Tracing and Trace Management

This chapter contains the following sections:

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 all Cisco ASR 1000 Series Routers except the Cisco ASR 1002 Router, which stores tracing files in bootflash:. Trace files are used to store tracing data.

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

- Troubleshooting—If a Cisco ASR 1000 Series Router is having an issue, the trace file output may provide information that is useful for locating and solving the problem.

- 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 Cisco ASR 1000 Series Routers. 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** command in privileged EXEC 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 Cisco ASR 1000 Series Router. Trace levels, however, which set the message types that generate trace output, are user-configurable and can be set using the **platform trace** commands. 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 **platform trace** commands. Trace levels can be set by process using the **all-modules** keyword within the **platform trace** commands, or by module within a process. See the **platform trace** command reference for more information on this command.

Tracing Levels

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

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 for every module on the Cisco ASR 1000 Series Routers.
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 Cisco ASR 1000 Series Router 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.

⚠️
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.

⚠️
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.

Viewing a Tracing Level

By default, all modules on the Cisco ASR 1000 Series Routers are set to notice. This setting will be maintained unless changed by a user.

To see the tracing level for any module on the Cisco ASR 1000 Series Routers, enter the **show platform software trace level** command in privileged EXEC 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 RP:

```
Router# show platform software trace level forwarding-manager rp active
Module Name                     Trace Level
---------------------------------------------
```

```
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
tdl_acl_config_type            Notice
tdl_acl_db_type                Notice
tdl_cdlcore_message            Notice
tdl_cef_config_common_type     Notice
tdl_cef_config_type            Notice
tdl_dpidb_config_type          Notice
tdl_fman_rp_comm_type          Notice
tdl_fman_rp_message            Notice
tdl_fw_config_type             Notice
tdl_hapi_tdl_type              Notice
tdl_icmp_type                  Notice
tdl_ip_options_type            Notice
tdl_ipc_ack_type               Notice
tdl_ipsec_db_type              Notice
tdl_mcp_comm_type              Notice
tdl_mlp_config_type            Notice
tdl_mlp_db_type                Notice
tdl_om_type                    Notice
tdl_ui_message                 Notice
tdl_ui_type                    Notice
tdl_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 Cisco ASR 1000 Series Routers, or for all modules within a process on the Cisco ASR 1000 Series Router, enter the **platform software trace** command in privileged EXEC mode.

In the following example, the trace level for the forwarding processor module in the Forwarding Manager of the ESP processor in slot 0 is set to the informational tracing level (info):

```
Router(config)# platform trace runtime slot F0 bay 0 process forwarding-manager module
interfaces level info
```
In the following example, the trace level for the forwarding processor module in the Forwarding Manager of the ESP processor in slot R0 is set to the informational tracing level (max):

```
Router(config)# platform trace boottime slot R0 bay 1 process forwarding-manager
forwarding-manager level max
```
See the **platform trace boottime process forwarding-manager moduleinterfaces** and **platform trace runtime process forwarding-manager moduleinterfaces** 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** command in privileged EXEC mode.

In the following example, the trace messages for the Host Manager process in Route 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 [uipeer]: (info): Looking for a ui_req msg
08/23 12:09:14.408 [uipeer]: (info): Start of request handling for con 0x100a61c8
08/23 12:09:14.399 [uipeer]: (info): Accepted connection for 14 as 0x100a61c8
08/23 12:09:14.399 [uipeer]: (info): Received new connection 0x100a61c8 on descriptor 14
08/23 12:09:14.398 [uipeer]: (info): Accepting command connection on listen fd 7
08/23 11:53:57.440 [uipeer]: (info): Going to send a status update to the shell manager in
 slot 0
08/23 11:53:47.417 [uipeer]: (info): Going to send a status update to the shell manager in
 slot 0
```