Onboard Failure Logging

Onboard Failure Logging (OBFL) gathers boot, environmental, and critical hardware data for field-replaceable units (FRUs), and stores the information in the nonvolatile memory of the FRU. This information is used for troubleshooting, testing, and diagnosis if a failure or other error occurs, providing improved accuracy in hardware troubleshooting and root cause isolation analysis. Stored OBFL data can be retrieved in the event of a failure and is accessible even if the card does not boot.

Because OBFL is on by default, data is collected and stored as soon as the card is installed. If a problem occurs, the data can provide information about historical environmental conditions, uptime, downtime, errors, and other operating conditions.

Caution OBFL is activated by default in FRUs and can be deactivated by stopping the **obflmgr** process. Do not deactivate OBFL without specific reasons, because the OBFL data is used to diagnose and resolve problems in FRUs.

OBFL cannot be disabled in the devices with the following PIDs and the only way to deactivate it is by stopping the **obflmgr** process:

- N540-28Z4C-SYS-A
- N540-28Z4C-SYS-D
- N540X-16Z4G8Q2C-A
- N540X-16Z4G8Q2C-D
- N540-12Z20G-SYS-A
- N540-12Z20G-SYS-D
- N540X-12Z16G-SYS-A
- N540X-12Z16G-SYS-D
- N540X-6Z18G-SYS-A
- N540X-6Z18G-SYS-D
- N540X-8Z16G-SYS-A
- N540X-8Z16G-SYS-D
- N540X-4Z14G2Q-A
- N540X-4Z14G2Q-D
- N540-24Q8L2DD-SYS

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Prerequisites

You must be in a user group associated with a task group that includes the proper task IDs. The command reference guides include the task IDs required for each command. If you suspect user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

Information About OBFL

OBFL is enabled by default. OBFL collects and stores both baseline and event- driven information in the nonvolatile memory of each supported card where OBFL is enabled. The data collected includes the following:

- Boot time

- FRU part serial number
- OS version
- Temperature and voltage at boot
- Temperature and voltage history
- Total run time

Note In addition to the above, the devices with the following PIDs also collect **Alarms** and **Field Programmable Device (FPD) Upgrade** data. However, they do not collect **OS version** data.

- N540-28Z4C-SYS-A
- N540-28Z4C-SYS-D
- N540X-16Z4G8Q2C-A
- N540X-16Z4G8Q2C-D
- N540-12Z20G-SYS-A
- N540-12Z20G-SYS-D
- N540X-12Z16G-SYS-A
- N540X-12Z16G-SYS-D
- N540X-6Z18G-SYS-A
- N540X-6Z18G-SYS-D
- N540X-8Z16G-SYS-A
- N540X-8Z16G-SYS-D
- N540X-4Z14G2Q-A
- N540X-4Z14G2Q-D
- N540-24Q8L2DD-SYS

This data is collected in two different ways as baseline data and event- driven data.

Baseline Data Collection

Baseline data is stored independent of hardware or software failures and includes the information given in the following table.

Table 1: Data Types for Baseline Data Collection

Data Type	Details
Installation	Chassis serial number and slot number are stored at initial boot.

Data Type	Details
Temperature	Information on temperature sensors is recorded after boot. The subsequent recordings are specific to variations based on preset thresholds.
Run-time	Total run-time is limited to the size of the history buffer used for logging. This is based on the local router clock with logging granularity of 30 minutes.

Note Data-types for baseline data collection for the devices with the following PIDs are listed in the table below:

- N540-28Z4C-SYS-A
- N540-28Z4C-SYS-D
- N540X-16Z4G8Q2C-A
- N540X-16Z4G8Q2C-D
- N540-12Z20G-SYS-A
- N540-12Z20G-SYS-D
- N540X-12Z16G-SYS-A
- N540X-12Z16G-SYS-D
- N540X-6Z18G-SYS-A
- N540X-6Z18G-SYS-D
- N540X-8Z16G-SYS-A
- N540X-8Z16G-SYS-D
- N540X-4Z14G2Q-A
- N540X-4Z14G2Q-D
- N540-24Q8L2DD-SYS

Data Type	Details
Installation	Chassis serial number and slot number are stored at initial boot.
Temperature	Information on temperature sensors is recorded after boot. The subsequent recordings are specific to variations based on preset thresholds.
Run-time	Total run-time is limited to the size of the history buffer used for logging. This is based on the local router clock with logging granularity of 15 minutes.
Voltage	Information from the voltage sensors is recorded after boot. The subsequent voltage recordings are specific to variations based on preset thresholds.

Event-Driven Data Collection

Event driven data include card failure events. Failure events are card crashes, memory errors, ASIC resets, and similar hardware failure indications.

Table 2: Data Types for Event-Driven Data Collection

	Details	
Environmental Factors	Temperature Value	Inlet and hot point temperature value change beyond the threshold set in the hardware inventory XML files.
	Voltage Value	An environmental reading is logged when the following temperature or voltage events occur: • Exceed the normal range • Change more than 10% • Return within range for more than five minutes. On reboot, these environmental readings are consolidated into a single environmental history record that shows the duration and extent out of normal range for a consecutive set of environmental readings.
Calendar Time	Cleared	The time when OBFL logging was cleared.
	Disabled	The time when OBFL logging was disabled.
	Reset to 0	The time when total line card runtime is reset to zero.

Note Data-types for event-driven data collection for the devices with the following PIDs are listed in the table below:

- N540-28Z4C-SYS-A
- N540-28Z4C-SYS-D
- N540X-16Z4G8Q2C-A
- N540X-16Z4G8Q2C-D
- N540-12Z20G-SYS-A
- N540-12Z20G-SYS-D
- N540X-12Z16G-SYS-A
- N540X-12Z16G-SYS-D
- N540X-6Z18G-SYS-A
- N540X-6Z18G-SYS-D
- N540X-8Z16G-SYS-A
- N540X-8Z16G-SYS-D
- N540X-4Z14G2Q-A
- N540X-4Z14G2Q-D
- N540-24Q8L2DD-SYS

Data Type	Details
Alarm	Major and critical alarm state changes.
FPD	FPD upgrade information.
Inventory	IDPROM information and card state changes.
Temperature	Inlet and hot point temperature value changes beyond the thresholds set in the hardware inventory XML files.
Uptime	Card uptime and location history, including the most recent time the card OBFL disk was cleared.
Voltage	Voltage value changes beyond the thresholds set in the hardware inventory XML files.

Supported Cards and Platform

FRUs that have sufficient nonvolatile memory available for OBFL data storage support OBFL. The following table provides information about the OBFL support for different FRUs on the Cisco NCS 540 Series router.

Table 3: OBFL Support on Cisco NCS 540 Series Router

Card Type	Cisco NCS 540 Series Router
Route processor	Supported
Fabric cards	Supported
Power supply cards	Not Supported
Fan tray	Supported
System Controller	Supported

Note The devices with the following PIDs are 1RU cards and do not have system controllers and fabric cards. Also, these devices do not support OBFL for fan trays and power supply cards:

- N540-28Z4C-SYS-A
- N540-28Z4C-SYS-D
- N540X-16Z4G8Q2C-A
- N540X-16Z4G8Q2C-D
- N540-12Z20G-SYS-A
- N540-12Z20G-SYS-D
- N540X-12Z16G-SYS-A
- N540X-12Z16G-SYS-D
- N540X-6Z18G-SYS-A
- N540X-6Z18G-SYS-D
- N540X-8Z16G-SYS-A
- N540X-8Z16G-SYS-D
- N540X-4Z14G2Q-A
- N540X-4Z14G2Q-D
- N540-24Q8L2DD-SYS