



## Onboard Failure Logging

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Onboard Failure Logging (OBFL) captures and stores hardware failure and environmental information into nonvolatile memory. OBFL permits improved accuracy in hardware troubleshooting and root cause isolation analysis. Stored OBFL data can be retrieved in the event of a router crash or failure.

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## Finding Feature Information

### Finding Feature Information

Your software release may not support all the features that are documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. The Feature Information Table at the end of this document provides information about the documented features and lists the releases in which each feature is supported.

## Hardware Compatibility Matrix for the Cisco cBR Series Routers



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**Note** The hardware components that are introduced in a given Cisco IOS-XE Release are supported in all subsequent releases unless otherwise specified.

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Table 1: Hardware Compatibility Matrix for the Cisco cBR Series Routers

Cisco CMTS Platform	Processor Engine	Interface Cards
Cisco cBR-8 Converged Broadband Router	<p><b>Cisco IOS-XE Release 16.5.1 and Later Releases</b></p> <p>Cisco cBR-8 Supervisor:</p> <ul style="list-style-type: none"> <li>• PID—CBR-SUP-250G</li> <li>• PID—CBR-CCAP-SUP-160G</li> <li>• PID—CBR-CCAP-SUP-60G</li> <li>• PID—CBR-SUP-8X10G-PIC</li> </ul>	<p><b>Cisco IOS-XE Release 16.5.1 and Later Releases</b></p> <p>Cisco cBR-8 CCAP Line Cards:</p> <ul style="list-style-type: none"> <li>• PID—CBR-LC-8D30-16U30</li> <li>• PID—CBR-LC-8D31-16U30</li> <li>• PID—CBR-RF-PIC</li> <li>• PID—CBR-RF-PROT-PIC</li> <li>• PID—CBR-CCAP-LC-40G</li> <li>• PID—CBR-CCAP-LC-40G-R</li> </ul> <p>Cisco cBR-8 Downstream PHY Modules:</p> <ul style="list-style-type: none"> <li>• PID—CBR-D30-DS-MOD</li> <li>• PID—CBR-D31-DS-MOD</li> </ul> <p>Cisco cBR-8 Upstream PHY Modules:</p> <ul style="list-style-type: none"> <li>• PID—CBR-D30-US-MOD</li> <li>• PID—CBR-D31-US-MOD</li> </ul>

## Understanding OBFL

OBFL provides a mechanism to store hardware, software, and environment related critical data in a non-volatile memory, such as flash EPROM or EEPROM on routers. The logging information is used by the TAC team to troubleshoot and fix hardware issues.

OBFL collects data like temperatures and voltages. It stores the data in a dedicated area of the flash memory of the router. This data is retrieved by TAC personnel to troubleshoot routers. It can also be analyzed by back-end software to detect failure patterns, and possibly to recommend specific quality improvements.

### Retrieval of the OBFL message

If the hardware is defective and the system cannot boot up, any data in flash is inaccessible. In that case, use any one of the following methods to recover OBFL data:

- Read the flash through JTAG: this requires provisions in hardware design and back-end hardware and software support tools.
- Repair the system; boot it; use the OBFL CLI commands.

## Configuring OBFL

Use the **hw-module** *{all|slot|module}* *{slotnumber/subslotnumber|modulenum}* **logging onboard** *{disable|enable}* command to enable or disable OBFL on a specified hardware module.



**Note** OBFL is enabled by default.

```
Router# hw-module slot R0 logging onboard enable
```

## Displaying OBFL Logging Information

Use the **show logging onboard** *{slot|module|bay}* *{slotnumber/subslotnumber|modulenum}* *{dram|message|serdes|status|temperature|uptime|voltage|firmware}* command to view the OBFL log information.



**Note** OBFL is enabled by default on the Cisco cBR series router.

For the card PICs, use the **show logging onboard bay** *slotnumber/subslotnumber* *{dram|message|serdes|status|temperature|uptime|voltage|firmware}* command to view its OBFL information.

## Clearing OBFL Logging

Use the **clear logging onboard** *{slot|module|bay}* *{slotnumber/subslotnumber|modulenum}* *{dram|message|serdes|temperature|voltage|firmware}* command to clear OBFL logging.

The following example shows how to clear firmware version:

```
Router# clear logging onboard slot R0 firmware
```

```
Router# clear logging onboard bay 4/4 firmware
```

Following example shows how to clear DRAM ECC error log:

```
Router# clear logging onboard slot R0 dram
```

Following example shows how to clear OBFL error message:

```
Router# clear logging onboard slot R0 message
```

Following example shows how to clear onboard serdes log:

```
Router# clear logging onboard slot R0 serdes
```

Following example shows how to clear onboard temperature log:

```
Router# clear logging onboard slot R0 temperature
```

Following example shows how to clear onboard voltage log:

```
Router# clear logging onboard slot R0 voltage
```

# Configuration and Verification Examples

## Example—Verifying OBFL Configuration Status

```
Router#show logging onboard slot R1 status
Status: Enabled
```

```
Router#show logging onboard slot 5 status
Status: Disabled
```

## Example—Displaying OBFL Logs

The following onboard failure logging example shows firmware version for SUP160:  
Router# **show logging onboard slot R0 firmware**

slot	timestamp	firmware	version
0	01/16/18 09:36:38	CPLD	16052011
0	01/16/18 09:36:38	ViperSO CPLD	14091201
0	01/16/18 09:36:38	ViperSIO CPLD	14092901
0	01/16/18 09:36:39	Rommon	16.6(1r)S
0	01/16/18 09:36:39	SUP-DC CPLD	ffffffff
0	01/16/18 09:36:39	SUP PSOC 0	v4.1.0_i2c1
0	01/16/18 09:36:39	SUP PSOC 1	v4.0.8_i2c1
0	01/16/18 09:36:39	SUP PSOC 2	v4.1.1_IVB
0	01/16/18 09:36:39	SUP PSOC 3	v4.0.6_i2c1
0	01/16/18 09:36:39	SUP-DC PSOC 0	N/A
0	01/16/18 09:36:39	SUP-DC PSOC 1	N/A
0	01/16/18 09:36:39	SUP-PIC PSOC 0	V2.0.6
0	01/16/18 09:36:39	SUP-PIC PSOC 1	V2.0.6
0	01/16/18 09:36:39	Blackbird	00000112
0	01/16/18 09:38:12	Raptor ESI	0001003b

The following onboard failure logging example shows firmware version for linecards:  
Router# **show logging onboard slot 3 firmware**

slot	timestamp	firmware	version
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```

3    01/16/18 09:41:43    CPLD                00000025
3    01/16/18 09:41:43    Rommon              2011.03.18
3    01/16/18 09:41:43    Basestar            00110022
3    01/16/18 09:41:43    Raider              02020018
3    01/16/18 09:41:43    Caprica             00000023
3    01/16/18 09:41:43    HA-PLL              N/A
3    01/16/18 09:41:43    PSOC 0              v4.6
3    01/16/18 09:41:44    PSOC 1              v4.6
3    01/16/18 09:42:04    dsphy0_fpga         2.f
3    01/16/18 09:42:04    dsphy0_micro        1.e
3    01/16/18 09:42:04    dsphy0_psoc         3.9
3    01/16/18 09:42:04    dsphy0_cpld         0.6
3    01/16/18 09:42:04    dsphy1_fpga         2.f
3    01/16/18 09:42:04    dsphy1_micro        1.e
3    01/16/18 09:42:04    dsphy1_psoc         3.9
3    01/16/18 09:42:04    dsphy1_cpld         0.6

```

The following onboard failure logging example shows firmware version for RF-PICs:  
Router# **show logging onboard bay 4/3 firmware**

```

slot    timestamp                firmware                version
-----
3    01/16/18 09:39:21    RF-PIC Firmware        0000073e

```

The following onboard failure logging example shows firmware version for SUP160-PIC:  
Router# **show logging onboard bay 4/4 firmware**

```

slot    timestamp                firmware                version
-----
4    01/16/18 09:40:20    SUP-PIC CPLD          14071504
4    01/16/18 09:40:20    DTI Client FPGA       00000005
4    01/16/18 09:40:20    DTI Firmware          00000a03
4    01/16/18 09:40:20    Raptor MAC            00010031
4    01/16/18 09:40:20    Cortina PHY           201402061607

```

The following onboard failure logging example shows firmware version for D-PIC:

Router# **show logging onboard bay 4/8 firmware**

```
slot    timestamp          firmware          version
-----
8       01/16/18 09:40:13    DPIC Firmware    00010001 (UBOOT:2015.7 FPGA:00fd0000 00010011)
```

The following onboard failure logging example shows the firmware versions that recently booted up:

Router# **show logging onboard slot R0 firmware reverse**

```
slot    timestamp          firmware          version
-----
0       01/16/18 09:38:12    Raptor ESI       0001003b
0       01/16/18 09:36:39    Blackbird        00000112
0       01/16/18 09:36:39    SUP-PIC PSOC 1   V2.0.6
0       01/16/18 09:36:39    SUP-PIC PSOC 0   V2.0.6
0       01/16/18 09:36:39    SUP-DC PSOC 1    N/A
0       01/16/18 09:36:39    SUP-DC PSOC 0    N/A
0       01/16/18 09:36:39    SUP PSOC 3       v4.0.6_i2c1
0       01/16/18 09:36:39    SUP PSOC 2       v4.1.1_IVB
0       01/16/18 09:36:39    SUP PSOC 1       v4.0.8_i2c1
0       01/16/18 09:36:39    SUP PSOC 0       v4.1.0_i2c1
0       01/16/18 09:36:39    SUP-DC CPLD      ffffffff
0       01/16/18 09:36:39    Rommon           16.6(1r)S
0       01/16/18 09:36:38    ViperSIO CPLD    14092901
0       01/16/18 09:36:38    ViperSO CPLD     14091201
0       01/16/18 09:36:38    CPLD              16052011
```

The following onboard failure logging example shows the firmware versions that are logged in the backup log file. The backup log file is created when an existing log file reaches its maximum size of 1MB.

sj-104-cbr-13#show logging onboard bay 4/4 firmware backup

```
slot    timestamp          firmware          version
-----
4       01/16/18 09:40:20    SUP-PIC CPLD     14071504
4       01/16/18 09:40:20    DTI Client FPGA  00000005
4       01/16/18 09:40:20    DTI Firmware     00000a03
4       01/16/18 09:40:20    Raptor MAC       00010031
```

```

4    01/16/18 09:40:20    Cortina PHY                201402061607
...
4    01/17/18 08:38:22    SUP-PIC CPLD              14071504
4    01/17/18 08:38:22    DTI Client FPGA           00000005
4    01/17/18 08:38:22    DTI Firmware              00000a03
4    01/17/18 08:38:22    Raptor MAC                00010031
4    01/17/18 08:38:22    Cortina PHY                201402061607

```

The following onboard failure logging example shows the firmware versions that were recently logged in the backup log file:

Router# **show logging onboard bay 4/4 firmware backup reverse**

slot	timestamp	firmware	version
4	01/17/18 08:38:22	Cortina PHY	201402061607
4	01/17/18 08:38:22	Raptor MAC	00010031
4	01/17/18 08:38:22	DTI Firmware	00000a03
4	01/17/18 08:38:22	DTI Client FPGA	00000005
4	01/17/18 08:38:22	SUP-PIC CPLD	14071504
...			
4	01/16/18 09:40:20	Cortina PHY	201402061607
4	01/16/18 09:40:20	Raptor MAC	00010031
4	01/16/18 09:40:20	DTI Firmware	00000a03
4	01/16/18 09:40:20	DTI Client FPGA	00000005
4	01/16/18 09:40:20	SUP-PIC CPLD	14071504

Router#**show logging onboard slot R1 message**

timestamp	module	sev	message
01/01/12 12:00:23	SUP_PSOC	3	SUP MB PSOC alert interrupt
01/01/12 12:00:23	SUP_PSOC	3	SUP MB PSOC alert interrupt
01/01/12 12:00:23	SUP_PSOC	3	SUP MB PSOC alert interrupt
01/01/12 12:00:23	SUP_PSOC	3	SUP MB PSOC alert interrupt
01/01/12 12:01:15	SUP_PSOC	3	SUP MB PSOC alert interrupt

Router#**show logging onboard slot R1 voltage**

Name	Id	Data (mV)	Poll	Last Update
PSOC-MB2_20: VO	40	1791	1	01/01/12 17:03:03
PSOC-MB2_21: VO	41	3290	1	01/01/12 17:03:03
PSOC-MB2_22: VO	42	3293	1	01/01/12 17:03:03
PSOC-MB2_23: VO	43	3299	1	01/01/12 17:03:03
PSOC-MB2_24: VO	44	4958	1	01/01/12 17:03:03
PSOC-MB2_25: VO	45	4508	1	01/01/12 17:03:03

```

PSOC-MB3_0: VOU 46 4999 1 01/01/12 17:03:03
PSOC-MB3_1: VOU 47 4982 1 01/01/12 17:03:03
PSOC-MB3_2: VOU 48 1499 1 01/01/12 17:03:03
PSOC-MB3_3: VOU 49 1193 1 01/01/12 17:03:03
PSOC-MB3_4: VOU 50 708 1 01/01/12 17:03:03
PSOC-MB3_5: VOU 51 757 1 01/01/12 17:03:03
PSOC-MB3_6: VOU 52 585 1 01/01/12 17:03:03
PSOC-MB3_7: VOU 53 1501 1 01/01/12 17:03:03

```

Router#show logging onboard slot R1 temperature

Name	Id	Data (C)	Poll	Last Update
Temp: BB_DIE	159	25	1	01/02/12 23:04:19
Temp: VP_DIE	160	21	1	01/02/12 23:04:19
Temp: RT-E_DIE	161	29	1	01/02/12 23:04:19
Temp: INLET_1	162	20	1	01/02/12 23:04:19
Temp: INLET_2	163	18	1	01/02/12 23:04:19
Temp: OUTLET_1	164	22	1	01/02/12 23:04:19
Temp: 3882_1	165	44	1	01/02/12 23:04:19
Temp: 3882_1A	166	38	1	01/02/12 23:04:19
Temp: 3882_1B	167	36	1	01/02/12 23:04:19
Temp: 3882_2	168	38	1	01/02/12 23:04:19
Temp: 3882_2A	169	37	1	01/02/12 23:04:19
Temp: 3882_2B	170	35	1	01/02/12 23:04:19
Temp: 3882_3	171	38	1	01/02/12 23:04:19

Router#show logging onboard slot R1 uptime latest

Slot	Reset reason	Power On
1	reset local software	01/02/12 23:02:46

Router#show logging onboard slot R1 uptime

Slot	Reset reason	Power On
0	reset local software	01/06/12 01:52:26
4	reset local software	01/06/12 01:52:42
0	reset local software	01/06/12 01:52:45
0	reset local software	01/06/12 02:20:27
4	reset local software	01/06/12 02:20:43
0	reset local software	01/06/12 02:20:46
0	reset local software	01/06/12 05:12:02
4	reset local software	01/06/12 05:12:19
0	reset local software	01/06/12 05:12:22
0	reset local software	01/06/12 05:17:31
4	reset local software	01/06/12 05:17:48
0	reset local software	01/06/12 05:17:51
0	reset power on	01/01/12 08:56:44
4	reset power on	01/01/12 08:57:00

Router# show logging onboard slot R1 uptime detail

-----  
 UPTIME SUMMARY INFORMATION  
 -----

First customer power on: 01/15/18 17:33:12  
 Number of resets: 6  
 Number of slot changes: 0  
 Last reset reason: power reset from RP  
 Current slot: 2



Current power on: 01/17/18 16:14:59

-----  
 UPTIME CONTINUOUS INFORMATION  
 -----

Slot	Reset reason	Power On	Up: Years	Days	Hours	Mins
2	power reset from RP	01/15/18 17:33:12	0	0	0	0
2	power reset from RP	01/16/18 11:44:28	0	0	18	0
2	power reset from RP	01/16/18 12:13:19	0	0	0	15
2	power reset from RP	01/16/18 17:12:43	0	0	4	0
2	power reset from RP	01/17/18 14:34:36	0	0	21	0
2	power reset from RP	01/17/18 16:14:59	0	0	1	0

Router#show logging onboard bay 4/3 message

timestamp	module	sev	message
01/02/12 08:14:22	RFSW-PIC	6	CAT1836E07Q:7.13:Initialize:3/1
01/02/12 08:20:42	RFSW-PIC	6	CAT1836E07Q:7.13:Initialize:3/1
01/02/12 09:13:23	RFSW-PIC	6	CAT1836E07Q:7.13:Initialize:3/1
01/02/12 09:42:33	RFSW-PIC	6	CAT1836E07Q:7.13:Initialize:3/1
01/02/12 11:56:09	RFSW-PIC	6	CAT1836E07Q:7.13:Initialize:3/1
01/02/12 12:27:23	RFSW-PIC	6	CAT1836E07Q:7.13:Initialize:3/1

Router#show logging onboard bay 5/3 message

timestamp	module	sev	message
01/22/15 01:06:05	RFSW-PIC	6	JAB092709EL:7.35:Init--stby:3/1
01/22/15 01:19:01	RFSW-PIC	6	JAB092709EL:7.35:Init--stby:3/1
01/22/15 01:31:47	RFSW-PIC	6	JAB092709EL:7.35:Init--stby:3/1
01/22/15 01:44:38	RFSW-PIC	6	JAB092709EL:7.35:Init--stby:3/1
01/22/15 01:59:04	RFSW-PIC	6	JAB092709EL:7.35:Init--stby:3/1
01/22/15 02:12:07	RFSW-PIC	6	JAB092709EL:7.35:Init--stby:3/1

Router#show logging onboard bay 4/4 message

timestamp	module	sev	message
01/01/12 10:01:44	SUP-PIC	0	TEST1122334:0.130:PLL-LOS:1[04]
01/01/12 10:01:45	SUP-PIC	0	TEST1122334:0.130:PLL-LOS:2[04]
01/01/12 10:01:46	SUP-PIC	0	TEST1122334:0.130:PLL-LOS:3[04]
01/01/12 10:01:49	SUP-PIC	0	TEST1122334:0.130:PLL-LOS:4[04]
01/01/12 10:01:50	SUP-PIC	0	TEST1122334:0.130:PLL-LOS:5[04]

```
01/01/12 10:01:51 SUP-PIC 0 TEST1122334:0.130:PLL-LOS:6[04]
```

```
Router#show logging onboard bay 5/5 message
timestamp      module      sev  message
```

```
-----
01/03/12 13:52:55 SUP-PIC 0 TEST8877665:0.130:PLL-LOS:1[04]
01/03/12 13:52:56 SUP-PIC 0 TEST8877665:0.130:PLL-LOS:2[04]
01/03/12 13:52:57 SUP-PIC 0 TEST8877665:0.130:PLL-LOS:3[04]
01/03/12 13:53:00 SUP-PIC 0 TEST8877665:0.130:PLL-LOS:4[04]
01/03/12 13:53:01 SUP-PIC 0 TEST8877665:0.130:PLL-LOS:5[04]
```

## Feature Information for Onboard Failure Logging

Use Cisco Feature Navigator to find information about the platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to the <https://cfng.cisco.com/> link. An account on the Cisco.com page is not required.



### Note

The following table lists the software release in which a given feature is introduced. Unless noted otherwise, subsequent releases of that software release train also support that feature.

**Table 2: Feature Information for Onboard Failure Logging**

Feature Name	Releases	Feature Information
Onboard Failure Logging	Cisco IOS XE Everest 16.6.1	This feature was integrated into Cisco IOS XE Everest 16.6.1 on the Cisco cBR Series Converged Broadband Routers.