CIAgent

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CIAgent Overview

CIAgent is a SNMP agent that has the following functionalities:

- Start, stop and gracefully restart the CSPS
- Monitor the proxy server log file sizes (error_log and access_log)
- Monitor CPU usage
- Check memory size, disk space
- Check Link up/down status on the system running the proxy server

CIAgent has a master agent (snmpdm) that communicates with a few subagents (critagt, smagt, logagt, etc.) which service their respective MIBs. Each SNMP request that the master agent receives is passed to the appropriate subagent which retrieves or sets a particular MIB object value. Responses from subagents are passed back through the master agent to the requester.
Setting a MIB object value can also trigger a command to run, start, stop and gracefully restart CSPS. In the subagent managed MIBs, traps are defined so when a certain event occurs, a trap is sent by the subagent through the master agent to the management station or a trap sink. SNMP traps can be used to notify the CSPS administrator when the CSPS comes up or goes down, when the size of a log file exceeds a specified limit, or when the CPU load rises above or falls below specified thresholds.

CIAgent runs as a set of processes as root on the same system that runs CSPS. In a farm setup of CSPS, each farm member should have its own CIAgent co-existing on the same system. This CIAgent controls and monitors a particular farm member. A SNMP management station can send requests to all the CIAgents on the farm members, and each CIAgent responds to the management station independently.

## MIBs and Subagents

The MIB files are located in the CIAgent installation directory under the mibs directory. They are text files with the extension, .my, and is a good source to learn what a MIB/subagent can provide.

The following are CIAgent MIBs being used and the subagents that service them:

- **CRITAPP-MIB (critagt)** — start and stop CSPS
- **LOG-MIB (logagt)** — monitor CSPS error_log and access_log sizes

The following are standard MIBs and subagents in the CIAgent which are also used:

- **DISMAN-SCRIPT-MIB (smagt)** — gracefully restart CSPS
- **DISMAN-EVENT-MIB (eventagt)** — monitor CPU load
- **HOST-RESOURCES-MIB (hostagt)** — check memory size, disk space
- **RFC1213-MIB (mib2agt)** — check link up/down status
- **SYSAPPL-MIB (sappagt)** — check what applications are installed and running on the system

## Installation

Use either the customized or manual installation methods to install and upgrade CIAgent.

**Note**

In a farm setup of CSPS, each farm member should have its own CIAgent installed on the same system. Each farm member has a one-to-one relationship with its co-located CIAgent in the same system, though a SNMP manager station can control or monitor all farm members through their individual CIAgent.

Before installation, check if a SNMP agent is running on the system by using the `ps -ef|grep snmp` command. If no snmp agent is running, proceed to the last paragraph of this section.

If a SNMP agent is running on port 161 or port 161 is in use and the existing SNMP agent is running on the port specified for snmp in the `/etc/services` file, stop the SNMP agent or run CIAgent on a non-standard port.

To run CIAgent on a different port, set an environment variable, `SR_SNMP_TEST_PORT`, to an available port. If necessary, an environment variable, `SR_TRAP_TEST_PORT`, can be set to specify a non-standard trap port, beside port 162. Otherwise, if the environment variable `SR_SNMP_TEST_PORT`, is set, the trap port will be of the value `SR_SNMP_TEST_PORT +1`. 
Optionally, you can set an environment variable, SR_HTTP_TEST_PORT, to specify a port besides 280 for snmp web management access. If any of the three environment variables are set for CIAgent, they must be included in the .login, .cshrc or any shell init files that are relevant to maintain consistency.

If a previous version of CIAgent is installed, use its uninstall.CIA script to uninstall it. Then use the following steps for installation.

### Customized Installation

This section describes the customized installation for CIAgent.

**Note**

The customized script is only recommended for first time installation of CIAgent, and NOT for upgrades because it does not keep the previous configuration. For CIAgent upgrades, use the steps in “Manual installation” section on page 7-4.

**Step 1**  
Login as root user.

**Step 2**  
Run the installation script, csps_ciagent_install, by using the following command:

```
./csps_ciagent_install
```

On a Linux system, CIAgent is installed in the `/usr/local/ciagent` directory and CSPS is assumed to be installed in the `/usr/local/sip` directory. On a Solaris system, CIAgent is installed in the `/opt/ciagent` directory and CSPS is assumed to be installed in the `/opt/sip` directory.

During installation, the following configuration files are modified to reflect the CSPS installation path and they are copied into the `/etc/srconf/agt` directory. These files provide a basic set of configurations to CIAgent for use with CSPS. You can modify them to suit your environment.

- `critagt.cnf`
- `smagt.cnf`
- `logagt.cnf`
- `eventagt.cnf`

A script, `smPopScript`, is activated to populate the script MIB subagent (smagt) with commands to do graceful restart for CSPS. After installation, the CIAgent is automatically started.

**Step 3**  
Add the CIAgent installation path and its bin directory to the search path as shown in the following example.

**For Linux:**

```
setenv PATH $PATH:/usr/local/ciagent:/usr/local/ciagent/bin
```

**For Solaris:**

```
setenv PATH $PATH:/opt/ciagent:/opt/ciagent/bin
```
Manual installation

To install CIAgent manually, use the CIAgent default installation script, install, then use the following steps.

### Step 1
Log in as a root user.

### Step 2
Change directory to where the CIAgent installation program is located with the following commands.

For Linux:
```bash
cd /usr/local/sip/ciagent
```

For Solaris:
```bash
cd opt/sip/ciagent
```

### Step 3
Run the installation program, install, with a parameter indicating your preferred CIAgent installation directory, as shown in the following examples.

For Linux:
```bash
./install /usr/local
```

For Solaris:
```bash
./install /opt
```

Note: It is recommended to install CIAgent in the same parent directory tree as CSPS for easy location. For example, if CSPS is installed on Linux in the /usr/local/sip directory, pass /usr/local to the script. If CSPS is installed on Solaris in the /opt/sip directory, pass /opt to the script. If no parameters are provided, CIAgent is installed in the /usr/local/ciagent on both Linux and Solaris.

CIAgent is automatically started.

### Step 4
Use the following command to check if CIAgent is running.
```bash
ps -ef|grep snmpd
```

### Step 5
Add the CIAgent installation path and its bin directory to the bin search path with the following commands.

For Linux:
```bash
setenv PATH \${PATH}:/usr/local/ciagent:/usr/local/ciagent/bin
```

For Solaris:
```bash
setenv PATH \${PATH}:/opt/ciagent:/opt/ciagent/bin
```

When CIAgent is loaded, the following processes which run as root are displayed:
- ./snmpdm -tcplocal (can be three on Linux)
- ./brassagt
- ./critagt
- ./mib2agt
- ./eventagt
- ./fsagt
Access CIAgent Dr-Web interface by opening a web browser and enter the following URL:
http://<localhost, IP or hostname of the system running CIAgent>:280

**Note**
280 is the default standard port for snmp web management access. However, if the environment variable, SR_HTTP_TEST_PORT, was set to a different port value before running the installation, that port must be used to access the Dr-Web page.

For login and password, enter root and webRootPassword respectively.

Information on CIAgent and its configurations can be found in the CIAgent Online Manual on this homepage. You can also click on the list of CIAgent subagents to do configuration through Dr-Web, or refer to the manual configuration instructions in this document.

### Stopping and Restarting CIAgent Manually

**Note**
You must be a root user to install, start, stop and uninstall CIAgent.

For Linux, to stop and restart CIAgent which is installed in the /usr/local/ciagent directory, use the following commands:

```bash
cd /usr/local/ciagent/
ciagent stop
ciagent start
```

For Solaris, to stop and restart CIAgent which is installed in the /opt/ciagent directory, use the following commands:

```bash
cd /opt/ciagent/
ciagent stop
ciagent start
```

### Uninstalling CIAgent

To uninstall CIAgent on both Linux and Solaris as a root user, issue the following command at the system prompt.

For Linux:

```bash
cd /usr/local/ciagent/
uninstall.CIA
```
For Solaris:

cd /opt/ciagent
uninstall.CIA

### Modifying System Information

To modify managed system information in the file `/etc/srconf/agt/snmpd.cnf`, change the default information in the following entries.

- **sysLocation** — The physical location of this managed system. For example, 2nd rack, 3rd floor
- **sysContact** — The contact person for this managed system
- **sysName** — FQDN of this managed system

### Creating a User for the System Administrator

**Step 1**

To create a user for the system administrator to access Dr-Web interface, add a line to the end of the file, `/etc/srconf/agt/snmpd.cnf`, as shown in the following example.

```plaintext
httpUserNameEntry  <YOUR-LOGIN-NAME> SystemAdmin - nonVolatile <YOUR-LOGIN-PASSWORD>
```

Remove the comment markers of or remove entirely the other `httpUserNameEntry(s)` to increase security and limit access to your system administrator.

**Step 2**

Change the file permission to read-only by root afterwards, then stop and restart CIAgent to activate the new configuration.

---

**Note**

Access the Dr-Web interface with configured login and password, and configure the subagents for the environment.

### Configuring SNMP v2c and Trap Target Addresses

To add or configure SNMP v2c community strings for the CSPS administrators and configure trap target addresses, refer to CIAgent online manual section, *The Emanate Master Agent*. The subsections on SNMP Community/userName Configuration and Trap Configuration provide information on how to make additions and modifications for the system environment. See following examples from the file `/etc/srconf/agt/snmpd.cnf`.

This example adds community string `cspAdmin` with security level `proxySec`.

```plaintext
snmpCommunityEntry  t0000001 cspAdmin proxySec localSnmpID - - nonVolatile
```

This example adds a new group, `proxyGroup`, with `snmpv2c` access permissions.

```plaintext
vacmAccessEntry  proxyGroup - snmpv2c noAuthNoPriv exact All All All nonVolatile
```

This example associates security level `proxySec` with group, `proxyGroup`.

```plaintext
vacmSecurityToGroupEntry  snmpv2c proxySec proxyGroup nonVolatile
```
This example specifies an IP address, 128.107.140.131, to send traps to.

```
        snmpTargetAddrEntry  40 snmpUDPDomain 128.107.140.131:0 100 3 Console v2cExampleParams
        nonVolatile 255.255.255.255:0
```

This example specifies community string, \textit{cspAdmin}, to be used in v2c traps.

```
        snmpTargetParamsEntry  v2cExampleParams 1 snmpv2c proxySec noAuthNoPriv nonVolatile
```

### Customizing Configurations

It is recommended to use CIAgent's Dr-Web interface to configure CIAgent's subagents. If the \texttt{csps\_ciagent\_install} script is used to install CIAgent, a preset configuration is included in the installation. This configuration is extendable.

To send SNMP requests to CIAgent, use the Dr-Web interface, command-line CIAgent utility, or any other SNMP product. If the command-line CIAgent utility is used, a default community string, \textit{cspAdmin}, is provided in the \texttt{snmpd.cnf} file.

CIAgent supports SNMP v1, v2c and v3, and the examples provided in this document and the readme file use v2c to show how to retrieve and set certain MIB objects for use of the CSPS. If security is a major concern, v3 MIB should be used. Refer to CIAgent's Online Manual on Dr-Web home page for more detail on CIAgent configurations and how to set up v3 user and passwords.

Observe the following settings:

- sipd's Intended Operation Status is initialized to be down. To start CSPS, change the status to up.
- Start and stop commands are also set into the Critical Applications MIB with appropriate path to the CSPS installation directory.
- The graceful restart command is set into the script MIB with appropriate path to the CSPS installation directory.
- The CSPS log files monitored by the CIAgent are pre-set to error\_log and accesss\_log with maximum size set to 5MB. If either one grows bigger than 5MB, a trap is sent.
- CPU average load over the last minute is monitored by the Event subagent and a rising threshold is set to 75\% and a falling threshold is set to be 20\%. When the CPU average load over the last minute exceeds the rising threshold or falls below the falling threshold, a trap is sent. To change these pre-set values or modify any CIAgent configurations by using the Dr-Web interface, or access them in their respective cnf files, refer to the CIAgent Online Manual for more detail.

To access the interface, use the following steps.

**Step 1** Enter the following URL at a web browser:

```
http://<localhost, machine IP or hostname running CIAgent>:280
```

**Step 2** Enter login and password as shown in the following examples.

```
login: proxy
password: csps
```

**Note** You can always remove or add logins in the file, \texttt{/etc/srconf/agt/snmpd.cnf}. See CIAgent Online Manual, Chapter 6, \textit{The EMANATE Master Agent}, for the format and directives in \texttt{snmpd.cnf}.
Step 3  At the CIAgent home page, access the CIAgent Online Manual on how to configure the subagents. Click on the listed subagents to see a sample list of CSPS specific configurations. The following list contains sample CIAgent’s subagents and how they are used with CSPS.

- Critical Application Monitor (critagt)—starts and stops CSPS
- Script MIB (smagt, smPopScript)—gracefully restarts the CSPS by setting a MIB object (smLaunchStart.1.67.1.68) to 0 via SNMP set command or CIAgent setany utility program.
- Log File Monitor (logagt)—monitors CSPS error_log and access_log file sizes, and sends traps when specified thresholds are exceeded.
- Host Resources (hostagt)—checks CPU usage, physical memory size and disk space usage on the system.
- Event MIB (eventagt)—monitors CPU usage by setting specified rising and falling thresholds and send traps when the thresholds are exceeded.
- System Applications Monitor (sappagt)—Checks what are installed and running on the system.
- MIB-II (mib2agt)—Checks link up and down status

Note  The Script MIB subagent cannot be configured through this home page. The MIB files are located in CIAgent installation directory under mibs. There are utility programs in the CIAgent bin directory that can interact with MIB objects. They are setany, getone, getmany, traprcv.

Configuring Critical Application Subagent (critagt)

To configure the critagt to start and stop CSPS, use the Dr-Web interface to add an entry for sipd, provide the Start command and Terminate command, and set desired options.

To do this, directly modify the /etc/srconf/agt/critagt.cnf file by adding a critAppProcEntry line for sipd, spa, pserver, and licenseMgr.

The following example is for Linux. To use this example for Solaris, change the path to sip from /usr/local/sip/bin/sip to /opt/sip/bin/sip.

```
# Entry type: critAppProcEntry
# Entry format: integer - index number (continuous positive integer)
# octetString - process name (real process name)
# octetString - start command (string of characters)
# octetString - stop command (string of characters)
# integer - intended operation status (up(1), down(2))
# integer - restart on exit (true or false)
# integer - restart interval in centisecond
# integer - send trap on exit (true or false)
# integer - send trap on start (true or false)
# integer - find process on startup (true or false)
critAppProcEntry 1 sipd \
    "/usr/local/sip/bin/sip start" \
    "/usr/local/sip/bin/sip stop" 2 false 3000 \
    true true true

critAppProcEntry 2 spa \
    "/usr/local/sip/bin/sip start" \
    "/usr/local/sip/bin/sip stop" 2 false 3000 \
    true true true
```
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critAppProcEntry  3 pserver 
    "/usr/local/sip/bin/sip start" \
    "/usr/local/sip/bin/sip stop" 2 false 3000 \ 
    true true true

critAppProcEntry  4 licenseMgr 
    "/usr/local/sip/bin/sip start" \
    "/usr/local/sip/bin/sip stop" 2 false 3000 \ 
    true true true

# Entry type: critAppTrapWhenNotAllRunning
# Entry format: integer - send trap when some process is down
critAppTrapWhenNotAllRunning false

# Entry type: critAppTrapWhenAllRunning
# Entry format: integer - send trap when all are running
critAppTrapWhenAllRunning false

Stop and restart the critagt to activate the new configuration by using the following commands.

ps -ef|grep critagt
kill -9 <critagt's PID>
cd /usr/local/ciagent/bin (on solaris, cd /opt/ciagent/bin)
./critagt &

To start or stop CSPS, use Dr-Web to change the Intended Operation Status on the GUI, or use the following commands.

setany is a SNMP utility program from CIAgent. Other SNMP set command can be used. Refer to the MIB files (located in the CIAgent installation directory under mibs) for the object information before setting it.

To start the CSPS, use the following command.

setany -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
    critAppAdminStatus.1 1

To stop the CSPS, use the following command.

setany -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
    critAppAdminStatus.1 2

To get the CSPS running status, use the following command.

getone -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
    critAppOperStatus.1

To find out about the CSPS start command, use the following command.

getone -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
    critAppStartCommand.1

To find out about the CSPS stop command, use the following command.

getone -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
    critAppTerminateCommand.1
Configuring the Script Subagent (smagt)

To configure the smagt to do graceful restart for CSPS, use the following steps.

**Step 1** Modify the script, smPopScript, which is located in the CSPS distribution directory under the ciagent/conf directory. Use a text editor to modify the following variables in the script for the environment.

```
Agent="localhost"
Version="-v2c"
User="cspsAdmin"
AuthPassword=""
PrivPassword=""
```

Change the following line to reflect the CSPS installation path to do graceful restart. For Solaris, change path to sip, so the full path is /opt/sip/bin/sip.

```
setany $Version $Agent $User \ smCodeRowStatus.$SOwner.$SName.1 createAndGo \ smCodeText.$SOwner.$SName.1 -D "exec("/usr/local/sip/bin/sip graceful");" 
```

**Step 2** Copy this file to the CIAgent installation bin directory (/usr/local/ciagent/bin for Linux; /opt/ciagent/bin for Solaris), and change file permission to be executable by root.

**Step 3** Run the script to populate the script MIB table by using the following command.

```
./smPopScript
```

**Step 4** To invoke a graceful restart, use the following command. This assumes the CSPS is already running.

```
setany -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin smLaunchStart.1.67.1.68 0
```

To stop and restart CIAgent, run this script to populate the script MIB subagent. To avoid doing this every time, add a call to the script in the ciagent script file (CIAgent installation directory). See the following example in the ciagent script file.

```
./critagt
./mib2agt
./eventagt &
./fsagt &
./hostagt &
./htmlagt
./logagt
./sappagt &
./schdagt
./smagt
sleep 5
./smPopScript
```

**Note**

This example assumes the smPopScript file is modified and exists in the CIAgent bin directory. The **sleep 5** command runs smPopScript after sleeping 5 seconds for smagt to fully started. An alternative is to use the customized start/stop script, csps_ciagent_ctl (in /usr/local/sip/ciagent for Linux and /opt/sip/ciagent for Solaris). You can copy it to your CIAgent installation directory (/usr/local/ciagent for Linux and /opt/ciagent for Solaris) and give it execution permission. The customized script calls the smPopScript script after starting CIAgent.
Configuring the Log File Subagent (logagt)

To configure the logagt to monitor CSPS log file sizes at certain intervals and to send traps when they exceed the thresholds, modify file /etc/srconf/agt/logagt.cnf directly or by using the Dr-Web interface. The following example is for Linux. To use this example for Solaris, change the path for error_log and access_log to /opt/sip/logs/error_log and /opt/sip/logs/access_log respectively.

```sh
# Entry type: siLogGlobalPollInterval
# Entry format: integer
siLogGlobalPollInterval 60

# Entry type: siLogEntry
# Entry format: integer - index number
# octetString - description of the file to be monitored
# octetString - full path to the file
# octetString - regular expression to match in the file
# integer - leave it as is
# integer - character position to start matching
# integer - character position to stop matching
# integer - number of matches found so far
# octetString - command to run on match
# integer - send trap on match (yes(1), no(2))
# integer - current size of the file in bytes
# integer - maximum file size as threshold
# octetString - command to run when maximum size reached
# integer - send trap on maximum size (yes(1), no(2))
# integer - polling interval in seconds
# integer - leave it as is
# octetString - file owner
# integer - leave it as is
siLogEntry 1 "CSPS error log" /
    /usr/local/sip/logs/error_log - 2 0 0 0 - 2 \
    316687 5000000 - 1 10 2 csps 1 316687 "tent-Length: 0\n\n\n\n"

siLogEntry 2 "CSPS access log" /
    /usr/local/sip/logs/access_log - 2 0 0 0 - 2 \
    316687 5000000 - 1 10 2 csps 1 316687 "tent-Length: 0\n\n\n\n"
```

View your current log file size from Dr-Web, or use the following commands to retrieve it.

```sh
getone -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
siLogSize.1

getone -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
siLogSize.2
```

**Note**

In the preset configurations, siLogSize.1 refers to log file size for the file at index 1 (error_log). siLogSize.2 refers to access_log.

---

Configuring the Event MIB Subagent

To configure the Event MIB subagent to monitor CPU usage and send traps when CPU average-usage-over-a-minute passes a specified threshold, use one of the following methods.

- Use the Dr-Web interface to configure a Trigger-Event-Notification set for hrProcessorLoad object in Host Resources MIB for CPU rising and falling thresholds.
- Modify the following sample eventagt.cnf file accordingly. Refer to CIAgent Online Manual on Dr-Web for more information on each directives in the eventagt.cnf configuration file.
In this example, the rising threshold is set to 75%, the falling threshold is set to 20%, and the polling interval is set to 5 seconds.

```plaintext
# Entry type: mteResourceSampleMinimum
# Entry format:
# mteResourceSampleMinimum (integer) mteResourceSampleMinimum 1
# Entry type: mteResourceSampleInstanceMaximum
# Entry format:
# mteResourceSampleInstanceMaximum (unsigned) mteResourceSampleInstanceMaximum 0u
# Entry type: mteTriggerEntry
# Entry format:
# mteOwner (text)
# mteTriggerName (text)
# mteTriggerComment (text)
# mteTriggerTest (bits)
# mteTriggerSampleType (integer)
# mteTriggerValueID (ObjectID)
# mteTriggerValueIDWildcard (integer)
# mteTriggerTargetTag (text)
# mteTriggerContextName (text)
# mteTriggerContextNameWildcard (integer)
# mteTriggerFrequency (unsigned)
# mteTriggerObjectsOwner (text)
# mteTriggerObjects (text)
# mteTriggerEnabled (integer)
# mteTriggerEntryStatus (integer) mteTriggerEntry 61 loadTrigger " " 20 1
iso.3.6.1.2.1.25.3.3.1.2.1 2 - - 2 \
5u -- 1 1
# Entry type: mteTriggerDeltaEntry
# Entry format:
# mteTriggerDeltaDiscontinuityID (ObjectID)
# mteTriggerDeltaDiscontinuityIDWildcard (integer)
# mteTriggerDeltaDiscontinuityIDType (integer)
# mteOwner (text)
# mteTriggerName (text)
# Entry type: mteTriggerExistenceEntry
# Entry format:
# mteTriggerExistenceTest (bits)
# mteTriggerExistenceStartup (bits)
# mteTriggerExistenceObjectsOwner (text)
# mteTriggerExistenceObjects (text)
# mteTriggerExistenceEventOwner (text)
# mteTriggerExistenceEvent (text)
# mteOwner (text)
# mteTriggerName (text)
# Entry type: mteTriggerBooleanEntry
# Entry format:
# mteTriggerBooleanComparison (integer)
# mteTriggerBooleanValue (integer)
# mteTriggerBooleanStartup (integer)
# mteTriggerBooleanObjectsOwner (text)
# mteTriggerBooleanObjects (text)
# mteTriggerBooleanEventOwner (text)
# mteTriggerBooleanEvent (text)
# mteOwner (text)
# mteTriggerName (text)
# Entry type: mteTriggerThresholdEntry
# Entry format:
# mteTriggerThresholdStartup (integer)
# mteTriggerThresholdRising (integer)
# mteTriggerThresholdFalling (integer)
# mteTriggerThresholdDeltaRising (integer)
# mteTriggerThresholdDeltaFalling (integer)
```
The hrProcessorLoad object represents the average CPU usage over the last minute in a system unit. This is not the same as the CPU usage output in Unix program “top” which shows CPU usage in the sampling moment. This means the hrProcessorLoad value rises up and drops down slowly, because it is an average value over a minute.

To check current hrProcessorLoad object value, use the following command.
getone -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
hrProcessorLoad.1

Configuring Trap Sink for CIAgent Traps

To set up a trap sink for CIAgent traps, run the CIAgent utility, traprcv, as root and configure in the snmpd.cnf file where trap sink is located accordingly. Then restart CIAgent. Usually, the loopback address (127.0.0.1) is one of the default trap sink addresses. When a trap triggering event occurs, such as the CSPS going up or down, a trap message should appear in the traprcv program window. The same applies to log files that exceed limits and CPU load that is over or under thresholds.

Checking Memory Size

To check memory size (amount of kilobytes in physical main memory in the host), use the following command.
getmany -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
hrMemorySize

Checking Disk Space Information

To check disk space information, use the following command.
getmany -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
hrStorageEntry

Note
See HrStorageEntry in Host Resources MIB for more detail.

Example storage types is given as:
- hrStorageType.1 = hrStorageRam
- hrStorageType.2 = hrStorageVirtualMemory
- hrStorageType.3 = hrStorageFixedDisk
- hrStorageType.4 = hrStorageFixedDisk
- hrStorageType.5 = hrStorageOther
- hrStorageType.6 = hrStorageOther
- hrStorageType.7 = hrStorageFixedDisk
- hrStorageType.8 = hrStorageRamDisk
- hrStorageType.9 = hrStorageRamDisk
- hrStorageType.10 = hrStorageFixedDisk
- hrStorageType.11 = hrStorageFixedDisk
- hrStorageType.12 = hrStorageFixedDisk
- hrStorageType.13 = hrStorageFixedDisk
- hrStorageType.14 = hrStorageFixedDisk
Example storage description corresponding to the indices is given as:

- hrStorageDescr.1 = Physical RAM
- hrStorageDescr.2 = Virtual Memory
- hrStorageDescr.3 = /
- hrStorageDescr.4 = /usr
- hrStorageDescr.5 = /proc
- hrStorageDescr.6 = /etc/mnttab
- hrStorageDescr.7 = /var
- hrStorageDescr.8 = /var/run
- hrStorageDescr.9 = /tmp
- hrStorageDescr.10 = /opt
- hrStorageDescr.11 = /auto/vvs
- hrStorageDescr.12 = /users/kevinmc
- hrStorageDescr.13 = /users/liuhong
- hrStorageDescr.14 = /users/ribiere

Example storage allocation unit size (in bytes) corresponding to the indices is given as:

- hrStorageAllocationUnits.1 = 8192
- hrStorageAllocationUnits.2 = 8192
- hrStorageAllocationUnits.3 = 1024
- hrStorageAllocationUnits.4 = 1024
- hrStorageAllocationUnits.5 = 512
- hrStorageAllocationUnits.6 = 512
- hrStorageAllocationUnits.7 = 1024
- hrStorageAllocationUnits.8 = 8192
- hrStorageAllocationUnits.9 = 8192
- hrStorageAllocationUnits.10 = 1024
- hrStorageAllocationUnits.11 = 512
- hrStorageAllocationUnits.12 = 512
- hrStorageAllocationUnits.13 = 512
- hrStorageAllocationUnits.14 = 512

Example storage total size in terms of the allocation units corresponding to the indices is given as:

- hrStorageSize.1 = 65536
- hrStorageSize.2 = 256214
- hrStorageSize.3 = 962571
- hrStorageSize.4 = 4032142
- hrStorageSize.5 = 0
- hrStorageSize.6 = 0
- hrStorageSize.7 = 962571
Checking Link Up/down Status

To check link up/down status from MIB-2, use the following command.

```
getmany -v2c <localhost, IP address or hostname of system running CIAgent> cspsAdmin
ifTable
```

**Note**
Refer to MIB-2 for more detail.

Example link description:
- ifDescr.1 = lo0
- ifDescr.2 = hme0

Example link up/down status:
- ifOperStatus.1 = up(1)
- ifOperStatus.2 = up(1)
Example link type:
- ifType.1 = softwareLoopback(24)
- ifType.2 = ethernet_csmacd(6)

Example link's MTU:
- ifMtu.1 = 8232
- ifMtu.2 = 1500

### Checking Installed and Active Components in the System

To check what software is installed and running in the system from SYSAPPL-MIB, it is recommended to use Dr-Web interface by clicking on System Applications Monitor from the CIAgent home page.

The `getmany` command may retrieve a long list of entries. See the following examples.

```bash
getmany -v2c <IP address of system running CIAgent or localhost> cspsAdmin sysApplInstalled
getmany -v2c <IP address of system running CIAgent or localhost> cspsAdmin sysAppRun
getmany -v2c <IP address of system running CIAgent or localhost> cspsAdmin sysApplInstallPkgProductName
getmany -v2c <IP address of system running CIAgent or localhost> cspsAdmin sysApplInstallPkgDate
getmany -v2c <IP address of system running CIAgent or localhost> cspsAdmin \ sysApplInstallPkgLocation
```

### Using the CSPS with CIAgent

### Starting, Stopping, and Gracefully Restarting the CSPS

#### Starting the CSPS

To start the CSPS from CIAgent, use the Dr-Web interface as follows.

**Step 1**
Click on the Critical Application Monitor and set the sipd's **Intended Operation Status** to up.

**Step 2**
Reload the page to check the operational status to verify that the CSPS is running.

Alternatively, from the command line, run the CIAgent utility programs by using the following command:

```bash
setany -v2c <IP address of system running CIAgent or localhost> cspsAdmin critAppAdminStatus.1 1
```
Stopping CSPS

To stop the CSPS from CIAgent, use the Dr-Web interface as follows.

**Step 1**
Click on the Critical Application Monitor and set the sipd’s **Intended Operation Status** to down.

**Step 2**
Reload the page to check the operational status to verify that the CSPS is not running.

Alternatively, from command line, run the CIAgent utility programs by using the following command:

```
setany -v2c <IP address of system running CIAgent or localhost> cspsAdmin
critAppAdminStatus.1 2
```

Checking Status

To check the CSPS running status, use the following command:

```
getone -v2c <IP address of system running CIAgent or localhost> cspsAdmin
critAppOperStatus.1
```

To find out about the CSPS start command, use the following command:

```
getone -v2c <IP address of system running CIAgent or localhost> cspsAdmin
critAppStartCommand.1
```

To find out about the CSPS stop command, use the following command:

```
getone -v2c <IP address of system running CIAgent or localhost> cspsAdmin
critAppTerminateCommand.1
```

Restarting the CSPS Gracefully

To gracefully restart CSPS, use the following command:

```
setany -v2c <IP address of system running CIAgent or localhost> cspsAdmin
smLaunchStart.1.67.1.68 0
```