



# Tracing and Trace Management

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## Tracing Overview

Tracing is a function that logs internal events. Trace files are automatically created and saved to the `tracelogs` directory on the harddisk: file system on the chassis, which stores tracing files in `bootflash:`. Trace files are used to store tracing data.



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**Note** The logs in the `bootflash` are stored in compressed format with `.gz` file extension. Use the archiving tools such as `gunzip`, `gzip`, `7-zip` to extract the files.

- If the system reloads unexpectedly, some of the files may not be in compressed format.
- Extraction of log files may lead to time hogs or CPU logs. We recommend to perform this by copying the files to the PC.
- Extraction of files *cannot* be performed at the IOS prompt.
- Log files not handled by the `bootflash` trace are *not* stored in the compressed format (for example, `system_shell_R*.log`).

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The contents of trace files are useful for the following purposes:

- **Troubleshooting**—If a chassis is having an issue, the trace file output may provide information that is useful for locating and solving the problem. Trace files can almost always be accessed through diagnostic mode even if other system issues are occurring.
- **Debugging**—The trace file outputs can help users get a more detailed view of system actions and operations.

# How Tracing Works

The tracing function logs the contents of internal events on the chassis. Trace files with all trace output for a module are periodically created and updated and are stored in the tracelog directory. Trace files can be erased from this directory to recover space on the file system without impacting system performance.

The most recent trace information for a specific module can be viewed using the **show platform software trace message** privileged EXEC and diagnostic mode command. This command can be entered to gather trace log information even during an IOS failure because it is available in diagnostic mode.

Trace files can be copied to other destinations using most file transfer functions (such as FTP, TFTP, and so on) and opened using a plaintext editor.

Tracing cannot be disabled on the chassis. Trace levels, however, which set the message types that generate trace output, are user-configurable and can be set using the **set platform software trace** command. If a user wants to modify the trace level to increase or decrease the amount of trace message output, the user should set a new tracing level using the **set platform software trace** command. Trace levels can be set by process using the **all-modules** keyword within the **set platform software trace** command, or by module within a process. See the **set platform software trace** command reference for more information on this command, and the [Tracing Levels, on page 2](#) of this document for additional information on tracing levels.

## Tracing Levels

Tracing levels determine how much information about a module should be stored in the trace buffer or file.

[Table 1: Tracing Levels and Descriptions, on page 2](#) shows all of the trace levels that are available and provides descriptions of what types of messages are displayed with each tracing level.

**Table 1: Tracing Levels and Descriptions**

Trace Level	Level Number	Description
Emergency	0	The message is regarding an issue that makes the system unusable.
Alert	1	The message is regarding an action that must be taken immediately.
Critical	2	The message is regarding a critical condition. This is the default setting.
Error	3	The message is regarding a system error.
Warning	4	The message is regarding a system warning
Notice	5	The message is regarding a significant issue, but the router is still working normally.
Informational	6	The message is useful for informational purposes only.
Debug	7	The message provides debug-level output.
Verbose	8	All possible tracing messages are sent.

Trace Level	Level Number	Description
Noise	-	All possible trace messages for the module are logged.  The noise level is always equal to the highest possible tracing level. Even if a future enhancement to tracing introduces a higher tracing level, the noise level will become equal to the level of that new enhancement.

Trace level settings are leveled, meaning that every setting will contain all messages from the lower setting plus the messages from its own setting. For instance, setting the trace level to 3(error) ensures that the trace file will contain all output for the 0 (emergencies), 1 (alerts), 2 (critical), and 3 (error) settings. Setting the trace level to 4 (warning) will ensure that all trace output for the specific module will be included in that trace file.

The default tracing level for every module on the chassis is notice.

All trace levels are not user-configurable. Specifically, the alert, critical, and notice tracing levels cannot be set by users. If you wish to trace these messages, set the trace level to a higher level that will collect these messages.

When setting trace levels, it is also important to remember that the setting is not done in a configuration mode, so trace level settings are returned to their defaults after every router reload.




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**Caution** Setting tracing of a module to the debug level or higher can have a negative performance impact. Setting tracing to this level or higher should be done with discretion.

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**Caution** Setting a large number of modules to high tracing levels can severely degrade performance. If a high level of tracing is needed in a specific context, it is almost always preferable to set a single module on a higher tracing level rather than setting multiple modules to high tracing levels.

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## Viewing a Tracing Level

By default, all modules on the chassis are set to notice. This setting will be maintained unless changed by a user.

To see the tracing level for any module on the chassis, enter the **show platform software trace level** command in privileged EXEC or diagnostic mode.

In the following example, the **show platform software trace level** command is used to view the tracing levels of the Forwarding Manager processes on the active RSP:

```
Router# show platform software trace level forwarding-manager rp active
Module Name                               Trace Level
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acl                                        Notice
binos                                      Notice
binos/brand                               Notice
bipc                                       Notice
bsignal                                   Notice
btrace                                     Notice
```

cce	Notice
cdllib	Notice
cef	Notice
chasfs	Notice
chasutil	Notice
erspan	Notice
ess	Notice
ether-channel	Notice
evlib	Notice
evutil	Notice
file_alloc	Notice
fman_rp	Notice
fpm	Notice
fw	Notice
icmp	Notice
interfaces	Notice
iosd	Notice
ipc	Notice
ipclog	Notice
iphc	Notice
ipsec	Notice
mgmte-acl	Notice
mlp	Notice
mqipc	Notice
nat	Notice
nbar	Notice
netflow	Notice
om	Notice
peer	Notice
qos	Notice
route-map	Notice
sbc	Notice
services	Notice
sw_wdog	Notice
tcl_acl_config_type	Notice
tcl_acl_db_type	Notice
tcl_cdlcore_message	Notice
tcl_cef_config_common_type	Notice
tcl_cef_config_type	Notice
tcl_dpiddb_config_type	Notice
tcl_fman_rp_comm_type	Notice
tcl_fman_rp_message	Notice
tcl_fw_config_type	Notice
tcl_hapi_tcl_type	Notice
tcl_icmp_type	Notice
tcl_ip_options_type	Notice
tcl_ipc_ack_type	Notice
tcl_ipsec_db_type	Notice
tcl_mcp_comm_type	Notice
tcl_mlp_config_type	Notice
tcl_mlp_db_type	Notice
tcl_om_type	Notice
tcl_ui_message	Notice
tcl_ui_type	Notice
tcl_urpf_config_type	Notice
tdllib	Notice
trans_avl	Notice
uihandler	Notice
uipeer	Notice
uistatus	Notice
urpf	Notice
vista	Notice
wccp	Notice

## Setting a Tracing Level

To set a tracing level for any module on the chassis, or for all modules within a process, enter the **set platform software trace** privileged EXEC and diagnostic mode command.

In the following example, the trace level for the ACL module in the Forwarding Manager of the ESP processor in slot 0 is set to info.

```
set platform software trace forwarding-manager F0 acl info
```

See the **set platform software trace** command reference for additional information about the options for this command.

## Viewing the Content of the Trace Buffer

To view the trace messages in the trace buffer or file, enter the **show platform software trace message** privileged EXEC and diagnostic mode command.

In the following example, the trace messages for the Host Manager process in Route Switch Processor slot 0 are viewed using the **show platform software trace message** command:

```
Router# show platform software trace message host-manager R0
08/23 12:09:14.408 [uippeer]: (info): Looking for a ui_req msg
08/23 12:09:14.408 [uippeer]: (info): Start of request handling for con 0x100a61c8
08/23 12:09:14.399 [uippeer]: (info): Accepted connection for 14 as 0x100a61c8
08/23 12:09:14.399 [uippeer]: (info): Received new connection 0x100a61c8 on descriptor 14
08/23 12:09:14.398 [uippeer]: (info): Accepting command connection on listen fd 7
08/23 11:53:57.440 [uippeer]: (info): Going to send a status update to the shell manager in
slot 0
08/23 11:53:47.417 [uippeer]: (info): Going to send a status update to the shell manager in
slot 0
```

