

# Cache Engine with TACACS+ Support Configuration Example

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## **Introduction**

This document describes how to configure Terminal Access Controller Access Control System Plus (TACACS+) support in order to access the Cisco Cache Engine. The instructions in this document allow you to validate against a remote TACACS+ server/database when you telnet to the Cache Engine. If the server does not include an entry for your user ID, it checks locally for valid access information.

## **Prerequisites**

### **Requirements**

There are no specific requirements for this document.

### **Components Used**

The information in this document is based on these software and hardware versions:

- Cisco Cache Engine 505 in a lab environment with cleared configurations
- Cisco Cache Engine Software Release 2.3.1
- CiscoSecure for UNIX

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, make sure that you understand the potential impact of any command.

### **Conventions**

Refer to the Cisco Technical Tips Conventions for information on document conventions.

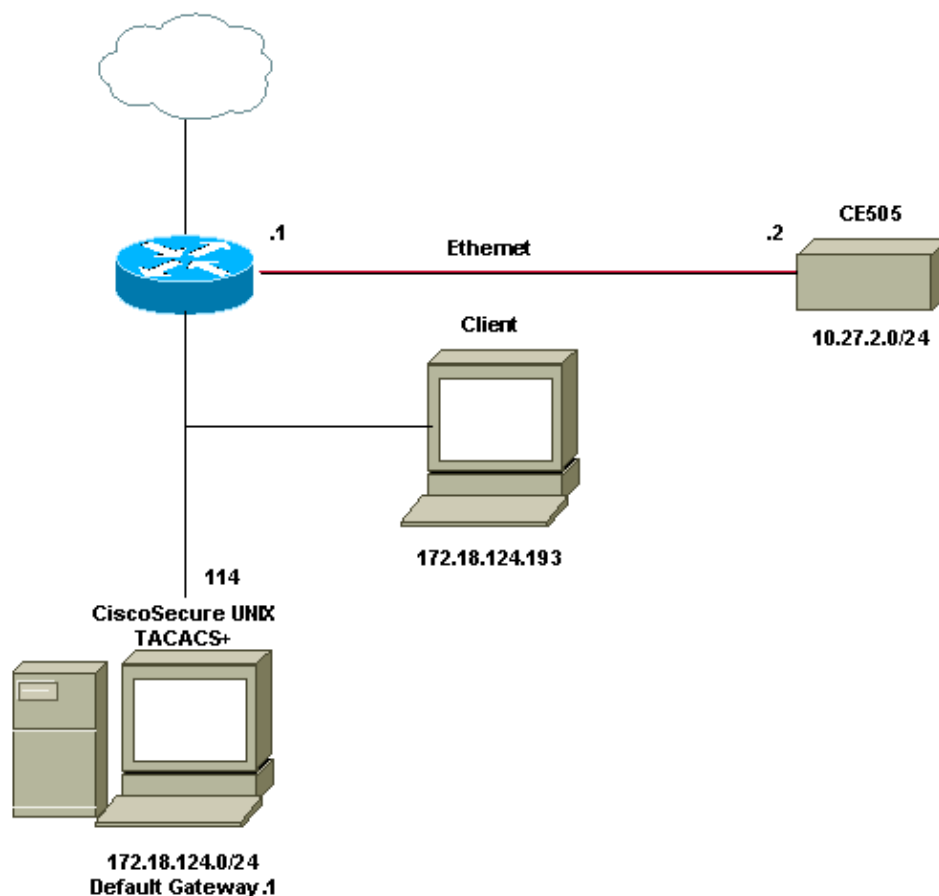
# Configure

In this section, you are presented with the information to configure the features described in this document.

**Note:** Use the Command Lookup Tool (registered customers only) to obtain more information on the commands used in this section.

## Network Diagram

This document uses this network setup:



## Configure the Cache Engine for TACACS+ Support

Complete these steps in order to configure the Cache Engine for TACACS+ support:

1. Configure the Cache Engine for the respective version of Web Cache Communication Protocol (WCCP).
2. Use these commands for the default configuration:

```
authentication login local enable
authentication configuration local enable
```
3. Configure the TACACS+ server IP address. If multiple servers specify which address is primary, then the secondary servers are left as blank options.
4. Configure authentication to the TACACS+ server as primary. If the server is not available, then the default will be the locally specified authentication.

5. Configure authentication to the TACACS+ key information where necessary.

**Note:** You must enable TACACS+ on the Cisco Cache Engine because Cisco Cache Engines use PPP in order to authenticate with the TACACS server, unlike the routers that do not require PPP. In order to enable TACACS+ on Cisco Cache Engines, open Cisco Secure ACS 2.6, click the **Group Setup** tab, and check the **PPP IP** check box located in the TACACS+ Settings area.

Your command lines should appear similar to this output:

```
cepro(config)#tacacs server 172.18.124.114
cepro(config)#authentication login tacacs ena primary
cepro(config)#authen configuration tacacs enab
```

## Verify

Use this section to confirm that your configuration works properly.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

- **show version** Displays the software that runs on the Cache Engine, as well as some other components as the system uptime (such as where the code was previously booted and the date when it was compiled).

```
cepro#show version
Cisco Cache Engine
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Software Release: CE ver 2.31 (Build: FCS 02/16/01)
Compiled: 11:20:14 Feb 22 2001 by bbalagot
Image text-base 0x108000, data_base 0x437534

System restarted by Reload
The system has been up for 20 hours, 42 minutes, 59 seconds.
System booted from "flash"
```

- **show hardware** Displays the same information as the **show version** command, as well as the hardware components of the Cache Engine.

```
cepro#show hardware
Cisco Cache Engine
Copyright (c) 1986-2001 by Cisco Systems, Inc.
Software Release: CE ver 2.31 (Build: FCS 02/16/01)
Compiled: 11:20:14 Feb 22 2001 by bbalagot
Image text-base 0x108000, data_base 0x437534

System restarted by Reload
The system has been up for 21 hours, 15 minutes, 16 seconds.
System booted from "flash"

Cisco Cache Engine CE505 with CPU AMD-K6 (model 8) (rev. 12) AuthenticAMD
2 Ethernet/IEEE 802.3 interfaces
1 Console interface.
134213632 bytes of Physical Memory
131072 bytes of ROM memory.
8388608 bytes of flash memory.

List of disk drives:
/c0t0d0 (scsi bus 0, unit 0, lun 0)
```

- **show running-config** Displays the running configuration on the Cache Engine.

```

cepro#show running-config

Building configuration...
Current configuration:
!
!
!
user add admin uid 0 password 1 "eeSdy9dcy" capability admin-access
user add chbanks uid 5001 password 1 "eeSdy9dcy" capability admin-access
!
!
!
hostname cepro
!
interface ethernet 0
 ip address 10.27.2.2 255.255.255.0
 ip broadcast-address 10.27.2.255
exit
!
!
interface ethernet 1
exit
!
ip default-gateway 10.27.2.1
ip route 0.0.0.0 0.0.0.0 10.27.2.1
cron file /local/etc/crontab
!
wccp router-list 1 10.27.2.1
wccp web-cache router-list-num 1
!
authentication login tacacs enable primary
authentication login local enable !--- on by default ---!
authentication configuration tacacs enable
authentication configuration local enable !---- on by default ---!
tacacs server 172.18.124.114 primary
rule no-cache url-regex .*cgi-bin.*
rule no-cache url-regex .*aw-cgi.*
!
!
end
cepro#

```

- **show tacacs** Displays the settings for the TACACS+ server.

```

cepro#show tacacs
Login Authentication for Console/Telnet Session: enabled (primary)
Configuration Authentication for Console/Telnet Session: enabled

TACACS Configuration:
-----
Key           =
Timeout      = 5 seconds
Retransmit   = 2 times

Server                               Status
-----
172.18.124.114                       primary

```

- **show statistics tacacs** Displays TACACS+ statistics.

```

cepro#show statistics tacacs
TACACS+ Statistics
-----
Number of access requests: 13
Number of access deny responses: 7

```

Number of access allow responses: 0

- **show authentication** Displays the current TACACS+ current authentication and authorization configuration.

```
cepro#show authentication
Login Authentication:      Console/Telnet Session
-----
local                      enabled
tacacs                    enabled (primary)

Configuration Authentication: Console/Telnet Session
-----
local                      enabled
tacacs                    enabled

cepro#
```

## Troubleshooting Commands

This section provides information you can use to troubleshoot your configuration.

The Output Interpreter Tool (registered customers only) (OIT) supports certain **show** commands. Use the OIT to view an analysis of **show** command output.

**Note:** Refer to Important Information on Debug Commands before you use **debug** commands.

- **show debug** Displays the debug commands that are enabled.

```
cepro#show debug
Authentication debugging is on
Tacacs debugging is on
```

- **terminal monitor** Displays the outputs of debugs to the screen. This output displays the results of the **debug authentication** and **debug tacacs** commands.

```
cepro#terminal monitor
cepro#authenticateUser(): Begin
setRemoteIPAddress(): pRemoteAddress 172.18.124.193
bAuthentication(): Begin
bAuthenticationIntersection(): Begin
bAuthenticationIntersection(): telnet_access 1
setAuthenticatedService(): nServiceToAuthenticate 6
getAuthenticatedService(): Begin
getAuthenticatedService(): nServiceToAuthenticate = 6
bAuthenticationIntersection() getAuthenticatedService 6
setErrorDisplayed(): Begin bStatus 0
getLocalLoginAuthEnable(): Begin
getLocalLoginAuthEnable(): uiState = 1
getTacacsLoginAuthEnable(): Begin
getTacacsLoginAuthEnable(): uiState = 1
getTacacsLoginAuthPrimary(): Begin
getTacacsLoginAuthPrimary(): uiState = 1
IncrementTacacsStatRequest(): Begin
tacacs_plus_login() Begin
isConsole() Begin
getAuthenticatedService(): Begin
getAuthenticatedService(): nServiceToAuthenticate = 6
isConsole() nReturn 0 telnet
tacacs_plus_login() sWhatService() tty = telnet
getRemoteIPAddress(): Begin
getRemoteIPAddress(): pRemoteAddress = 172.18.124.193
```

```

tacacs_plus_login() getRemoteIPAddress sHostIp 172.18.124.193
tacacs_malloc() Begin 164
tacacs_malloc() PSkmalloc ptr
getUserStruct() malloc_named ustr
tacacs_plus_login() allocated memory for ustruct
aaa_update_user() Begin
debug_authen_svc() Begin

aaa_update_user(): user='admin' ruser='system' port='telnet'
    rem_addr='172.18.124.193' authen_type=1
tacacs_plus_login() updated user
getNumTacacsLoginAttempts(): Begin
getNumTacacsLoginAttempts(): ulRetransmit = 2
##### tacacs_plus_login() num_tries 1
aaa_start_login() Begin
debug_start_login() Begin

debug_start_login()/AUTHEN/START (0): port='telnet' list='(null)'
    action=LOGIN service=LOGIN
aaa_randomize_id() Begin
tacacs_plus_start_login() Begin
tacacs_parse_server() Begin user_str admin
getTacacsDirectRequestEnable(): Begin
getTacacsDirectRequestEnable(): cDirectRequestEnable = 0
printIpAddr() Begin
printIpAddr() 0.0.0.0
tacacs_plus_start_login() server.ip_addr 0.0.0.0          server.type
    0 server.length 0
choose_version() Begin
create_authen_start() Begin
create_authen_start() len 45
tacacs_malloc() Begin 45
tacacs_malloc() PSkmalloc ptr
create_authen_start() malloc_named tac_pak
fill_tacacs_plus_hdr() Begin encrypt 1
fill_tacacs_plus_hdr() len 33, tac_pak->length 33
#### fill_tacacs_plus_hdr() tac_pak->encrypted 1
#### fill_tacacs_plus_hdr() TEST nTestLen 33
create_authen_start() len 33, tac_pak->length 33
create_authen_start() u->priv_lvl 15 start->priv_lvl 15
create_authen_start() start->action 1
create_authen_start() start->authen_type 1
create_authen_start() start->service 1
create_authen_start() user_len 5
create_authen_start() port_len 6
create_authen_start() addr_len 14
create_authen_start() out_len 33
tacacs_plus_start_login() TACACS+: send AUTHEN/START packet ver=192
    id=1541646967
tacacs_plus_start_login() login to TACACS+ server:
printIpAddr() Begin
printIpAddr() 0.0.0.0
tacacs_plus_get_conn() Begin server(0)
printIpAddr() Begin
printIpAddr() 0.0.0.0
tacacs_plus_get_conn() **pSocketHandleIndex 89434348
tacacs_plus_get_conn() Look at server in the TACACS+ server list
tacacs_plus_get_conn() TACACS+: This is a loop through server list
tacacs_plus_openconn() Begin
printIpAddr() Begin
printIpAddr() 172.18.124.114
open_handle() Begin
tacacs_plus_socket() Begin
tacacs_plus_socket Socket: return nSocket 784 nSockFdTbl[28] = 784

```

```

printIpAddress() Begin
printIpAddress() 172.18.124.114
open_handle() TACACS+: Opening TCP/IP connection to 172.18.124.114
open_handle() nSockFdTbl[28]= 784
setCurrentServer() Begin SaveCurrentServer->ip_addr 172.18.124.114
IncrementTacacsStatPerServerRequest(): Begin
##### IncrementTacacsStatPerServerRequest Server->ip_addr 1920733868
    tacacs_root.ulTacacsServerAddr
open_handle() socket(28) 784
tacacs_plus_connect() Begin
tacacs_plus_connect() socket(28) 784
tacacs_plus_connect() End
open_handle() is connected
open_handle() *connection_handle 28
open_handle() **pSocketHandleIndex 28
tacacs_plus_openconn() **pSocketHandleIndex 28
get_server() Begin
tacacs_plus_openconn() server->opens++
tacacs_plus_get_conn() **pSocketHandleIndex 28
tacacs_plus_get_conn() oldServerCount: 0, count:0
    tacacs_plus_start_login() **pHandleIndex 28
tacacs_plus_send_receive() Begin
tacacs_plus_proc_send_receive() Begin
tacacs_plus_proc_send_receive() length 33
copy_tac_plus_packet() Begin
tacacs_malloc() Begin 45
tacacs_malloc() Pskmalloc ptr
copy_tac_plus_packet() malloc_named copy
tacacs_plus_encrypt() Begin
getTacacsKey(): Begin
getTacacsKey(): sKey =
tacacs_plus_encrypt() key
tacacs_plus_encrypt() sizeof(tacacs_plus_pkt_hdr) 12
tacacs_plus_encrypt() sizeof(uchar) 1
tacacs_plus_encrypt() tac_pak->encrypted 1
tacacs_plus_encrypt() tac_pak->encrypted = TAC_PLUS_CLEAR && key is empty
tacacs_plus_proc_send_receive() out_pak->encrypted 1
tacacs_plus_proc_send_receive() out_pak->encrypted 1
tacacs_plus_proc_send_receive() Pskfree dump_pak
tacacs_plus_proc_send_receive() ntohl(out_pak->length) 33
dump_start_session() Begin ntohl(out_pak->length) 33
getTacacsKey(): Begin
getTacacsKey(): sKey =
0xc0 0x1 0x1 0x1 0x77 0xaa 0xe3 0x5b 0x0 0x0 0x0 0x21 0x1 0xf 0x1 0x1 0x5
    0x6 0xe 0x0 0x61 0x64 0x6d
encrypt_md5_xor() Begin
encrypt_md5_xor() no key
dump_summarise_incoming_packet_type() Begin
Read AUTHEN/START size=45
dump_nas_pak() Begin
dump_header() Begin
PACKET: key=
version 192 (0xc0), type 1, seq no 1, encrypted 1
session_id 2007688027 (0x77aae35b), Data length 33 (0x21)
End header
type=AUTHEN/START, priv_lvl = 15action=login
authen_type=ascii
service=login
user_len=5 port_len=6 (0x6), rem_addr_len=14 (0xe)
data_len=0
User: port: rem_addr: data:
End packet
dump_start_session() Pskfree test
getTacacsTimeout(): Begin

```

```

getTacacsTimeout(): ulTimeout = 5
tacacs_plus_sockwrite() Begin
tacacs_plus_proc_send_receive() PSkfree out_pak
getTacacsTimeout(): Begin
getTacacsTimeout(): ulTimeout = 5
sockread() Begin
tacacs_plus_proc_send_receive() read
tacacs_malloc() Begin 18
tacacs_malloc() PSkmalloc ptr
tacacs_plus_proc_send_receive() malloc_named *in
tacacs_plus_proc_send_receive() allocated memory
getTacacsTimeout(): Begin
getTacacsTimeout(): ulTimeout = 5
sockread() Begin
tacacs_plus_proc_send_receive() OK
tacacs_plus_decrypt() Begin
getTacacsKey(): Begin
getTacacsKey(): sKey =
tacacs_plus_decrypt() key
tacacs_plus_decrypt() tac_pak->encrypted = TAC_PLUS_CLEAR && key is empty
authen_resp_sanity_check() Begin
tacacs_plus_hdr_sanity_check() Begin
authen_debug_response() Begin
authen_debug_response() TACACS+: ver=192 id=1541646967 received AUTHEN
    status = FAIL
tacacs_plus_start_login() PSkfree out_tac_pak
unload_authen_resp() Begin
tacacs_plus_start_login() PSkfree in_tac_pak
debug_authen_status() Begin

TACACS+/AUTHEN (2007688027): status = FAIL

tacacs_plus_login() Authentication failed.
tacacs_plus_login() labell
aaa_cleanup_login() Begin
aaa_close_connection() Begin
tacacs_plus_closeconn() Begin
get_server() Begin
close_handle() Begin
close_handle() nHandleIndex 28 nSockFdTbl[**handle] 784
aaa_set_password() Begin
aaa_free_user() Begin
debug_authen_svc() Begin
aaa_close_connection() Begin

TACACS+/AUTHEN: free user admin system telnet 172.18.124.193
    authen_type=ASCII service=LOGIN priv_lv
aaa_free_user() PSkfree ustr
##### tacacs_plus_login() num_tries 2
aaa_start_login() Begin
debug_start_login() Begin

debug_start_login()/AUTHEN/START (0): port='unknown' list='(null)'
    action=LOGIN service=LOGIN

TACACS+/AUTHEN/START aaa_start_login() (0): ERROR (no ustruct)
    tacacs_plus_login() TACACS+: aaa_start
aaa_free_user() Begin
tacacs_plus_login() try_local_login AUTHENTICATION_INTERNAL_ERROR
IncrementTacacsStatDenyAccess(): Begin
localAuthentication(): Begin
localAuthentication() usrName admin
localAuthentication() passwd system
localAuthentication() pUid 89435294

```

```

localAuthentication() telnet_access
localAuthentication() rc == TRUE
AuthenticationIntersection(): bTacacsLogin 0
IncrementLocalLoginStat(): Begin
getLocalConfigAuthEnable(): Begin
getLocalConfigAuthEnable(): uiState = 1
getTacacsConfigAuthEnable(): Begin
getTacacsConfigAuthEnable(): uiState = 1
getTacacsConfigAuthPrimary(): Begin
getTacacsConfigAuthPrimary(): uiState = 0
localAuthentication(): Begin
localAuthentication() usrName admin
localAuthentication() passwd system
localAuthentication() pUid 89435294
localAuthentication() telnet_access
localAuthentication() rc == TRUE
AuthenticationIntersection(): bTacacsConfig 0
AuthenticationIntersection():== Local Database Authentication ==
IncrementLocalConfigStat(): Begin
AuthenticationIntersection(): user has been found
AuthenticationIntersection(): bTacacsLogin pUid 89435294
AuthenticationIntersection(): GOT ACCESS capab 0 Admin 0 Ftp 0 Http 0
Telnet 0

authenticateUser() AUTHENTICATION IS OK
authenticateUser() AUTHENTICATION #2

```

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NetPro Discussion Forums – Featured Conversations for CDN
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Emerging Technologies: Content Networking
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## Related Information

- [Release Notes for Cisco Cache Software, Release 2.3.0 – FTP Caching](#)
- [Cisco 500 Series Cache Engine Products & Services](#)
- [Technical Support & Documentation – Cisco Systems](#)

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