



About Cisco IOS XR Software Documentation, Release 3.3

This document lists the describes the Cisco IOS XR software documentation and its objectives, audience, organization, and conventions. It also provides sources for obtaining documentation, technical assistance, and additional publications and information from Cisco Systems. The document sections are:

- [Changes to This Document, page 1](#)
- [Documentation Objectives, page 2](#)
- [Audience, page 2](#)
- [Organization of the Cisco IOS XR Software Release 3.3.0 Documentation, page 2](#)
- [Command References, page 3](#)
- [Configuration Guides, page 4](#)
- [Craft Works Interface Documents, page 5](#)
- [Supporting Documents, page 5](#)
- [Document Conventions, page 7](#)
- [Obtaining Documentation, page 8](#)
- [Documentation Feedback, page 9](#)
- [Cisco Product Security Overview, page 9](#)
- [Obtaining Technical Assistance, page 10](#)
- [Obtaining Additional Publications and Information, page 12](#)

Changes to This Document

Table 1 Changes to This Document

Revision	Date	Change Summary
OL-8523-02	July 2006	Added titles of new documents for multishelf systems.
OL-8523-01	April 2006	This document was first released.

Documentation Objectives

Cisco IOS XR software documentation describes the tasks and commands that are necessary to configure and maintain a router that is using Cisco IOS XR software.

Audience

The Cisco IOS XR software documentation is intended primarily for users who configure and maintain routers but who might be unfamiliar with the tasks, relationship between tasks, or Cisco IOS XR software commands necessary to perform particular tasks. The Cisco IOS XR software documentation is also for users who are experienced with Cisco IOS XR software and need to know about new features, configuration options, and characteristics of Release 3.3 software.

Organization of the Cisco IOS XR Software Release 3.3.0 Documentation

The Cisco IOS XR documentation set provides configuration guides, command references, and supporting documents. It differs from other Cisco software major releases in these respects:

- Documents are delivered online, in PDF and HTML formats, and are not orderable as printed books.
- Cisco IOS XR Release 3.3 provides online documents for each technology area.
- All command references present commands in alphabetical order.

Master Index

A master index of CLI commands lets you reach the description for any of the CLI user commands. The master index is tied to the command references and provides a quick way for you to find a command when you know the command name but not the module title that contains the command description. When you use this online index, you can click the page number for an index entry and then go to that page in the online command reference.

Supporting Documents and Resources

The following types of documents support Cisco IOS XR Software Release 3.3:

- [Command References, page 3](#)
- [Configuration Guides, page 4](#)
- [Craft Works Interface Documents, page 5](#)
- [Supporting Documents, page 5](#)

Command References

The following command references support the Cisco IOS XR software. (For a list of debug command references, see “[Supporting Documents](#)”.)

- *Cisco IOS XR Interface and Hardware Component Command Reference*—This reference provides command syntax and usage guidelines for the commands you use to configure physical and virtual interfaces and additional hardware component types. This document also includes commands that apply to Packet over SONET (POS)—which includes Synchronous Digital Hierarchy (SDH)—SONET/SDH, automatic protection switching (APS), Ethernet, null and loopback virtual interfaces, Tunnel-IPSec (but not Tunnel-TE, which is covered in *Cisco IOS XR MPLS Command Reference*), VLANs, bidirectional forwarding detect (BFD), BFD over VLAN bundles (on the Cisco IOS XR Router only in the current release), Netflow, and dense wave-division multiplexing (DWDM). This command reference also describes the commands that apply to the SPA interface processor (SIP) and the shared port adapter (SPA).
- *Cisco IOS XR Multicast Command Reference*—This reference provides command syntax and usage guidelines for the multicast routing protocols that include Protocol Independent Multicast (PIM), Internet Group Management Protocol (IGMP), and Multicast Source Discovery Protocol (MSDP).
- *Cisco IOS XR IP Addresses and Services Command Reference*—This reference provides command syntax and usage guidelines for the commands for the following technologies: Address Resolution Protocol (ARP), access control lists (ACLs), Cisco Express Forwarding (CEF), Dynamic Host Configuration Protocol (DHCP), local packet transport services (LPTS), network IPv4 and IPv6 stacks, prefix lists, quality of service (QoS), and transport stacks.
- *Cisco IOS XR Multiprotocol Label Switching Command Reference*—This reference provides command syntax and usage guidelines for the following Multiprotocol Label Switching (MPLS) facilities: Label Distributing Protocol (LDP); MPLS Resource Reservation Protocol (RSVP); MPLS Forwarding; MPLS Traffic Engineering (MPLS-TE); Generalized MPLS (GMPLS); and MPLS Optical-UNI (MPLS O-UNI).
- *Cisco IOS XR Routing Command Reference*—This reference provides command syntax and usage guidelines to configure and monitor Border Gateway Protocol (BGP), Intermediate System-to-Intermediate System (IS-IS), Open Shortest First Path (OSPF), Open Shortest First Path Version 3 (OSPFv3), Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol (RIP), Routing Information Base (RIB) routing protocols, and static routing.
- *Cisco IOS XR System Management Command Reference*—This reference has command syntax and usage guidelines for the following: alarm logs and logging correlation; Cisco Discovery Protocol (CDP); system logging; configuration management; fault management; file system manageability; Network Time Protocol (NTP); Simple Network Management Protocol (SNMP); software package management; terminal services; IP Service Level Agreements (IP SLAs); and performance, process, and memory management.
- *Cisco IOS XR System Security Command Reference*—This reference provides command syntax and usage guidelines for the following areas: Internet Key Exchange (IKE); IP Security (IPSec); Public Key Infrastructure (PKI); Secure Shell (SSH); Secure Socket Layer (SSL); authentication, authorization, and accounting (AAA); Software Authentication Manager (SAM); and secret keys and key chain management.
- *Cisco IOS XR Modular Quality of Service Command Reference*—This reference describes the commands used to display and configure quality of service (QoS) in Cisco IOS XR software.
- *Cisco IOS XR Session Border Controller Command Reference*—This reference describes the commands that support Session Border Controller (SBC) applications using Cisco IOS XR Software Release 3.3.

Configuration Guides

The following configuration guides support the Cisco IOS XR software documentation set:

- *Cisco IOS XR Interface and Hardware Component Configuration Guide*—This guide provides interface configuration and management information for Release 3.3. It describes a variety of global interfaces that are not described in individual guides: Packet over SONET (POS)—which also applies to Synchronous Digital Hierarchy (SDH), SONET/SDH, automatic protection switching (APS), Ethernet, null and loopback virtual interfaces, Tunnel-IPSec (but not Tunnel-TE, which is covered in *Cisco IOS XR MPLS Configuration Guide*), VLANs, bidirectional forwarding detect (BFD), BFD over VLAN bundles (on the Cisco IOS XR Router only in the current release), and management. It contains the information on how to configure the SPA interface processor (SIP) and the shared port adapter (SPA). SIPs and SPAs are carrier cards and port adapters that increase modularity, flexibility, and scalability across the Cisco Systems routers. This document also includes configuration guidance for using Netflow and dense wave-division multiplexing (DWDM).
- *Cisco IOS XR Multicast Configuration Guide*—This guide provides concepts and configuration tasks for the following technologies: PIM, IGMP, and MSDP.
- *Cisco IOS XR IP Addresses and Services Configuration Guide*—This guide provides concepts and configuration tasks for the following technologies: ARP, access control lists (ACLs), Cisco Express Forwarding (CEF), DHCP, local packet transport service (LPTS), network IPv4 and IPv6 stacks, prefix lists, QoS, and transport stacks.
- *Cisco IOS XR Multiprotocol Label Switching Configuration Guide*—This guide provides concepts and configuration tasks for the following Multiprotocol Label Switching (MPLS) facilities: Label Distributing Protocol (LDP); MPLS Resource Reservation Protocol (RSVP); MPLS Forwarding; MPLS Traffic Engineering (MPLS-TE); and MPLS Optical-UNI (MPLS O-UNI).
- *Cisco IOS XR Routing Configuration Guide*—This guide provides concepts and configuration tasks for the following technologies: BGP, IS-IS, OSPF, and RIB protocols and static routing.
- *Cisco IOS XR System Management Configuration Guide*—This guide has configuration tasks and concepts for the following technologies: alarm logs and logging correlation; CDP; logging services, fault management; NTP; performance management, physical and virtual terminals; SNMP; and IP Service Level Agreements (IP SLAs).
- *Cisco IOS XR System Security Configuration Guide*—This guide provides concepts and configuration tasks for the following technologies: IKE, IPSec, PKI, SSH, SSL, AAA, Key Chain Management, and SAM. It also defines a task ID and provides guidance on the use of task IDs for commands that require them.
- *Cisco IOS XR Modular Quality of Service Configuration Guide*—This guide describes the Cisco IOS XR Quality of Service (QoS) feature for prioritizing traffic flows and providing preferential forwarding for higher-priority packets. The QoS techniques described include allocating bandwidth, improving loss characteristics, avoiding and managing network congestion, metering network traffic, and setting traffic-flow priorities across the network.
- *Cisco IOS XR Session Border Controller Configuration Guide*—This guide describes the tasks that support Session Border Controller (SBC) applications using Cisco IOS XR Software Release 3.3.

Craft Works Interface Documents

The following Craft Works Interface documents support the Cisco IOS XR software:

- *Cisco Craft Works Interface Quick Start Guide*—This guide provides a brief overview of the Craft Works Interface (CWI) and describes procedures for setting up the router and CWI and for establishing a connection between the CWI and the router.
- *Cisco Craft Works Interface Configuration Applications Reference Guide*—This guide provides a description of configuration applications in the CWI, including detailed field descriptions.
- *Cisco Craft Works Interface Configuration Guide*—This guide provides a task-based overview on how to manage, monitor, configure, and troubleshoot a router that is running IOS XR software.
- *Cisco Craft Works Interface User Interface Guide*—This guide provides a description of CWI desktops, applications, menus, toolbars, status icons, dialog boxes, and application options and features. It includes procedures that are common to all applications within CWI.

Supporting Documents

The following documents support the Cisco IOS XR software documentation for Release 3.3:

- *Cisco IOS XR Getting Started Guide* for Release 3.3—This guide provides an introduction to the Cisco IOS XR software command-line interface (CLI) and describes basic router configuration and maintenance tasks, including package file upgrades and the procedure for online insertion and removal (OIR) of fabric cards.
- *Cisco IOS XR Command Modes Reference*—This reference defines each regular user mode in the CLI. One chapter lists and defines the modes in alphabetical order, and one chapter identifies the mode by the prompt.
- *Cisco CRS-1 Carrier Routing System Single-Shelf to Multishelf Upgrade Guide*—This guide describes the software aspects of upgrading from a single-shelf Cisco CRS-1 Router to a multishelf Cisco CRS-1 Router.
- *Cisco IOS XR XML API Guide*—This guide provides an overview of the Cisco IOS XR extensible markup language (XML) application programming interface (API). This API helps you develop external management applications for routers that run Cisco IOX XR software.
- *Release Notes for Cisco IOS XR Software Release 3.3*—These release notes describe new, changed, and unique characteristics of Release 3.3.
- *Upgrading from Cisco IOS to Cisco IOS XR Software on the Cisco 12000 Series Router*—This guide describes how to upgrade a router from Cisco IOS software to Cisco IOS XR software. It covers two cases: that of a router with one route processor (RP) and that of a router with dual RPs.
- *Converting Cisco IOS Configurations to Cisco IOS XR Configurations*—This guide describes how to convert Cisco IOS configurations to working Cisco IOS XR configurations. The prerequisite for configuration conversion is an understanding of Cisco IOS and Cisco IOS XR software.
- *Supported Platforms and Features for Cisco IOS XR Software*—This module briefly describes each platform that runs Cisco IOS XR software. It includes a list of features (by release) that indicates which platform supports a feature.
- *Cisco IOS XR System Error Message Guide*—This guide describes system error messages that Cisco IOS XR software can generate. Each entry contains an explanation and a resolution for the message.

- *Cisco IOS XR Security Guide*—This guide describes the security features built into the Cisco CRS-1 Carrier Routing System router (Cisco CRS-1 router) and the Cisco XR 12000 Series Routers. The emphasis is on software-based security provisions but also includes hardware support for security. This guide also describes a variety of common attacks that are attempted against a router or network and how to address attacks.
- *Cisco IOS, Cisco IOS XR, and Catalyst Operating System Software Release Notes*—These release notes provide instructions for finding release notes for Cisco IOS software, Cisco IOS XR software, and Cisco Catalyst Operating System Software. The instructions apply to viewing and obtaining DVDs. In addition, other useful sources are identified, such as for obtaining technical assistance.
- *Cisco IOS XR Diagnostics*—This book describes how to configure and run the integrated field diagnostics. These diagnostics can contribute to high network availability by allowing you to test and verify hardware operation in a live, operational network.
- *Cisco CRS-1 Carrier Routing System Single-Shelf to Multishelf Upgrade Guide*—This guide describes how to upgrade a single-shelf Cisco CRS-1 Carrier Routing System router to a Cisco CRS-1 Carrier Routing System Multishelf System.
- *Cisco IOS XR ROM Monitor Guide*—This guide presents configuration information and examples for using the ROM Monitor mode of the Cisco IOS XR software.
- *Using Debug Commands on Cisco IOS XR Software*—This guide describes how to use the debug commands to monitor system operation and troubleshoot problems based on error messages. It describes how to enter debug mode and other general information about debugging. Other, specific debug command references describe the commands for debugging specific features and facilities.
- *Cisco IOS XR Interface and Hardware Component Debug Command Reference*—This reference describes the commands you can use to debug interface and hardware components.
- *Cisco IOS XR Quality of Service Debug Command Reference*—This reference describes the commands you can use to debug the QoS software components.
- *Cisco IOS XR Routing Debug Command Reference*—This reference describes the commands you can use to debug the various routing protocols, including BGP, EIGRP, ISIS, OSPF, OSPFV3, RIB, RIP, and the static and utility routing commands.
- *Cisco IOS XR Multicast Debug Command Reference*—This reference describes commands you can use to debug the following multicast facilities: Inter Group Management Protocol (IGMP); Protocol Independent Multicast (PIM); Multicast Routing and Forwarding; and Multicast Library (MLIB), handling route, and interface programming from software MFIB to specific platform calls.
- *Cisco IOS XR Multiprotocol Label Switching Debug Command Reference*—This reference describes the commands you can use to debug the following MPLS features and facilities: MPLS Label Distributing Protocol (LDP); MPLS Resource Reservation Protocol (RSVP); MPLS Forwarding; MPLS Traffic Engineering (MPLS-TE); and MPLS Optical-UNI (MPLS O-UNI).
- *Cisco IOS XR Session Border Controller Debug Command Reference*—This reference describes the commands you can use to debug the SBC software components.
- *Cisco IOS XR System Security Debug Command Reference*—This reference describes the commands you can use to debug the System Security software components.
- *Cisco IOS XR IP Addresses and Services Debug Command Reference*—This reference describes the commands you can use to debug the IP addresses and services features.

Document Conventions

Cisco IOS XR documentation uses the following conventions:

Convention	Description
^ or Ctrl	The ^ and Ctrl symbols represent the Control key. For example, the key combination ^D or Ctrl-D means hold down the Control key while you press the D key. Keys are indicated in capital letters but are not case sensitive.
<i>string</i>	A string is a nonquoted set of characters shown in italics. For example, when setting an SNMP <i>community</i> string to <i>public</i> , do not use quotation marks around the string or the string will include the quotation marks.

Command syntax descriptions use the following conventions:

Convention	Description
bold	Bold text indicates commands and keywords that you enter literally as shown.
<i>italics</i>	Italic text indicates arguments for which you supply values.
[x]	Square brackets enclose an optional element (keyword or argument).
	A vertical line indicates a choice within an optional or required set of keywords or arguments.
[x y]	Square brackets enclose keywords or arguments separated by a vertical line to show optional choices.
{x y}	Braces enclosing keywords or arguments separated by a vertical line indicate a required choice.

Nested sets of square brackets or braces indicate optional or required choices within optional or required elements. For example:

Convention	Description
[x {y z}]	Braces and a vertical line within square brackets indicate a required choice within an optional element.

Examples use the following conventions:

Convention	Description
screen	Examples of information displayed on the screen are set in Courier font.
bold screen	Examples of text that you must enter are set in Courier bold font.
< >	Angle brackets enclose text that is not printed to the screen, such as passwords.
!	An exclamation point at the beginning of a line indicates a comment line. (Exclamation points are also displayed by the Cisco IOS XR software for certain processes.)
[]	Square brackets enclose default responses to system prompts.

The following conventions are used to attract the attention of the reader:



Caution

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



Note

Means *reader take note*. Notes contain helpful suggestions or references to materials not contained in this manual.



Timesaver

Means the *described action saves time*. You can save time by performing the action described in the paragraph.

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 defines four severities.

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 our 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 many 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 our offerings at this URL:

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

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