



Preface

This section explains the objectives, intended audience, and organization of this publication and describes the conventions that convey instructions and other information.

This section provides the following information:

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Document Objectives

This guide explains the commands to configure and manage the Cisco ONS 15540 ESPx system. Use this guide in conjunction with the appropriate publications listed in the [Related Documentation](#) section.

Audience

To use this publication, you should be familiar with Cisco or equivalent optical transmission hardware and cabling, telecommunications hardware and cabling, electronic circuitry and wiring practices, and preferably have experience as a telecommunications technician.

Document Organization

This Cisco ONS 15540 ESPx Command Reference Guide is organized into the following chapters:

- [Chapter 1, “APS Commands,”](#) lists the commands to configure and monitor APS operations.
- [Chapter 2, “Debug Commands,”](#) lists the commands to debug the Cisco ONS 15540 ESPx.
- [Chapter 3, “Interface Configuration Commands,”](#) lists the commands to configure and monitor the interfaces on the Cisco ONS 15540 ESPx.
- [Chapter 4, “Online Diagnostics Commands,”](#) lists the commands to configure and monitor online diagnostic operations.
- [Chapter 5, “OSCP Commands,”](#) lists the commands to configure and monitor OSCP operations.
- [Chapter 6, “Processor Card Redundancy Commands,”](#) lists the commands to configure and monitor processor card redundancy operations.
- [Chapter 7, “SNMP Commands,”](#) lists the Cisco ONS 15540 ESPx-specific SNMP commands.
- [Chapter 8, “System Management Commands,”](#) lists the commands to manage your Cisco ONS 15540 ESPx.
- [Chapter 9, “Threshold Commands,”](#) lists the commands to configure and monitor interface alarm threshold operations.
- [Chapter 10, “Topology Neighbor Commands,”](#) lists the commands to configure and monitor network topology neighbors.

Related Documentation

Use this Cisco ONS 15540 ESPx Command Reference Guide in conjunction with the following referenced publications:

- *Regulatory Compliance and Safety Information for the Cisco ONS 15500 Series*
Provides the regulatory compliance and safety information for the Cisco ONS 15500 Series.
- *Cisco ONS 15540 ESPx Planning Guide*
Provides detailed information on the Cisco ONS 15540 ESPx architecture and functionality.
- *Cisco ONS 15540 ESPx Hardware Installation Guide*
Provides detailed information about installing the Cisco ONS 15540 ESPx.
- *Cisco ONS 15540 ESPx Optical Transport Turn-Up and Test Guide*
Provides acceptance testing procedures for Cisco ONS 15540 ESPx nodes and networks.
- *Cisco ONS 15540 ESPx Cleaning Procedures for Fiber Optic Connections*
Provides processes and procedures for cleaning the fiber optic connectors and component interfaces of the Cisco ONS 15540 ESPx.
- *Cisco ONS 15540 ESPx Configuration Guide*
Describes how to configure the Cisco ONS 15540 ESPx.
- *Cisco ONS 15540 ESPx System Alarms and Error Messages*
Describes the system alarms and error messages for the Cisco ONS 15540 ESPx.
- *Cisco ONS 15540 ESPx Troubleshooting Guide*

- Describes how to identify and resolve problems with the Cisco ONS 15540 ESPx.
- *Network Management for the Cisco ONS 15540 ESPx*
Provides information on the network management systems that support the Cisco ONS 15540 ESPx.
- *Cisco ONS 15540 ESPx TL1 Commands*
Provides a full TL1 command and autonomous message set including parameters, AIDs, conditions and modifiers for the Cisco ONS 15540 ESPx.
- *MIB Quick Reference for the Cisco ONS 15500 Series*
Describes the Management Information Base (MIB) objects and explains how to access Cisco public MIBs for the Cisco ONS 15500 Series.
- *Cisco ONS 15540 ESPx Software Upgrade Guide*
Describes how to upgrade system images and functional images on the Cisco ONS 15540 ESPx.
- *Introduction to DWDM Technology*
Provides background information on the dense wavelength division multiplexing (DWDM) technology.
- *Cisco IOS Configuration Fundamentals Configuration Guide*
Provides useful information on the CLI (command-line interface) and basic shelf management.

About the CLI

You can configure the Cisco ONS 15540 ESPx from the CLI (command-line interface) that runs on the system console or terminal, or by using remote access.

To use the CLI, your terminal must be connected to the Cisco ONS 15540 ESPx through the console port or one of the TTY lines. By default, the terminal is configured to a basic configuration, which should work for most terminal sessions.

About Cisco IOS Command Modes

The Cisco IOS user interface is divided into many different modes. The commands available to you depend on which mode you are currently in. To get a list of the commands available in a given mode, type a question mark (?) at the system prompt.

When you start a session on the system, you begin in user mode, also called EXEC mode. Only a limited subset of the commands are available in EXEC mode. To have access to all commands, you must enter privileged EXEC mode. Normally, you must type in a password to access privileged EXEC mode. From privileged mode, you can type in any EXEC command or access global configuration mode. Most of the EXEC commands are one-time commands, such as **show** commands, which show the current configuration status, and **clear** commands, which clear counters or interfaces. The EXEC commands are not saved across system reboots or across processor switchovers.

You can monitor and control the standby processor with commands entered on the active processor. A subset of EXEC and privileged EXEC commands are available through the standby processor console.



Note

You can easily determine if you are accessing the active or the standby processor: The standby processor has “sby-” prefixed to the command prompt.

The configuration modes allow you to make changes to the running configuration. If you later save the configuration, these commands are stored across system reboots. You must start at global configuration mode. From global configuration mode, you can enter interface configuration mode, subinterface configuration mode, and a variety of submodes.

ROM (read-only memory) monitor mode is a separate mode used when the system cannot boot properly. For example, your system or access server might enter ROM monitor mode if it does not find a valid system image when it is booting, or if its configuration file is corrupted at startup.

[Table 1](#) lists and describes the most commonly used modes, how to enter the modes, and the resulting system prompts. The system prompt helps you identify which mode you are in and, therefore, which commands are available to you.

Table 1 *Frequently Used IOS Command Modes*

Mode	Description of Use	How to Access	Prompt
User EXEC	To connect to remote devices, change terminal settings on a temporary basis, perform basic tests, and display system information.	Log in.	Switch>
Privileged EXEC (Enable)	To set operating parameters. The privileged command set includes the commands in user EXEC mode, as well as the configure command. Use this command to access the other command modes.	From the user EXEC mode, enter the enable command and the enable password.	Switch#
Global configuration	To configure features that affect the system as a whole.	From the privileged EXEC mode, enter the configure terminal command.	Switch(config)#
Interface configuration	To enable features for a particular interface. Interface commands enable or modify the operation of a port.	From global configuration mode, enter the interface type location command. For example, enter interface fastethernet 0	Switch(config-if)#
Line configuration	To configure the console port or VTY line from the directly connected console or the virtual terminal used with Telnet.	From global configuration mode, enter the line console 0 command to configure the console port, or the line vty line-number command to configure a VTY line.	Switch(config-line)#
Redundancy configuration	To configure system redundancy.	From global configuration mode, enter the redundancy command.	Switch(config-red)#
APS ¹ configuration	To configure APS redundancy features.	From redundancy configuration mode, enter the associate group command.	Switch(config-aps)#

Table 1 Frequently Used IOS Command Modes (continued)

Mode	Description of Use	How to Access	Prompt
Threshold list configuration	To configure alarm threshold list attributes and thresholds.	From the global configuration mode, enter the threshold-list command.	Switch(config-t-list)#
Threshold configuration	To configure alarm threshold attributes.	From threshold list configuration mode, enter the threshold command.	Switch(config-threshold)#

1. Automatic Protection Switching

The Cisco IOS command interpreter, called the EXEC, interprets and executes the commands you enter. You can abbreviate commands and keywords by entering just enough characters to make the command unique from other commands. For example, you can abbreviate the **show** command to **sh** and the **configure terminal** command to **conf t**.

When you type **exit**, the CLI backs out one command mode level. In general, typing **exit** returns you to global configuration mode. To exit configuration mode completely and return to privileged EXEC mode, press **Ctrl-Z** or **end**.

Listing Cisco IOS Commands and Syntax

In any command mode, you can get a list of available commands by entering a question mark (?).

```
Switch> ?
```

To obtain a list of commands that begin with a particular character sequence, type in those characters followed immediately by the question mark (?). Do not include a space. This form of help is called word help, because it lists the words for you.

```
Switch# c?
calendar cd clear clock configure
connect copy
```

To list keywords or arguments, enter a question mark in place of a keyword or argument. Include a space before the question mark. This form of help is called command syntax help, because it reminds you which keywords or arguments are applicable based on the command, keywords, and arguments you have already entered.

```
Switch# configure ?
memory          Configure from NV memory
network         Configure from a TFTP network host
overwrite-network Overwrite NV memory from TFTP network host
terminal        Configure from the terminal
<cr>
```

To redisplay a command you previously entered, press the Up-arrow key. You can continue to press the Up-arrow key to see more previously issued commands.



Tip

If you are having trouble entering a command, check the system prompt and enter the question mark (?) for a list of available commands. You might be in the wrong command mode or using incorrect syntax.

You can press **Ctrl-Z** or **end** in any mode to immediately return to privileged EXEC (enable) mode, instead of entering **exit**, which returns you to the previous mode.

Document Conventions

This publication uses the following conventions:

Convention	Application
boldface	Commands and keywords in body text.
<i>italic</i>	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.
boldface screen font	Examples of information that the user must enter.
< >	Command parameters that must be replaced by module-specific codes.



Note

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



Caution

Means *reader be careful*. In this situation, the user might do something that could result in equipment damage or loss of data.



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

Where to Find Safety and Warning Information

For safety and warning information, refer to the *Cisco Optical Transport Products Safety and Compliance Information* document that accompanied the product. This publication describes the international agency compliance and safety information for the Cisco ONS 15xxx systems. It also includes translations of the safety warnings that appear in the ONS 15xxx system documentation.

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/techsupport>

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

Product Documentation DVD

The Product Documentation DVD is a comprehensive library of technical product documentation on a portable medium. The DVD enables you to access multiple versions of installation, configuration, and command guides for Cisco hardware and software products. With the DVD, you have access to the same HTML documentation that is found on the Cisco website without being connected to the Internet. Certain products also have .PDF versions of the documentation available.

The Product Documentation DVD is available as a single unit or as a subscription. Registered Cisco.com users (Cisco direct customers) can order a Product Documentation DVD (product number DOC-DOCDVD= or DOC-DOCDVD=SUB) from Cisco Marketplace at this URL:

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

Cisco Optical Networking Product Documentation CD-ROM

Optical networking-related documentation, including Cisco ONS 15xxx 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.

Ordering Documentation

Registered Cisco.com users may order Cisco documentation at the Product Documentation Store in the Cisco Marketplace at this URL:

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

Nonregistered Cisco.com users can order technical documentation from 8:00 a.m. to 5:00 p.m. (0800 to 1700) PDT by calling 1 866 463-3487 in the United States and Canada, or elsewhere by calling 011 408 519-5055. You can also order documentation by e-mail at tech-doc-store-mkpl@external.cisco.com or by fax at 1 408 519-5001 in the United States and Canada, or elsewhere at 011 408 519-5001.

Documentation Feedback

You can rate and provide feedback about Cisco technical documents by completing the online feedback form that appears with the technical documents on Cisco.com.

You can submit comments about Cisco documentation 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 will find information about how to:

- 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, security notices, and security responses for Cisco products is available at this URL:

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

To see security advisories, security notices, and security responses as they are updated in real time, you can subscribe to the Product Security Incident Response Team Really Simple Syndication (PSIRT RSS) feed. Information about how to subscribe to the PSIRT RSS feed is found at 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 have identified a vulnerability in a Cisco product, contact PSIRT:

- For Emergencies only—security-alert@cisco.com

An emergency is either a condition in which a system is under active attack or a condition for which a severe and urgent security vulnerability should be reported. All other conditions are considered nonemergencies.

- For Nonemergencies—psirt@cisco.com

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

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



We encourage you to use Pretty Good Privacy (PGP) or a compatible product (for example, GnuPG) to encrypt any sensitive information that you send to Cisco. PSIRT can work with information that has been encrypted with PGP versions 2.x through 9.x.

Never use a revoked or an expired encryption key. The correct public key to use in your correspondence with PSIRT is the one linked in the Contact Summary section of the Security Vulnerability Policy page at this URL:

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

The link on this page has the current PGP key ID in use.

If you do not have or use PGP, contact PSIRT at the aforementioned e-mail addresses or phone numbers before sending any sensitive material to find other means of encrypting the data.

Obtaining Technical Assistance

Cisco Technical Support provides 24-hour-a-day award-winning technical assistance. The Cisco Technical Support & Documentation website on Cisco.com features extensive online support resources. In addition, if you have a valid Cisco service contract, Cisco Technical Assistance Center (TAC) engineers provide telephone support. If you do not have a valid Cisco service contract, contact your reseller.

Cisco Technical Support & Documentation Website

The Cisco Technical Support & Documentation 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, at this URL:

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

Access to all tools on the Cisco Technical Support & Documentation 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 & Documentation 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 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 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)—An existing 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 operations 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 the network is impaired, while 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.

- The *Cisco Product Quick Reference Guide* is a handy, compact reference tool that includes brief product overviews, key features, sample part numbers, and abbreviated technical specifications for many Cisco products that are sold through channel partners. It is updated twice a year and includes the latest Cisco offerings. To order and find out more about the Cisco Product Quick Reference Guide, go to this URL:

<http://www.cisco.com/go/guide>

- Cisco Marketplace provides a variety of Cisco books, reference guides, documentation, 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>

or view the digital edition at this URL:

<http://ciscoiq.texterity.com/ciscoiq/sample/>

- *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>

- Networking products offered by Cisco Systems, as well as customer support services, can be obtained at this URL:
<http://www.cisco.com/en/US/products/index.html>
- Networking Professionals Connection is an interactive website for networking professionals to share questions, suggestions, and information about networking products and technologies with Cisco experts and other networking professionals. Join a discussion at this URL:
<http://www.cisco.com/discuss/networking>
- 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>