Troubleshooting Line Cards

This chapter discusses troubleshooting faults on the following Cisco uBR10012 line cards:

General Information for Troubleshooting Line Card Crashes

Line card crashes occur when the hardware or software encounter unexpected situations that are not expected in the current design. As a general rule, they usually indicate a configuration error, a software error, or a hardware problem.

Table 4-1 lists the **show** commands that are most useful in collecting information to troubleshoot line card crashes.

Table 4-1 Relevant Show Commands for Line Card Crashes

Command	Description
show version	Provides general information about the system's hardware and software configurations
show logging	Displays the general logs of the router
show diag [*slot/subslot*]	Provides specific information about a particular slot: type of engine, hardware revision, firmware revision, memory configuration, and so on.
show context [**summary** | **slot** [*slot/subslot*]]	Provides context information about the most recent crashes. This is often the most useful command for troubleshooting line card crashes.

Use the following procedure if you suspect that a line card has crashed.

Step 1 If you can identify the particular card that has crashed or is experiencing problems, first use the other sections in this chapter to perform basic troubleshooting. In particular, ensure that the line card is fully inserted into the proper slot, and that all cables are properly connected.

Step 2 If any system messages were displayed on the console or in the SYSLOG logs at the time of the crash, consult the *Cisco CMTS System Messages* guide and the *Cisco IOS System Messages Guide* for possible suggestions on the source of the problem.

Step 3 Line cards can crash or appear to crash when an excessive number of debug messages are being generated. In particular, this can happen when using the **verbose** or **detail** mode of a **debug** command, or if the **debug** command is dumping the contents of packets or packet buffers. If the console contains a large volume of debug output, turn off all debugging with the **no debug all** command.

Step 4 If the system message log contains messages that indicate the line card is not responding (for example, %IPCOIR-3-TIMEOUT), and the card's LEDs are not lit, the line card might have shut down because of overheating. Ensure that all chassis slots either have the proper card or module installed in them. If a slot is blank, ensure that the slot has a blank front panel installed, so that proper airflow and cooling can be maintained in the chassis.

Step 5 Use the **show context summary** command to identify all of the line cards that have experienced a crash:

```
Router# show context summary

CRASH INFO SUMMARY
 Slot 1/0: 0 crashes
 Slot 1/1: 0 crashes
 Slot 2/0: 0 crashes
 Slot 2/1: 0 crashes
 Slot 3/0: 0 crashes
 Slot 3/1: 0 crashes
 Slot 4/0: 1 crashes
  1 - crash at 04:28:56 EDT Tue Apr 20 1999
 Slot 4/1: 0 crashes
 Slot 5/0: 0 crashes
```

```
 Slot 5/1: 0 crashes
 Slot 6/0: 0 crashes
 Slot 6/1: 0 crashes
 Slot 7/0: 0 crashes
 Slot 7/1: 0 crashes
 Slot 8/0: 0 crashes
 Slot 8/1: 0 crashes

Router#
```

Step 6 After identifying the particular card that crashed, use the **show context** command again to display more information about the most recent crash. For example:

```
Router# show context slot 2/0
CRASH INFO: Slot 2/0, Index 1, Crash at 19:57:56 PDT Wed Nov 27 2002

VERSION:
7200 Software (UBR10KCLC-LCK8-M), Version 12.2(122BC.021127.), CISCO DEVELOPMENN
Compiled Wed 27-Nov-02 12:57 by
Card Type: UNKNOWN, S/N CAB0544L6F5
System exception: sig=10, code=0x8000000C, context=0x60A1BDE4
STACK TRACE:
  traceback 601C28FC 601C29B4 601B9E8C 600F99B0 600F999C
CONTEXT:
$0 : 00000000, AT : 60930000, v0 : FFFFFFFF, v1 : 60940000
a0 : 00000000, a1 : 00000000, a2 : 00000001, a3 : 0000EA60
t0 : FFFFFFFF, t1 : FFFFA91C, t2 : 601284E0, t3 : FFFF00FF
t4 : 601284D8, t5 : 00000062, t6 : 00000000, t7 : D1B71759
s0 : 00000000, s1 : 00000008, s2 : 00000000, s3 : 60CD0998
s4 : 60CD0990, s5 : 00000000, s6 : 00000002, s7 : 60940000
t8 : 60D98C2C, t9 : 0000001B, k0 : 3040D001, k1 : BE840244
gp : 6093BD60, sp : 60CD0968, s8 : 60A70000, ra : 601C2900
EPC : 0x601C28F8, SREG : 0x3400F903, Cause : 0x8000000C
ErrorEPC : 0xCF1998F2

SLOT 2/0: *Jan  1 00:01:30.371: %SYS-2-EXCEPTIONDUMP: System Crashed, Writing Coredump...

Router#
```

Step 7 Look for the SIG Type in the line that starts with "System exception" to identify the reason for the crash. Table 4-2 lists the most common SIG error types and their causes.

Table 4-2 SIG Value Types

SIG Value	SIG Name	Error Reason
	SIGINT	Unexpected hardware interrupt
3	SIGQUIT	Abort due to break key
4	SIGILL	Illegal opcode exception
5	SIGTRAP	Abort due to Break Point or an arithmetic exception
8	SIGFPE	Floating point unit (FPU) exception
9	SIGKILL	Reserved exception
10	SIGBUS	Bus error exception
11	SIGSEGV	SegV exception
20	SIGCACHE	Cache parity exception
21	SIGWBERR	Write bus error interrupt

Table 4-2 SIG Value Types

SIG Value	SIG Name	Error Reason
22	SIGERROR	Fatal hardware error
23	SIGRELOAD	Software-forced crash

Step 8 The vast majority of line card crashes are either Cache Parity Exception (SIG type=20), Bus Error Exception (SIG type=10), and Software-forced Crashes (SIG type=23). Use the following sections to further troubleshoot these problems:

- Cache Parity Errors, page 4-4
- Bus Errors, page 4-5
- Software-Forced Crashes, page 4-6

If the line card crashed for some other reason, capture the output of the **show tech-support** command. Registered Cisco.com users can decode the output of this command by using the Output Interpreter tool, which is at the following URL:

https://www.cisco.com/cgi-bin/Support/OutputInterpreter/home.pl

Step 9 If you cannot resolve the problem using the information from the Output Interpreter, collect the following information and contact Cisco TAC:

- All relevant information about the problem that you have available, including any troubleshooting you have performed.
- Any console output that was generated at the time of the problem.
- Output of the **show tech-support** command.
- Output of the **show log** command (or the log that was captured by your SYSLOG server, if available).

For information on contacting TAC and opening a case, see the "Obtaining Technical Assistance" section on page x.

Cache Parity Errors

A cache parity error (SIG type is 20) means that one or more bits at a memory location were unexpectedly changed after they were originally written. This error could indicate a potential problem with the Dynamic Random Access Memory (DRAM) that is onboard the line card.

Parity errors are not expected during normal operations and could force the line card to crash or reload. These memory errors can be categorized in two different ways:

- Soft parity errors occur when an energy level within the DRAM memory changes a bit from a one to a zero, or a zero to a one. Soft errors are rare and are most often the result of normal background radiation. When the CPU detects a soft parity error, it attempts to recover by restarting the affected subsystem, if possible. If the error is in a portion of memory that is not recoverable, it could cause the system to crash. Although soft parity errors can cause a system crash, you do not need to swap the board or any of the components, because the problem is not defective hardware.

- Hard parity errors occur when a hardware defect in the DRAM or processor board causes data to be repeatedly corrupted at the same address. In general, a hard parity error occurs when more than one parity error in a particular memory region occurs in a relatively short period of time (several weeks to months).

When parity occurs, take the following steps to resolve the problem:

Step 1 Determine whether this is a soft parity error or a hard parity error. Soft parity errors are 10 to 100 times more frequent than hard parity errors. Therefore, wait for a second parity error before taking any action. Monitor the router for several weeks after the first incident, and if the problem reoccurs, assume that the problem is a hard parity error and proceed to the next step.

Step 2 When a hard parity error occurs (two or more parity errors at the same memory location), try removing and reinserting the line card, making sure to fully insert the card and to securely tighten the restraining screws on the front panel.

Step 3 If this does not resolve the problem, remove and reseat the DRAM chips. If the problem continues, replace the DRAM chips.

Step 4 If parity errors occur, the problem is either with the line card or the router chassis. Try removing the line card and reinserting it. If the problem persists, try removing the line card from its current slot and reinserting it in another slot, if one is available. If that does not fix the problem, replace the line card.

Step 5 If the problems continue, collect the following information and contact Cisco TAC:

- All relevant information about the problem that you have available, including any troubleshooting you have performed.
- Any console output that was generated at the time of the problem.
- Output of the **show tech-support** command.
- Output of the **show log** command (or the log that was captured by your SYSLOG server, if available).

For information on contacting TAC and opening a case, see the "Obtaining Technical Assistance" section on page x.

Bus Errors

Bus errors (SIG type is 10) occur when the line card tries to access a memory location that either does not exist (which indicates a software error) or that does not respond (which indicates a hardware error). Use the following procedure to determine the cause of a bus error and to resolve the problem.

Perform these steps as soon as possible after the bus error. In particular, perform these steps before manually reloading or power cycling the router, or before performing an Online Insertion/Removal (OIR) of the line card, because doing so eliminates much of the information that is useful in debugging line card crashes.

Step 1 Capture the output of the **show stacks**, **show context**, and **show tech-support** commands. Registered Cisco.com users can decode the output of this command by using the Output Interpreter tool, which is at the following URL:

https://www.cisco.com/cgi-bin/Support/OutputInterpreter/home.pl

Step 2 If the results from the Output Interpreter indicate a hardware-related problem, try removing and reinserting the hardware into the chassis. If this does not correct the problem, replace the DRAM chips on the hardware. If the problem persists, replace the hardware.

Step 3 If the problem appears software-related, verify that you are running a released version of software, and that this release of software supports all of the hardware that is installed in the router. If necessary, upgrade the router to the latest version of software.

Tip The most effective way of using the Output Interpreter tool is to capture the output of the **show stacks** and **show tech-support** commands and upload the output into the tool. If the problem appears related to a line card, you can also try decoding the **show context** command.

Upgrading to the latest version of the Cisco IOS software eliminates all fixed bugs that can cause line card bus errors. If the crash is still present after the upgrade, collect the relevant information from the above troubleshooting, as well as any information about recent network changes, and contact Cisco TAC.

Software-Forced Crashes

Software-forced crashes (SIG type is 23) occur when the Cisco IOS software encounters a problem with the line card and determines that it can no longer continue, so it forces the line card to crash. The original problem could be either hardware-based or software-based.

The most common reason for a software-forced crash on a line card is a "Fabric Ping Timeout," which occurs when the PRE-1 module sends five keepalive messages (fabric pings) to the line card and does not receive a reply. If this occurs, you should see error messages similar to the following in the router's console log:

```
%GRP-3-FABRIC_UNI: Unicast send timed out (4)
%GRP-3-COREDUMP: Core dump incident on slot 4, error: Fabric ping failure
```

Fabric ping timeouts are usually caused by one of the following problems:

- High CPU Utilization—Either the PRE-1 module or line card is experiencing high CPU utilization. The PRE-1 module or line card could be so busy that either the ping request or ping reply message was dropped. Use the **show processes cpu** command to determine whether CPU usage is exceptionally high (at 95 percent or more). If so, see the "High CPU Utilization Problems" section on page 3-9 for information on troubleshooting the problem.
- CEF-Related Problems—If the crash is accompanied by system messages that begin with "%FIB," it could indicate a problem with Cisco-Express Forwarding (CEF) on one of the line card's interfaces. For more information, see *Troubleshooting CEF-Related Error Messages*, at the following URL:

  http://www.cisco.com/en/US/products/hw/routers/ps359/products_tech_note09186a0080110d68.shtml
- IPC Timeout—The InterProcess Communication (IPC) message that carried the original ping request or the ping reply was lost. This could be caused by a software bug that is disabling interrupts for an excessive period of time, high CPU usage on the PRE-1 module, or by excessive traffic on the line card that is filling up all available IPC buffers.

  If the router is not running the most current Cisco IOS software, upgrade the router to the latest software release, so that any known IPC bugs are fixed. If the **show processes cpu** shows that CPU usage is exceptionally high (at 95 percent or more), or if traffic on the line card is excessive, see the "High CPU Utilization Problems" section on page 3-9.

If the crash is accompanied by %IPC-3-NOBUFF messages, see *Troubleshooting IPC-3-NOBUFF Messages on the Cisco 12000, 10000 and 7500 Series*, at the following URL:

http://www.cisco.com/en/US/products/hw/routers/ps133/products_tech_note09186a00800945a1.shtml

- Hardware Problem—The card might not be fully inserted into its slot, or the card hardware itself could have failed. In particular, if the problem began occurring after the card was moved or after a power outage, the card could have been damaged by static electricity or a power surge. Only a small number of fabric ping timeouts are caused by hardware failures, so check for the following before replacing the card:
  - Reload the software on the line card, using the **hw-module slot reset** command.
  - Remove and reinsert the line card in its slot.
  - Try moving the card to another slot, if one is available.

If software-forced crashes continue, collect the following information and contact Cisco TAC:

- All relevant information about the problem that you have available, including any troubleshooting you have performed.
- Any console output that was generated at the time of the problem.
- Output of the **show tech-support** command.
- Output of the **show log** command (or the log that was captured by your SYSLOG server, if available).

For information on contacting TAC and opening a case, see the "Obtaining Technical Assistance" section on page x.

Troubleshooting the Timing, Communication, and Control Plus Card

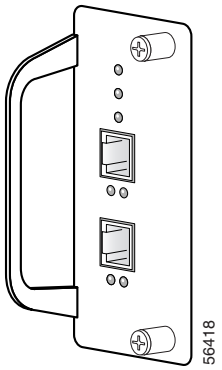
At least one working Timing, Communication, and Control Plus (TCC+) card must be installed in the Cisco uBR10012 router for normal operations. The TCC+ card acts as a secondary processor that performs the following functions:

- Generates and distributes 10.24 MHz clock references to each cable interface line card.
- Generates and distributes 32-bit time stamp references to each cable interface line card.
- Allows software to independently power off any or all cable interface line cards.
- Provides support for Online Insertion/Removal (OIR) operations of line cards.
- Drives the LCD panel used to display system configuration and status information.
- Monitors the supply power usage of the chassis.
- Provides two redundant RJ-45 ports for external timing clock reference inputs such as a Global Positioning System (GPS) or BITS clock.

If the Cisco uBR10012 router does not have a working TCC+ card installed, the WAN and cable interface line cards will experience excessive packet drops, or all traffic will be dropped, because of an invalid timing signal. Also, if no TCC+ card is installed, the **cable power** command is disabled, because this function is performed by the TCC+ card.

Note Because the TCC+ card is considered a half-height card, use slot numbers 1/1 or 2/1 to display information for the TCC+ card using the **show diag** command. The **show cable clock** and **show controllers clock-reference** commands also use these slot numbers when displaying clock-related information.

Figure 4-1 TCC+ Front Panel



The front panel on the TCC+ card has seven LEDs. Table 4-3 describes each LED on the TCC+ card.

Table 4-3 TCC+ Card LEDs and Their Functions

LED	Status	Description
POWER	Green	Indicates that power is supplied to the TCC+ card.
	Off	Power is off.
STATUS- bi-color	Yellow	Indicates that the CPU is in the bootup process, self-test, or downloading code.
	Green	Indicates that the CPU has successfully completed the boot, self-test, and code download process, and that the TCC+ card is the active card.
	Blinking Green	Indicates that the CPU has successfully completed the boot, self-test, and code download process, and that the TCC+ card is the backup card.
MAINTENANCE	Off	Normally off. Indicates that no maintenance action is required.
	Yellow	Indicates a required maintenance operation and that the TCC+ card can be hot-swapped.
PRESENT (Primary)	Green	Normally on. Indicates that a valid clock reference signal is present at the associated input.
	Off	Indicates that no signal is present, or that the TCC+ card is unable to synchronize to the signal at the associated input.
ACTIVE (Primary)	Green	Normally on. Indicates that the associated input has been selected as the active clock reference for the TCC+ card.
	Off	Indicates that the associated input is not the active clock reference.
PRESENT (Secondary)	Green	Normally on. Indicates that a valid clock reference signal is present at the associated input.
	Off	Indicates that no signal is present, or that the TCC+ card is unable to synchronize to the signal at the associated input.
ACTIVE (Secondary)	Green	Normally on. Indicates that the associated input has been selected as the active clock reference for the TCC+ card.
	Off	Indicates that the associated input is not the active clock reference.

When performing any troubleshooting on the TCC+ cards, first check the LEDs as follows:

1. Check the POWER LEDs on each TCC+ card. Are the POWER LEDs on each TCC+ card on (green)?
   - If no, remove the TCC+ card and reinsert it, making sure that it firmly connects to the backplane and that both captive screws are tightly connected.
   - If yes, proceed to the next step.
2. Is the STATUS LED on the primary TCC+ card on (green) to indicate that it is the primary card? Is the STATUS LED on the secondary TCC+ card flashing (green) to indicate that it is the redundant card?

Use Table 4-4 to continue troubleshooting the TCC+ cards.

Table 4-4 TCC+ Card Faults and Recommended Responses

Fault Type	Response

The **show cable clock** command shows that no TCC+ cards are installed:
`Router# show cable clock`
`Number of TCCplus Cards in the Chassis: 0`
`TCCplus Cards are not yet configured`
`Router#`
The console also typically displays the error message %UBR10KTCC-1-NOTCC: No working TCCplus card available in the system.
	1. Verify that at least one TCC+ card is installed in the chassis. If not, install a TCC+ card, because it is required for normal operations.
	2. If only one TCC+ card is installed, it might not have been properly initialized, so remove it from its slot, wait approximately 30 seconds, and reinsert it.
	3. If only one TCC+ card is installed, its slot might be fault, so remove the card from its slot and install it in the other TCC+ card slot.
	4. Replace the TCC+ card with a known, working TCC+ card.

An IPC error message (IPCGRP-3-SYSCALL) occurs for the TCC+ card slots (slot 1/1 or slot 2/1).	1. If this message results after a line card is reset using the **hw-module reset** command, it is an informational-only message that indicates only that an IPC message was missed while the processor was performing the reset of the line card. This error message can be ignored. 2. Upgrade the Cisco uBR10012 router to Cisco IOS Release 12.2(11)BC2 or later release.
The console displays the following error message: %UBR10KTCC-1-BADTCC: TCCplus card in *slot* put under maintenance: *reason*	The Cisco uBR10012 router detected that the TCC+ card in the indicated slot was faulty. If a redundant card is installed, the system passed control to it. The faulty TCC+ card has been put into maintenance mode. The following errors are possible: • Holdover rcvd by Active Card—The active TCC+ card generated a holdover interrupt to indicate an error in its clock source. • Holdover rcvd by Backup Card—The backup TCC+ card generated a holdover interrupt to indicate an error in the clock source being received by either the Active or Backup card. • Bad Clock reported by CLC(s)—A cable interface line card reported that the clock signal being received from the TCC+ card is faulty. • TRU Loss of Sync—The clock hardware on the TCC+ card reported a • Unknown—An unknown failure occurred, possibly a hardware failure. To correct the problem: 1. If an external clock source is being used, check that the clock source is valid national clock source, such as a GPS receiver or BITS clock. 2. If the clock source is valid, remove and reinsert the faulty TCC+ card. 3. If the MAINTENANCE LED on the faulty TCC+ card is still lit, replace the card.

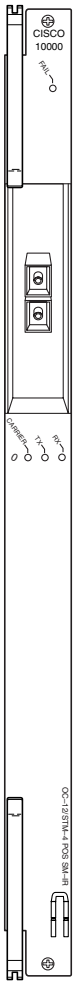
Table 4-4 TCC+ Card Faults and Recommended Responses

Fault Type	Response
The **show controllers clock-reference** command displays compare errors between the two TCC+ cards installed in the Cisco uBR10012 router.	1. If this occurs at system startup or only occasionally at other times, this error can be ignored, because the system typically records a slight delay when the TCC+ cards synchronize with each other. These initial compare errors can be ignored and cleared with the **cable clock clear-counters** command. 2. If this error repeatedly occurs, it could indicate a hardware problem with one of the TCC+ cards. Try replacing each card to see if the problem disappears.
The **show controllers** command for a cable interface displays the message "Timestamp is from local oscillator." This command should show that the timestamp is coming either from an external source or from the TCC+ card.	1. Verify that at least one TCC+ card is installed in the chassis. If not, install a TCC+ card. 2. Verify that a valid national clock source, such as a GPS receiver or BITS clock, is plugged into the TCC+ card's RJ-45 connector. 3. Replace the TCC+ card.

Troubleshooting the OC-12 Packet-Over-SONET Line Card

Figure 4-2 describes the LEDs on the Cisco uBR10-1OC12/P-SMI OC-12 Packet-Over-SONET (POS) line card faceplate. Use these descriptions to verify the operation of the OC-12 POS line card.

Figure 4-2 OC-12 POS Line Card LEDs



LED	Status	Description
Fail	Yellow	A major failure has disabled the line card.
	Off	The line card is operating properly.
Rx (receive)	Green	Receiving traffic.
	Off	Not receiving traffic.
Tx (transmit)	Green	Transmitting traffic.
	Off	Not transmitting traffic.
Carrier	Green	Carrier detected.
	Off	Carrier not detected.

29993

Table 4-5 describes fault conditions on the OC-12 POS line card and recommended corrective actions.

Table 4-5 OC-12 POS Line Card Fault Indications and Recommended Action

Fault	Corrective Action
Fail LED is lit indicating that the line card has failed	1. Reinsert the line card. 2. Replace the line card. 3. Insert the line card in another slot. 4. Contact the Cisco TAC.
Carrier LED is off and interface is enabled	1. Check the fiber optic cable, making sure that it is properly attached at both ends. 2. Make sure that you are using the proper fiber type. 3. Check the cable connections on the remote equipment. 4. Contact the Cisco TAC.
Fail LED blinks then lights steadily repeatedly or Card seems to be passing traffic (Tx/Rx lights), but cannot communicate with the PRE	1. Check for bent pins on the backplane. 2. If there are no bent pins, replace with a new line card. 3. Try inserting the line card in a different slot. If the card works in a different slot, the Cisco uBR10012 backplane may be defective. Contact the Cisco TAC.

Troubleshooting the OC-12 Dynamic Packet Transport Spatial Reuse Protocol WAN Card

Figure 4-3 shows and Table 4-6 describes the LEDs on the Cisco BR10-SRP-OC12SML Dynamic Packet Transport (DPT) Spatial Reuse Protocol (SRP) WAN card.

Figure 4-3 OC12 SRP/DPT WAN Line Card LEDs

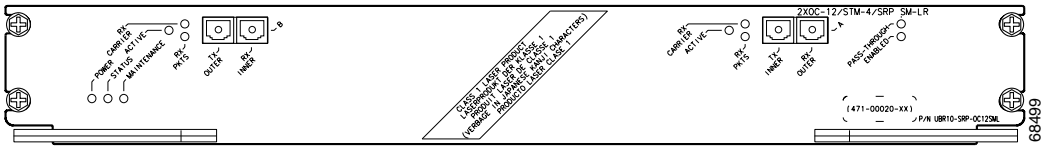


Table 4-6 Cisco uBR10-SRP-OC12SML DPT WAN Line Card LEDs

LED	Status	Description
POWER	Green	Indicates that power is being supplied to the Cisco uBR10-SRP- OC12SML DPT WAN line card.
	Off	Power off.
STATUS - bi-color	Yellow	Indicates that the CPU is in the bootup process, self test, or downloading code.
	Green	Indicates that the CPU has successfully completed the boot, self test, and code download process, and that the Cisco uBR10-SRP- OC12SML DPT WAN line card is the active card.
MAINTENANCE	Off	Normally off. Indicates that no maintenance action is required.
	Yellow	Indicates a required maintenance operation and that the Cisco uBR10-SRP- OC12SML DPT WAN line card can be hot-swapped.
RX CARRIER–B	Green	Indicates that the DPT port WAN has detected valid SONET or SDH framing on the received carrier.
	Off	No valid SONET or SDH framing.
ACTIVE	Green	Indicates that side B of the DPT port line is functioning.
	Off	Not active.
RX PKTS (Packets)	Blinking Green	Indicates that the DPT port line has received a packet. This LED flickers in normal operation, indicating traffic.
	Off	No traffic.
RX CARRIER–A	Green	Indicates that the DPT port line has detected valid SONET or SDH framing on the received carrier.
	Off	No valid SONET or SDH framing.
ACTIVE	Green	Indicates that side A of the DPT port line is functioning.
	Off	Not Active

Table 4-6 Cisco uBR10-SRP-OC12SML DPT WAN Line Card LEDs (continued)

LED	Status	Description
RX PKTS (Packets)	Blinking Green	Indicates that the DPT port line has received a packet. This LED flickers in normal operation, indicating traffic.
	Off	No traffic
PASS-THROUGH	Amber	Indicates that the DPT port line is in a pass-through state.
	Off	Not active.
ENABLED	Green	Indicates that the DPT port line is enabled for operation; however, the interface port might be in the shutdown state.
	Off	Not active.

Troubleshooting the Cisco uBR10012 OC-48 DPT/POS Line Card

The Cisco OC-48 DPT/POS interface module has a pair of OC-48c, fiber-optic standard connector (SC) duplex ports that provide an SC connection for either the single-mode short-reach or single-mode long-reach version. Figure 4-4 shows the faceplate on the Cisco OC-48 DPT/POS interface module, and Table 4-7 describes each LED.

Figure 4-4 Cisco OC-48 DPT Interface Module Faceplate

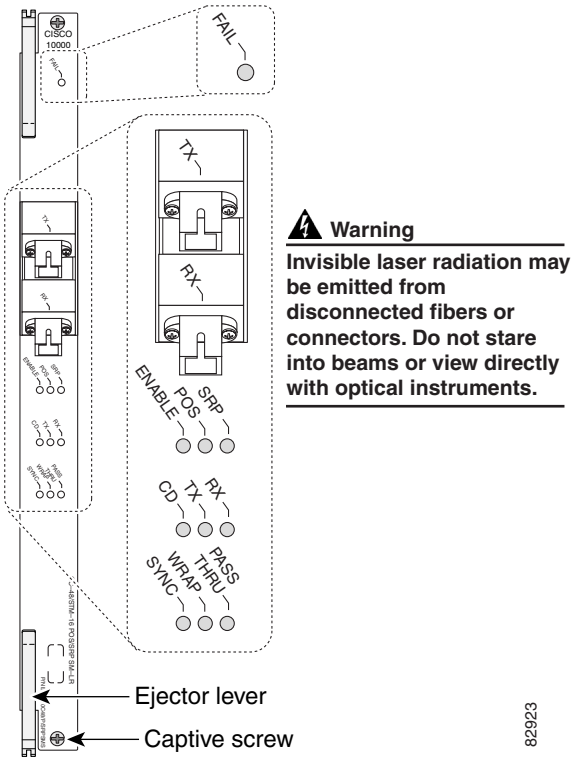


Table 4-7 Cisco OC-48 DPT LED Status and Description

LED	Status	Description
FAIL	Yellow Off	Line card is disabled Line card is operational
ENABLE	Green Off	Port is enabled Port is disabled
POS	Green Off	Operating in POS mode Not operating in POS mode
SRP	Green Off	Operating in SRP mode Not operating in SRP mode
CD	Green Off	Carrier detected No carrier detected
TX	Green Off	Packets transported No packets transported
RX	Green Off	Packets received No packets received

Table 4-7 Cisco OC-48 DPT LED Status and Description

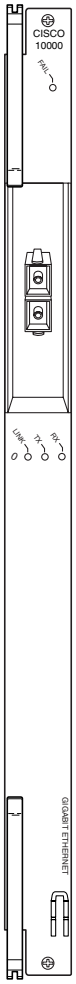
LED	Status	Description
SYNC	Green Off	Card synchronized to mate card Card not synchronized
WRAP	Yellow Off	Interface is wrapped Interface not wrapped
PASS THRU	Yellow Off	DPT port line is in a pass-through state DPT port line not in pass-through state

Troubleshooting the Gigabit Ethernet Line Card

Figure 4-5 describes the LEDs on the Cisco uBR10-1GE Gigabit Ethernet line card faceplate to help you verify correct operation.

Tip Make sure that the gigabit Ethernet Interface Converter (GBIC) type on the Cisco uBR10012 router matches the GBIC type at the other end of the fiber optic cable.

Figure 4-5 Gigabit Ethernet Line Card Faceplate and LED Descriptions



LED	Status	Description
Fail	Yellow	A major failure has disabled the line card.
	Off	The line card is operating properly.
Rx (receive)	Green	Receiving traffic.
	Off	Not receiving traffic.
Tx (transmit)	Green	Transmitting traffic.
	Off	Not transmitting traffic.
Link	Green	Carrier detected; the port is able to pass traffic.
	Off	No carrier detected; the port is not able to pass traffic.

29992

Table 4-8 describes the gigabit Ethernet line card fault indications and suggests responses to each.

Table 4-8 Gigabit Ethernet Line Card Faults and Recommended Responses

Fault Type	Response
Fail LED is lit yellow indicating that a major fault has disabled the card	1. Reinsert the line card. 2. Insert the line card into another slot. 3. Replace the line card. 4. If neither of the above responses to a card failure succeeds, call the Cisco TAC.
Fail LED blinks then lights steadily repeatedly or Card seems to be passing traffic (Tx/Rx lights), but cannot communicate with the PRE	1. Check for bent pins on the backplane. 2. If there are no bent pins, replace with a new line card. Try inserting the line card in a different slot. If the card works in a different slot, the Cisco uBR10012 backplane may be defective. Call the Cisco TAC.
Fail LED blinks steadily	This is a user correctable problem. The steadily blinking LED indicates a transmit failure. To correct the problem: 1. Reinsert the GBIC. If reinsertion fails: 2. Replace the GBIC.
Link LED does not light but the port is enabled	1. Make sure the fiber optic cable is plugged in properly, unbroken, and undamaged. 2. Make sure that you are using the correct type of fiber optic cable. 3. If you have autonegotiation enabled on the local gigabit Ethernet interface, make sure that it is enabled on the remote interface also. If autonegotiation is disabled, it must be disabled at the remote interface as well. 4. Replace the GBIC.
Gigabit Ethernet card resets itself intermittently.	1. Issue the **show diag** command. If this indicates a “parity error” occurred, contact Cisco TAC for possible replacement of the card.