**C H A P T E R  17**

# Configuring Onboard Failure Logging

This chapter describes how to configure the onboard failure logging (OBFL) features on Cisco NX-OS devices.

This chapter includes the following sections:

## Information About OBFL

This section includes the following topics:

## OBFL Overview

Cisco NX-OS provides the ability to log failure data to persistent storage, which you can retrieve and display for analysis at a later time. This onboard failure logging (OBFL) feature stores failure and environmental information in nonvolatile memory on the module. The information will help analyze failed modules.

The data stored by OBFL include the following:

- Time of initial power-on
- Slot number of the module in the chassis

- Initial temperature of the module
- Firmware, BIOS, FPGA, and ASIC versions
- Serial number of the module
- Stack trace for crashes
- CPU hog information
- Memory leak information
- Software error messages
- Hardware exception logs
- Environmental history
- OBFL-specific history information
- ASIC interrupt and error statistics history
- ASIC register dumps

OBFL stores a kernel trace in case Cisco NX-OS crashes.

# Virtualization Support

You must be in the default virtual device context (VDC) to configure and display OBFL information. See the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x* for more information on VDCs.

# Licensing Requirements for OBFL

The following table shows the licensing requirements for this feature:

| Product | License Requirement |
|---|---|
| Cisco NX-OS | OBFL requires no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the Cisco NX-OS licensing scheme, see the *Cisco NX-OS Licensing Guide*. |

# Prerequisites for OBFL

If you configure VDCs, install the Advanced Services license and enter the desired VDC (see the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x)*.

You must have network-admin user privileges and be logged into the default VDC.

# Guidelines and Limitations

OBFL has the following guidelines and limitations:

- OBFL is enabled by default.

- OBFL flash supports a limited number of writes and erases. The more logging you enable, the faster you use up this number of writes and erases.

✎
**Note**    Be aware that the Cisco NX-OS commands for this feature may differ from those commands used in Cisco IOS.

# Default Settings

Table 17-1 lists the default settings for OBFL parameters.

*Table 17-1      Default OBFL Parameters*

| Parameters | Default |
|---|---|
| OBFL | All features enabled |

# Configuring OBFL

You can configure the OBFL features on Cisco NX-OS devices.

**BEFORE YOU BEGIN**

Make sure you are in global configuration mode.

**SUMMARY STEPS**

1.  **hw-module logging onboard**

2.  **hw-module logging onboard environmental-history**

3.  **hw-module logging onboard error-stats**

4.  **hw-module logging onboard interrupt-stats**

5.  **hw-module logging onboard module** *slot*

6.  **hw-module logging onboard module obfl-log**

7.  **show logging onboard**

8.  **copy running-config startup-config**

■  **Configuring OBFL**

**DETAILED STEPS**

| | Command | Purpose |
|---|---|---|
| Step 1 | `config t`<br><br>**Example:**<br>`switch# config t`<br>`Enter configuration commands, one per line.  End with`<br>`CNTL/Z.`<br>`switch(config)#` | Places you in global configuration mode. |
| Step 2 | `hw-module logging onboard`<br><br>**Example:**<br>`switch(config)# hw-module logging onboard`<br>`    Module:  7   Enabling  ... was successful.`<br>`    Module: 10   Enabling  ... was successful.`<br>`    Module: 12   Enabling  ... was successful.` | Enables all OBFL features. |
| Step 3 | `hw-module logging onboard environmental-history`<br><br>**Example:**<br>`switch(config)# hw-module logging onboard`<br>`environmental-history`<br>`    Module:  7   Enabling environmental-history ... was`<br>`successful.`<br>`    Module: 10   Enabling environmental-history ... was`<br>`successful.`<br>`    Module: 12   Enabling environmental-history ... was`<br>`successful.` | Enables the OBFL environmental history. |
| Step 4 | `hw-module logging onboard error-stats`<br><br>**Example:**<br>`switch(config)# hw-module logging onboard error-stats`<br>`    Module:  7   Enabling error-stats ... was successful.`<br>`    Module: 10   Enabling error-stats ... was successful.`<br>`    Module: 12   Enabling error-stats ... was successful.` | Enables the OBFL error statistics. |
| Step 5 | `hw-module logging onboard interrupt-stats`<br><br>**Example:**<br>`switch(config)# hw-module logging onboard interrupt-stats`<br>`    Module:  7   Enabling interrupt-stats ... was`<br>`successful.`<br>`    Module: 10   Enabling interrupt-stats ... was`<br>`successful.`<br>`    Module: 12   Enabling interrupt-stats ... was`<br>`successful.` | Enables the OBFL interrupt statistics. |
| Step 6 | `hw-module logging onboard module` *slot*<br><br>**Example:**<br>`switch(config)# hw-module logging onboard module 7`<br>`    Module:  7   Enabling  ... was successful.` | Enables the OBFL information for a module. |
| Step 7 | `hw-module logging onboard obfl-log`<br><br>**Example:**<br>`switch(config)# hw-module logging onboard obfl-log`<br>`    Module:  7   Enabling obfl-log ... was successful.`<br>`    Module: 10   Enabling obfl-log ... was successful.`<br>`    Module: 12   Enabling obfl-log ... was successful.` | Enables the boot uptime, device version, and OBFL history. |

| | Command | Purpose |
|---|---|---|
| **Step 8** | **show logging onboard**<br><br>**Example:**<br>switch(config)# show logging onboard<br>----------------------------<br>OBFL Status<br>----------------------------<br>    Switch OBFL Log:<br>Enabled<br><br>    Module:  7 OBFL Log: Enabled<br>    cpu-hog Enabled<br>    environmental-history Enabled<br>    error-stats Enabled<br>    exception-log<br>.<br>.<br>.<br><br>Fri Mar 21 19:07:33 2008 (957597 us)<br>Module 2 SecondaryBootROM test has failed 20 times with<br>error BIOS file checksum<br> error<br><br> Library could not be opened<br> *** /lc/isan/lib/libcrdcfg.so: undefined symbol:<br>get_slot_id ***<br>plog_show_data_type: Error opening library statcl,<br>func_name statcl_disp_func | (Optional) Displays information about OBFL. |
| **Step 9** | **copy running-config startup-config**<br><br>**Example:**<br>switch(config)# copy running-config startup-config | (Optional) Saves this configuration change. |

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# Verifying the OBFL Configuration

Use the **show logging onboard status** command to display the configuration status of OBFL.

```
switch# show logging onboard status
---------------------------
OBFL Status
---------------------------
    Switch OBFL Log:                                      Enabled

    Module:  2 OBFL Log:                                  Enabled
    cpu-hog                                               Enabled
    environmental-history                                 Enabled
    error-stats                                           Enabled
    exception-log                                         Enabled
    interrupt-stats                                       Enabled
    mem-leak                                              Enabled
    miscellaneous-error                                   Enabled
    obfl-log (boot-uptime/device-version/obfl-history)    Enabled
    register-log                                          Enabled
    stack-trace                                           Enabled
    system-health                                         Enabled

    Module:  6 OBFL Log:                                  Enabled
    cpu-hog                                               Enabled
    environmental-history                                 Enabled
    error-stats                                           Enabled
    exception-log                                         Enabled
    interrupt-stats                                       Enabled
    mem-leak                                              Enabled
    miscellaneous-error                                   Enabled
    obfl-log (boot-uptime/device-version/obfl-history)    Enabled
    register-log                                          Enabled
    stack-trace                                           Enabled
    system-health                                         Enabled
    temp Error                                            Enabled
```

To display OBFL information stored in flash on a module, perform one of the following tasks:

| Command | Purpose |
|---|---|
| **show logging onboard boot-uptime** | Displays the boot and uptime information. |
| **show logging onboard counter-stats** | Displays statistics on all ASIC counters. |
| **show logging onboard device-version** | Displays device version information. |
| **show logging onboard endtime** | Displays OBFL logs to a specified end time. |
| **show logging onboard environmental-history** | Displays environmental history. |
| **show logging onboard error-stats** | Displays error statistics. |
| **show logging onboard exception-log** | Displays exception log information. |
| **show logging onboard interrupt-stats** | Displays interrupt statistics. |
| **show logging onboard kernel-trace** | Displays kernel trace information. |
| **show logging onboard module** *slot* | Displays OBFL information for a specific module. |
| **show logging onboard obfl-history** | Displays history information. |
| **show logging onboard obfl-logs** | Displays log information. |

| Command | Purpose |
|---------|---------|
| **show logging onboard stack-trace** | Displays kernel stack trace information. |
| **show logging onboard starttime** | Displays OBFL logs from a specified start time. |
| **show logging onboard status** | Displays OBFL status information. |

Note    Use the **clear logging onboard** command to clear the OBFL information for each of the **show** command options listed.

# Configuration Example for OBFL

This example shows how to enable OBFL on module 2 for environmental information:

```
conf t
 hw-module logging onboard module 2 environmental-history
```

# Additional References

For additional information related to implementing OBFL, see the following sections:

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# Related Documents

| Related Topic | Document Title |
|---------------|----------------|
| OBFL CLI commands | *Cisco Nexus 7000 Series NX-OS System Management Command Reference* |
| Configuration files | *Cisco Nexus 7000 Series NX-OS Fundamentals Configuration Guide, Release 5.x* |
| VDCs | *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 5.x* |

# Standards

| Standards | Title |
|-----------|-------|
| No new or modified standards are supported by this feature, and support for existing standards has not been modified by this feature. | — |

# Feature History for OBFL

Table 17-2 lists the release history for this feature.

*Table 17-2        Feature History for OBFL*

| Feature Name | Releases | Feature Information |
|---|---|---|
| OBFL | 5.2(1) | No change from Release 5.1. |
| OBFL | 5.1(1) | No change from Release 5.0. |
| OBFL | 5.0(2) | No change from Release 4.2. |