



Release Notes for Cisco 7000 Family for Cisco IOS Release 12.2 ZE

February 3, 2003

Cisco IOS Release 12.2(13)ZE

OL-1620-01

These release notes for the Cisco 7000 family describe the enhancements provided in Cisco IOS Release 12.2(13)ZE. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.2(13)ZE, see the [“Caveats for Cisco IOS Release 12.2 ZE” section on page 8](#) and *Caveats for Cisco IOS Release 12.2 T*. The caveats document is updated for every maintenance release and is located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* located on Cisco.com and the Documentation CD-ROM.

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System Requirements

This section describes the system requirements for Cisco IOS Release 12.2 B and includes the following sections:

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Memory Recommendations

Table 1 Images and Memory Recommendations for Cisco IOS Release 12.2(13)ZE

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco 7200 Series	IP Standard Feature Set	IP	c7200-is-mz	20 MB	128 MB	RAM
		IP IPSec 56	c7200-ik8s-mz	20 MB	128 MB	RAM
		IP IPSec 3DES	c7200-ik9s-mz	20 MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS	c7200-io3s-mz	20 MB	128 MB	RAM
		IP/FW/IDS IPSec 56	c7200-ik8o3s-mz	20 MB	128 MB	RAM
		IP/FW/IDS IPSec 3DES	c7200-ik9o3s-mz	20 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7200-js-mz	20 MB	128 MB	RAM
		Enterprise IPSec 56	c7200-jk8s-mz	20 MB	128 MB	RAM
		Enterprise IPSec 3DES	c7200-jk9s-mz	20 MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS	c7200-jo3s-mz	20 MB	128 MB	RAM
		Enterprise/FW/IDS IPSec 56	c7200-jk8o3s-mz	20 MB	128 MB	RAM
		Enterprise/FW/IDS IPSec 3DES	c7200-jk9o3s-mz	20 MB	128 MB	RAM
	Enterprise MCM Standard Feature Set	Enterprise MCM	c7200-jx2-m	20 MB	128 MB	RAM
	Desktop/IBM Standard Feature Set	Desktop/IBM	c7200-ds-mz	20 MB	128 MB	RAM
		Desktop/IBM IPSec 56	c7200-dk8s-mz	20 MB	128 MB	RAM
	Desktop/IBM Firewall Standard Feature Set	Desktop/IBM/FW/IDS	c7200-do3s-mz	20 MB	128 MB	RAM
		Desktop/IBM/FW/IDS IPSec 56	c7200-dk8o3s-mz	20 MB	128 MB	RAM
		Desktop/IBM/FW/IDS IPSec 3DES	c7200-dk9o3s-mz	20 MB	128 MB	RAM
	Enterprise SSG Standard Feature Set	Enterprise SSG	c7200-g4js-mz	20 MB	128 MB	RAM

Table 1 Images and Memory Recommendations for Cisco IOS Release 12.2(13)ZE (continued)

Cisco 7400 Series	IP Standard Feature Set	IP	c7400-is-mz	20 MB	128 MB	RAM
		IP IPSec 56	c7400-ik8s-mz	20 MB	128 MB	RAM
		IP IPSec 3DES	c7400-ik9s-mz	20 MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS	c7400-io3s-mz	20 MB	128 MB	RAM
		IP/FW/IDS IPSec 56	c7400-ik8o3s-mz	20 MB	128 MB	RAM
		IP/FW/IDS IPSec 3DES	c7400-ik9o3s-mz	20 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7400-js-mz	20 MB	128 MB	RAM
		Enterprise IPSec 56	c7400-jk8s-mz	20 MB	128 MB	RAM
		Enterprise IPSec 3DES	c7400-jk9s-mz	20 MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS	c7400-jo3s-mz	20 MB	128 MB	RAM
		Enterprise/FW/IDS IPSec 56	c7400-jk8o3s-mz	20 MB	128 MB	RAM
		Enterprise/FW/IDS IPSec 3DES	c7400-jk9o3s-mz	20 MB	128 MB	RAM
	Enterprise MCM Standard Feature Set	Enterprise MCM	c7400-jx2-m	20 MB	128 MB	RAM
	Desktop/IBM Standard Feature Set	Desktop/IBM	c7400-ds-mz	20 MB	128 MB	RAM
		Desktop/IBM IPSec 56	c7400-dk8s-mz	20 MB	128 MB	RAM
Desktop/IBM Firewall Standard Feature Set	Desktop/IBM/FW/IDS	c7400-do3s-mz	20 MB	128 MB	RAM	
	Desktop/IBM/FW/IDS IPSec 56	c7400-dk8o3s-mz	20 MB	128 MB	RAM	
	Desktop/IBM/FW/IDS IPSec 3DES	c7400-dk9o3s-mz	20 MB	128 MB	RAM	
Enterprise SSG Standard Feature Set	Enterprise SSG	c7400-g4js-mz	20 MB	128 MB	RAM	

Table 1 Images and Memory Recommendations for Cisco IOS Release 12.2(13)ZE (continued)

Cisco 7500 Series	IP Standard Feature Set	IP	rsp-isv-mz	20 MB	128 MB	RAM
		IP IPSec 56	rsp-ik8sv-mz	20 MB	128 MB	RAM
		IP IPSec 3DES	rsp-ik9sv-mz	20 MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS	rsp-io3sv-mz	20 MB	128 MB	RAM
		IP/FW/IDS IPSec 56	rsp-ik8o3sv-mz	20 MB	128 MB	RAM
		IP/FW/IDS IPSec 3DES	rsp-ik9o3sv-mz	20 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	rsp-jsv-mz	20 MB	128 MB	RAM
		Enterprise IPSec 56	rsp-jk8sv-mz	20 MB	128 MB	RAM
		Enterprise IPSec 3DES	rsp-jk9sv-mz	20 MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS	rsp-jo3sv-mz	20 MB	128 MB	RAM
		Enterprise/FW/IDS IPSec 56	rsp-jk8o3sv-mz	20 MB	128 MB	RAM
		Enterprise/FW/IDS IPSec 3DES	rsp-jk9o3sv-mz	20 MB	128 MB	RAM
	Desktop/IBM Standard Feature Set	Desktop/IBM	rsp-dsv-mz	20 MB	128 MB	RAM
		Desktop/IBM IPSec 56	rsp-dk8sv-mz	20 MB	128 MB	RAM
	Desktop/IBM Firewall Standard Feature Set	Desktop/IBM/FW/IDS	rsp-do3sv-mz	20 MB	128 MB	RAM
Desktop/IBM/FW/IDS IPSec 56		rsp-dk8o3sv-mz	20 MB	128 MB	RAM	
Desktop/IBM/FW/IDS IPSec 3DES		rsp-dk9o3sv-mz	20 MB	128 MB	RAM	

Supported Hardware

Cisco IOS Release 12.2(13)ZE supports the following Cisco 7000 family platforms:

- Cisco 7200 series routers
- Cisco 7400 series routers
- Cisco 7500 series routers

For detailed descriptions of the new hardware features, see the [“New and Changed Information”](#) section on page 6.

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco family router, log in to the Cisco family router and enter the **show version** EXEC command. The following sample **show version** command output is from a router running a Cisco 7200 series software image with Cisco IOS Release 12.2(13)ZE:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.2 ZE Software (c7200-is-mz), Version 12.2(13)ZE, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer to *Upgrading the Cisco IOS Software Release in Cisco Routers and Modems* located at:

http://www.cisco.com/warp/public/130/upgrade_index.shtml

New and Changed Information

The following is a list of the new hardware and software features supported by the Cisco 7000 family for Cisco IOS Release 12.2 ZE.

New Hardware Features in Cisco IOS Release 12.2(13)ZE

The following new hardware features are supported in Cisco IOS Release 12.2(13)ZE:

PA-POS-2OC3

The Cisco PA-POS-2OC3 port adapter provides two Packet-over-SONET (POS) ports in a single port adapter slot. The two ports function as either dual independent OC-3c/STM1 ports or a single port with automatic switchover. The Cisco PA-POS-2OC3 port adapter is used as a direct connection between the supported router or switch platform and external networks.

The Cisco PA-POS-2OC3 port adapter features include:

- Dual-port Packet-over-SONET capabilities with a single-width port adapter for the Cisco 7200VXR series routers (7204, 7206), Cisco 7401ASR router, and the Cisco 7500 series routers (7505, 7507, 7513)
- Single Product ID (PA-POS-2OC3), with configuration options for small form-factor pluggable (SFP) optic modules:
 - POM-OC3-MM (short range, multimode fiber)
 - POM-OC3-SMIR (intermediate range, single-mode fiber)
 - POM-OC3-SMLR (long range, single-mode fiber)
- Ability to use a combination of any two of the SFP modules
- Field-replaceable SFP optic modules
- Supports network processing and switching engines—NPE-400, NPE-G1, NSE-1 on the Cisco 7200VXR platform

- Supports network switching engine—NSE-1 on the Cisco 7401ASR router
- Supports versatile interface processors—VIP4-80 and VIP6-80 on the Cisco 7500 series routers
- Supports Cisco route switch processors—RSP 16 on the Cisco 7500 series routers
- Online insertion and removal (OIR) allowing you to remove, add, or replace a Cisco PA-POS-2OC3 when the system is online.
- Standards-compliant SONET/SDH interface; SONET/STS-3c and SDH/STM-1 framing and signaling overhead
- Full-duplex operation at 155 Mbps (half-duplex operation is not supported)
- Self-synchronous X⁴³+1 scrambling and descrambling of packets
- Support for 16- and 32-bit cyclic redundancy checking (CRC-16 and CRC-32)
- Single-mode or multimode fiber-optic cables capability



Note NPE-G1 is a supported processor in Cisco IOS Release 12.2(13)ZE.

New Software Features in Cisco IOS Release 12.2(13)ZE

There are no new software features supported in Cisco IOS Release 12.2(13)ZE:

MIBs

Current MIBs

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

Deprecated and Replacement MIBs

Old Cisco MIBs will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs without affecting existing Cisco IOS products or network management system (NMS) applications. You can update from deprecated MIBs to the replacement MIBs as shown in [Table 2](#).

Table 2 *Deprecated and Replacement MIBs*

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be determined
OLD-CISCO-DECNET-MIB	To be determined
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB

Table 2 *Deprecated and Replacement MIBs (continued)*

Deprecated MIB	Replacement
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be determined
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be determined
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be determined

Caveats for Cisco IOS Release 12.2 ZE

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*.

All caveats in Cisco IOS Release 12.2 are also in Cisco IOS Release 12.2 T.

For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*, which lists severity 1 and 2 caveats and select severity 3 caveats and is located on Cisco.com and the Documentation CD-ROM.

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

This section contains only open and resolved caveats for the current Cisco IOS maintenance release.

All caveats in Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T are also in Cisco IOS Release 12.2(13)ZE.

For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*.

For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*, which lists severity 1 and 2 caveats and select severity 3 caveats and is located on Cisco.com and the Documentation CD-ROM.



Note

If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, **log in** to Cisco.com and click **Service and Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to <http://www.cisco.com/support/bugtools/>.

Table 3 Caveats Reference for Cisco IOS Release 12.2 ZE

DDTS Number	Open in Release	Resolved in Release
CSCin32054		12.2(13)ZE

Open Caveats—Cisco IOS Release 12.2(13)ZE

This section documents possible unexpected behavior by Cisco IOS Release 12.2(13)ZE and describes only severity 1 and 2 caveats and select severity 3 caveats.

There are no known open caveats for Cisco IOS Release 12.2(13)ZE.

Resolved Caveats—Cisco IOS Release 12.2(13)ZE

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(13)ZE. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCin32054

On Cisco Series Router 7500, DCEF Performance is less than CEF Performance.

When traffic is pumped from one port of PA-2POS-OC3 to another port of PA-2POS-OC3, DCEF performance is less than the CEF performance.

There are no known workarounds.

Related Documentation

The following sections describe the documentation available for the Cisco 7000 family of routers. These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, and other documents.

Documentation is available as printed manuals or electronic documents.

Use these release notes with these documents:

- [Release-Specific Documents, page 10](#)
- [Platform-Specific Documents, page 10](#)
- [Feature Modules, page 11](#)
- [Cisco IOS Software Documentation Set, page 11](#)

Release-Specific Documents

For Use in T Train and Special Train Release Notes

The following documents are specific to Cisco IOS Release 12.2 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.2*

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Release Notes: Cisco IOS Release 12.2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Release Notes: Cisco IOS Release 12.2

- Product bulletins, field notices, and other release-specific documents on Cisco.com at:

Technical Documents

- *Caveats for Cisco IOS Release 12.2* and *Caveats for Cisco IOS Release 12.2 T*

As a supplement to the caveats listed in “[Caveats for Cisco IOS Release 12.2 ZE](#)” in these release notes, see *Caveats for Cisco IOS Release 12.2* and *Caveats for Cisco IOS Release 12.2 T*, which contains caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Release Notes: Caveats

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Caveats



Note

If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, log in to Cisco.com and click **Service & Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to <http://www.cisco.com/support/bugtools/bugtool.shtml>.

Platform-Specific Documents

These documents are available for the Cisco 7000 family of routers on Cisco.com and the Documentation CD-ROM:

- *Cisco 7000 Hardware Installation and Maintenance*
- *Cisco 7000 User Guide*
- *Cisco 7010 User Guide*
- *Cisco 7200 VXR Installation and Configuration Guide*
- Cisco 7200 VXR Quick Start Guide
- *Cisco 7202 Installation and Configuration Guide*

- *Cisco 7204 Installation and Configuration Guide*
- *Cisco 7206 Installation and Configuration Guide*
- Cisco 7206 Quick Start Guide
- Cisco 7401 ASR Installation and Configuration Guide
- Cisco 7401 ASR Quick Start Guide
- *Quick Reference for Cisco 7204 Installation*

Quick Start Guide Cisco 7100 Series VPN Router Change the paths in this section so they go to your platform-specific documents.

On Cisco.com at:

Technical Documents: Documentation Home Page: Core/High-End Routers

On the Documentation CD-ROM at:

Cisco Product Documentation: Core/High-End Routers

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.2(13)ZE and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference. As updates, the feature modules are available online only. Feature module information is incorporated in the next printing of the Cisco IOS documentation set.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: New Feature Documentation

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents. The Cisco IOS software documentation set is shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. Chapters in a configuration guide describe protocols, configuration tasks, and Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Configuration Guides and Command References

Cisco IOS Release 12.2 Documentation Set Contents

Table 4 lists the contents of the Cisco IOS Release 12.2 software documentation set, which is available in electronic form and in printed form if ordered.



Note

You can find the most current Cisco IOS documentation on Cisco.com and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2

Table 4 Cisco IOS Release 12.2 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> Cisco IOS Configuration Fundamentals Configuration Guide Cisco IOS Configuration Fundamentals Command Reference 	<ul style="list-style-type: none"> Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> Cisco IOS Bridging and IBM Networking Configuration Guide Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2 Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2 	<ul style="list-style-type: none"> Transparent Bridging SRB Token Ring Inter-Switch Link Token Ring Route Switch Module RSRB DLSW+ Serial Tunnel and Block Serial Tunnel LLC2 and SDLC IBM Network Media Translation SNA Frame Relay Access NCIA Client/Server Airline Product Set DSPU and SNA Service Point SNA Switching Services Cisco Transaction Connection Cisco Mainframe Channel Connection CLAW and TCP/IP Offload CSNA, CMPC, and CMPC+ TN3270 Server

Table 4 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • Cisco IOS Dial Technologies Configuration Guide: Dial Access • Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications • Cisco IOS Dial Technologies Command Reference, Volume 1 of 2 • Cisco IOS Dial Technologies Command Reference, Volume 2 of 2 	Dial Access Modem and Dial Shelf Configuration and Management ISDN Configuration Signaling Configuration Point-to-Point Protocols Dial-on-Demand Routing Dial Backup Dial Related Addressing Service Network Access Solutions Large-Scale Dial Solutions Cost-Control Solutions Internetworking Dial Access Scenarios
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	LAN Interfaces Serial Interfaces Logical Interfaces
<ul style="list-style-type: none"> • Cisco IOS IP Configuration Guide • Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services • Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols • Cisco IOS IP Command Reference, Volume 3 of 3: Multicast 	IP Addressing IP Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • Cisco IOS AppleTalk and Novell IPX Configuration Guide • Cisco IOS AppleTalk and Novell IPX Command Reference 	AppleTalk Novell IPX
<ul style="list-style-type: none"> • Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide • Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • Cisco IOS Voice, Video, and Fax Configuration Guide • <i>Cisco IOS Voice, Video, and Fax Command Reference</i> 	Voice over IP Call Control Signaling Voice over Frame Relay Voice over ATM Telephony Applications Trunk Management Fax, Video, and Modem Support
<ul style="list-style-type: none"> • Cisco IOS Quality of Service Solutions Configuration Guide • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms

Table 4 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • Cisco IOS Security Configuration Guide • <i>Cisco IOS Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options Supported AV Pairs
<ul style="list-style-type: none"> • Cisco IOS Switching Services Configuration Guide • Cisco IOS Switching Services Command Reference 	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> • Cisco IOS Wide-Area Networking Configuration Guide • Cisco IOS Wide-Area Networking Command <i>Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • Cisco IOS Mobile Wireless Configuration Guide • Cisco IOS Mobile Wireless Command Reference 	General Packet Radio Service
<ul style="list-style-type: none"> • Cisco IOS Terminal Services Configuration Guide • Cisco IOS Terminal Services Command Reference 	ARA LAT NAS1 Telnet TN3270 XRemote X.28 PAD Protocol Translation
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Guide Master Index</i> • <i>Cisco IOS Command Reference Master Index</i> • Cisco IOS Debug Command Reference • Cisco IOS Software System Error Messages • <i>New Features in 12.2-Based Limited Lifetime Releases</i> • New Features in Release 12.2 T • Release Notes (Release note and caveat documentation for 12.2-based releases and various platforms) 	

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

The most current Cisco documentation is available on the World Wide Web at <http://www.cisco.com>. Translated documentation can be accessed at http://www.cisco.com/public/countries_languages.shtml.

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Documentation Feedback

If you are reading Cisco products documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to bug-doc@cisco.com.

For your convenience, many documents contain a response card behind the front cover for submitting your comments by mail. Otherwise, you can mail your comments to the following address:

Cisco Systems, Inc.
Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

The following sections provide sources for obtaining technical assistance from Cisco Systems.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

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

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

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

Cisco.com registered users who cannot resolve a technical issue by using the TAC online resource can open a case online by using the TAC Case Open tool at the following website:

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

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

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

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section on page 9.

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