Configuring Online Diagnostics

Information About Configuring Online Diagnostics

Online Diagnostics

With online diagnostics, you can test and verify the hardware functionality of the device while the device is connected to a live network.

The online diagnostics contain packet switching tests that check different hardware components and verify the data path and the control signals.

The online diagnostics detect problems in these areas:

- Hardware components
- Interfaces (Ethernet ports and so forth)
- Solder joints

Online diagnostics are categorized as on-demand, scheduled, or health-monitoring diagnostics. On-demand diagnostics run from the CLI; scheduled diagnostics run at user-designated intervals or at specified times when the device is connected to a live network; and health-monitoring runs in the background with user-defined intervals. By default, the health-monitoring test runs for every 30 seconds.

After you configure online diagnostics, you can manually start diagnostic tests or display the test results. You can also see which tests are configured for the device and the diagnostic tests that have already run.

Note The Catalyst 2960L switch is not stackable. Hence, the **switch** *number* keyword is not supported on this switch.

How to Configure Online Diagnostics

Starting Online Diagnostic Tests

After you configure diagnostic tests to run on the switch, use the **diagnostic start** privileged EXEC command to begin diagnostic testing.

After starting the tests, you cannot stop the testing process.

Use this privileged EXEC command to manually start online diagnostic testing.

Procedure

	Command or Action	Purpose
Step 1	**diagnostic start test** {*name* | *test-id* | *test-id-range* | **all** | **basic** | **non-disruptive** } **Example:** `Device# diagnostic start test basic`	Starts the diagnostic tests. You can specify the tests by using one of these options: • *name*: Enters the name of the test. • *test-id*: Enters the ID number of the test. • *test-id-range*: Enters the range of test IDs by using integers separated by a comma and a hyphen. • **all**: Starts all of the tests. • **basic**: Starts the basic test suite. • **non-disruptive**: Starts the non-disruptive test suite.

Configuring Online Diagnostics

You must configure the failure threshold and the interval between tests before enabling diagnostic monitoring.

Scheduling Online Diagnostics

You can schedule online diagnostics to run at a designated time of day or on a daily, weekly, or monthly basis for a switch. Use the **no** form of this command to remove the scheduling.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:**	Enters global configuration mode.

	Command or Action	**Purpose**
	Device# **configure terminal**	
Step 2	**diagnostic schedule test** {*name* | *test-id* | *test-id-range* | **all** | **basic** | **non-disruptive** |} {**daily** | **on** *mm dd yyyy hh:mm* | **weekly** *day-of-week hh:mm*} **Example:** Device(config)# **diagnostic schedule test 1-5 on July 3 2013 23:10**	Schedules on-demand diagnostic tests for a specific day and time. When specifying the tests to be scheduled, use these options: • *name*: Name of the test that appears in the **show diagnostic content** command output. • *test-id*: ID number of the test that appears in the **show diagnostic content** command output. • *test-id-range*: ID numbers of the tests that appear in the **show diagnostic content** command output. • **all**: All test IDs. • **basic**: Starts the basic on-demand diagnostic tests. • **non-disruptive**: Starts the non-disruptive test suite. You can schedule the tests as follows: • Daily: Use the **daily** *hh:mm* parameter. • Specific day and time: Use the **on** *mm dd yyyy hh:mm* parameter. • Weekly: Use the **weekly** *day-of-week hh:mm* parameter.

Configuring Health-Monitoring Diagnostics

You can configure health-monitoring diagnostic testing on a device while it is connected to a live network. You can configure the execution interval for each health-monitoring test, enable the device to generate a syslog message because of a test failure, and enable a specific test.

Use the **no** form of this command to disable testing.

By default, health monitoring is disabled, but the device generates a syslog message when a test fails.

Follow these steps to configure and enable the health-monitoring diagnostic tests:

Procedure

	Command or Action	**Purpose**
Step 1	**enable** **Example:** Device> **enable**	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 3	**diagnostic monitor interval test** {*name* | *test-id* | *test-id-range* | **all**} *hh:mm:ss milliseconds day* **Example:** Device(config)# **diagnostic monitor interval test 1 12:30:00 750 5**	Configures the health-monitoring interval of the specified tests. When specifying the tests, use one of these parameters: • *name*: Name of the test that appears in the **show diagnostic content** command output. • *test-id*: ID number of the test that appears in the **show diagnostic content** command output. • *test-id-range*: ID numbers of the tests that appear in the **show diagnostic content** command output. • **all**: All of the diagnostic tests. When specifying the interval, set these parameters: • *hh:mm:ss*—Monitoring interval in hours, minutes, and seconds. The range for *hh* is 0 to 24, and the range for *mm* and *ss* is 0 to 60. • *milliseconds*—Monitoring interval in milliseconds (ms). The range is from 0 to 999. • *day*—Monitoring interval in the number of days. The range is from 0 to 20.
Step 4	**diagnostic monitor syslog** **Example:** Device(config)# **diagnostic monitor syslog**	(Optional) Configures the switch to generate a syslog message when a health-monitoring test fails.

	Command or Action	**Purpose**

Step 5	**diagnostic monitor threshold** *number* **test** {*name* | *test-id* | *test-id-range* | **all**} **failure count** *count*
	
	Example:
	
	Device(config)# **diagnostic monitor threshold test 1 failure count 20**
		(Optional) Sets the failure threshold for the health-monitoring tests.
		
		When specifying the tests, use one of these parameters:
		
		   • *name*: Name of the test that appears in the **show diagnostic content** command output.
		
		   • *test-id*: ID number of the test that appears in the **show diagnostic content** command output.
		
		   • *test-id-range*: ID numbers of the tests that appear in the **show diagnostic content** command output.
		
		   • **all**: All of the diagnostic tests.
		
		The range for the failure threshold *count* is 0 to 99.

Step 6	**diagnostic monitor test** {*name* | *test-id* | *test-id-range* | **all**}
	
	Example:
	
	Device(config)# **diagnostic monitor test 1**
		Enables the specified health-monitoring tests.
		
		The **switch** *number* keyword is supported only on stacking switches.
		
		When specifying the tests, use one of these parameters:
		
		   • *name*: Name of the test that appears in the **show diagnostic content** command output.
		
		   • *test-id*: ID number of the test that appears in the **show diagnostic content** command output.
		
		   • *test-id-range*: ID numbers of the tests that appear in the **show diagnostic content** command output.
		
		   • **all**: All of the diagnostic tests.

Step 7	**end** **Example:** Device(config)# **end**	Returns to privileged EXEC mode.
Step 8	**show running-config** **Example:** Device# **show running-config**	Verifies your entries.

	Command or Action	Purpose
Step 9	**copy running-config startup-config** **Example:** Device# **copy running-config startup-config**	(Optional) Saves your entries in the configuration file.

What to do next

Use the **no diagnostic monitor interval test***test-id* | *test-id-range* } global configuration command to change the interval to the default value or to zero. Use the **no diagnostic monitor syslog** command to disable generation of syslog messages when a health-monitoring test fails. Use the **diagnostic monitor threshold test***test-id* | *test-id-range* }**failure count**command to remove the failure threshold.

Monitoring and Maintaining Online Diagnostics

Displaying Online Diagnostic Tests and Test Results

You can display the online diagnostic tests that are configured for the device and check the test results by using the privileged EXEC **show** commands in this table:

Table 1: Commands for Diagnostic Test Configuration and Results

Command	Purpose
show diagnostic content	Displays the online diagnostics configured for a switch.
show diagnostic status	Displays the currently running diagnostic tests.
show diagnostic result switch [*number*	**all**] [**detail**	**test** {*name*	*test-id*	*test-id-range*	**all**} [**detail**]]	Displays the online diagnostics test results.
show diagnostic detail]	Displays the online diagnostics test results.
show diagnostic schedule	Displays the online diagnostics test schedule.
show diagnostic post	Displays the POST results. (The output is the same as the **show post** command output.)

Configuration Examples for Online Diagnostic Tests

Starting Online Diagnostic Tests

After you configure diagnostic tests to run on the switch, use the **diagnostic start** privileged EXEC command to begin diagnostic testing.

After starting the tests, you cannot stop the testing process.

Use this privileged EXEC command to manually start online diagnostic testing.

Procedure

	Command or Action	Purpose
Step 1	**diagnostic start test** {*name* | *test-id* | *test-id-range* | **all** | **basic** | **non-disruptive** } **Example:** `Device# diagnostic start test basic`	Starts the diagnostic tests. You can specify the tests by using one of these options: • *name*: Enters the name of the test. • *test-id*: Enters the ID number of the test. • *test-id-range*: Enters the range of test IDs by using integers separated by a comma and a hyphen. • **all**: Starts all of the tests. • **basic**: Starts the basic test suite. • **non-disruptive**: Starts the non-disruptive test suite.

Example: Configure a Health Monitoring Test

This example shows how to configure a health-monitoring test:

```
Device(config)# diagnostic monitor threshold test 1 failure count 50
Device(config)# diagnostic monitor interval test TestPortAsicLoopback
```

Note The Catalyst 2960L switch is not stackable. Hence, the **switch** *number* keyword is not supported on this switch.

Scheduling Online Diagnostics

You can schedule online diagnostics to run at a designated time of day or on a daily, weekly, or monthly basis for a switch. Use the **no** form of this command to remove the scheduling.

Procedure

	Command or Action	**Purpose**
Step 1	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 2	**diagnostic schedule test** {*name* | *test-id* | *test-id-range* | **all** | **basic** | **non-disruptive** |} {**daily** | **on** *mm dd yyyy hh:mm* | **weekly** *day-of-week hh:mm*} **Example:** Device(config)# **diagnostic schedule test 1-5 on July 3 2013 23:10**	Schedules on-demand diagnostic tests for a specific day and time. When specifying the tests to be scheduled, use these options: • *name*: Name of the test that appears in the **show diagnostic content** command output. • *test-id*: ID number of the test that appears in the **show diagnostic content** command output. • *test-id-range*: ID numbers of the tests that appear in the **show diagnostic content** command output. • **all**: All test IDs. • **basic**: Starts the basic on-demand diagnostic tests. • **non-disruptive**: Starts the non-disruptive test suite. You can schedule the tests as follows: • Daily: Use the **daily** *hh:mm* parameter. • Specific day and time: Use the **on** *mm dd yyyy hh:mm* parameter. • Weekly: Use the **weekly** *day-of-week hh:mm* parameter.

Displaying Online Diagnostics: Examples

This example shows how to display the online diagnostic detailed information on a switch:

```
Device# show diagnostic switch detail

:    SerialNo :

 Overall Diagnostic Result : UNTESTED

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

_____

   1) TestPortAsicLoopback ------------> U

          Error code ------------------> 3 (DIAG_SKIPPED)
          Total run count -------------> 0
          Last test testing type ------> n/a
          Last test execution time ----> n/a
          First test failure time -----> n/a
          Last test failure time ------> n/a
          Last test pass time ---------> n/a
          Total failure count ---------> 0
          Consecutive failure count ---> 0

_____

   2) TestPortAsicCam -----------------> U

          Error code ------------------> 3 (DIAG_SKIPPED)
          Total run count -------------> 0
          Last test testing type ------> n/a
          Last test execution time ----> n/a
          First test failure time -----> n/a
          Last test failure time ------> n/a
          Last test pass time ---------> n/a
          Total failure count ---------> 0
          Consecutive failure count ---> 0

_____

   3) TestPortAsicMem -----------------> U

          Error code ------------------> 3 (DIAG_SKIPPED)
          Total run count -------------> 0
          Last test testing type ------> n/a
          Last test execution time ----> n/a
          First test failure time -----> n/a
          Last test failure time ------> n/a
          Last test pass time ---------> n/a
          Total failure count ---------> 0
          Consecutive failure count ---> 0

_____
```

This example shows how to display the online diagnostics that are configured on a switch:

```
Device# show diagnostic content

:

 Diagnostics test suite attributes:
     B/* - Basic ondemand test / NA
   P/V/* - Per port test / Per device test / NA
   D/N/* - Disruptive test / Non-disruptive test / NA
     S/* - Only applicable to standby unit / NA
     X/* - Not a health monitoring test / NA
     F/* - Fixed monitoring interval test / NA
     E/* - Always enabled monitoring test / NA
```

```
        A/I - Monitoring is active / Monitoring is inactive
        R/* - Switch will reload after test list completion / NA
        P/* - will partition stack / NA


                                                 Test Interval   Thre-
    ID   Test Name                  Attributes   day hh:mm:ss.ms shold
    ==== ================================= ============ =============== =====
     1)  TestPortAsicLoopback ------------> B*D*X**IR*    not configured  n/a
     2)  TestPortAsicCam ----------------> B*D*X**IR*    not configured  n/a
     3)  TestPortAsicMem ----------------> B*D*X**IR*    not configured  n/a
```

This example shows how to display the online diagnostic results for a switch:

```
Device# show diagnostic result

:   SerialNo :

 Overall Diagnostic Result : UNTESTED

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

   1) TestPortAsicLoopback ------------> U
   2) TestPortAsicCam ----------------> U
   3) TestPortAsicMem ----------------> U
```

This example shows how to display the online diagnostic test status:

```
Device# show diagnostic status


<BU> - Bootup Diagnostics, <HM> - Health Monitoring Diagnostics,
<OD> - OnDemand Diagnostics, <SCH> - Scheduled Diagnostics

====== ================================= ============================== ======
Card   Description                       Current Running Test           Run by
------ --------------------------------- ------------------------------ ------
                                         N/A                            N/A


====== ================================= ============================== ======
Switch#
```

This example shows how to display the online diagnostic test schedule for a switch:

```
Device# show diagnostic schedule

Current Time = 17:06:07 IST Tue Sep 11 2018

Diagnostic is not scheduled.
```

Feature History for Online Diagnostics

This table provides release and related information for features explained in this module.

These features are available on all releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS Release 15.2(5)E	Online Diagnostics	With online diagnostics, you can test and verify the hardware functionality of the device while the device is connected to a live network.

Use Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to http://www.cisco.com/go/cfn.