



Maintaining and Monitoring the Cisco Remote-PHY Solution

This section provides information on how to maintain and monitor the Cisco Remote-PHY solution.

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Monitoring the Cisco Remote-PHY Solution

Verifying the Cisco CMC Using the LEDs

Verify the following LEDs located inside the Cisco CMC to check if it is operational.

LED	Status	Description
PWR	Off	The Cisco CMC is not powered up.
	Green	The Cisco CMC is powered up.
UPLINK	Off	Passive Optical Network (PON) or Metro Ethernet is not connected.
	Green	PON or Metro Ethernet is connected.
	Green (blinking)	PON or Metro Ethernet is connected and transmitting data.
DS RF	Off	Downstream RF is not connected.
	Green	Downstream RF is connected.

LED	Status	Description
ALARM	Off	The Cisco CMC is working.
	Yellow (major alarm)	Indicates one of the following: • The power received on the Optical Network Unit (ONU) is less than -25 dBm, unstable or unable to build link between Optical Line Terminal (OLT) and ONU. • Voltage or current has exceeded the major threshold value. • Temperature has exceeded the major threshold value.
	Red (critical alarm)	Indicates one of the following: • Voltage or current has exceeded the critical threshold value and the Cisco CMC must be shut down. • Temperature has exceeded the critical threshold value and the Cisco CMC must be shut down. • The switch chipset is not working and unable to read the register.
STATUS	Off	The Cisco CMC has not booted or run the power-on self-test (POST).
	Green	The Cisco CMC is connected to the Cisco CMTS and has received an IP address.
	Green (blinking)	The Cisco CMC is in bootup mode and running the power-on self-test.
RESERVED	Off	Reserved for future use.
GE0 and GE1	Off	The RJ-45 Gigabit Ethernet port is not connected on the Cisco CMC.
	Green	The RJ-45 Gigabit Ethernet port is connected on the Cisco CMC.
	Green (blinking)	The RJ-45 Gigabit Ethernet port is connected on the Cisco CMC and transmitting data.

Verify the following LEDs located inside the Cisco CMC to check if the FRx is operational.

LED	Status	Description
COMM	Off	There is no power.
	Green	There is no communication.
	Green (blinking)	Communication is working.
OPTICAL POWER	Off	Optical input level is normal (optical input level $\geq$ -6 dBm)
	Red (blinking)	Low optical input level (-10 dBm $\leq$ optical input level < -6 dBm)
	Red	No optical input (optical input level < -10 dBm)

Verifying the Cisco CMC Using the CLI

Using the Cisco CMTS Commands

Use the following commands on the Cisco CMTS to verify the Cisco CMC configuration.

Table 1: Commands for Monitoring the Cisco CMC using the Cisco CMTS

Command	Purpose
show cable cmc	Displays the Cisco CMC information.
show cable channel-group	Displays information on the associated Cisco CMCs in the channel group.

Using the Cisco CMC Commands

Use the following commands on the Cisco CMC console to verify the Cisco CMC configuration.

Table 2: Commands for Monitoring the Cisco CMC using the Cisco CMC Console

Command	Purpose
show frx	Displays the FRx information on the Cisco CMC.
show frx alarm	Displays the FRx alarm information on the Cisco CMC.
show gcp config command stats info	Displays the statistics information for the Generic Control Protocol (GCP) Exchange Data Structure (EDS) messages at <i>command</i> level.

Command	Purpose
show gcp config op stats info	Displays the statistics information for the GCP EDS messages at <i>operation code</i> level.
show gcp config subtype stats info	Displays the statistics information for the GCP EDS messages at <i>TLV</i> level.
show gcp stats	Displays the GCP statistics information.
show hardware	Displays the basic hardware information of the Cisco CMC.
show hardware alarm active	Displays the current information of the hardware sensor monitors on the Cisco CMC.
show hardware alarm history	Displays information on the history of the hardware sensor monitors on the Cisco CMC.
show hardware alarm threshold	Displays the alarm threshold information for the hardware sensor monitors on the Cisco CMC.
show igmp status	Displays the current Internet Group Management Protocol (IGMP) status on the Cisco CMC.
show log file	Display the Cisco CMC error log files.
show onu	Displays the Optical Network Unit (ONU) information.
show psu	Displays the Power Supply Unit (PSU) information.
show system	Displays the basic system information of the Cisco CMC.

For more information on the Cisco CMC commands, see [Cisco Coaxial Media Converter Command Reference](#).

Verifying the Cisco uBR-MC3GX60V-RPHY Line Card Installation Using LEDs

Verify the following LEDs on the Cisco uBR-MC3GX60V-RPHY line card to check if it is operational.

Table 3: LEDs on the Cisco uBR-MC3GX60V-RPHY Line Card

LED	Status	Description
POWER	Off	The Cisco uBR-MC3GX60V-RPHY line card is not powered on.
	Green	The Cisco uBR-MC3GX60V-RPHY line card is not powered on.
STATUS	Off	The Cisco uBR-MC3GX60V-RPHY line card is powered on.
	Green	The processor on the Cisco uBR-MC3GX60V-RPHY line card has booted and passed the diagnostics, or is in the standby mode.
	Yellow	The Cisco uBR-MC3GX60V-RPHY line card is in bootup mode.
MAINT	Off	No action is required.
	Yellow	It is safe to remove the Cisco uBR-MC3GX60V-RPHY line card.
GE0 and GE1	Off	The DEPI port is not enabled.
	Green	The DEPI port is configured and is able to send traffic.
LK/ACT0-LK/ACT5	Off	The Ethernet link is not working.
	Green (steady)	The Gigabit Ethernet port is enabled and the Ethernet link is working, and there is no US or DS traffic flow.
	Green (blinking)	The Gigabit Ethernet port is enabled and the Ethernet link is working, and there is US or DS traffic flow.

Verifying the Cisco uBR-MC3GX60V-RPHY Line Card Using the CLI

Verify the Cisco uBR-MC3GX60V-RPHY line card using the following commands:

Table 4: Commands Used to Verify the Cisco uBR-MC3GX60V-RPHY Line Card

Command	Purpose
• show cable mac-domain cable cgd-associations • show cable mac-domain cable downstream-service-group • show cable mac-domain cable forwarding • show cable mac-domain cable rcc • show cablemac-domain cable upstream-service-group	Displays the MAC domain information to verify the bonding operation on the Cisco uBR-MC3GX60V-RPHY line card.
• show cable license • show license detail	Displays the software license of the Cisco uBR-MC3GX60V-RPHY line card.
show controller modular-cable	Displays the Cisco uBR-MC3GX60V-RPHY line card Statistics. This command allows the user to view the following line card statistics: • Interface association • JIB hardware downstream configuration • Channel counters • Errors • Mapping of wideband and RF channels • JIB hardware downstream registers • JIB hardware downstream status
• show controllers cable <i>slot/subslot/port</i> • show interface cable <i>slot/subslot/cable-interface-index</i>	Displays the interface controllers information on the Cisco uBR-MC3GX60V-RPHY line card.
show cable modem	Displays the Cable modem information.
show cable clock	Displays the DOCSIS Timing and Control Card (DTCC) and its current status.

Command	Purpose
show controllers modular-cable sfp	Displays information about the SFP modules on the Cisco uBR-MC3GX60V-RPHY line card. If the SFP module is not present, the following output is displayed: SFP in Port1 is NOT PRESENT
show ip interfaces brief	Displays the bidirectional communication between the Cisco CMTS and the Cisco CMC. The Cisco uBR-MC3GX60V-RPHY line card has three Gigabit Ethernet interfaces. When an IP address is configured on the Gigabit Ethernet interface in a subnet that includes the Cisco CMC, the IP address of the Cisco CMC becomes pingable.
show diag	Displays the hardware and diagnostic information of the Cisco uBR-MC3GX60V-RPHY line card.

Maintaining the Cisco Remote-PHY Solution

Using the Console Port on the Cisco CMC

The console port on the Cisco CMC is used for connecting the Cisco CMC to a PC using a console cable.

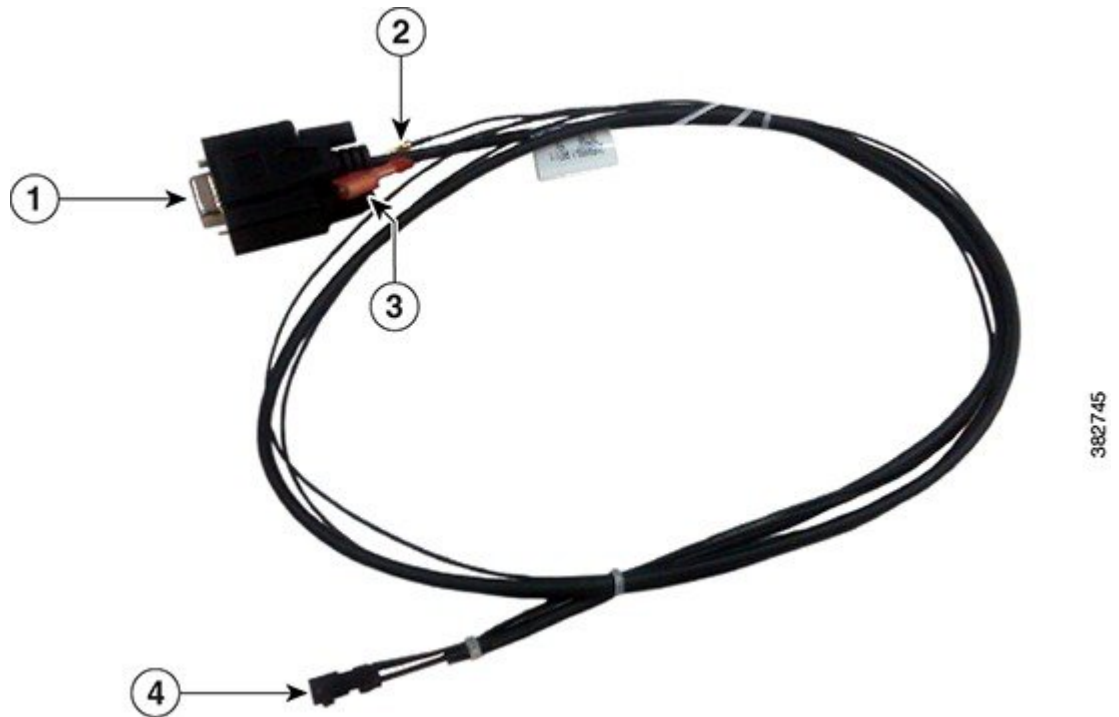


Warning

The console cable connection is only for initial installation and maintenance of the Cisco CMC. The console cable must not be connected during electromagnetic compliance testing. The console cable must be disconnected from the Cisco CMC after the final installation.

The figure below shows the console cable used with the Cisco CMC.

Figure 1: Console Cable



1	DB9 connector	3	Pin 3 (P3)
2	Pin 2 (P2)	4	PCB connector

The table below provides the console cable connector pin definitions.

Table 5: Console Cable—Connector Pin Definitions

Pin Number	Definition
Pin 1	Ground (GND)
Pin 2	Input (UART_RX)
Pin 3	Ground (GND)
Pin 4	Output (UART_TX)
Pin 5	Golden image (Golden_Image)
Pin 6	Ground (GND)

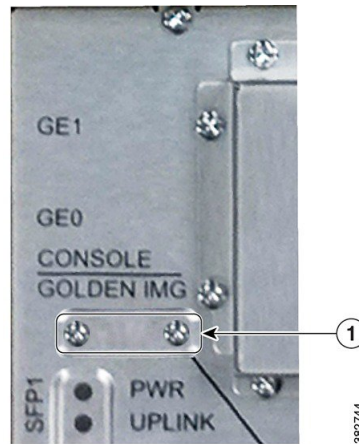
Before You Begin

- Open the Cisco CMC lid. See [Opening the Cisco CMC](#).
- Have the following tools ready before performing this task:
 - Screwdriver

Step 1

Remove the screws on the console port cover using a screwdriver to access the console port. The figure below shows the console port with its cover.

Figure 2: Cisco CMC Console Port



1	Console port cover	—
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Step 2

Align the PCB connector of the console cable with the pins on the Cisco CMC console port and insert the PCB connector into the console port.

Step 3

(Optional) To boot the Cisco CMC with the golden image, insert P2 into P3.

Tip If P2 is not connected to P3, the Cisco CMC boots normally.

Step 4

Connect the DB9 connector of the console cable with the appropriate serial port on the PC.

Step 5

Power up the PC.

Step 6

Configure the PC terminal emulation software with the following default settings for the Cisco CMC:

- 115200 baud rate
- 8 data bits
- No parity generation or checking
- 1 stop bit

Step 7 Use username **admin** and password **admin** to log in to the Cisco CMC console.

What to Do Next

- 1 Disconnect the console cable from the console port.
- 2 Reinstall the console port cover and tighten the screws using a screwdriver.
- 3 Close the Cisco CMC lid. See [Closing the Cisco CMC](#).

Removing the Coaxial Cable from the Cisco CMC

Before You Begin

- Open the Cisco CMC lid. See [Opening the Cisco CMC](#).
- Have the following tools ready before performing this task:
 - Torque wrench

- Slot screwdriver

Step 1 Remove the coaxial cable from the F-connector installed in the RF port.

Step 2 Loosen the seizure screw, do not remove it. The figure below shows the location of the seizure screw inside the Cisco CMC.

Figure 3: Location of the Seizure Screw



1	Seizure screw	—
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Step 3 Loosen the connector nut using a torque wrench and remove the F-connector from the RF port.

Step 4 Reinstall the PG11-to-5/8" adapter plug in the RF port and tighten using a torque wrench (4.63 ft-lb or 6.25 Nm), if you removed a PG11 F-connector from the RF port.

Step 5 Check if RF signal is present at the unused RF ports and perform one of the following:

- If RF signal is present, insert a 75 ohm terminator into the RF port and tighten according to the manufacturer specifications.

- If RF signal is not present, insert a 5/8" port plug into the RF port and tighten from 5 ft-lb to 8 ft-lb (6.8 Nm to 10.8 Nm) using a torque wrench.
-

What to Do Next

- To install the F-connector and connect the coaxial cable to the Cisco CMC, see [Installing the Coaxial Cables on the Cisco CMC](#).
- Close the Cisco CMC lid. See [Closing the Cisco CMC](#).

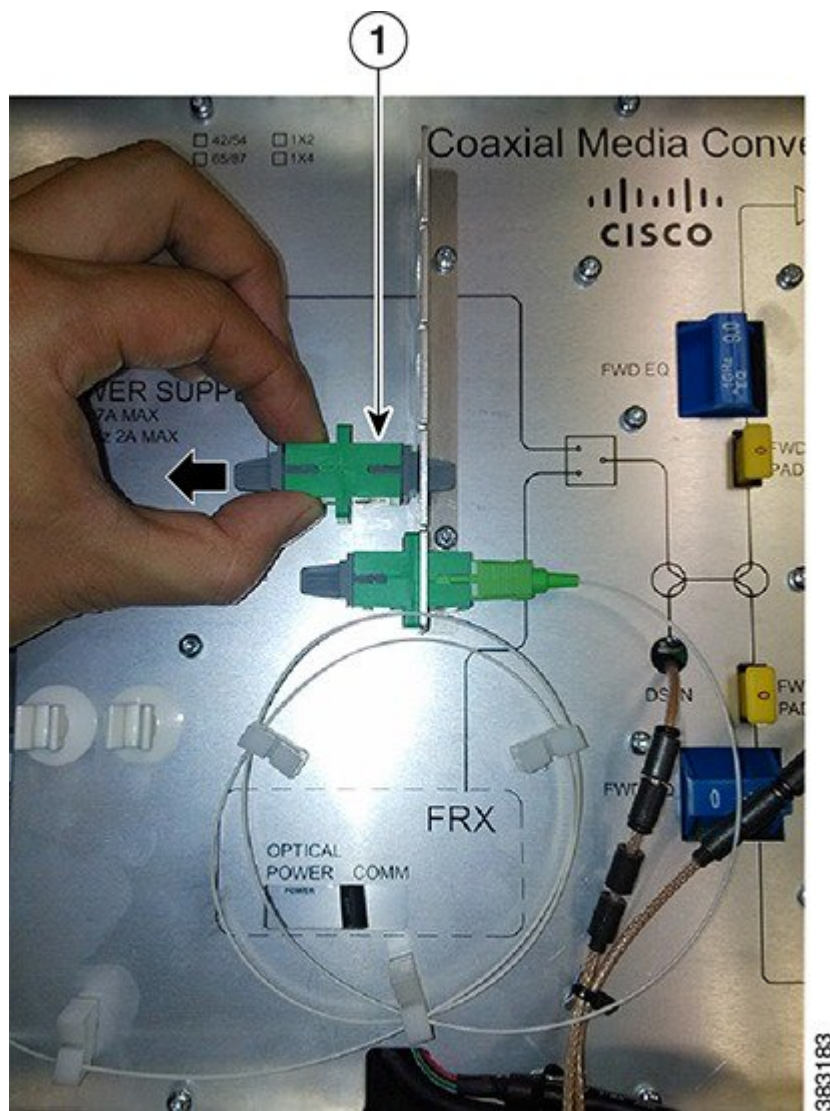
Removing the Fiber Adapter from the Cisco CMC

Before You Begin

Open the Cisco CMC lid. See [Opening the Cisco CMC](#).

- Step 1** Disconnect the optical fibers connected to the fiber adapter. Immediately reinstall the dust plugs in the fiber adapters.
- Step 2** Remove the fiber adapter from the slot as shown in the figure below:

Figure 4: Removing the Fiber Adapter from the Cisco CMC



1	SC/APC-SC/APC fiber adapter	—
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Step 3 Place the fiber adapter in its protective packaging.

What to Do Next

- To install a fiber adapter, see [Installing a Fiber Adapter on the Cisco CMC](#).
- Close the Cisco CMC lid. See [Closing the Cisco CMC](#).

Removing the SFP Module from the Cisco CMC

Before You Begin

- Open the Cisco CMC lid. See [Opening the Cisco CMC](#).
 - Have the following tools ready before performing this task:
 - Torque wrench
-

Step 1 Perform one of the following and immediately reinstall the dust plug in the SFP module:

- Disconnect the optical fiber connected to the SFP module. If the fiber port does not have any other optical fibers, remove the gland. Reinstall the 5/8" port plug in the fiber port and tighten to 6.7 ft-lb (9 Nm) using a torque wrench.
- Disconnect the RJ-45 cable connected to the SFP module. If the RJ-45 port does not have any other RJ-45 cables, remove the PG16 gland using a torque wrench. Reinstall the PG16 port plug in the RJ-45 port and tighten using a torque wrench.

Step 2 Unlock and remove the SFP module from the socket connector using one of the following:

- If the SFP module has a Mylar tab latch, pull the tab gently in a slightly downward direction until the SFP module disengages from the socket connector, and then pull the SFP module straight out of the socket. Do not twist or pull the Mylar tab as it can detach from the SFP module.
- If the SFP module has an Actuator button latch, gently press the Actuator button on the front of the SFP module until it clicks and the latch mechanism releases the SFP module from the socket connector. Grasp the Actuator button between your thumb and index finger, and carefully pull the SFP module straight from the socket.
- If the SFP module has a Bale-clasp latch, pull the bale to eject the SFP module from the socket. If the Bale-clasp latch is obstructed and you cannot use your index finger to open it, use a small, flat-blade screwdriver or a long narrow instrument to open the bale-clasp latch. Grasp the SFP module between your thumb and index finger, and carefully remove it from the socket.

Step 3 Place the removed SFP module in an antistatic bag.

What to Do Next

- To install the SFP module, see [Installing an SFP Module on the Cisco CMC](#).
- Close the Cisco CMC lid. See [Closing the Cisco CMC](#).

Online Insertion and Removal of the Cisco uBR-MC3GX60V-RPHY Line Card

You can replace a Cisco uBR-MC3GX60V-RPHY line card with only a Cisco uBR-MC3GX60V-RPHY line card.

Before You Begin

- Save the Cisco uBR-MC3GX60V-RPHY line card configurations before starting the OIR.
- Change the standby card (if available) to HOT state.
- Save the startup configuration file before any reload of the system (if there is a need to reload), after a successful OIR.
- Perform OIR when the Cisco CMTS is up and running.



Restriction

- The OIR cannot be used if you want to upgrade to Cisco uBR-MC3GX60V-RPHY line card directly from any of the old line card (Cisco uBR-MC3GX60V, Cisco uBR10-MC5X20H, Cisco UBR-MC20X20V) other than LC like 520 or 20x20 to 3G60.
- OIR cannot be performed when the standby PRE is being loaded.

Step 1 Enter the **cr10k card oir-compatibility** command for the existing Cisco uBR-MC3GX60V-RPHY line card.

Example:

```
Router(config)# cr10k card 8/0 oir-compatibility
```

This command preserves the configuration and performs internal synchronization to ensure that the OIR runs successfully.

Step 2 Save the configuration to ensure the transition.

Example:

```
Router# copy running-config startup-config
```

Step 3 Power down the existing Cisco uBR-MC3GX60V-RPHY line card using **cable power off** command.

Example:

```
Router# cable power off 8/0
Line Card 8/0 is POWERED OFF
```

This powers off the Cisco uBR-MC3GX60V-RPHY line card gracefully.

- Step 4** Before removing the existing Cisco uBR-MC3GX60V-RPHY line card, verify that the proper grounding instructions have been followed.
- Step 5** Remove the existing Cisco uBR-MC3GX60V-RPHY line card from the slot.
See [Removing the Existing Line Card from the Card Slot](#).
- Step 6** Install the new Cisco uBR-MC3GX60V-RPHY line card in the slot.
See [Installing the Cisco uBR-MC3GX60V-RPHY Line Card in the Card Slot](#).
- Step 7** Power up the new Cisco uBR-MC3GX60V-RPHY line card using the **cable power on** command.

Example:

```
Router# cable power on 8/0
```

- Step 8** Verify that the new Cisco uBR-MC3GX60V-RPHY line card and line protocol is up using the **show interface cable** command.

Example:

```
Router# show interface cable 8/0/0
Cable8/0/0 is up, line protocol is up
Hardware is BCM3210 ASIC, address is 010a.13e8.1ca8 (bia 010a.13e8.1a60)
Internet address is 192.1.1.3/24
MTU 1500 bytes, BW 27000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
Encapsulation, loopback not set, keepalive not set
ARP type: ARPA, ARP Timeout 04:00:00
Last input 4d07h, output 00:00:00, output hang never
Last clearing of "show interface" counters never
Queuing strategy: fifo
Output queue 0/40, 0 drops; input queue 0/75, 0 drops
5 minute input rate 1834000 bits/sec, 2385 packets/sec
5 minute output rate 1982000 bits/sec, 2431 packets/sec
24461542 packets input, 2348214388 bytes, 0 no buffer
Received 1979 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
24854257 packets output, 2536222931 bytes, 0 underruns
0 output errors, 0 collisions, 0 interface resets
0 output buffer failures, 0 output buffers swapped out
```

- Step 9** Verify the hardware status using the **show controllers cable** command.

Example:

```
Router# show controllers cable 8/0/0
Cable8/0/0 JIB hardware status:
JIB Downstream port Enabled
JIB Upstream port 0 Enabled
JIB Upstream port 1 Enabled
JIB Upstream port 2 Enabled
JIB Upstream port 3 Enabled
Cable8/0/0 Upconverter is Enabled Output is Enabled
```

- Step 10** Verify the configuration with the **show running-configuration** command.
-