



## 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.

- [Finding Feature Information, on page 1](#)
- [Hardware Compatibility Matrix for the Cisco cBR Series Routers, on page 1](#)
- [Understanding OBFL, on page 3](#)
- [Configuring OBFL, on page 3](#)
- [Displaying OBFL Logging Information, on page 3](#)
- [Clearing OBFL Logging, on page 4](#)
- [Configuration and Verification Examples, on page 4](#)
- [Feature Information for Onboard Failure Logging, on page 10](#)

## 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.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <http://tools.cisco.com/ITDIT/CFN/>. An account on <http://www.cisco.com/> is not required.

## 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> </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> <li>• PID—CBR-CCAP-LC-G2-R</li> <li>• PID—CBR-SUP-8X10G-PIC</li> <li>• PID—CBR-2X100G-PIC</li> </ul> <p>Digital PICs:</p> <ul style="list-style-type: none"> <li>• PID—CBR-DPIC-8X10G</li> <li>• PID—CBR-DPIC-2X100G</li> </ul> <p>Cisco cBR-8 Downstream PHY Module:</p> <ul style="list-style-type: none"> <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-D31-US-MOD</li> </ul>



**Note** Do not use DPICs (8X10G and 2x100G) to forward IP traffic, as it may cause buffer exhaustion, leading to line card reload.

The only allowed traffic on a DPIC interface is DEPI, UEPI, and GCP traffic from the Cisco cBR-8 router to Remote PHY devices. Other traffic such as DHCP, SSH, and UTSC should flow via another router, since DPICs cannot be used for normal routing.

## 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.




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**Note** OBFL is enabled by default.

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```
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.




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

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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|modulenumber} {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
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_cp1d	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_cp1d	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**

<b>Feature Name</b>	<b>Releases</b>	<b>Feature Information</b>
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.

