System and Message Logging

System and Message Logging

System logging allows controllers to log their system events to up to three remote syslog servers. The controller sends a copy of each syslog message as it is logged to each syslog server configured on the controller. Being able to send the syslog messages to multiple servers ensures that the messages are not lost due to the temporary unavailability of one syslog server. Message logging allows system messages to be logged to the controller buffer or console.

For more information about system messages and trap logs, see http://www.cisco.com/c/en/us/support/wireless/wireless-lan-controller-software/products-system-message-guides-list.html.

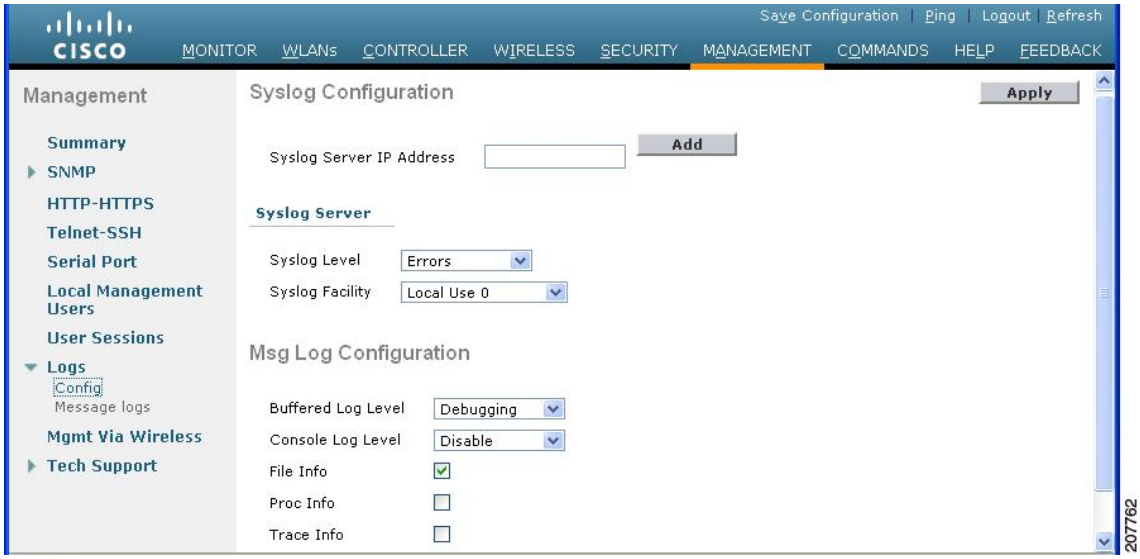
This section contains the following subsections:

Configuring System and Message Logging (GUI)

Procedure

Step 1 Choose **Management** > **Logs** > **Config**. The Syslog Configuration page appears.

Figure 1: Syslog Configuration Page



Step 2 In the **Syslog Server IP Address (IPv4/IPv6)** field, enter the IPv4/IPv6 address of the server to which to send the syslog messages and click **Add**. You can add up to three syslog servers to the controller. The list of syslog servers that have already been added to the controller appears below this field.

Note If you want to remove a syslog server from the controller, click **Remove** to the right of the desired server.

Step 3 To set the severity level for filtering syslog messages to the syslog servers, choose one of the following options from the **Syslog Level** drop-down list:

- **Emergencies** = Severity level 0
- **Alerts** = Severity level 1 (default value)
- **Critical** = Severity level 2
- **Errors** = Severity level 3
- **Warnings** = Severity level 4
- **Notifications** = Severity level 5
- **Informational** = Severity level 6
- **Debugging** = Severity level 7

If you set a syslog level, only those messages whose severity is equal to or less than that level are sent to the syslog servers. For example, if you set the syslog level to Warnings (severity level 4), only those messages whose severity is between 0 and 4 are sent to the syslog servers.

Note If you have enabled logging of debug messages to the logging buffer, some messages from application debug could be listed in message log with severity that is more than the level set. For example, if you execute the **debug client** *mac-addr* command, the client event log could be listed in message log even though the message severity level is set to **Errors**.

Step 4 To set the facility for outgoing syslog messages to the syslog servers, choose one of the following options from the **Syslog Facility** drop-down list:

- **Kernel** = Facility level 0
- **User Process** = Facility level 1
- **Mail** = Facility level 2
- **System Daemons** = Facility level 3
- **Authorization** = Facility level 4
- **Syslog** = Facility level 5 (default value)
- **Line Printer** = Facility level 6
- **USENET** = Facility level 7
- **Unix-to-Unix Copy** = Facility level 8
- **Cron** = Facility level 9
- **FTP Daemon** = Facility level 11
- **System Use 1** = Facility level 12
- **System Use 2** = Facility level 13
- **System Use 3** = Facility level 14
- **System Use 4** = Facility level 15
- **Local Use 0** = Facility level 16
- **Local Use 2** = Facility level 17
- **Local Use 3** = Facility level 18
- **Local Use 4** = Facility level 19
- **Local Use 5** = Facility level 20
- **Local Use 5** = Facility level 21
- **Local Use 5** = Facility level 22
- **Local Use 5** = Facility level 23

Step 5 Click **Apply**.

Step 6 To set the severity level for logging messages to the controller buffer and console, choose one of the following options from both the **Buffered Log Level** and **Console Log Level** drop-down lists:

- **Emergencies** = Severity level 0
- **Alerts** = Severity level 1
- **Critical** = Severity level 2
- **Errors** = Severity level 3 (default value)
- **Warnings** = Severity level 4
- **Notifications** = Severity level 5
- **Informational** = Severity level 6
- **Debugging** = Severity level 7
- **Disable**— This option is available only for Console Log level. Select this option to disable console logging.

If you set a logging level, only those messages whose severity is equal to or less than that level are logged by the controller. For example, if you set the logging level to Warnings (severity level 4), only those messages whose severity is between 0 and 4 are logged.

Step 7 Select the **File Info** check box if you want the message logs to include information about the source file. The default value is enabled.

Step 8 Select the **Trace Info** check box if you want the message logs to include traceback information. The default is disabled.

Step 9 Click **Apply**.

Step 10 Click **Save Configuration**.

Viewing Message Logs (GUI)

To view message logs using the controller GUI, choose **Management > Logs > Message Logs**. The Message Logs page appears.

Note To clear the current message logs from the controller, click **Clear**.

Configuring System and Message Logging (CLI)

Procedure

Step 1 Enable system logging and set the IP address of the syslog server to which to send the syslog messages by entering this command:

config logging syslog host *server_IP_address*

You can add up to three syslog servers to the controller.

Note To remove a syslog server from the controller by entering this command: **config logging syslog host** *server_IP_address* **delete**.

Step 2 Set the severity level for filtering syslog messages to the syslog server by entering this command:

config logging syslog level *severity_level*

where *severity_level* is one of the following:

- emergencies = Severity level 0
- alerts = Severity level 1
- critical = Severity level 2
- errors = Severity level 3
- warnings = Severity level 4
- notifications = Severity level 5
- informational = Severity level 6
- debugging = Severity level 7

Note As an alternative, you can enter a number from 0 through 7 for the *severity_level* parameter.

Note If you set a syslog level, only those messages whose severity is equal to or less than that level are sent to the syslog server. For example, if you set the syslog level to Warnings (severity level 4), only those messages whose severity is between 0 and 4 are sent to the syslog server.

Step 3 Set the severity level for filtering syslog messages for a particular access point or for all access points by entering this command:

config ap logging syslog level *severity_level* {*Cisco_AP* | **all**}

where *severity_level* is one of the following:

- emergencies = Severity level 0
- alerts = Severity level 1
- critical = Severity level 2
- errors = Severity level 3
- warnings = Severity level 4
- notifications = Severity level 5
- informational = Severity level 6
- debugging = Severity level 7

Note If you set a syslog level, only those messages whose severity is equal to or less than that level are sent to the access point. For example, if you set the syslog level to Warnings (severity level 4), only those messages whose severity is between 0 and 4 are sent to the access point.

Step 4 Set the facility for outgoing syslog messages to the syslog server by entering this command:

config logging syslog facility *facility-code*

where *facility-code* is one of the following:

- ap = AP related traps.
- authorization = Authorization system. Facility level = 4.
- auth-private = Authorization system (private). Facility level = 10.
- cron = Cron/at facility. Facility level = 9.
- daemon = System daemons. Facility level = 3.
- ftp = FTP daemon. Facility level = 11.
- kern = Kernel. Facility level = 0.
- local0 = Local use. Facility level = 16.
- local1 = Local use. Facility level = 17.
- local2 = Local use. Facility level = 18.
- local3 = Local use. Facility level = 19.
- local4 = Local use. Facility level = 20.
- local5 = Local use. Facility level = 21.
- local6 = Local use. Facility level = 22.
- local7 = Local use. Facility level = 23.
- lpr = Line printer system. Facility level = 6.
- mail = Mail system. Facility level = 2.
- news = USENET news. Facility level = 7.
- sys12 = System use. Facility level = 12.
- sys13 = System use. Facility level = 13.

- sys14 = System use. Facility level = 14.
- sys15 = System use. Facility level = 15.
- syslog = The syslog itself. Facility level = 5.
- user = User process. Facility level = 1.
- uucp = Unix-to-Unix copy system. Facility level = 8.

Step 5 Configure the syslog facility for AP using the following command:

config logging syslog facility *AP*

where *AP* can be:

- associate= Associated sys log for AP
- disassociate=Disassociate sys log for AP

Step 6 Configure the syslog facility for an AP or all APs by entering this command:

config ap logging syslog facility *facility-level* {*Cisco_AP* | **all**}

where *facility-level* is one of the following:

- auth = Authorization system
- cron = Cron/at facility
- daemon = System daemons
- kern = Kernel
- local0 = Local use
- local1 = Local use
- local2 = Local use
- local3 = Local use
- local4 = Local use
- local5 = Local use
- local6 = Local use
- local7 = Local use
- lpr = Line printer system
- mail = Mail system
- news = USENET news
- sys10 = System use
- sys11 = System use
- sys12 = System use
- sys13 = System use
- sys14 = System use
- sys9 = System use
- syslog = Syslog itself
- user = User process
- uucp = Unix-to-Unix copy system

Step 7 Configure the syslog facility for client by entering this command:

config logging syslog facility client {**assocfail** | **associate** | **authentication** | **authfail** | **deauthenticate** | **disassociate** | **excluded**} {**enable** | **disable**}

where:

- **assocfail**: 802.11 association fail syslog for clients.
- **authentication**: Authentication success syslog for clients
- **authfail**: 802.11 authentication fail syslog for clients
- **deauthenticate**: 802.11 deauthentication syslog for clients
- **disassociate**: 802.11 disassociation syslog for clients
- **excluded**: Excluded syslog for clients

Step 8 Configure transmission of syslog messages over IPSec by entering this command:

config logging syslog ipsec {**enable** | **disable**}

Step 9 Configure transmission of syslog messages over transport layer security (TLS) by entering this command:

config logging syslog tls {**enable** | **disable**}

Enabling syslog over TLS on the controller enables the feature for all syslog hosts defined in the controller. You can define up to three syslog hosts per controller. The controller transmits messages concurrently to all the configured syslog hosts.

Check if the controller has an active TLS connection to the syslog server by entering the **show logging** command. The following is a sample output:

```
- syslog over tls.............................. Enabled
  - Host 0..................................... 209.165.200.224
    - TLS auth status.......................... connected
    - packets sent............................. 3879
    - packets dropped.......................... 2
  - Host 1.....................................
  - Host 2.....................................
```

Caution Issue: Some messages are not transmitted to the syslog server even though it is reachable.

Analysis: This issue occurs because syslog over TLS is enabled in the controller, multiple syslog hosts are defined in the controller, the number of syslog messages generated are high, and one of the syslog hosts is not reachable over TLS.

Step 10 Set the severity level for logging messages to the controller buffer and console by entering these commands:

- **config logging buffered** *severity_level*
- **config logging console** *severity_level*

where *severity_level* is one of the following:

- emergencies = Severity level 0
- alerts = Severity level 1
- critical = Severity level 2
- errors = Severity level 3
- warnings = Severity level 4
- notifications = Severity level 5

- informational = Severity level 6
- debugging = Severity level 7

Note As an alternative, you can enter a number from 0 through 7 for the *severity_level* parameter.

Note If you set a logging level, only those messages whose severity is equal to or less than that level are logged by the controller. For example, if you set the logging level to Warnings (severity level 4), only those messages whose severity is between 0 and 4 are logged.

Step 11 Save debug messages to the controller buffer, the controller console, or a syslog server by entering these commands:

- **config logging debug buffered {enable | disable}**
- **config logging debug console {enable | disable}**
- **config logging debug syslog {enable | disable}**

  By default, the console command is enabled, and the buffered and syslog commands are disabled.

Step 12 To cause the controller to include information about the source file in the message logs or to prevent the controller from displaying this information by entering this command:

config logging fileinfo {enable | disable}

The default value is enabled.

Step 13 Configure the controller to include process information in the message logs or to prevent the controller from displaying this information by entering this command:

config logging procinfo {**enable** | **disable**}

The default value is disabled.

Step 14 Configure the controller to include traceback information in the message logs or to prevent the controller from displaying this information by entering this command:

config logging traceinfo {enable | disable}

The default value is disabled.

Step 15 Enable or disable timestamps in log messages and debug messages by entering these commands:

- **config service timestamps log {datetime | disable}**
- **config service timestamps debug {datetime | disable}**

  where

  - **datetime** = Messages are timestamped with the standard date and time. This is the default value.
  - **disable** = Messages are not timestamped.

Step 16 Save your changes by entering this command:

save config

Viewing System and Message Logs (CLI)

To see the logging parameters and buffer contents, enter this command:

show logging

Viewing Access Point Event Logs

Information About Access Point Event Logs

Access points log all system messages (with a severity level greater than or equal to notifications) to the access point event log. The event log can contain up to 1024 lines of messages, with up to 128 characters per line. When the event log becomes filled, the oldest message is removed to accommodate a new event message. The event log is saved in a file on the access point flash, which ensures that it is saved through a reboot cycle. To minimize the number of writes to the access point flash, the contents of the event log are written to the event log file during normal reload and crash scenarios only.

Viewing Access Point Event Logs (CLI)

Use these CLI commands to view or clear the access point event log from the controller:

- To see the contents of the event log file for an access point that is joined to the controller, enter this command:

  show ap eventlog *ap-name*

  Information similar to the following appears:

```
AP event log download has been initiated
Waiting for download to complete

AP event log download completed.
 ========================= AP Event log Contents =====================
*Sep 22 11:44:00.573: %CAPWAP-5-CHANGED: CAPWAP changed state to IMAGE
*Sep 22 11:44:01.514: %LINEPROTO-5-UPDOWN: Line protocol on Interface Dot11Radio0,
changed state to down
*Sep 22 11:44:01.519: %LINEPROTO-5-UPDOWN: Line protocol on Interface Dot11Radio1,
changed state to down
*Sep 22 11:44:53.539: *** Access point reloading. Reason: NEW IMAGE DOWNLOAD ***
*Mar 1 00:00:39.078: %CAPWAP-3-ERRORLOG: Did not get log server settings from DHCP.
*Mar 1 00:00:42.142: %CDP_PD-4-POWER_OK: Full power - NEGOTIATED inline power source
*Mar 1 00:00:42.151: %LINK-3-UPDOWN: Interface Dot11Radio1, changed state to up
*Mar 1 00:00:42.158: %LINK-3-UPDOWN: Interface Dot11Radio0, changed state to up
*Mar 1 00:00:43.143: %LINEPROTO-5-UPDOWN: Line protocol on Interface Dot11Radio1, changed
 state to up
*Mar 1 00:00:43.151: %LINEPROTO-5-UPDOWN: Line protocol on Interface Dot11Radio0, changed
 state to up
*Mar 1 00:00:48.078: %CAPWAP-3-ERRORLOG: Could Not resolve CISCO-CAPWAP-CONTROLLER
*Mar 1 00:01:42.144: %CDP_PD-4-POWER_OK: Full power - NEGOTIATED inline power source
*Mar 1 00:01:48.121: %CAPWAP-3-CLIENTERRORLOG: Set Transport Address: no more AP manager
 IP addresses remain
*Mar 1 00:01:48.122: %CAPWAP-5-CHANGED: CAPWAP changed state to JOIN
*Mar 1 00:01:48.122: %LINK-5-CHANGED: Interface Dot11Radio0, changed state to
administratively down
*Mar 1 00:01:48.122: %LINK-5-CHANGED: Interface Dot11Radio1, changed state to
administratively down
```

- To delete the existing event log and create an empty event log file for all access points or for a specific access point joined to the controller, enter this command:

  clear ap eventlog {**all** | *ap-name*}