



Release Notes for Cisco AS5350 Universal Gateway for Cisco IOS Release 12.1 XQ

February 18, 2002
Cisco IOS Release 12.1(3) XQ4
78-11551-02 Rev. F0

These release notes for the Cisco AS5350 universal gateway describe the enhancements provided in Cisco IOS Release 12.1(3) XQ4. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.1(3) XQ4, see *Caveats for Cisco IOS Release 12.1*. 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 12.1* located on Cisco.com and the Documentation CD-ROM.

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Introduction

The Cisco AS5350 is a 2 T1/E1/PRI 1RU universal-port ready gateway targeted for small to mid-sized ISPs and enterprises requiring innovative remote access.

For information on new features and Cisco IOS commands supported by Cisco IOS Release 12.1(3) XQ4, see the [“New and Changed Information” section on page 5](#) and the [“Related Documentation” section on page 9](#).

System Requirements

This section describes the system requirements for Cisco IOS Release 12.1 XQ:

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

[Table 1](#) lists the memory recommendations for the Cisco AS5350.

Table 1 *Memory Recommendations for the Cisco AS5350 Universal Gateway*

Image Name	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
IP Plus	c5350-is-mz	32 MB	128 MB	RAM
Enterprise Plus	c5350-js-mz	32 MB	128 MB	RAM

Supported Hardware

Cisco IOS Release 12.1(3) XQ4 supports the Cisco AS5350. [Table 2](#) lists the interfaces and supported dial feature cards.

For detailed descriptions of the new hardware features, see the [“New and Changed Information” section on page 5](#).

Table 2 *Supported Interfaces for the Cisco AS5350*

Interfaces and Dial Feature Cards	Product Description
Dial Feature Cards	AS535-DFC-60NP
LAN Interfaces	Fast Ethernet 10/100BaseT (RJ-45)
WAN Interface Options	2PRI CT1/CE1 DFC Two 8MB Serial ports

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco AS5350, log in to the Cisco AS5350 and enter the **show version EXEC** command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.1 Software (c5350-is-mz), Version 12.1(3) XQ4, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer to *Software Installation and Upgrade Procedures* located at the following URL:

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

Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features.



Caution

Cisco IOS images with strong encryption (including, but not limited to, 168-bit Triple Data Encryption Standard [3DES] data encryption feature sets) are subject to United States government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay because of United States government regulations. When applicable, the purchaser and user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

[Table 3](#) lists the features and feature sets supported by the Cisco AS5350 in Cisco IOS Release 12.1(3) XQ4 and uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, (1) means a feature was introduced in 12.1(1) XD.



Note

This table might not be cumulative or list all the features in each image. You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hardcopy documents were printed. If you have a Cisco.com login account, you can find image and release information regarding features prior to Cisco IOS Release 12.1(3) XQ4 by using the Feature Navigator tool at: <http://www.cisco.com/go/fn>.

Table 3 Feature List by Feature Set for the Cisco AS5350

Feature	In ¹	Software Images by Feature Set	
		IP Plus	Enterprise Plus
Airline Protocol (UTS)		Yes	Yes
Annex G (X.25 over Frame Relay)		Yes	Yes
Cisco IOS DHCP Server		Yes	Yes
Cisco IOS IEEE 802.1Q Support		Yes	Yes
Committed Access Rate (CAR)		Yes	Yes
DLSw RSVP Bandwidth Reservation		Yes	Yes
DNS based X.25 routing		Yes	Yes
DSLw+ Ethernet Redundancy		Yes	Yes
Dialer profiles		Yes	Yes
Dynamic Multiple Encapsulation for Dial-in over ISDN		Yes	Yes
Frame Relay End-to-End Keepalive		Yes	Yes
H.323 Version 2 Support		Yes	Yes
IP Multicast Multilayer Switching		Yes	Yes
IPX Infrastructure Enhancements		No	Yes
IS-IS Multiarea Support		No	Yes
ISDN LAPB-T		Yes	Yes
ISDN MIB RFC 2127		Yes	Yes
Layer 2 Tunneling Protocol		Yes	Yes
MBGP/MSDP		Yes	Yes
MPLS on GSR		No	Yes
NextPort Port Service Management for the Cisco AS5350 Universal Gateway	(3)	Yes	Yes
OSPF Packet Pacing		Yes	Yes
OS_IFSS		Yes	Yes
Preauthentication with ISDN PRI and Channel-Associated Signaling	(3)	Yes	Yes
RIP		Yes	Yes
Cisco SS7/CCS7 Dial Access Solution System Integration Guidelines, Release 2		Yes	Yes
Subnetwork Bandwidth Manager (SBM)		Yes	Yes
TDM Hairpinning		Yes	Yes
TG/COS		No	Yes
Tag Switching (MPLS)		No	Yes

Table 3 Feature List by Feature Set for the Cisco AS5350 (continued)

Feature	In ¹	Software Images by Feature Set	
		IP Plus	Enterprise Plus
Virtual Console		Yes	Yes
WCCP		Yes	Yes

1. The number in the “In” column indicates the Cisco IOS release in which the interface was introduced. For example, (1) means that an interface was introduced in Cisco IOS Release 12.1(1) XD. If a cell in this column is empty, the interface was included in the initial base release.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco AS5350 for Cisco IOS Release 12.1(3) XQ4.

New Hardware and Software Features in Cisco IOS Release 12.1(3)XQ4

No new hardware and software feature are supported by the Cisco AS5350 for Cisco IOS Release 12.1(3) XQ4.

New Hardware and Software Features in Cisco IOS Release 12.1(3)XQ3

No new hardware and software feature are supported by the Cisco AS5350 for Cisco IOS Release 12.1(3) XQ3.

New Hardware and Software Features in Cisco IOS Release 12.1(3)XQ2

No new hardware and software feature are supported by the Cisco AS5350 for Cisco IOS Release 12.1(3) XQ2.

New Hardware and Software Features in Cisco IOS Release 12.1(3)XQ1

No new hardware and software feature are supported by the Cisco AS5350 for Cisco IOS Release 12.1(3) XQ1.

New Hardware Features in Cisco IOS Release 12.1(3)XQ

There are no new hardware features in the Cisco AS5350 for Cisco IOS Release 12.1(3)XQ.

New Software Features in Cisco IOS Release 12.1(3)XQ

The following new software feature is supported by the Cisco AS5350 for Cisco IOS Release 12.1(3)XQ:

Managing Port Services on the Cisco AS5350 Universal Gateway

The Managing Port Services feature implements port service management for the Cisco AS5350 universal gateway using the NextPort dial feature card (DFC). The NextPort DFC is a hardware card that processes digital service port technology for the Cisco AS5350. The ports on the NextPort DFC support both modem and digital services. Ports can be aggregated at the slot level of the NextPort module, the Service Processing Element (SPE) level within the NextPort module, and the individual port level. A port is defined as an endpoint on a DFC card through which multiservice tones and data flow.

Instead of the traditional line/modem one-to-one correspondence, lines are mapped to an SPE that resides on the Cisco AS5350 NextPort DFC. Each SPE provides modem services for six ports. Busyout and shutdown can be configured at the SPE or port level. The NextPort DFC introduces the slot and SPE software hierarchy.

Limitations and Restrictions

The MICA and microcom modems are not supported on the Cisco AS5350. Only modem and digital services are supported by using the NextPort dial feature card.

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/netgmt/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 4](#).

Table 4 *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

Table 4 *Deprecated and Replacement MIBs (continued)*

Deprecated MIB	Replacement
OLD-CISCO-DECNET-MIB	To be determined
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
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

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 12.1 and Cisco IOS Release 12.1 T are also in Cisco IOS Release 12.1(3) XQ4.

For information on caveats in Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T*.

For information on caveats in Cisco IOS Release 12.1, see *Caveats for Cisco IOS Release 12.1*, which lists severity 1 and 2 caveats and select severity 3 caveats for Cisco IOS Release 12.1 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, go to Cisco.com and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools/>.

Open Caveats—Cisco IOS Release 12.1(3) XQ4

There are no open caveats specific to Cisco IOS Release 12.1(3) XQ4 that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.1(3) XQ4

All the caveats listed in this section are resolved in Cisco IOS Release 12.1(3) XQ4. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdw65903

An error can occur with management protocol processing. Please use the following URL for further information:

<http://www.cisco.com/cgi-bin/bugtool/onebug.pl?bugid=CSCdw65903>

Open Caveats for Release 12.1(3) XQ3

There are no open caveats for Cisco IOS Release 12.1(3) XQ3 that require documentation.

Resolved Caveats for Release 12.1(3) XQ3

All the caveats listed in this section are resolved in Cisco IOS Release 12.1(3) XQ3. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCds04747

Cisco IOS software contains a flaw that permits the successful prediction of TCP Initial Sequence Numbers.

This vulnerability is present in all released versions of Cisco IOS software running on Cisco routers and switches. It only affects the security of TCP connections that originate or terminate on the affected Cisco device itself; it does not apply to TCP traffic forwarded through the affected device in transit between two other hosts.

To remove the vulnerability, Cisco is offering free software upgrades for all affected platforms. The defect is described in DDTS record CSCds04747.

Workarounds are available that limit or deny successful exploitation of the vulnerability by filtering traffic containing forged IP source addresses at the perimeter of a network or directly on individual devices.

This notice will be posted at <http://www.cisco.com/warp/public/707/ios-tcp-isn-random-pub.shtml>.

This caveat is resolved in Cisco IOS Release 12.1(3) XQ3.

- CSCds36317

When virtual private dial-up network (VPDN) calls are made, the Cisco AS5350 will reload unexpectedly. There is no workaround.

This is resolved in Cisco IOS Release 12.1(3) XQ3.

Related Documentation

The following sections describe the documentation available for the Cisco AS5350. 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 9](#)
- [Feature Modules, page 10](#)
- [Feature Navigator, page 10](#)
- [Cisco IOS Software Documentation Set, page 11](#)

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.1 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.1*

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: Release Notes: Cross-Platform Release Notes

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

Technical Documents

- *Caveats for Cisco IOS Release 12.1 XQ*

See *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.1 and Cisco IOS Release 12.1 T.

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Release Notes: Caveats

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: 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, go to Cisco.com and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools/>.

Platform-Specific Documents

These documents will be available for the Cisco AS5350 on Cisco.com and the Documentation CD-ROM when the hardware FCS ships:

- *Cisco AS5350 Universal Gateway Chassis Installation Guide*
- *Cisco AS5350 Universal Gateway Card Installation Guide*
- *Cisco AS5350 Universal Gateway Regulatory Compliance and Safety Information*
- *Cisco AS5350 Universal Gateway Software Configuration Guide*

On Cisco.com at:

Technical Documents: Documentation Home Page: Access Servers and Access Routers: Access Servers: Cisco AS5350

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5350

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.1 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: 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 Java Script 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 that are 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 two books: a configuration guide and a corresponding command reference. Chapters in a configuration guide describe protocols, configuration tasks, 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 and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

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 5 describes the contents of the Cisco IOS Release 12.1 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: 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 5 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> 	<ul style="list-style-type: none"> Cisco IOS User Interfaces Cisco IOS File Management Cisco IOS 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 I</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume II</i> 	<ul style="list-style-type: none"> 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> 	<ul style="list-style-type: none"> Preparing for Dial Access Modem Configuration and Management ISDN and Signalling 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> 	<ul style="list-style-type: none"> 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> 	<ul style="list-style-type: none"> 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> 	<ul style="list-style-type: none"> 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> 	<ul style="list-style-type: none"> Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Overview Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring ISO CLNS Configuring XNS
<ul style="list-style-type: none"> • <i>Cisco IOS Multiservice Applications Configuration Guide</i> • <i>Cisco IOS Multiservice Applications Command Reference</i> 	<ul style="list-style-type: none"> Multiservice Applications Overview Voice Video Broadband

Table 5 Cisco IOS Release 12.1 Documentation Set (continued)

Books	Major Topics
<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 Signalling 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 MPLS 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>New Features in 12.1-Based Limited Lifetime Releases</i> • <i>New Features in Release 12.1 T</i> • Release Notes (Release note and caveat documentation for 12.1-based releases and various platforms) • <i>Cisco IOS Debug Command Reference</i> • <i>Cisco IOS Dial Services Quick Configuration Guide</i> 	

Obtaining Documentation

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

World Wide Web

You can access the most current Cisco documentation 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 product 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.

To submit your comments by mail, for your convenience many documents contain a response card behind the front cover. 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

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. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

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/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users 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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