



Release Notes for Cisco Catalyst 4224 Access Gateway Switch for Cisco IOS Release 12.1(5)YI

January 21, 2002



Note

You can find the most current Cisco IOS documentation on Cisco.com. This set of electronic documents may contain updates and modifications made after the hard-copy documents were printed.

These release notes for the Cisco Catalyst 4224 Access Gateway Switch describe the software features provided in Cisco IOS Release 12.1(5)YI. These release notes are updated as needed.

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Introduction

The Cisco Catalyst 4224 Access Gateway Switch is an Ethernet switching router that provides Voice over IP (VoIP) gateway and IP telephony services. It is designed to be part of a centralized Cisco CallManager application.

System Requirements

This section describes the system requirements for Cisco IOS Release 12.1(5)YI and includes the following sections:

- [Memory Requirements, page 2](#)
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Memory Requirements

Table 1 Minimum Memory Recommendations for the Cisco Catalyst 4224 Access Gateway Switch

Platforms	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco c4224	IP Plus (standard)	c4224-isx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / FW	c4224-io3sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / IPsec 56	c4224-isx356i-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / IPsec 56 / FW	c4224-io3sx356i-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / 3DES	c4224-ik2sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / 3DES / FW	c4224-ik2o3sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / FW	c4224-io3sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / FW / IPX / SNA	c4224-a3intro3sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus	c4224-isx3-mz	32 MB Flash	64 MB DRAM	RAM
IP Plus / IPX / SNA	c4224-a3inrsx3-mz	32 MB Flash	64 MB DRAM	RAM	

Table 2 Minimum Memory Recommendations for the Cisco Catalyst 4224 Access Gateway Switch —Crypto Images

Platforms	Image Name	Crypto Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco c4224	IP Plus / FW / 3DES	c4224-ik2o3sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / FW / IPSEC 56	c4224-io3sx356i-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / FW / IPX / SNA / IPSEC 56	c4224-a3inro3sx356i-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / FW / IPX / SNA / 3DES	c4224-a3inrk2o3sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / 3DES	c4224-ik2sx3-mz	32 MB Flash	64 MB DRAM	RAM
	IP Plus / IPSEC 56	c4224-isx356i-mz	32 MB Flash	64 MB DRAM	RAM

Hardware Supported

Cisco IOS Release 12.1(5)YI supports:

- Cisco Catalyst 4224 Access Gateway Switch

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco Catalyst 4224 Access Gateway Switch, log in to the Cisco Catalyst 4224 Access Gateway Switch and enter the **show version** EXEC command:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.1(5) Software (c4224-isx3-mz), Version 12.1(5)YI, RELEASE SOFTWARE
```

New and Changed Information

The following sections list the new hardware and software features in Cisco IOS Release 12.1(5)YI.

New Hardware Features in Cisco IOS Release 12.1(5)YI

Cisco IOS Release 12.1(5)YI supports the Catalyst 4224 Access Gateway Switch.

New Software Features in Cisco IOS Release 12.1(5)YI

Cisco IOS Release 12.1(5)YI supports:

- Novell Internetwork Packet Exchange (IPX) protocol

Novell IPX is derived from the Xerox Network Systems (XNS) Internet Datagram Protocol (IDP). The Cisco implementation of the Novell IPX protocol is certified to provide full IPX routing functionality, and it includes support for the following features:

- IPX MIB (currently, read-only access is supported)
- IPX Enhanced IGRP, with automatic redistribution, increased network width, and incremental SAP updates.
- Routing IPX between Ethernet-emulated LANs and Token Ring-emulated LANs
- Routing IPX between VLANs
- IPX Multilayer Switching (MLS)

For details on how to configure IPX protocol, refer to the following documentation, available online at Cisco.com:

- *Cisco IOS AppleTalk and Novell IPX Configuration Guide, Release 12.1*

Available on Cisco.com at

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/atipx_c/index.htm

- *Cisco IOS AppleTalk and Novell IPX Command Reference, Release 12.*

Available on Cisco.com at

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/atipx_r/index.htm

- IBM Systems Network Architecture (SNA) protocol

Many enterprise organizations have networks that are based on IBM mainframes and Systems Network Architecture (SNA). The Cisco bridging and IBM networking technologies enable the delivery of SNA data over routers supporting TCP/IP. For details on how to configure SNA protocol, refer to the following documentation:

- *Cisco IOS Bridging and IBM Networking Configuration Guide, Release 12.1*

Available on Cisco.com at

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/ibm_c/index.htm

- *Cisco IOS Bridging and IBM Networking Command Reference, Release 12.1, Vol. 1*

Available on Cisco.com at

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/ibm_r/index.htm

- *Cisco IOS Bridging and IBM Networking Command Reference, Release 12.1, Vol. II*

Available on Cisco.com at

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121cgcr/ibm_r2/index.htm

Limitations and Restrictions

The following MIBs are supported:

- SNMP MIB-II
- ENTITY-MIB
- IF-MIB
- BRIDGE-MIB

The following Cisco proprietary MIBs are supported:

- CISCO-PROCESS-MIB
- CISCO-MEMORY-POOL-MIB
- CISCO-CDP-MIB

The following MIB will be supported later:

- CISCO-STACK-MIB

Important Notes

This section contains important information about Cisco IOS Release 12.1(5)YI that applies to the Cisco Catalyst 4224 Access Gateway Switch:

- Half-duplex mode for bisync tunneling (BSTUN) is not supported for this release.
- The 12.1(5)YI release supersedes the 12.1(5)YE releases for the C4224. However, unless you intend to use the SNA functionality provided by the YI release and are currently running the latest 12.1(5)YE5 release, you do not need to upgrade at this time.

Bug Fixes In Cisco IOS Release 12.1(5)YI

The following reported bugs have been fixed or resolved in Cisco IOS Release 12.1(5)YI:

- CSCdu63189
Extraneous error message.
- CSCdw24120
Broadcom driver changes for SNA.
- CSCdw25153
dlsu support for c4224.

Related Documentation

The following sections describe the documentation available for the Cisco Catalyst 4224 Access Gateway Switch. These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, feature modules, and other documents.

Documentation is available as printed manuals or electronic documents, except for feature modules, which are available online on Cisco.com and the Documentation CD-ROM.

Use these release notes with these documents:

- [Platform-Specific Documents, page 6](#)
- [Cisco IOS Software Documentation Set, page 7.](#)

Platform-Specific Documents

These documents are available for the Cisco Catalyst 4224 Access Gateway Switch on Cisco.com and the Documentation CD-ROM:

- *Switch Software Documentation, Release 5.5*
- *Catalyst 4000 Family Release Notes*
- *Catalyst 4000 Family Installation & Configuration Notes*
- *Site Preparation and Safety Guide*
- *Troubleshooting Tips*

On Cisco.com at:

Technical Documents: Documentation Home Page: Multilayer LAN Switches: Catalyst 4000 Family Switches: Installation and Configuration Notes

On the Documentation CD-ROM at:

Cisco Product Documentation: Multilayer LAN Switches: Catalyst 4000 Family Switches: Installation and Configuration Notes

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.1(5)YI and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the features, benefits, and configuration tasks as well as 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: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation

Feature Navigator

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a particular set of features and which features are supported in a particular Cisco IOS image.

Feature Navigator is available 24 hours a day, 7 days a week. To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, e-mail the Contact Database Administration group at cdbadmin@cisco.com. If you do not have an account on Cisco.com, go to <http://www.cisco.com/register> and follow the directions to establish an account.

To use Feature Navigator, you must have a JavaScript-enabled web browser such as Netscape 3.0 or later, or Internet Explorer 4.0 or later. Internet Explorer 4.0 always has JavaScript enabled. To enable JavaScript for Netscape 3.x or Netscape 4.x, follow the instructions provided with the web browser. For JavaScript support and enabling instructions for other browsers, check with the browser vendor.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. You can access Feature Navigator at the following URL:

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

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: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References

Cisco IOS Release 12.1 Documentation Set Contents

[Table 3](#) lists the contents of the Cisco IOS Release 12.0 software documentation set, [Table 4](#) lists the contents of the Cisco IOS Release 12.1 software documentation set, and [Table 5](#) lists the contents of the Cisco IOS Release 12.2 software documentation set. These documents are 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: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1

Table 3 Cisco IOS Release 12.0 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> • <i>Configuration Fundamentals Configuration Guide</i> • <i>Configuration Fundamentals Command Reference</i> 	<ul style="list-style-type: none"> Configuration Fundamentals Overview Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> • <i>Bridging and IBM Networking Configuration Guide</i> • <i>Bridging and IBM Networking Command Reference</i> 	<ul style="list-style-type: none"> Bridging and IBM Networking Overview Bridging IBM Networking

Table 3 Cisco IOS Release 12.0 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> <i>Dial Solutions Configuration Guide</i> 	Overview of Interfaces, Controllers, and Lines Used for Dial Access Configuring Modem Support and Other Asynchronous Devices Managing Modems Configuring Terminal Operating Characteristics for Dial-In Sessions Setting Up ISDN Basic Rate Service Configuring Synchronous Serial Ports Configuring Channelized E1 and T1 Configuring ISDN Special Signaling Configuring X.25 on ISDN Using A0/D1 Configuring AppleTalk Remote Access Preparing for Asynchronous DDR Configuring Asynchronous PP and SLIP Configuring the Bandwidth Allocation Control Protocol Configuring PPP Callback for DDR Configuring ISDN Caller ID Callback Configuring Dial Backup for Dialer Profiles Configuring Dial Backup Using Dialer Watch Configuring Dial Backup for Serial Lines Configuring Peer-to-Peer DDR with Dialer Profiles Configuring DialOut Enterprise Dial Scenarios and Configurations Configuring Easy IP Deciding and Preparing to Configure DDR Configuring Legacy DDR Hubs Configuring Multichassis Multilink PPP Configuring Support For NASI Clients to Access Network Resources Dial Networking Business Applications Configuring the Cisco PAD Per-User Configuration Configuring Media-Independent PPP and Multilink PPP Configuring Protocol Translation and Virtual Asynchronous Devices Establishing a Reverse Telenet Session to a Modem Configuring Snapshot Routing Telco and ISP Dial Scenarios and Configurations Configuring Legacy DDR Spokes Configuring Dial-In Terminal Services Configuring V.120 Access Configuring Virtual Private Dialup Networks Configuring Virtual Profiles Configuring Virtual Template Interfaces Configuring X.25 on ISDN

Table 3 Cisco IOS Release 12.0 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Dial Solutions Command Reference</i> 	Dial-In Port Setup Dial-In Terminal Service and Remote Node Configuration Dial-on-Demand Routing Dial Backup Dial-Out Modem Pooling Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Dialup Networks Other Network Traffic on ISDN Channels Dial-Related Addressing Services
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	Interface Configuration Overview LAN Interfaces Serial Interfaces Logical Interfaces
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 1</i> • <i>Network Protocols Command Reference, Part 1</i> 	IP Overview IP Addressing and Services IP Routing Protocols
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 2</i> • <i>Network Protocols Command Reference, Part 2</i> 	AppleTalk and Novell IPX Overview AppleTalk Novell IPX
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	Network Protocols Overview Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	Security Overview Authentication, Authorization, and Accounting (AAA) Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Other Security Features
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Services Overview Cisco IOS Switching Paths Cisco Express Forwarding NewFlow Switching Tag Switching Multilayer Switching Multicast Distributed Switching Virtual LANs MPOA Commands
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	Wide-Area Network Overview ATM Frame Relay SMDS X.25 and LAPB

Table 3 *Cisco IOS Release 12.0 Documentation Set (continued)*

Books	Major Topics
<ul style="list-style-type: none"> • <i>Voice, Video, and Home Applications Configuration Guide</i> • <i>Voice, Video, and Home Applications Command Reference</i> 	Using Voice, Video, and Home Applications Voice Video Broadband
<ul style="list-style-type: none"> • <i>Quality of Service Solutions Configuration Guide</i> • <i>Quality of Service Solutions Command Reference</i> 	Quality of Service Overview Classification Congestion Management Congestion Avoidance Policy and Shaping Overview Signaling Link Efficiency Mechanisms
<ul style="list-style-type: none"> • <i>Caveats</i> (Caveat documentation for Cisco IOS Releases 12.0 and 12.0 T—includes open and resolved severity 1 and 2 caveats for all platforms) • <i>Cisco IOS Release 12.0 Configuration Guide Master Index</i> • <i>Cisco IOS Release 12.0 Command Reference Master Index</i> • <i>Cisco IOS Release 12.0 Master Indexes</i> • <i>Cisco IOS Software Command Summary</i> • <i>Cisco IOS Software System Error Messages</i> • <i>Debug Command Reference</i> • <i>Dial Solutions Quick Configuration Guide</i> • <i>New Features in 12.0-Based Limited Lifetime Releases</i> • <i>New Features in Early Deployment Release 12.0T</i> • <i>Release Notes</i> (Release notes for 12.0-based releases and various platforms) 	

Table 4 Cisco IOS Release 12.1 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> • <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	Configuration Fundamentals Overview Cisco IOS User Interfaces Cisco IOS File Management Cisco IOS System Management Cisco IOS User Interfaces Commands Cisco IOS File Management Commands Cisco IOS System Management Commands
<ul style="list-style-type: none"> • <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume I</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume II</i> 	Using Cisco IOS Software Overview of SNA Internetworking Bridging IBM Networking
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Services Configuration Guide: Terminal Services</i> • <i>Cisco IOS Dial Services Configuration Guide: Network Services</i> • <i>Cisco IOS Dial Services Command Reference</i> 	Preparing for Dial Access Modem Configuration and Management ISDN and Signaling Configuration PPP Configuration Dial-on-Demand Routing Configuration Dial-Backup Configuration Terminal Service Configuration Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Interworking Dial Access Scenarios
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces
<ul style="list-style-type: none"> • <i>Cisco IOS IP and IP Routing Configuration Guide</i> • <i>Cisco IOS IP and IP Routing Command Reference</i> 	IP Addressing and Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i> 	AppleTalk and Novell IPX Overview Configuring AppleTalk Configuring Novell IPX
<ul style="list-style-type: none"> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</i> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</i> 	Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Overview Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring ISO CLNS Configuring XNS

Table 4 *Cisco IOS Release 12.1 Documentation Set (continued)*

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Multiservice Applications Configuration Guide</i> • <i>Cisco IOS Multiservice Applications Command Reference</i> 	Multiservice Applications Overview Voice Video Broadband
<ul style="list-style-type: none"> • <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	Quality of Service Overview Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms Quality of Service Solutions
<ul style="list-style-type: none"> • <i>Cisco IOS Security Configuration Guide</i> • <i>Cisco IOS Security Command Reference</i> 	Security Overview Authentication, Authorization, and Accounting (AAA) Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Other Security Features
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Services Overview Cisco IOS Switching Paths Cisco Express Forwarding NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	Wide-Area Networking Overview Configuring ATM Configuring Frame Relay Configuring Frame Relay-ATM Interworking Configuring SMDS Configuring X.25 and LAPB
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Guide Master Index</i> • <i>Cisco IOS Command Reference Master Index</i> • <i>Cisco IOS Debug Command Reference</i> • <i>Cisco IOS Dial Services Quick Configuration Guide</i> • <i>Cisco IOS Software System Error Messages</i> • New Features in 12.1-Based Limited Lifetime Releases • New Features in Release 12.1 T • Release Notes (Release note and caveat documentation for 12.1-based releases and various platforms) 	

Table 5 *Cisco IOS Release 12.2 Documentation Set*

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> • <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> • <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2</i> 	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 NCI/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
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Technologies Configuration Guide: Dial Access</i> • <i>Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications</i> • <i>Cisco IOS Dial Technologies Command Reference, Volume 1 of 2</i> • <i>Cisco IOS Dial Technologies Command Reference, Volume 2 of 2</i> 	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"> • <i>Cisco IOS IP Configuration Guide</i> • <i>Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services</i> • <i>Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols</i> • <i>Cisco IOS IP Command Reference, Volume 3 of 3: Multicast</i> 	IP Addressing IP Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i> 	AppleTalk Novell IPX

Table 5 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</i> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</i> 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Cisco IOS Voice, Video, and Fax Configuration Guide</i> • <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"> • <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms
<ul style="list-style-type: none"> • <i>Cisco IOS Security Configuration Guide</i> • <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"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • <i>Cisco IOS Mobile Wireless Configuration Guide</i> • <i>Cisco IOS Mobile Wireless Command Reference</i> 	General Packet Radio Service

Table 5 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> Cisco IOS Terminal Services Configuration Guide Cisco IOS Terminal Services Command Reference 	ARA LAT NASI Telnet TN3270 XRemote X.28 PAD Protocol Translation
<ul style="list-style-type: none"> Cisco IOS Configuration Guide Master Index Cisco IOS Command Reference Master Index Cisco IOS Debug Command Reference Cisco IOS Software System Error Messages New Features in 12.2-Based Limited Lifetime Releases 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 explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following URL:

<http://www.cisco.com>

Translated documentation is available at the following URL:

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

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped 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 through 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, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

If you are reading Cisco product documentation on Cisco.com, you can submit technical comments electronically. Click **Leave Feedback** at the bottom of the Cisco Documentation home page. After you complete the form, print it out and fax it to Cisco at 408 527-0730.

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

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

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

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you to

- Streamline business processes and improve productivity
- Resolve technical issues with online support

- Download and test software packages
- Order Cisco learning materials and merchandise
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You can self-register on Cisco.com to obtain customized information and service. To access Cisco.com, go to the following URL:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two types of support are available through the Cisco TAC: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Inquiries to Cisco TAC are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

Which Cisco TAC resource you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

The Cisco TAC Web Site allows you to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to the following URL:

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

All customers, partners, and resellers who have a valid Cisco services contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to the following URL to register:

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

If you cannot resolve your technical issues by using the Cisco TAC Web Site, and you are a Cisco.com registered user, you can open a case online by using the TAC Case Open tool at the following URL:

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

If you have Internet access, it is recommended that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses issues that are classified as priority level 1 or priority level 2; these classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer will automatically open a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to the following URL:

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

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled; for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). In addition, please have available your service agreement number and your product serial number.

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

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