Preface

This preface describes the audience, new and changed information, organization, and conventions of the *Cisco ONS 15530 Hardware Installation Guide.* It also provides information about how to obtain related documentation and technical assistance.

The information contained in this document pertains to the entire range of hardware supported on the Cisco ONS 15530 platform. As new hardware and Cisco IOS software releases are made available for the Cisco ONS 15530 platform, verification of compatibility becomes extremely important. To ensure that your Cisco IOS software release supports your hardware, see the New and Changed Information section. Also refer to the “Hardware Supported” section of the latest release notes for the Cisco ONS 15530.

Audience

This guide is intended for experienced network administrators who are responsible for installing and maintaining the Cisco ONS 15530.

New and Changed Information

The table in this section lists and briefly describes the ongoing new and changed hardware features for the Cisco ONS 15530 by Cisco IOS software release. Additionally, it shows the location of the new feature information in this guide.

Feature	Release	Description	Location
4-channel tunable 10-Gbps ITU trunk card	12.2(26)SV	If the 10-Gbps ITU trunk cards are equipped with Universal Transponders (UT1) that have tunable lasers, the cards are programmable to one of the four supported frequencies belonging to one of the following bands: A, B, C, D, E, F, G, or H.	"10-Gbps ITU Tunable Trunk Cards" section on page 1-42
8-port multi-service muxponder	12.2(25)SV	The 8-port multi-service muxponder transports a mix of different protocols between sites in a metro DWDM network. The protocols that can be aggregated and transported range from high-speed services to low-speed services.	"8-Port Multi-Service Muxponders" section on page 1-33 "Installing SFPs into Aggregation Cards and Muxponders" section on page 2-18 "Installing SFP with Mini SMB Coax Connectors" section on page 2-18 "Connecting the 8-Port Multi-Service Muxponder" section on page 3-23 "8-Port Multi-Service Muxponder Specifications" section on page A-12 "SFP Specifications" section on page A-16
4-port 1-Gbps/2-Gbps FC aggregation card	12.2(23)SV	The Cisco ONS 15530 supports a 4-port 1-Gbps/2-Gbps FC aggregation card for Fibre Channel(FC), FICON, or ISC traffic.	"4-Port 1-Gbps/2-Gbps FC Aggregation Cards" section on page 1-27 "Connecting the 4-Port 1-Gbps/2-Gbps FC Aggregation Card" section on page 3-20 "4-Port 1-Gbps/2-Gbps FC Aggregation Card" section on page A-9
Variable rate SFP optics	12.1(12c)EV3	Variable rate SFP optics are available for the ESCON aggregation card and the 8-port FC/GE aggregation card.	"ESCON Aggregation Cards" section on page 1-25 "8-Port FC/GE Aggregation Cards" section on page 1-30
8-port FC/GE aggregation card	12.1(12c)EV	The Cisco ONS 15530 supports an 8-port Fibre Channel/Gigabit Ethernet aggregation card for FC and GE traffic.	"8-Port FC/GE Aggregation Cards" section on page 1-30 "Connecting the 8-Port FC/GE Aggregation Card" section on page 3-21

Feature	Release	Description	Location
2.5-Gbps ITU trunk cards	12.1(12c)EV	2.5-Gbps ITU trunk card sends and receives the ITU grid wavelength signal to and from an OADM module.	"2.5-Gbps ITU Trunk Cards" section on page 1-36 "Connecting the 2.5-Gbps ITU Trunk Card" section on page 3-24
Protection switch module	12.1(12c)EV	PSM (protection switch module) provides trunk fiber protection.	"PSMs" section on page 1-15 "Cabling PSMs" section on page 3-15

Organization

This guide describes how to install the Cisco ONS 15530 and is organized as follows:

Chapter	Title	Description
Chapter 1	Cisco ONS 15530 Overview	Describes the Cisco ONS 15530 chassis and its components
Chapter 2	Installing the Cisco ONS 15530	Describes how to install the Cisco ONS 15530 chassis and its components
Chapter 3	Connecting the Cisco ONS 15530	Describes how to install and route the cable connectors in the Cisco ONS 15530
Appendix A	Specifications	Lists the specifications for the Cisco ONS 15530 chassis and components

Conventions

This document uses the following conventions for notes, cautions, and safety warnings.

Convention	Application
boldface	Commands and keywords in body text.
italic	Command input that is supplied by the user.
[ ]	Keywords or arguments that appear within square brackets are optional.
{ x | x | x }	A choice of keywords (represented by x) appears in braces separated by vertical bars. The user must select one.
Ctrl	The control key. For example, where Ctrl + D is written, hold down the Control key while pressing the D key.
`screen font`	Examples of information displayed on the screen.

Convention	Application
`boldface screen font`	Examples of information that the user must enter.
< >	Command parameters that must be replaced by module-specific codes.

Notes and Cautions contain important information that you should be aware of.

Note Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Caution Means *reader be careful*. You are capable of doing something that might result in equipment damage or loss of data.

Safety warnings appear throughout this publication in procedures that, if performed incorrectly, may harm you. A warning symbol precedes each warning statement.

Warning **This warning symbol means *danger*. You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents. To see translations of the warnings that appear in this publication, refer to the *Regulatory Compliance and Safety Information* document that accompanied this device.**

Related Documentation

Refer to the following documents for additional information about the Cisco ONS 15530 system:

- *Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series*
- *Cisco ONS 15530 Planning Guide*
- *Cisco ONS 15530 Cleaning Procedures for Fiber Optic Connections*
- *Cisco ONS 15530 Optical Turn-Up and Test Guide*
- *Cisco ONS 15530 Configuration Guide*
- *Cisco ONS 15530 Command Reference*
- *Cisco ONS 15530 TL1 Command Reference*
- *Cisco ONS 15530 System Alarms and Error Messages*
- *Cisco ONS 15530 Troubleshooting Guide*
- *Network Management for the Cisco ONS 15530*
- *MIB Quick Reference for the Cisco ONS 15500 Series*
- *Cisco ONS 15530 Software Upgrade 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 at this URL:

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

You can access the Cisco website at this URL:

http://www.cisco.com

You can access international Cisco websites at this URL:

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

Documentation DVD

Cisco documentation and additional literature are available in a Documentation DVD package, which may have shipped with your product. The Documentation DVD is updated regularly and may be more current than printed documentation. The Documentation DVD package is available as a single unit.

Registered Cisco.com users (Cisco direct customers) can order a Cisco Documentation DVD (product number DOC-DOCDVD=) from the Ordering tool or Cisco Marketplace.

Cisco Ordering tool:

http://www.cisco.com/en/US/partner/ordering/

Cisco Marketplace:

http://www.cisco.com/go/marketplace/

Ordering Documentation

You can find instructions for ordering documentation at this URL:

http://www.cisco.com/univercd/cc/td/doc/es_inpck/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/

- 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 1 800 553-NETS (6387).

Documentation Feedback

You can send 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.

Cisco Product Security Overview

Cisco provides a free online Security Vulnerability Policy portal at this URL:

http://www.cisco.com/en/US/products/products_security_vulnerability_policy.html

From this site, you can perform these tasks:

- Report security vulnerabilities in Cisco products.
- Obtain assistance with security incidents that involve Cisco products.
- Register to receive security information from Cisco.

A current list of security advisories and notices for Cisco products is available at this URL:

http://www.cisco.com/go/psirt

If you prefer to see advisories and notices as they are updated in real time, you can access a Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed from this URL:

http://www.cisco.com/en/US/products/products_psirt_rss_feed.html

Reporting Security Problems in Cisco Products

Cisco is committed to delivering secure products. We test our products internally before we release them, and we strive to correct all vulnerabilities quickly. If you think that you might have identified a vulnerability in a Cisco product, contact PSIRT:

- Emergencies—security-alert@cisco.com
- Nonemergencies—psirt@cisco.com

Tip We encourage you to use Pretty Good Privacy (PGP) or a compatible product to encrypt any sensitive information that you send to Cisco. PSIRT can work from encrypted information that is compatible with PGP versions 2.*x* through 8.*x*.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one that has the most recent creation date in this public key server list:

http://pgp.mit.edu:11371/pks/lookup?search=psirt%40cisco.com&op=index&exact=on

In an emergency, you can also reach PSIRT by telephone:

- 1 877 228-7302
- 1 408 525-6532

Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, Cisco Technical Support provides 24-hour-a-day, award-winning technical assistance. The Cisco Technical Support Website on Cisco.com features extensive online support resources. In addition, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not hold a valid Cisco service contract, contact your reseller.

Cisco Technical Support Website

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

http://www.cisco.com/techsupport

Access to all tools on the Cisco Technical Support Website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a user ID or password, you can register at this URL:

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

Note Use the Cisco Product Identification (CPI) tool to locate your product serial number before submitting a web or phone request for service. You can access the CPI tool from the Cisco Technical Support Website by clicking the **Tools & Resources** link under Documentation & Tools. Choose **Cisco Product Identification Tool** from the Alphabetical Index drop-down list, or click the **Cisco Product Identification Tool** link under Alerts & RMAs. The CPI tool offers three search options: by product ID or model name; by tree view; or for certain products, by copying and pasting **show** command output. Search results show an illustration of your product with the serial number label location highlighted. Locate the serial number label on your product and record the information before placing a service call.

Submitting a Service Request

Using the online TAC Service Request Tool is the fastest way to open S3 and S4 service requests. (S3 and S4 service requests are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Service Request Tool provides recommended solutions. If your issue is not resolved using the recommended resources, your service request is assigned to a Cisco TAC engineer. The TAC Service Request Tool is located at this URL:

http://www.cisco.com/techsupport/servicerequest

For S1 or S2 service requests or if you do not have Internet access, contact the Cisco TAC by telephone. (S1 or S2 service requests are those in which your production network is down or severely degraded.) Cisco TAC engineers are assigned immediately to S1 and S2 service requests to help keep your business operations running smoothly.

To open a service request 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 list of Cisco TAC contacts, go to this URL:

http://www.cisco.com/techsupport/contacts

Definitions of Service Request Severity

To ensure that all service requests are reported in a standard format, Cisco has established severity definitions.

Severity 1 (S1)—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.

Severity 2 (S2)—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.

Severity 3 (S3)—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.

Severity 4 (S4)—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. Visit Cisco Marketplace, the company store, at this URL:

  http://www.cisco.com/go/marketplace/

- *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 at this URL:

  http://www.ciscopress.com

- *Packet* magazine is the Cisco Systems technical user magazine for maximizing Internet and networking investments. Each quarter, Packet delivers coverage of the latest industry trends, technology breakthroughs, and Cisco products and solutions, as well as network deployment and troubleshooting tips, configuration examples, customer case studies, certification and training information, and links to scores of in-depth online resources. You can access Packet magazine at this URL:

  http://www.cisco.com/packet

- *iQ Magazine* is the quarterly publication from Cisco Systems designed to help growing companies learn how they can use technology to increase revenue, streamline their business, and expand services. The publication identifies the challenges facing these companies and the technologies to help solve them, using real-world case studies and business strategies to help readers make sound technology investment decisions. 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

- World-class networking training is available from Cisco. You can view current offerings at this URL:

  http://www.cisco.com/en/US/learning/index.html