

Installing Cisco ONS 15454 SONET/SDH FC_MR-4 Cards

Product Name: 15454-ML-4FC=

This document lists regulatory requirements and describes installation procedures for the Cisco ONS 15454/ONS 15454 SDH FC_MR-4 card. It also contains removal instructions and technical specifications. Use this document in conjunction with the *Cisco ONS 15454 SDH Reference Manual*, the *Cisco ONS 15454 SDH Procedure Guide*, the *Cisco ONS 15454 Reference Manual*, and the *Cisco ONS 15454 Procedure Guide*.

This document contains the following sections:

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This document contains the following procedures:

- [Procedure: Install the FC_MR-4 Card, page 5](#)
- [Procedure: Verify Successful Turn Up of the OC192 LR/STM64 LH ITU 15xx.xx Card, page 9](#)

FC_MR-4 Card Description



Class 1 (21 CFR 1040.10, 1040.11, and IEC 60825-1 2001-01) laser products. Invisible laser radiation may be emitted from the end of the unterminated fiber cable or connector. Do not stare into the beam or view directly with optical instruments. Viewing the laser output with certain optical instruments (for



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example, eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. Use of controls or adjustments, or performance of procedures other than those specified may result in hazardous radiation exposure.

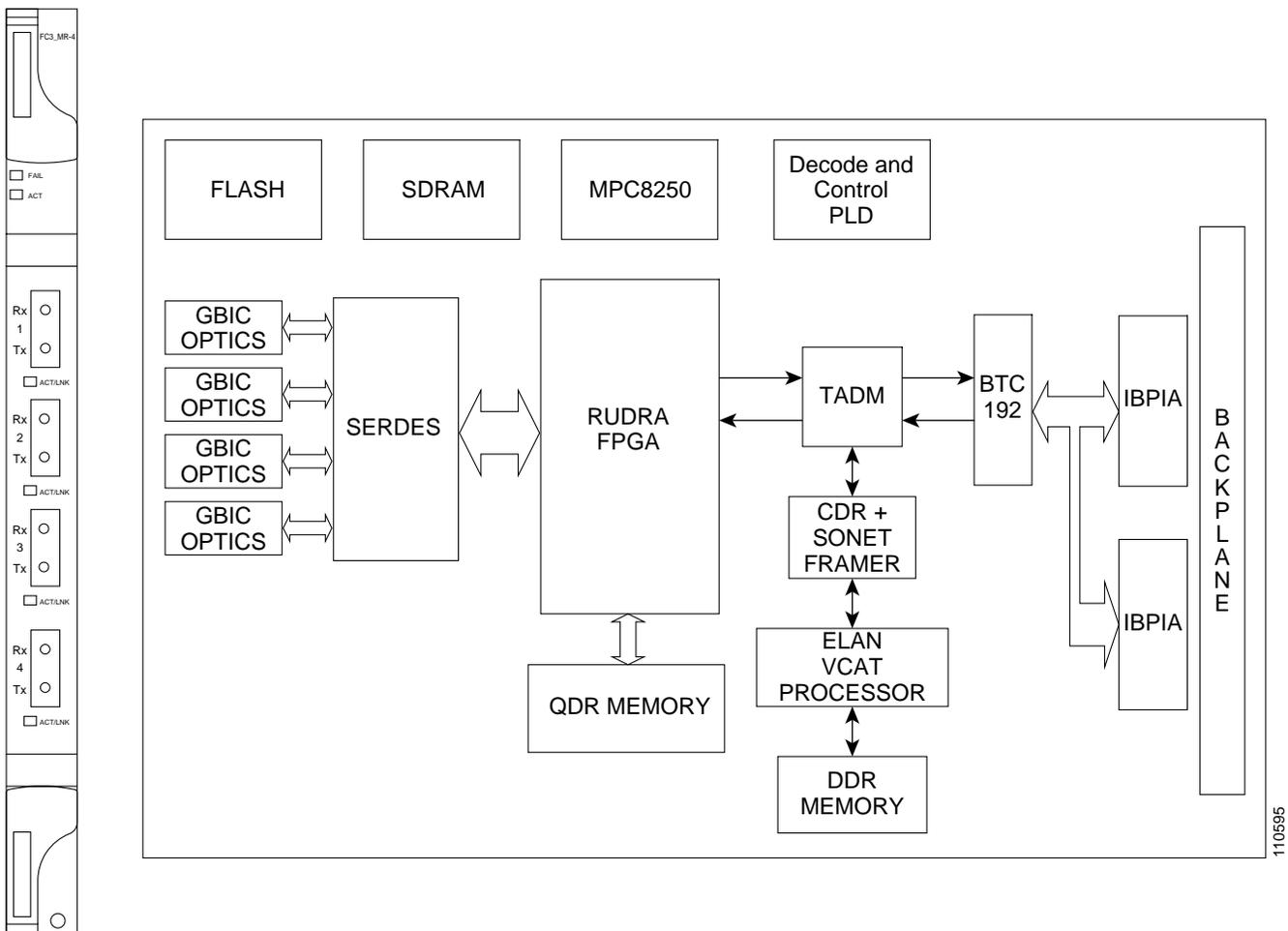
The FC_MR-4 (Fibre Channel 4-port) card uses pluggable Gigabit Interface Converters (GBICs) to transport non-SONET/SDH-framed, block-coded protocols over SONET/SDH in virtually concatenated or contiguously concatenated payloads. The FC_MR-4 can transport Fibre Channel over SONET/SDH using Fibre-Channel client interfaces and allows transport of one of the following at a time:

- Two contiguously concatenated (CCAT) STS-24c/VC4-8c circuits
- One STS-48c/VC4-16c CCAT
- Two virtually concatenated (VCAT) circuits (STC3c-8V/VC4-8v) compliant with ITU-T G.7041 GFP-T and Telcordia GR-253-CORE
- One STS-24c/VC4-8c CCAT and one STS-24c/VC4-8c VCAT

In Software Release 4.6, only two of the four ports can be active at one time.

Figure 0-1 shows the FC_MR-4 faceplate and block diagram.

Figure 0-1 FC_MR-4 Faceplate and Block Diagram



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FC_MR-4 Card-Level Indicators

Table 0-1 describes the two card-level LEDs on the FC_MR-4 card.

Table 0-1 FC_MR-4 Card-Level Indicators

Card-Level Indicators	Description
Red FAIL LED	The red FAIL LED indicates that the card's processor is not ready. Replace the card if the red FAIL LED persists.
Green ACT LED	If the ACTV/STBY LED is green, the card is operational and ready to carry traffic.

FC_MR-4 Port-Level Indicators

Each FC_MR-4 port has a corresponding ACT/LNK LED. The ACT/LNK LED is solid green if the port is available to carry traffic, is provisioned as in-service, and in the active mode. The ACT/LNK LED is flashing green if the port is carrying traffic. The ACT/LNK LED is steady amber if the port is not enabled and the link is connected, or if the port is enabled and the link is connected but there is a SONET transport error. The ACT/LNK LED is unlit if there is no link.

You can find the status of the card ports using the LCD screen on the ONS 15454 fan-tray assembly. Use the LCD to view the status of any port or card slot; the screen displays the number and severity of alarms for a given port or slot. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for a complete description of the alarm messages.

FC_MR-4 Card Specifications

The FC_MR-4 card has the following specifications:

- Environmental
 - Operating temperature
 - C-Temp (15454-E100T): –5 to +55 degrees Celsius (23 to 131 degrees Fahrenheit)
 - Operating humidity: 5 to 95%, noncondensing
 - Power consumption: 60 W, 1.35 A, 221.93 BTU/hr
- Dimensions
 - Height: 321.3 mm (12.650 in.)
 - Width: 18.2 mm (0.716 in.)
 - Depth: 228.6 mm (9.000 in.)
 - Card weight: 1.17 kg (2.59 lb)
- Compliance
 - For compliance information, refer to the *Cisco Optical Transport Products Safety and Compliance Information*.

Installation Procedures

Use this section if you are installing the FC_MR-4 card for the first time. After you become familiar with ONS 15454 SONET/SDH card installation and boot up, use this section as a reference. For information about fiber optic cable installation, see the *Cisco ONS 15454 SDH Reference Manual*, the *Cisco ONS 15454 SDH Procedure Guide*, the *Cisco ONS 15454 Reference Manual*, or the *Cisco ONS 15454 Procedure Guide*.

**Warning**

Hazardous voltage or energy may be present on the backplane when the system is operating. Use caution when servicing.

**Caution**

Always use the supplied electrostatic discharge (ESD) wristband when working with an ONS 15454 SONET/SDH. Plug the wristband cable into the ESD jack located on the lower right outside edge of the shelf assembly and ensure the shelf assembly is properly grounded.

FC_MR-4 cards have electrical plugs that plug into electrical connectors on the shelf assembly backplane. When the ejectors are fully closed, the card plugs into the shelf assembly backplane. [Figure 2](#) shows general card installation. The example shows the installation in an ONS 15454. The procedure in an ONS 15454 SDH is identical.

Figure 2 Installing a card in an ONS 15454

Procedure: Install the FC_MR-4 Card

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- Step 1** Open the card ejectors.
- Step 2** Slide the card along the guide rails into the correct slot.
- Step 3** Close the ejectors.
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Procedure: Verify Turn Up of the FC_MR-4 Card

Follow the steps in this section to verify card turn up. If one or more of the Cisco Transport Controller (CTC) software screen conditions according to this procedure are not met, reinstall the card. Replace the unit if the faulty state persists.

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- Step 1** Verify that power is applied to the shelf assembly.
- Step 2** Verify the LED activity:
- The red FAIL LED turns on for 20 to 30 seconds. The ACT LED is amber for 3 to 5 seconds.
 - The red FAIL LED blinks for up to 2 minutes.
 - The FAIL and ACT LEDs blink once and turn off for 1 to 5 seconds.
 - The ACT LED turns on.



Note If the red FAIL LED does not turn on, check the power.



Note If you insert a card into a slot provisioned for a different card, all LEDs turn off.

- Step 3** Verify that the ACT or ACT/STBY LED is on. The signal fail (SF) LED can persist until all card ports connect to their far end counterparts and a signal is present.
- Step 4** When you have displayed Cisco Transport Controller (CTC) on your workstation, verify that the card appears in the correct slot on the CTC node view. See the *Cisco ONS 15454 SDH Reference Manual*, the *Cisco ONS 15454 SDH Procedure Guide*, the *Cisco ONS 15454 Reference Manual*, or the *Cisco ONS 15454 Procedure Guide*.
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Related Documentation

- DOC-7815934= *Cisco ONS 15454 Procedure Guide*
- DOC-7815981= *Cisco ONS 15454 Reference Manual*
- DOC-7815982= *Cisco ONS 15454 Troubleshooting Guide*
- DOC-7815983= *Cisco ONS 15454 SDH Procedure Guide*
- DOC-7815988= *Cisco ONS 15454 SDH Reference Manual*
- DOC-7815989= *Cisco ONS 15454 SDH Troubleshooting Guide*

Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

International Cisco websites can be accessed from this URL:

http://www.cisco.com/public/countries_languages.shtml

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:
<http://www.cisco.com/en/US/partner/ordering/index.shtml>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Cisco Optical Networking Product Documentation CD-ROM

Optical networking-related documentation, including Cisco ONS 15454 product documentation, is available in a CD-ROM package that ships with your product. The Optical Networking Product Documentation CD-ROM is updated periodically and may be more current than printed documentation.

Documentation Feedback

You can submit e-mail comments about technical documentation to bug-doc@cisco.com.

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Customer Document Ordering
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

Cisco TAC Website

The Cisco TAC website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year. The Cisco TAC website is located at this URL:

<http://www.cisco.com/tac>

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

<http://tools.cisco.com/RPF/register/register.do>

Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer. The online TAC Case Open Tool is located at this URL:

<http://www.cisco.com/tac/caseopen>

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Go to this URL to visit the company store:
<http://www.cisco.com/go/marketplace/>
- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:
<http://cisco.com/univercd/cc/td/doc/pcat/>
- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:
<http://www.cisco.com/packet>
- *iQ Magazine* is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:
<http://www.cisco.com/go/iqmagazine>
- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:
<http://www.cisco.com/ipj>

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:
<http://www.cisco.com/en/US/learning/index.html>

