



CHAPTER 3

Configuring System Message Logging

This chapter describes how to configure system message logging.

This chapter includes the following topics:

- [Information About System Message Logging](#), page 3-1
- [Licensing Requirements for System Message Logging](#), page 3-3
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Information About System Message Logging

You can use system message logging to control the destination and to filter the severity level of messages that system processes generate. You can configure logging to terminal sessions, a log file, and syslog servers on remote systems.

System message logging is based on [RFC 3164](#). For more information about the system message format and the messages that the device generates, see the *Cisco Nexus 7000 Series NX-OS System Messages Reference*.

By default, the device outputs messages to terminal sessions. For information about configuring logging to terminal sessions, see the [“Configuring System Message Logging to Terminal Sessions”](#) section on page 3-3.

By default, the device logs system messages to a log file. For information about configuring logging to a file, see the [“Configuring System Message Logging to a File”](#) section on page 3-5.

[Table 3-1](#) describes the severity levels used in system messages. When you configure the severity level, the system outputs messages at that level and lower.

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Table 3-1 System Message Severity Levels

Level	Description
0 – emergency	System unusable
1 – alert	Immediate action needed
2 – critical	Critical condition
3 – error	Error condition
4 – warning	Warning condition
5 – notification	Normal but significant condition
6 – informational	Informational message only
7 – debugging	Appears during debugging only

The device logs the most recent 100 messages of severity 0, 1, or 2 to the NVRAM log. You cannot configure logging to the NVRAM.

You can configure which system messages should be logged based on the facility that generated the message and its severity level. For information about facilities, see *Cisco Nexus 7000 Series NX-OS System Management Command Reference, Release 4.0*. For information about configuring the severity level by module and facility, see the “[Configuring Module and Facility Messages Logged](#)” section on [page 3-6](#).

This section includes the following topics:

- [syslog Servers, page 3-2](#)
- [Virtualization Support, page 3-2](#)

syslog Servers

syslog servers run on remote systems that are configured to log system messages based on the syslog protocol. You can configure up to three syslog servers. For information about configuring syslog servers, see the “[Configuring syslog Servers](#)” section on [page 3-7](#).



Note

When the device first initializes, messages are sent to syslog servers only after the network is initialized.

Virtualization Support

A virtual device context (VDC) is a logical representation of a set of system resources. System message logging applies only to the VDC where commands are entered.

For information about configuring VDCs, see the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 4.0* at the following URL:

http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/virtual_device_context/configuration/guide/vdc_nx-os_book.html

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Licensing Requirements for System Message Logging

The following table shows the licensing requirements for this feature:

Product	License Requirement
NX-OS	System message logging requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the NX-OS licensing scheme, see the <i>Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.0</i> at the following URL: http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/licensing/configuration/guide/nx-os_licensing.html

Guidelines and Limitations

System messages are logged to the console and the logfile by default.

Configuring System Message Logging

This section includes the following topics:

- [Configuring System Message Logging to Terminal Sessions, page 3-3](#)
- [Configuring System Message Logging to a File, page 3-5](#)
- [Configuring Module and Facility Messages Logged, page 3-6](#)
- [Configuring syslog Servers, page 3-7](#)
- [Displaying and Clearing Log Files, page 3-9](#)



Note

If you are familiar with the Cisco IOS CLI, be aware that the Cisco NX-OS commands for this feature might differ from the Cisco IOS commands that you would use.

Configuring System Message Logging to Terminal Sessions

You can configure the device to log messages by their severity level to console, telnet, and SSH sessions. By default, logging is enabled for terminal sessions.

BEFORE YOU BEGIN

Ensure that you are in the correct VDC (or use the `switchto vdc` command).

SUMMARY STEPS

1. `terminal monitor`
2. `config t`
3. `logging console [severity-level]`

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- no logging console
- 4. show logging console
- 5. logging monitor [severity-level]
no logging monitor
- 6. show logging monitor
- 7. copy running-config startup-config

DETAILED STEPS

	Command	Purpose
Step 1	terminal monitor Example: switch# terminal monitor	Enables the device to log messages to the console.
Step 2	config t Example: switch# config t switch(config)#	Enters global configuration mode.
Step 3	logging console [severity-level] Example: switch(config)# logging console 3	Configures the device to log messages to the console session based on a specified severity level or higher. Severity levels, which can range from 0 to 7, are listed in Table 3-1 . If the severity level is not specified, the default of 2 is used.
	no logging console [severity-level] Example: switch(config)# no logging console	Disables the device's ability to log messages to the console.
Step 4	show logging console Example: switch(config)# show logging console	(Optional) Displays the console logging configuration.
Step 5	logging monitor [severity-level] Example: switch(config)# logging monitor 3	Enables the device to log messages to the monitor based on a specified severity level or higher. The configuration applies to telnet and SSH sessions. Severity levels, which can range from 0 to 7, are listed in Table 3-1 . If the severity level is not specified, the default of 2 is used.
	no logging monitor [severity-level] Example: switch(config)# no logging monitor	Disables logging messages to telnet and SSH sessions.
Step 6	show logging monitor Example: switch(config)# show logging monitor	(Optional) Displays the monitor logging configuration.
Step 7	copy running-config startup-config Example: switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

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Configuring System Message Logging to a File

You can configure the device to log system messages to a file. By default, system messages are logged to the file `log:messages`.

For information about displaying and clearing log files, see the “[Displaying and Clearing Log Files](#)” section on page 3-9.

BEFORE YOU BEGIN

Ensure that you are in the correct VDC (or use the `switchto vdc` command).

SUMMARY STEPS

1. `config t`
2. `logging logfile logfile-name severity-level [size bytes]`
`no logging logfile [logfile-name severity-level [size bytes]]`
3. `show logging info`
4. `copy running-config startup-config`

DETAILED STEPS

	Command	Purpose
Step 1	<code>config t</code> Example: <code>switch# config t</code> <code>switch(config)#</code>	Enters global configuration mode.
Step 2	<code>logging logfile logfile-name severity-level [size bytes]</code> Example: <code>switch(config)# logging logfile my_log 6</code> <code>no logging logfile [logfile-name severity-level [size bytes]]</code> Example: <code>switch(config)# no logging logfile</code>	Configures the name of the log file used to store system messages and the minimum severity level to log. You can optionally specify a maximum file size. The default severity level is 5 and the file size is 10485760. Severity levels are listed in Table 3-1 . The file size is from 4096 to 10485760 bytes. Disables logging to the log file.
Step 3	<code>show logging info</code> Example: <code>switch(config)# show logging info</code>	(Optional) Displays the logging configuration.
Step 4	<code>copy running-config startup-config</code> Example: <code>switch(config)# copy running-config startup-config</code>	(Optional) Copies the running configuration to the startup configuration.

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Configuring Module and Facility Messages Logged

You can configure the severity level and time-stamp units of messages logged by modules and facilities.

BEFORE YOU BEGIN

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

SUMMARY STEPS

1. **config t**
2. **logging module** [*severity-level*]
no logging module
3. **show logging module**
4. **logging level** *facility severity-level*
no logging level [*facility severity-level*]
5. **show logging level** [*facility*]
6. **logging timestamp** {**microseconds** | **milliseconds** | **seconds**}
no logging timestamp {**microseconds** | **milliseconds** | **seconds**}
7. **show logging timestamp**
8. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	config t Example: switch# config t switch(config)#	Enters global configuration mode.
Step 2	logging module [<i>severity-level</i>] Example: switch(config)# logging module 3	Enables module log messages that have the specified severity level or higher. Severity levels, which range from 0 to 7, are listed in Table 3-1 . If the severity level is not specified, the default of 5 is used.
	no logging module [<i>severity-level</i>] Example: switch(config)# no logging module	Disables module log messages.
Step 3	show logging module Example: switch(config)# show logging module	(Optional) Displays the module logging configuration.

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	Command	Purpose
Step 4	logging level <i>facility severity-level</i> Example: switch(config)# logging level aaa 2	Enables logging messages from the specified facility that have the specified severity level or higher. The facilities are listed in <i>Cisco Nexus 7000 Series NX-OS System Management Command Reference, Release 4.0</i> . Severity levels, which range from 0 to 7, are listed in Table 3-1 . To apply the same severity level to all facilities, use the all facility. For defaults, see the show logging level command.
	no logging level [<i>facility severity-level</i>] Example: switch(config)# no logging level aaa 3	Resets the logging severity level for the specified facility to its default level. If you do not specify a facility and severity level, the device resets all facilities to their default levels.
Step 5	show logging level [<i>facility</i>] Example: switch(config)# show logging level aaa	(Optional) Displays the logging level configuration and the system default level by facility. If you do not specify a facility, the device displays levels for all facilities.
Step 6	logging timestamp { <i>microseconds</i> <i>milliseconds</i> <i>seconds</i> } Example: switch(config)# logging timestamp milliseconds	Sets the logging time-stamp units. By default, the units are seconds. Note This command applies to logs that are kept in the switch. It does not apply to the external logging server.
	no logging timestamp { <i>microseconds</i> <i>milliseconds</i> <i>seconds</i> } Example: switch(config)# no logging timestamp milliseconds	Resets the logging time-stamp units to the default of seconds. Note This command applies to logs that are kept in the switch. It does not apply to the external logging server.
Step 7	show logging timestamp Example: switch(config)# show logging timestamp	(Optional) Displays the logging time-stamp units configured.
Step 8	copy running-config startup-config Example: switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

Configuring syslog Servers

You can configure up to three syslog servers that reference remote systems where you want to log system messages.



Note

We recommend that you configure the syslog server to use the management virtual routing and forwarding (VRF) instance. For more information on VRFs, see the *Cisco Nexus 7000 Series NX-OS Unicast Routing Configuration Guide, Release 4.0* at the following URL:
http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/unicast/configuration/guide/13_nx-os-book.html.

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BEFORE YOU BEGIN

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

SUMMARY STEPS

1. **config t**
2. **logging server** *host* [*severity-level* [**use_vrf** *vrf-name*]]
no logging server *host*
3. **show logging server**
4. **copy running-config startup-config**

DETAILED STEPS

	Command	Purpose
Step 1	config t Example: switch# config t switch(config)#	Enters global configuration mode.
Step 2	logging server <i>host</i> [<i>severity-level</i> [use_vrf <i>vrf-name</i>]] Example 1: switch(config)# logging server 192.0.2.253 Example 2: switch(config)# logging server 192.0.254.254 5 use_vrf red	Configures a syslog server at the specified host name or IPv4 or IPv6 address. You can limit logging of messages to a particular VRF by using the use_vrf keyword. Severity levels, which range from 0 to 7, are listed in Table 3-1 . The default outgoing facility is local7. Example 1 forwards all messages on facility local 7. Example 2 forwards messages with severity level 5 or lower for VRF red.
	no logging server <i>host</i> Example: switch(config)# no logging server host	Removes the logging server for the specified host.
Step 3	show logging server Example: switch(config)# show logging server	(Optional) Displays the syslog server configuration.
Step 4	copy running-config startup-config Example: switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

You can configure a syslog server on a UNIX or Linux system by adding the following line to the `/etc/syslog.conf` file:

```
facility.level <five tab characters> action
```

[Table 3-2](#) describes the syslog fields that you can configure.

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Table 3-2 *syslog Fields in syslog.conf*

Field	Description
Facility	Creator of the message, which can be auth, authpriv, cron, daemon, kern, lpr, mail, mark, news, syslog, user, local0 through local7, or an asterisk (*) for all. These facility designators allow you to control the destination of messages based on their origin. Note Check your configuration before using a local facility.
Level	Minimum severity level at which messages are logged, which can be debug, info, notice, warning, err, crit, alert, emerg, or an asterisk (*) for all. You can use none to disable a facility.
Action	Destination for messages, which can be a filename, a host name preceded by the at sign (@), or a comma-separated list of users or an asterisk (*) for all logged-in users.

To configure a syslog server on a UNIX or Linux system, follow these steps:

-
- Step 1** Log debug messages with the local7 facility in the file /var/log/myfile.log by adding the following line to the /etc/syslog.conf file:
- ```
debug.local7 /var/log/myfile.log
```
- Step 2** Create the log file by entering these commands at the shell prompt:
- ```
$ touch /var/log/myfile.log
$ chmod 666 /var/log/myfile.log
```
- Step 3** Make sure the system message logging daemon reads the new changes by checking myfile.log after entering this command:
- ```
$ kill -HUP ~cat /etc/syslog.pid~
```
- 

## Displaying and Clearing Log Files

You can display or clear messages in the log file and the NVRAM.

### BEFORE YOU BEGIN

Ensure that you are in the correct VDC (or use the **switchto vdc** command).

### SUMMARY STEPS

1. **show logging last** *number-lines*
2. **show logging logfile** [**start-time** *yyyy mmm dd hh:mm:ss*] [**end-time** *yyyy mmm dd hh:mm:ss*]
3. **show logging nvram** [**last** *number-lines*]
4. **clear logging logfile**
5. **clear logging nvram**

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## DETAILED STEPS

|        | Command                                                                                                                                                                                                            | Purpose                                                                                                                                                                                                                                            |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Step 1 | <b>show logging last</b> <i>number-lines</i><br><br><b>Example:</b><br>switch# show logging last 40                                                                                                                | Displays the last number of lines in the logging file. You can specify from 1 to 9999 for the last number of lines.                                                                                                                                |
| Step 2 | <b>show logging logfile</b> [ <b>start-time</b> <i>yyyy mmm dd hh:mm:ss</i> ] [ <b>end-time</b> <i>yyyy mmm dd hh:mm:ss</i> ]<br><br><b>Example:</b><br>switch# show logging logfile start-time 2007 nov 1 15:10:0 | Displays the messages in the log file that have a time stamp within the span entered. If you do not enter an end time, the current time is used. You enter three characters for the month time field, and digits for the year and day time fields. |
| Step 3 | <b>show logging nvram</b> [ <b>last</b> <i>number-lines</i> ]<br><br><b>Example:</b><br>switch# show logging nvram last 10                                                                                         | Displays the messages in the NVRAM. To limit the number of lines displayed, you can enter the last number of lines to display. You can specify from 1 to 100 for the last number of lines.                                                         |
| Step 4 | <b>clear logging logfile</b><br><br><b>Example:</b><br>switch# clear logging logfile                                                                                                                               | Clears the contents of the log file.                                                                                                                                                                                                               |
| Step 5 | <b>clear logging nvram</b><br><br><b>Example:</b><br>switch# clear logging nvram                                                                                                                                   | Clears the logged messages in NVRAM.                                                                                                                                                                                                               |

## Verifying System Message Logging Configuration

To display system message logging configuration information, perform one of the following tasks:

| Command                                                                                                                       | Purpose                                                     |
|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| <b>show logging console</b>                                                                                                   | Displays the console logging configuration.                 |
| <b>show logging info</b>                                                                                                      | Displays the logging configuration.                         |
| <b>show logging last</b> <i>number-lines</i>                                                                                  | Displays the last number of lines of the log file.          |
| <b>show logging level</b> [ <i>facility</i> ]                                                                                 | Displays the facility logging severity level configuration. |
| <b>show logging logfile</b> [ <b>start-time</b> <i>yyyy mmm dd hh:mm:ss</i> ] [ <b>end-time</b> <i>yyyy mmm dd hh:mm:ss</i> ] | Displays the messages in the log file.                      |
| <b>show logging module</b>                                                                                                    | Displays the module logging configuration.                  |
| <b>show logging monitor</b>                                                                                                   | Displays the monitor logging configuration.                 |
| <b>show logging nvram</b> [ <b>last</b> <i>number-lines</i> ]                                                                 | Displays the messages in the NVRAM log.                     |
| <b>show logging server</b>                                                                                                    | Displays the syslog server configuration.                   |
| <b>show logging session</b>                                                                                                   | Displays the logging session status.                        |

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| Command                             | Purpose                                              |
|-------------------------------------|------------------------------------------------------|
| <code>show logging status</code>    | Displays the logging status.                         |
| <code>show logging timestamp</code> | Displays the logging time-stamp units configuration. |

For detailed information about the fields in the output from these commands, see the *Cisco Nexus 7000 Series NX-OS System Management Command Reference, Release 4.0* at the following URL:

[http://www.cisco.com/en/US/docs/switches/datacenter/sw/4\\_0/nx-os/system\\_management/command/reference/sm\\_cmd\\_ref.html](http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/system_management/command/reference/sm_cmd_ref.html).

## System Message Logging Example Configuration

The following example shows how to configure system message logging:

```
config t
 logging console 3
 logging monitor 3
 logging logfile my_log 6
 logging module 3
 logging level aaa 2
 logging timestamp milliseconds
 logging server 172.28.254.253
 logging server 172.28.254.254 5 local3
 copy running-config startup-config
```

## Default Settings

Table 3-3 lists the default settings for system message logging parameters.

**Table 3-3** *Default System Message Logging Parameters*

| Parameters            | Default                                                                                                                       |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Console logging       | Enabled at severity level 2                                                                                                   |
| Monitor logging       | Enabled at severity level 5                                                                                                   |
| Log file logging      | Enabled to log messages at severity level 5                                                                                   |
| Module logging        | Enabled at severity level 5                                                                                                   |
| Facility logging      | Enabled; for severity levels, see the <i>Cisco Nexus 7000 Series NX-OS System Management Command Reference, Release 4.0</i> . |
| Time-stamp units      | Seconds                                                                                                                       |
| syslog server logging | Disabled                                                                                                                      |

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## Additional References

For additional information related to implementing system message logging, see the following sections:

- [Related Documents](#), page 3-12
- [Standards](#), page 3-12

## Related Documents

| Related Topic                | Document Title                                                                                                                                                                                                                                                                                                                          |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| System messages CLI commands | <i>Cisco NX-OS System Management Command Reference</i> at the following URL:<br><a href="http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/system_management/command/reference/sm_cmd_ref.html">http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/system_management/command/reference/sm_cmd_ref.html</a> |
| System messages              | <i>Cisco Nexus 7000 Series NX-OS System Messages Reference</i> at the following URL:<br><a href="http://www.cisco.com/en/US/docs/switches/datacenter/sw/system_messages/reference/sl_nxos_book.html">http://www.cisco.com/en/US/docs/switches/datacenter/sw/system_messages/reference/sl_nxos_book.html</a>                             |

## Standards

| Standards                                                                                                                             | Title |
|---------------------------------------------------------------------------------------------------------------------------------------|-------|
| No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature. | —     |