Preface

This preface describes the audience, organization, and conventions of the *Cisco ONS 15540 ESPx Hardware Installation Guide.* It also provides information on 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 15540 ESPx platform. As new hardware and Cisco IOS software releases are made available for the Cisco ONS 15540 ESPx platform, verification of compatibility becomes extremely important. To ensure that your hardware is supported by your release of Cisco IOS software, see the "New and Changed Information" section on page xii. Also refer to the "Hardware Supported" section of the latest release notes for the Cisco ONS 15540 ESPx.

Audience

This guide is intended for experienced network administrators who are responsible for installing and maintaining the Cisco ONS 15540 ESPx.

New and Changed Information

This section lists the new and changed information for the *Cisco ONS 15540 ESPx Hardware Installation Guide* for Cisco IOS Release 12.2S and later.

Feature	Release	Description	Location
Variable rate SFP optics	12.1(12c)EV3	Two new SFP optics that support a wide range of data rates.	"Type 2 Extended Range Transponder Modules with SFP Optics" section on page 1-22
Protection switch module (PSM)	12.1(12c)EV3	The main purpose of the protection switch module is to trigger trunk fiber protection after a trunk fiber has been cut.	"" section on page 1-16 "Cabling PSMs" section on page 3-10
Type 2 extended range transparent transponder module with selectable fixed rate SFP optics	12.1(10)EV	A transponder module that accepts selectable fixed-rate SFP optics supporting specfic protocol rates.	"Type 2 Extended Range Transponder Modules with SFP Optics" section on page 1-22 "Installing the Type 2 Extended Range Transponder Modules with SFP Optics" section on page 2-25 "Removing SFP Optics from the Type 2 Extended Range Transponders Modules" section on page 2-26

Organization

This guide describes how to install the Cisco ONS 15540 ESPx and is organized as follows:

Chapter	Title	Description
Chapter 1	Product Overview	Describes the Cisco ONS 15540 ESPx chassis and its components
Chapter 2	Installing the Cisco ONS 15540 ESPx	Describes how to install the Cisco ONS 15540 ESPx chassis and its components
Chapter 3	Connecting the Cisco ONS 15540 ESPx	Describes how to install and route the cables in the Cisco ONS 15540 ESPx
Appendix A	Specifications	Lists the specifications for the Cisco ONS 15540 ESPx chassis and components

Conventions

Notes use the following conventions:

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

Cautions use the following conventions:

Caution Means *caution should be taken*. Cautions contain information that is important to follow so as not to cause harm to the equipment.

Warnings use the following conventions:

Warning **IMPORTANT SAFETY INSTRUCTIONS**

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. Use the statement number provided at the end of each warning to locate its translation in the translated safety warnings that accompanied this device. Statement 1071

SAVE THESE INSTRUCTIONS

Related Documentation

Refer to the following documents for additional information about the Cisco ONS 15540 ESPx:

- *Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series*
- *Cisco ONS 15540 ESPx Planning Guide*
- *Cisco ONS 15540 ESPx Optical Transport Turn-Up and Test Guide*
- *Cisco ONS 15540 ESPx Cleaning Procedures for Fiber Optic Connections*
- *Cisco ONS 15540 ESPx Configuration Guide*
- *Cisco ONS 15540 ESPx Command Reference*
- *Cisco ONS 15540 ESPx TL1 Command Reference*
- *Cisco ONS 15540 ESPx System Alarms and Error Messages*
- *Cisco ONS 15540 ESPx Troubleshooting Guide*
- *Network Management for the Cisco ONS 15540 ESPx*
- *MIB Quick Reference for the Cisco ONS 15500 Series*

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_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/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).

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