# Configuring Online Diagnostics

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# Information About Online Diagnostics

Online diagnostics provide verification of hardware components during switch bootup or reset, and they monitor the health of the hardware during normal switch operation.

Cisco Nexus 3600 platform switches support bootup diagnostics and runtime diagnostics. Bootup diagnostics include disruptive tests and nondisruptive tests that run during system bootup and system reset.

Runtime diagnostics (also known as health monitoring diagnostics) include nondisruptive tests that run in the background during normal operation of the switch.

## Bootup Diagnostics

Bootup diagnostics detect faulty hardware before bringing the switch online. Bootup diagnostics also check the data path and control path connectivity between the supervisor and the ASICs. The following table describes the diagnostics that are run only during switch bootup or reset.

***Table 1: Bootup Diagnostics***

| Diagnostic | Description |
|---|---|
| PCIe | Tests PCI express (PCIe) access. |
| NVRAM | Verifies the integrity of the NVRAM. |
| In band port | Tests connectivity of the inband port to the supervisor. |
| Management port | Tests the management port. |

| Diagnostic | Description |
|---|---|
| Memory | Verifies the integrity of the DRAM. |

Bootup diagnostics also include a set of tests that are common with health monitoring diagnostics.

Bootup diagnostics log any failures to the onboard failure logging (OBFL) system. Failures also trigger an LED display to indicate diagnostic test states (on, off, pass, or fail).

You can configure Cisco Nexus devices to either bypass the bootup diagnostics or run the complete set of bootup diagnostics.

# Health Monitoring Diagnostics

Health monitoring diagnostics provide information about the health of the switch. They detect runtime hardware errors, memory errors, software faults, and resource exhaustion.

Health monitoring diagnostics are nondisruptive and run in the background to ensure the health of a switch that is processing live network traffic.

# Expansion Module Diagnostics

During the switch bootup or reset, the bootup diagnostics include tests for the in-service expansion modules in the switch.

When you insert an expansion module into a running switch, a set of diagnostics tests are run. The following table describes the bootup diagnostics for an expansion module. These tests are common with the bootup diagnostics. If the bootup diagnostics fail, the expansion module is not placed into service.

***Table 2: Expansion Module Bootup and Health Monitoring Diagnostics***

| Diagnostic | Description |
|---|---|
| SPROM | Verifies the integrity of backplane and supervisor SPROMs. |
| Fabric engine | Tests the switch fabric ASICs. |
| Fabric port | Tests the ports on the switch fabric ASIC. |
| Forwarding engine | Tests the forwarding engine ASICs. |
| Forwarding engine port | Tests the ports on the forwarding engine ASICs. |
| Front port | Tests the components (such as PHY and MAC) on the front ports. |

Health monitoring diagnostics are run on in-service expansion modules. The following table describes the additional tests that are specific to health monitoring diagnostics for expansion modules.

***Table 3: Expansion Module Health Monitoring Diagnostics***

| Diagnostic | Description |
|---|---|
| LED | Monitors port and system status LEDs. |

| Diagnostic | Description |
|---|---|
| Temperature Sensor | Monitors temperature sensor readings. |

# Guidelines and Limitations for Online Diagnostics

Online diagnostics has the following configuration guidelines and limitations:

- You cannot run disruptive online diagnostic tests on demand.
- The BootupPortLoopback test is not supported.
- Interface Rx and Tx packet counters are incremented (approximately four packets every 15 minutes) for ports in the shutdown state.
- On admin down ports, the unicast packet Rx and Tx counters are incremented for GOLD loopback packets. The PortLoopback test is on demand, so the packet counter is incremented only when you run the test on admin down ports.

# Configuring Online Diagnostics

You can configure the bootup diagnostics to run the complete set of tests, or you can bypass all bootup diagnostic tests for a faster module boot up time.

**Note** We recommend that you set the bootup online diagnostics level to complete. We do not recommend bypassing the bootup online diagnostics.

### SUMMARY STEPS

1. switch# **configure terminal**
2. switch(config)# **diagnostic bootup level** [**complete** | **bypass**]
3. (Optional) switch# **show diagnostic bootup level**

### DETAILED STEPS

#### Procedure

| | Command or Action | Purpose |
|---|---|---|
| **Step 1** | switch# **configure terminal** | Enters global configuration mode. |
| **Step 2** | switch(config)# **diagnostic bootup level** [**complete** \| **bypass**] | Configures the bootup diagnostic level to trigger diagnostics when the device boots, as follows:<br>• **complete**—Performs all bootup diagnostics. This is the default value. |

| | Command or Action | Purpose |
|---|---|---|
| | | • **bypass**—Does not perform any bootup diagnostics. |
| **Step 3** | (Optional) switch# **show diagnostic bootup level** | Displays the bootup diagnostic level (bypass or complete) that is currently in place on the switch. |

### Example

The following example shows how to configure the bootup diagnostics level to trigger the complete diagnostics:

```
switch# configure terminal
switch(config)# diagnostic bootup level complete
```

# Verifying the Online Diagnostics Configuration

Use the following commands to verify online diagnostics configuration information:

| Command | Purpose |
|---|---|
| **show diagnostic bootup level** | Displays the bootup diagnostics level. |
| **show diagnostic result module** *slot* | Displays the results of the diagnostics tests. |

# Default Settings for Online Diagnostics

The following table lists the default settings for online diagnostics parameters.

***Table 4: Default Online Diagnostics Parameters***

| Parameters | Default |
|---|---|
| Bootup diagnostics level | complete |