Configuring SNMP Monitoring

This chapter describes the procedures for configuring Simple Network Monitoring Protocol (SNMP) on the Cisco Unity Express module to monitor the system’s health, conduct performance monitoring, collect data, and manage traps for Cisco Unity Express voicemail and auto attendant applications.

See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details about the CISCO-UNITY-EXPRESS-MIB.

The system monitoring commands are not available through the Cisco Unity Express graphical user interface (GUI).

This chapter contains the following sections:
- Prerequisites for Implementing SNMP Monitoring on Cisco Unity Express, page 1
- Enabling the SNMP Agent, Passwords, and Trap Server, page 1
- Setting Threshold Values for Subscriber Responses, page 4
- Enabling Cisco Unity Express Shutdown Requests, page 7

Prerequisites for Implementing SNMP Monitoring on Cisco Unity Express

See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details about installing the CISCO-UNITY-EXPRESS-MIB on the Cisco Unity Express module.

Enabling the SNMP Agent, Passwords, and Trap Server

Activating the SNMP system monitoring on Cisco Unity Express requires the following tasks:
- Enabling the SNMP agent.
- Specifying the SNMP notification passwords.
- Specifying at least one host server that will receive the notifications.

Prerequisites

Be sure that the appropriate MIBs are installed. See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details.
Required Data for This Procedure

- Passwords that permit subscribers to retrieve and change SNMP information. Specify whether these passwords will have read-only or read-write privileges. The system supports a maximum of 5 read-only and 5 read-write passwords. Each password may have a maximum of 15 alphanumeric characters, including letters A to Z, letters a to z, digits 0 to 9, underscore (_), and hyphen (-).

- IP address and password of the host server that will receive the SNMP information. If no host is defined, the system discards the trap information. The system supports a maximum of 5 servers. The password does not have to be the same as the subscriber passwords.

  No host is considered the primary host. The system sends the SNMP notifications to all enabled hosts.

- (Optional) Server contact and location information.

SUMMARY STEPS

1. `config t`
2. `snmp-server community community-string {ro | rw}`
3. `snmp-server enable traps`
4. `snmp-server host host-ipaddress community-string`
5. (Optional) `snmp-server contact contact-string`
6. (Optional) `snmp-server location location-string`
7. `end`
8. `copy running-config startup-config`
## Chapter 1 Configuring SNMP Monitoring

### Enabling the SNMP Agent, Passwords, and Trap Server

#### Detailed Steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><code>config t</code></td>
<td>Enters configuration mode.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0# config t</code></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>`snmp-server community community-string { ro</td>
<td>rw }`</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server community myaccess rw</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server community youraccess ro</code></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><code>snmp-server enable traps</code></td>
<td>Enables SNMP traps. SNMP traps are disabled by default.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server enable traps</code></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><code>snmp-server host host-ipaddress community-string</code></td>
<td>Specifies a server that accepts the SNMP notifications.</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server host 172.16.100.10 iminhere</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server host 172.16.100.20 bigtraps</code></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server host 172.16.100.30 traps4cue</code></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><code>snmp-server contact “contact-string”</code></td>
<td>(Optional) Specifies SNMP server contact information. Maximum length is 31 alphanumeric characters. This value sets the MIB’s sysContact string. Enclose the text in double quotes (“ “).</td>
</tr>
<tr>
<td></td>
<td><strong>Example:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><code>se-10-0-0-0(config)# snmp-server contact “Dial 71111 for system operator”</code></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 1 Configuring SNMP Monitoring

### Setting Threshold Values for Subscriber Responses

One way to monitor the system is to track spikes in the number of failures that occur within a short period of time for certain subscriber actions. Monitoring helps identify possible security breaches in the system.

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 6</strong></td>
<td><strong>snmp-server location “location-string”</strong></td>
</tr>
<tr>
<td>Example:</td>
<td>(Optional) Specifies SNMP server location information. Maximum length is 31 alphanumeric characters. This value sets the MIB’s sysLocation string. Enclose the text in double quotes (&quot; &quot;).</td>
</tr>
<tr>
<td><strong>Step 7</strong></td>
<td><strong>end</strong></td>
</tr>
<tr>
<td>Example:</td>
<td>Exits configuration mode.</td>
</tr>
<tr>
<td><strong>Step 8</strong></td>
<td><strong>copy running-config startup-config</strong></td>
</tr>
<tr>
<td>Example:</td>
<td>Saves the configuration changes.</td>
</tr>
</tbody>
</table>

#### Verifying the Enabling of the SNMP Agent, Passwords, and Trap Server

Use the `show snmp configuration` command in Cisco Unity Express EXEC mode to display the SNMP agent status and passwords.

The following example shows output from the `show snmp configuration` command:

```plaintext
se-10-0-0-0# config t
Enter configuration commands, one per line.  End with CNTL/Z.
se-10-0-0(config)# snmp-server community myaccess rw
se-10-0-0(config)# snmp-server community iminhere ro
se-10-0-0(config)# snmp-server enable traps
se-10-0-0(config)# snmp-server host 172.16.160.224 bigtraps
se-10-0-0(config)# snmp-server contact "Dial 71111 for system operator"
se-10-0-0(config)# snmp-server location "Bldg A NYC"
se-10-0-0(config)# end
se-10-0-0-0# show snmp configuration
Contact:              Dial 71111 for system operator
Location:             Bldg A NYC
Community 1 RO:       iminhere
Community 1 RW:       admin_main
Community 2 RW:       myaccess
Traps:                enabled
Host Community 1:     172.16.160.224 bigtraps
cueShutdownRequest:   disabled
```

#### Setting Threshold Values for Subscriber Responses

Tracking spikes in the number of failures that occur within a short period of time for certain subscriber actions helps to identify possible security breaches in the system.

Each subscriber action has a default threshold value. Use the commands in this section if you want to change the default values.
Cisco Unity Express supports setting thresholds for the number of failures in a 5-minute interval for the following subscriber actions:

- Logging in.
- Entering a password.
- Entering a personal identification number (PIN) user ID.
- Entering a PIN password.
- Resetting a PIN.

When the number of attempts reaches the action’s threshold, the system sends a notification to the SNMP host.

**Prerequisites**

Be sure that the appropriate MIBs are installed. See the *Cisco Unity Express SNMP MIB Release 2.2* guide for details.

**Required Data for This Procedure**

Number of times the following can occur before the system sends a notification to the SNMP host:

- Password errors (default is 30)
- Login errors (default is 30)
- PIN password errors (default is 30)
- PIN resets (default is 5)
- PIN user ID errors (default is 30)

**SUMMARY STEPS**

1. `config t`
2. (Optional) `notification security login user threshold`
3. (Optional) `notification security login password threshold`
4. (Optional) `notification security pin uid threshold`
5. (Optional) `notification security pin password threshold`
6. (Optional) `notification security pin reset threshold`
7. `end`
8. `copy running-config startup-config`
## Setting Threshold Values for Subscriber Responses

### DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td>Enters configuration mode.</td>
</tr>
<tr>
<td><code>config t</code></td>
<td>Example: <code>se-10-0-0-0# config t</code> (Optional) Sets the number of invalid login names within a 5-minute interval to <code>threshold</code>. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>Example: <code>se-10-0-0-0(config)# notification security login user 10</code> (Optional) Sets the number of invalid login passwords within a 5-minute interval to <code>threshold</code>. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.</td>
</tr>
<tr>
<td><code>notification security login user threshold</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>Example: <code>se-10-0-0-0(config)# notification security login password 6</code> (Optional) Sets the number of invalid PIN user IDs within a 5-minute interval to <code>threshold</code>. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.</td>
</tr>
<tr>
<td><code>notification security login password threshold</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td>Example: <code>se-10-0-0-0(config)# notification security pin uid 12</code> (Optional) Sets the number of invalid PIN passwords within a 5-minute interval to <code>threshold</code>. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.</td>
</tr>
<tr>
<td><code>notification security pin uid threshold</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 5</strong></td>
<td>Example: <code>se-10-0-0-0(config)# notification security pin password 8</code> (Optional) Sets the number of invalid PIN passwords within a 5-minute interval to <code>threshold</code>. If the number of failures exceeds this value, the system sends a notification to the SNMP host. The default value is 30. Valid values are 0 to 999.</td>
</tr>
<tr>
<td><code>notification security pin password threshold</code></td>
<td></td>
</tr>
<tr>
<td><strong>Step 6</strong></td>
<td>Example: <code>se-10-0-0-0(config)# notification security pin reset 3</code> (Optional) Sets the number of PIN password resets within a 5-minute interval to <code>threshold</code>. If the number of resets exceeds this value, the system sends a notification to the SNMP host. The default value is 5. Valid values are 0 to 999.</td>
</tr>
<tr>
<td><code>notification security pin reset threshold</code></td>
<td></td>
</tr>
</tbody>
</table>
Chapter 1  Configuring SNMP Monitoring

Enabling Cisco Unity Express Shutdown Requests

Enabling shutdown requests allows the Cisco Unity Express module to be gracefully halted. For example, suppose an uninterruptible power supply (UPS) sends a power out alert to the Cisco Unity Express management application. The management application would send an SNMP shutdown request to bring down the Cisco Unity Express module while power is still supplied from the UPS.

For security reasons, the shutdown capability is disabled by default.

To reset the Cisco Unity Express module, use the `service-module service-engine slot/port reset` command on the router housing the module.

Prerequisites

Be sure that the appropriate MIBs are installed. See the `Cisco Unity Express SNMP MIB Release 2.2` guide for details.

---

###Command or Action | Purpose
--- | ---
`end` | Exits configuration mode.
`copy running-config startup-config` | Saves the configuration changes.

---

Verifying the SNMP Login and PIN Notification Thresholds

Use the `show notification configuration` command in Cisco Unity Express EXEC mode to display the SNMP login and password notification thresholds.

The following example shows output from the `show notification configuration` command:

```
se-10-0-0-0# config t
Enter configuration commands, one per line.  End with CNTL/Z.
se-10-0-0-0(config)# notification security login user 10
se-10-0-0-0(config)# notification security login password 6
se-10-0-0-0(config)# notification security pin uid 12
se-10-0-0-0(config)# notification security pin password 8
se-10-0-0-0(config)# notification security pin reset 3
se-10-0-0-0(config)# end
se-10-0-0-0# show notification configuration
Login user threshold:         10    (errors within a 5 minute interval)
Login password threshold:     6     (errors within a 5 minute interval)
PIN uid threshold:            12    (errors within a 5 minute interval)
PIN password threshold:       8     (errors within a 5 minute interval)
PIN reset threshold:          3     (resets within a 5 minute interval)
```
Enabling Cisco Unity Express Shutdown Requests

SUMMARY STEPS

1. config t
2. snmp-server enable cueShutdownRequest
3. end
4. copy running-config startup-config

DETAILED STEPS

<table>
<thead>
<tr>
<th>Command or Action</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1</strong></td>
<td><strong>config t</strong></td>
</tr>
<tr>
<td>Example:</td>
<td><code>se-10-0-0-0# config t</code></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Enters configuration mode.</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td><strong>snmp-server enable cueShutdownRequest</strong></td>
</tr>
<tr>
<td>Example:</td>
<td><code>se-10-0-0-0(config)# snmp-server enable cueShutdownRequest</code></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Enables Cisco Unity Express shutdown requests. Shutdown requests are disabled by default.</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td><strong>end</strong></td>
</tr>
<tr>
<td>Example:</td>
<td><code>se-10-0-0-0(config)# end</code></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Exits configuration mode.</td>
</tr>
<tr>
<td><strong>Step 4</strong></td>
<td><strong>copy running-config startup-config</strong></td>
</tr>
<tr>
<td>Example:</td>
<td><code>se-10-0-0-0# copy running-config startup-config</code></td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Saves the configuration changes.</td>
</tr>
</tbody>
</table>

Verifying the Enabling of Shutdown Requests

Use the `show snmp configuration` command in Cisco Unity Express EXEC mode to display the status of the shutdown request capability.

The following example shows output from the `show snmp configuration` command:

```
se-10-0-0-0# show snmp configuration
Contact: Dial 71111 for system operator
Location: Bldg A NYC
Community 1 RO: iminhere
Community 1 RW: admin_main
Community 2 RW: myaccess
Traps: enabled
Host Community 1: 172.16.160.224 bigtraps
cueShutdownRequest enabled
se-10-0-0-0#
```