Diagnostic Commands

This module describes the Cisco IOS XR Software commands to configure diagnostics for system monitoring on the router.

For detailed information about the online diagnostics, refer *Online Diagnostics* module in *System Monitoring Configuration Guide for Cisco 8000 Series Routers*.

To use commands of this module, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using any command, contact your AAA administrator for assistance.

For Cisco Technical Support contact information, see the 'Obtaining Documentation and Submitting a Service Request' section in the Preface.

show diag

To display details about the hardware and software on each node in a router, use the **show diag** command in XR EXEC mode.

show **diag** [**location** *node-id*] [{**chassis** | **details** | **eeprom** | **fans** | **power-supply** | **summary**}]

Syntax Description		
location *node-id*	(Optional) Displays diagnostic information from the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.
chassis	(Optional) Displays detailed diagnostics information for the chassis.
details	(Optional) Displays detailed diagnostics information for the current node.
eeprom	(Optional) Displays field diagnostics results from the EEPROM.
fans	(Optional) Displays information about the fans tray.

| power-supply | (Optional) Displays information about the power supply. |
| summary | (Optional) Displays summarized diagnostics results for all nodes in the system. |

Command Default

Diagnostics for all nodes installed in the router are displayed.

Hardware and software information for all nodes installed in the router is displayed

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 7.0.12	This command was introduced.

Usage Guidelines

The **show diag** command displays detailed information on the hardware components for each node, and on the status of the software running on each node.

Task ID

Task ID	Operations
sysmgr	read

Examples

The following example shows excerpts of output from the **show diag details** command:

```
Router# show diag details
Rack 0-Chassis IDPROM - Cisco 8201 1RU System with 24x400GE QSFP56-DD & 12x100GE QSFP28
 Info
    Controller Family      : 0045
    Controller Type        : 0613
    PID                    : 8201-SYS
    Version Identifier     : V00
    UDI Description        : Cisco 8201 1RU System with 24x400GE QSFP56-DD & 12x100GE
QSFP28
    Chassis Serial Number  : FOC2325NREU
    Top Assy. Part Number  : 68-6825-06
    Top Assy. Revision     : 09
    PCB Serial Number      : FOC2324NP35
    PCA Number             : 73-19428-08
    PCA Revision           : 04
    CLEI Code              : UNASSIGNED
    ECI Number             : ECI123
    Deviation Number # 1   : 0
    Deviation Number # 2   : 0
    Deviation Number # 3   : 0
    Deviation Number # 4   : 0
    Deviation Number # 5   : 1126
    Manufacturing Test Data : 00 00 00 00 00 00 00 00
    Calibration Data       : 00000000
    Chassis MAC Address    : 6c8b.d31f.d400
    MAC Addr. Block Size   : 512
    Hardware Revision      : 0.9
    Unknown Field (type 0x00d7): 0
    Device values # 1      : 21 80 84 0c 00 00 00 00

0/RP0/CPU0-Base Board IDPROM - Cisco 8201 1RU System with 24x400GE QSFP56-DD & 12x100GE
```

```
QSFP28
 Info
    Controller Family        : 0045
    Controller Type          : 0613
    PID                      : 8201-SYS
    Version Identifier       : V00
    UDI Description          : Cisco 8201 1RU System with 24x400GE QSFP56-DD & 12x100GE
QSFP28
    Chassis Serial Number    : FOC2325NREU
    Top Assy. Part Number    : 68-6825-06
    Top Assy. Revision       : 09
    PCB Serial Number        : FOC2324NP35
    PCA Number               : 73-19428-08
    PCA Revision             : 04
    CLEI Code                : UNASSIGNED
    ECI Number               : ECI123
    Deviation Number # 1     : 0
    Deviation Number # 2     : 0
    Deviation Number # 3     : 0
    Deviation Number # 4     : 0
    Deviation Number # 5     : 1126
    Manufacturing Test Data  : 00 00 00 00 00 00 00 00
    Calibration Data         : 00000000
    Chassis MAC Address      : 6c8b.d31f.d400
    MAC Addr. Block Size     : 512
    Hardware Revision        : 0.9
    Unknown Field (type 0x00d7): 0
    Device values # 1        : 21 80 84 0c 00 00 00 00

HundredGigE0/0/0/0-IDPROM - Cisco QSFP28 100G SR4 Pluggable Optics Module
 Info
    IDPROM Format Revision   : 05
    Hardware Revision        : 1
    PID                      : QSFP-100G-SR4-S
    Version Identifier       : V02
    UDI Description          :
    CLEI Code                : CMUIAL8CAB
    ECI Number               : 0
    Top Assy. Part Number    : AFBR-89CDDZ-CS3
    Top Assy. Revision       : 05
    PCB Serial Number        : AVF2131S02J
    PCA Number               : N/A
    PCA Revision             : N/A
    Deviation Number # 1     : 0
    Asset ID                 :
    Asset Alias              :
..........
```

The output displayed for the **show diag details** command is the most comprehensive output displayed
for **show diag** command variations. All other variations show a subset of the fields displayed except
for the **show diag chassis**, **show diag fans**, and **show diag power-supply** commands, which also
enable you to display EEPROM information.

```
RP/0/RP0/CPU0:P1#show diag eeprom
Thu Mar 12 18:16:32.436 UTC
Rack 0-Chassis IDPROM - Cisco 8201 1RU Chassis

 00:  1B 5C 04 FF 48 00 45 40 06 13 CB 92 38 32 30 31   .\..H.E@....8201
 10:  2D 53 59 53 00 00 00 00 00 00
 20:  30 30 00 DA 3C 43 69 73 63 6F 20 38 32 30 31 20   00..<Cisco 8201
 30:  31 52 55 20 43 68 61 73 73 69 73 00 00 00 00 00   1RU Chassis.....
 40:  00 00 00 00 00 00 00 00 00 00 00 00 00 2D 44 44   .............-DD
 50:  20 26 20 31 32 78 31 30 30 47 20 51 53 46 50 32   & 12x100G QSFP2
```

```
60:   38 C2 8B 46 4F 43 32 32 31 37 45 4C 5A 4C 87 44    8..FOC2217ELZL.D
70:   18 86 04 8D 30 37 20 20 C1 8B 46 4F 43 32 32 31    ....07  ..FOC221
80:   39 5A 4F 55 47 E2 46 00 49 00 48 7E 05 8A 30 35    9ZOUG.F.I.H~..05
90:   20 20 C6 8A 55 4E 41 53 53 49 47 4E 45 44 EB 86     ..UNASSIGNED..
A0:   45 43 49 31 32 33 88 00 00 00 00 88 00 00 00 00    ECI123..........
B0:   88 00 00 00 00 88 00 00 00 00 88 00 00 02 35 C4    ..............5.
C0:   08 00 00 00 00 00 00 00 00 86 00 00 00 00 C3 06    ................
D0:   78 99 52 4C D8 00 43 02 00 41 00 01 D7 44 00 00    x.RL..C..A...D..
E0:   00 00 C9 08 2F 20 22 08 00 00 00 00 FF FF FF FF    ..../ ".........
F0:   FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
100:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
110:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
120:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
130:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
140:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
150:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
160:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
170:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
180:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
190:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
1A0:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
1B0:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
1C0:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
1D0:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
1E0:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
1F0:  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF    ................
```

This table describes the significant fields shown in the display.

Table 1: show diag Field Descriptions

Field	Description
MAIN	Provides the following general information about the hardware: • Board type • Revision • Device identifier • Serial number
PCA	Cisco printed circuit assembly (PCA) hardware and revision number.
PID	Displays the product identifier (PID) revision for the specified node.
VID	Displays the version identifier (VID) for the specified node.
CLEI	Displays the common language equipment identifier (CLEI) for the specified node.
ECI	Displays the equipment catalog item (ECI) for the specified node.
Board State	Displays the current software on the board and whether or not the board is running.
PLD	Displays the information about the following programmable logic device (PLD) components on the current module: • Processor • Power • MONLIB

Field	Description
SPEED	Displays speed information for the various components of the specified node, in megahertz.
MEM Size	Displays the memory size of the specified node, in megabytes.
RMA	Displays returned material adjustment (RMA) information for the specified node.
DIAGNOSTICS RESULTS	Provides the following information about the last diagnostics test that was run on the specified node: • ENTRY 1 • TIMESTAMP—Time stamp for the last diagnostic test that was run on the node. • VERSION • PARAM1 • PARAM2 • TESTNUM—Identifies the test that was run on the node. • RESULT—Displays whether the last diagnostic test passed or failed. • ERRCODE

diagnostic monitor interval

To change the interval at which the online diagnostic tests send packets to the Network Processing Units (NPU) for a specific interval at a specified location, use the **diagnostic monitor interval** command in Config mode. To disable the configuration and restore the system to its original state, use the **no** form of this command.

diagnostic monitor interval location *node-id* **test** *test-name* *number-of-days* *hours:minutes:seconds.milliseconds*

Syntax Description

node-id	Specifies a location where diagnostic monitoring was configured. The *node-id* argument is entered in the *rack/slot/module* notation.
test-name	Name of the diagnostic test.
number-of-days	Interval between each test run. The *number-of-days* variable specifies the number of days between each test run.
hours:minutes:seconds.milliseconds	The *hours:minutes:seconds.milliseconds* variable specifies the test interval. Hours is a number in the range from 0 through 23, minutes is a number in the range from 0 through 59, seconds is a number in the range from 0 through 59, and milliseconds is a number in the range of 0 through 999.

Command Default   None

Command Modes	XR Config mode

Command History

Release	Modification
Release 7.5.2/Release 7.3.5	This command was introduced.

Usage Guidelines	None

Task ID

Task ID	Operations
diag	read, write
cisco-support	read

Examples

This example shows how to set the diagnostic testing at an interval of 1 hour, 2 minutes, 3 seconds, and 4 milliseconds at location 0/1/CPU0:

```
Router# config
Router(config)# diagnostic monitor interval location 0/1/cpu0 test 1 0 1:2:3.4
```

diagnostic monitor location disable

To disable automatic diagnostic testing for a specified location, use the **diagnostic monitor location disable** command in Config mode. To enable the diagnostic testing, use the **no** form of this command.

diagnostic monitor location *node-id* **test** *test-name* **disable**

Syntax Description

node-id	Specifies a location where diagnostic monitoring was configured. The *node-id* argument is entered in the *rack/slot/module* notation.
test-name	Name of the diagnostic test.
disable	Disables diagnostic monitoring for a specified location.

Command Default	By default, the automatic diagnostic tests are enabled in the system.

Command Modes	XR Config mode

Command History

Release	Modification
Release 7.5.2/Release 7.3.5	This command was introduced.

Usage Guidelines	None

Task ID

Task ID	Operations
diag	read, write
cisco-support	read

Examples

This example shows how to disable the online diagnostic execution at location 0/1/CPU0:

```
Router# config
Router(config)# diagnostic monitor location 0/1/cpu0 test 1 disable
```

diagnostic monitor syslog

To enable the generation of a system log message when any online diagnosis fails, use the **diagnostic monitor syslog** command in Config mode. To remove the specified command from the configuration file and restore the system to its default condition, use the **no** form of this command.

diagnostic monitor syslog

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.5.2/Release 7.3.5	This command was introduced.

Usage Guidelines

None

Task ID

Task ID	Operations
diag	read, write
cisco-support	read

The following example shows how to generate a system log message when any online diagnostic test fails:

```
Router(config)# diagnostic monitor syslog
```

diagnostic monitor threshold

To set the number of successive failures that triggers the generation of an NP data log, use the **diagnostic monitor threshold** command in Config mode. To remove the specified command from the configuration file and restore the system to its default condition, use the **no** form of this command.

diagnostic monitor threshold location *node-id* **test** *test-name* **failure-count** *failures*

Syntax Description		
node-id	Specifies a location where diagnostic monitoring was configured. The *node-id* argument is entered in the *rack/slot/module* notation.	
test-name	Specifies the name of the diagnostic test.	
failures	Number of test failures that are allowed. The given range is 1 to 99.	

Command Default   None

Command Modes   XR Config mode

Command History

Release	Modification
Release 7.5.2/Release 7.3.5	This command was introduced.

Usage Guidelines   None

Task ID

Task ID	Operations
diag	read, write
cisco-support	read

The following example shows how to set the failure threshold to 35 test failures for test 1 at location 0/1/CPU0:

```
Router# config
Router(config)# diagnostic monitor threshold location 0/1/cpu0 test 1 failure count 35
```

show diagnostic trace location

To display the logging information of the online diagnostic tests for a specific location, use the **show diagnostic trace location** command in Config mode.

show diagnostic trace location *node-id*

| Syntax Description | *node-id* Specifies a location where diagnostic monitoring was configured. The *node-id* argument is entered in the *rack/slot/module* notation. |

| Command Default | None |

| Command Modes | XR Config mode |

Command History	**Release**	**Modification**
	Release 7.5.2/Release 7.3.5	This command was introduced.

| Usage Guidelines | None |

Task ID	**Task ID**	**Operations**
	diag	read, write
	cisco-support	read

The following example shows the online diagnostic logging information at 0/1/CPU0 location:

```
Router# config
Router(config)# show diagnostic trace location 0/1/CPU0
Apr  1 18:09:38.180 diags/online/packet 0/1/CPU0 t5879 Sending a packet to SPP
Apr  1 18:09:38.180 diags/online/packet 0/1/CPU0 t5879 Sending a packet to SPP
Apr  1 18:09:38.180 diags/online/engineer 0/1/CPU0 t5879 Now sending a pak(seq 1276),
destination slot 1 (card type 0x2), NP 0
Apr  1 18:09:38.180 diags/online/engineer 0/1/CPU0 t5879 Now sending a pak(seq 1276),
destination slot 1 (card type 0x2), NP 1
Apr  1 18:09:38.180 diags/online/engineer 0/1/CPU0 6904# t5879 Slot 1 has 2 NPs for NPU
loopback test, Inactive NP mask: 0x0
Apr  1 18:09:38.180 diags/online/engineer 0/1/CPU0 7456# t5879 Packets sent, time
tick=77148425000000
Apr  1 18:09:38.190 diags/online/gold_message 0/1/CPU0 9188# t5879 0/1/CPU0:
SFNPULoopback{ID=1} Completed Successfully.
Apr  1 18:09:38.190 diags/online/gold_message 0/1/CPU0 9740# t5879 0/1/CPU0: running parallel
 test...
Apr  1 18:09:38.190 diags/online/engineer 0/1/CPU0 8008# t5879 Time took to receive 2 pkts:
 10000000 nsec, timeout val: 500000000 nsec
Apr  1 18:09:38.190 diags/online/engineer 0/1/CPU0 8560# t5879 Successfully verified a
packet, seq. no.: 1276
Apr  1 18:09:38.190 diags/online/engineer 0/1/CPU0 9112# t5879 Successfully verified a
packet, seq. no.: 1276
Apr  1 18:09:38.190 diags/online/engineer 0/1/CPU0 9664# t5879 exp_mask: 0x00000003 mask:
0x00000003, err_mask: 0x00000000
```

show diagnostic result

To display diagnostic test results, use the **show diagnostic result** command in EXEC mode.

show diagnostic result location *node-id* **[detail]**

Syntax Description	location *node-id*	Displays the diagnostic test results for a specified location. The *node-id* argument is entered in the *rack/slot/module* notation.
	detail	(Optional) Specifies detailed results.

Command Default   None

Command Modes   Exec mode

Command History

Release	Modification
Release 7.5.2/Release 7.3.5	This command was introduced.

Usage Guidelines   None

Task ID

Task ID	Operations
diag	read, write
cisco-support	read

The following example shows the online diagnostic test results at 0/5/CPU0 location:

```
Router#show diagnostic result location 0/5/CPU0

0/5/CPU0:

Overall diagnostic result: PASS
Diagnostic level at card bootup: bypass

Test results: (. = Pass, F = Fail, U = Untested)

1 ) SFNPULoopback ------------------> .


Router#show diagnostic result location 0/5/CPU0 detail

0/5/CPU0:

Overall diagnostic result: PASS
Diagnostic level at card bootup: bypass

Test results: (. = Pass, F = Fail, U = Untested)


_____


1 ) SFNPULoopback ------------------> .

Error code ------------------> 0 (DIAG_SUCCESS)
Total run count ------------> 31
Last test execution time ----> Fri Jun 9 08:28:39 2023
First test failure time -----> n/a
Last test failure time ------> n/a
```

```
Last test pass time ---------> Fri Jun 9 08:28:39 2023
Total failure count ---------> 0
Consecutive failure count ---> 0
```