



Release Notes for Cisco AS5200 Universal Access Servers for Cisco IOS Release 12.0

January 2, 2001



Note

You can find the most current Cisco IOS documentation on Cisco Connection Online (CCO). These electronic documents may contain updates and modifications made after the hardcopy documents were printed.

These release notes for Cisco AS5200 universal access servers support Cisco IOS Release 12.0(15). These release notes are updated to describe new memory requirements, hardware support, software platform deferrals, and changes to the microcode or modem code and related documents.

For a list of the software caveats that apply to Cisco IOS Release 12.0, see *Caveats for Cisco IOS Release 12.0* that accompanies these release notes. The caveats document is updated for every maintenance release and is located on Cisco Connection Online (CCO) and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.0* on CCO and the Documentation CD-ROM.

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Introduction

Cisco AS5200 universal access servers are multifaceted data communications platforms that provide the functions of access servers, routers, modems, and terminal adapters (TAs) in a modular chassis. Mid-sized organizations or service providers requiring centralized processing capabilities for mobile users and telecommuters will benefit the most by using Cisco AS5200 universal access servers.

With their optimization for high-speed modem access, Cisco AS5200 universal access servers are ideally suited for all traditional dial-up applications, such as host access, electronic mail, file transfer, and dial-in access to a local area network.

For information on new features and Cisco IOS commands supported by Cisco IOS Release 12.0(15), see the “New and Changed Information” section on page 7 and the “Related Documentation” section on page 9.

System Requirements

This section describes the system requirements for Cisco IOS Release 12.0:

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Memory Recommendations

Table 1 lists the memory recommendations for the Cisco AS5200.

Table 1 *Memory Recommendations for the Cisco AS5200 Universal Access Servers*

Feature Sets	Images Names	Images	Flash Memory Recommended	DRAM Memory Recommended	Release 12.0 Runs from
IP	IP	c5200-i-1	8 MB	8 MB	FLASH
	IP Plus	c5200-is-1	8 MB	8 MB	FLASH
IP/IPX/AT/DEC	IP/IPX/AT/DEC	c5200-d-1	16 MB	8 MB	FLASH
	IP/IPX/AT/DEC Plus	c5200-ds-1	16 MB	8 MB	FLASH
Enterprise	Enterprise	c5200-j-1	16 MB	8 MB	FLASH
	Enterprise Plus	c5200-js-1	16 MB	8 MB	FLASH

Hardware Supported

Cisco IOS Release 12.0 supports the Cisco AS5200. Table 2 lists the interfaces, network modules, and data rates supported by the Cisco AS5200.

For detailed descriptions of the new hardware features, see the “New and Changed Information” section on page 7.

Table 2 Supported Interfaces for the Cisco AS5200 Universal Access Servers

Interface, Network Module, or Data Rate	Product Description
LAN Interfaces	1-port Ethernet (AUI), up to 10 Mbps
	MultiChannel Interface (Channelized E1/T1)
WAN Data Rates	48/56/64 kbps
	1.544/2.048 Mbps
WAN Interfaces and Network Modules	56K 12-port network module
	6-Port MICA network modules and carrier cards
	Channelized E1
	Channelized T1
	Dual T1/PRI and E1/PRI feature cards
	E1-G.703/G.704
	EIA-530 connection, balanced, up to 4 Mbps
	EIA/TIA-232 connection, up to 64 kbps
	EIA/TIA-449 connection, balanced and unbalanced, up to 2 Mbps
	2-port High Speed Serial Interface
	ISDN PRI
	V.110 12-Port network modules
	V.35 connection, up to 48 kbps
X.21 connection, balanced	

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco AS5200, log in to the Cisco AS5200 and enter the **show version EXEC** command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.0 Software (c5200-d-1), Version 12.0(15), RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Cisco IOS Upgrade Ordering Instructions* located at:

http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957_pp.htm

Modem Code Software

Cisco IOS Release 11.2 and later releases, including Release 12.0, include bundled modem code for the Cisco AS5200, which is the firmware or portware that runs on the Microcom 12-port and MICA 6-port modem cards. Modem code is bundled with the Cisco IOS software image to eliminate the need to store separate modem code. When the Cisco AS5200 is turned on, the Cisco IOS software unpacks the modem code and loads the proper code on the modem cards. Table 3 lists the current modem code versions.



Note

The Cisco factory could have installed a later version of modem code than the one bundled with the Cisco IOS software. The factory installs modem code in Flash memory and maps that code to the modems.

For information about installing Microcom 12-port modem cards and how Cisco IOS software uses Microcom modem code, see *Installing 56K 12-Port Modem Modules in Cisco AS5200 Universal Access Servers* and the *Cisco AS5200 Universal Access Server Software Configuration Guide*. For information about installing MICA 6-port modem cards and how Cisco IOS software uses MICA modem code, see *Installing 6-Port MICA Modules and Carrier Cards in Cisco AS5200 Universal Access Servers* and the *Cisco AS5300 Universal Access Server Software Configuration Guide*.

The *Cisco IOS Software Upgrade Planner* on CCO contains information about downloading software. To access this document from CCO, click **Login** on the CCO home page to access all information. From the CCO home page, go to the Service & Support area menu, click **Software Center**, then **Cisco IOS Software** or **IOS Upgrade Planner**.

The modem code release notes are on CCO and the Documentation CD-ROM.

On CCO at:

Technical Documents: Documentation Home Page: Access Servers and Access Routers: Firmware and Portware Information

On the Documentation CD-ROM at:

Access Servers and Access Routers: Firmware and Portware Information: Cisco AS5200

Additional information regarding Cisco IOS software compatibility is located in *Cisco AS5X00 MICA 6-Port and 12-Port Modem Module Portware/Cisco IOS Software Compatibility Matrixes* at:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/as5200/as52mfw/cm/mca6port.htm

Microcom firmware compatibility issues are discussed in *56K Digital 12-Port Modem Module Compatibility Matrix (56K Modem) for Cisco AS5200/AS5300* at:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/5300/mod_info/cm/56k12prt.htm

Table 3 **Current Bundled Modem Code Version**

Modem Code Modules	Current Bundled Modem Code Version	Cisco IOS Software Releases
MICA Portware (V.110)	2.7.1.0	Release 12.0(5)T and later
Microcom Firmware (56K, V.90)	5.1.20	Release 12.0(5)T and later

**Note**

The Cisco factory could have installed a later version of modem code than the one bundled with the Cisco IOS software. When this happens, the factory installs modem code in Flash memory and maps that code to the modems. Unless you fully understand how Cisco IOS software uses modem code, it is important to keep the factory configuration.

Feature Set Table

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 (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 due to United States government regulations. When applicable, purchaser/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 4 lists the features and feature sets supported by the Cisco AS5200 in Cisco IOS Release 12.0 and uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.

**Note**

This feature set table might contain a selected list of features. This table might not be cumulative or list all the features in each image.

Table 4 Feature List by Feature Set for the Cisco AS5200

Features	Software Images by Feature Sets					
	IP	IP Plus	IP/IPX/AT/DEC	IP/IPX/AT/DEC Plus	Enterprise	Enterprise Plus
IBM Support						
Bridging Code Rework	Yes	Yes	Yes	Yes	Yes	Yes
RIF Passthru in DLSw+	No	No	No	No	Yes	Yes
IP Routing						
IP Type of Service and Precedence for GRE Tunnels	Yes	Yes	Yes	Yes	Yes	Yes
OSPF Point to Multipoint	Yes	Yes	Yes	Yes	Yes	Yes
Per User DNS	Yes	Yes	Yes	Yes	No	No
Management						
Cisco IOS File System	Yes	Yes	Yes	Yes	Yes	Yes
Entity MIB	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 Feature List by Feature Set for the Cisco AS5200 (continued)

Features	Software Images by Feature Sets					
	IP	IP Plus	IP/IPX/AT/DEC	IP/IPX/AT/DEC Plus	Enterprise	Enterprise Plus
Expression MIB	Yes	Yes	Yes	Yes	Yes	Yes
Conditionally Triggered Debugging	Yes	Yes	Yes	Yes	Yes	Yes
Show Caller	Yes	Yes	Yes	Yes	No	No
SNMP Inform Request	No	No	No	No	Yes	No
SNMP Manager	Yes	Yes	Yes	Yes	Yes	Yes
VPDN MIB and Syslog Facility	No	Yes	No	Yes	Yes	Yes
Multimedia						
Protocol-Independent Multicasts (PIM) Version 2	Yes	Yes	Yes	Yes	Yes	Yes
Scalability						
Airline Product Set (ALPS)	Yes	Yes	Yes	Yes	Yes	Yes
Security						
Additional Vendor-Proprietary RADIUS Attributes	Yes	Yes	Yes	Yes	Yes	No
Authenticating ACLs	Yes	Yes	Yes	Yes	Yes	Yes
Automated Double Authentication	Yes	Yes	Yes	Yes	Yes	Yes
MS-CHAP Support	No	No	No	No	Yes	Yes
Named Method Lists for AAA Authentication & Accounting	Yes	Yes	Yes	Yes	Yes	Yes
Subblock Phase 1	Yes	Yes	Yes	Yes	Yes	Yes
WAN Optimization						
DRP Server Agent Enhancement	Yes	Yes	No	Yes	Yes	No
WAN Services						
Always On/Dynamic ISDN (AO/DI)	No	No	No	No	Yes	Yes
ATM E.164 Auto Conversion	Yes	Yes	Yes	Yes	Yes	Yes
Dialer Watch	Yes	Yes	Yes	Yes	Yes	Yes
Layer 2 Tunneling Protocol	No	Yes	No	Yes	No	No
Microsoft Point-to-Point (MPPC)	Yes	Yes	Yes	Yes	Yes	Yes
MS Callback	Yes	Yes	Yes	Yes	Yes	Yes
Multiple ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 Feature List by Feature Set for the Cisco AS5200 (continued)

Features	Software Images by Feature Sets					
	IP	IP Plus	IP/IPX/AT/DEC	IP/IPX/AT/DEC Plus	Enterprise	Enterprise Plus
National ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes
Signaling System 7	No	Yes	No	Yes	No	No
Stackable Home Gateway	No	Yes	No	Yes	Yes	Yes

New and Changed Information

The following is a list the new hardware and software features categories supported by the Cisco AS5200 for Cisco IOS Release 12.0. These categories are broken down by feature in Table 4.

- IBM Support
- IP Routing
- Management
- Multimedia
- Scalability
- Security
- WAN Optimization
- WAN Services

MIBs

Current MIBs

If you have an account with CCO, you can find the current list of MIBs supported by Cisco. To reach the Cisco Network Management Toolkit, **Login** to CCO and click **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Deprecated and Replacement MIBs

Old Cisco Management Information Bases (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 NMS applications. You can update from deprecated MIBs to the replacement MIBs as shown in Table 5.

Table 5 *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 decided
OLD-CISCO-DECNET-MIB	To be decided
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 decided
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 decided
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be decided



Note

Cisco Management Information Base (MIB) User Quick Reference is no longer published. If you have an account with CCO, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit*, go to CCO, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

Important Notes

The following sections contain important notes about Cisco IOS Release 12.0(15) that can apply to the Cisco AS5200.

Caveat CSCdr91706 and IOS HTTP Vulnerability

A defect in multiple releases of Cisco IOS software will cause a Cisco router or switch to halt and reload if the IOS HTTP service is enabled, browsing to `http://router-ip/anytext?/` is attempted, and the enable password is supplied when requested. This defect can be exploited to produce a denial of service (DoS) attack.

The vulnerability, identified as Cisco bug ID CSCdr91706, affects virtually all mainstream Cisco routers and switches running Cisco IOS software releases 12.0 through 12.1, inclusive. This is not the same defect as CSCdr36952.

The vulnerability has been corrected and Cisco is making fixed releases available for free to replace all affected IOS releases. Customers are urged to upgrade to releases that are not vulnerable to this defect as shown in detail below.

This vulnerability can only be exploited if the enable password is known or not set.

You are strongly encouraged to read the complete advisory, which is available at <http://www.cisco.com/warp/public/707/ioshttpserverquery-pub.shtml>.

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.

For information on caveats in Cisco IOS Release 12.0, see *Caveats for Cisco IOS Release 12.0*, which lists severity 1 and 2 caveats and select severity 3 caveats for Cisco IOS Release 12.0 and is located on CCO and the Documentation CD-ROM.



Note

If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to CCO 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>.

Related Documentation

The following sections describe the documentation available for the Cisco AS5200. These documents consist of hardware and software installation guides, Cisco IOS configuration 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
- Platform-Specific Documents, page 10
- Cisco IOS Software Documentation Set, page 11

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.0 and are located on CCO and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.0*

On CCO at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Release Notes: Cross-Platform Release Notes

- Product bulletins, field notices, and other release-specific documents on CCO at:

Technical Documents

- *Caveats for Cisco IOS Release 12.0*

See *Caveats for Cisco IOS Release 12.0*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.0.

On CCO at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Caveats

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Caveats



Note

If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to CCO 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 are available for the Cisco AS5200 on CCO and the Documentation CD-ROM:

- *Cisco AS5200 Universal Access Server Installation Guide*
- *Cisco AS5200 Universal Access Server Software Configuration Guide*
- *Cisco AS5200 Universal Access Server Manager Guide*
- *Port Information*—Firmware/portware release notes, configuration notes, command references, frequently asked questions (FAQs)
- *Regulatory Compliance and Safety Information for the Cisco AS5200 Universal Access Server*
- Documentation for Spare Parts—Install and replacement procedures for port modules, feature cards, carrier cards, memory modules, power supply, ROM monitor ROMs
- *Cisco IOS Software*
- *Cisco AS5200 Universal Access Server Quick Start Guide (with Fast Step)*

On CCO at:

Technical Documents: Documentation Home Page: Cisco Product Documentation: Access Servers and Routers: Access Server: Cisco AS5200

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5200

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 CCO and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

On CCO at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References

Cisco IOS Release 12.0 Documentation Set

Table 6 describes the contents of the Cisco IOS Release 12.0 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 CCO and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.

On CCO at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0

Table 6 Cisco IOS Software Release 12.0 Documentation Set

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Configuration Fundamentals Configuration Guide</i> • <i>Configuration Fundamentals Command Reference</i> 	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> 	Transparent Bridging Source-Route Bridging Token Ring Inter-Switch Link Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN Cisco Database Connection NCIA Client/Server Topologies Cisco Mainframe Channel Connection Airline Product Set
<ul style="list-style-type: none"> • <i>Dial Solutions Configuration Guide</i> • <i>Dial Solutions Command Reference</i> 	X.25 over ISDN Appletalk Remote Access Asynchronous Callback, DDR, PPP, SLIP Bandwidth Allocation Control Protocol ISDN Basic Rate Service ISDN Caller ID Callback PPP Callback for DDR Channelized E1 & T1 Dial Backup for Dialer Profiles Dial Backup Using Dialer Watch Dial Backup for Serial Lines Peer-to-Peer DDR with Dialer Profiles DialOut Dial-In Terminal Services Dial-on-Demand Routing (DDR) Dial Backup Dial-Out Modem Pooling Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Dialup Networks Dial Business Solutions and Examples
<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 Logical Interfaces Serial Interfaces

Table 6 Cisco IOS Software Release 12.0 Documentation Set (continued)

Books	Chapter Topics
<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 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> 	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Switching Services Switching Paths for IP Networks Virtual LAN (VLAN) Switching and Routing
<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
<ul style="list-style-type: none"> • <i>Voice, Video, and Home Applications Configuration Guide</i> • <i>Voice, Video, and Home Applications Command Reference</i> 	Voice over IP Voice over Frame Relay Voice over ATM Voice over HDLC Frame Relay-ATM Internetworking Synchronized Clocks Video Support Universal Broadband Features

Table 6 Cisco IOS Software Release 12.0 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> <i>Quality of Service Solutions Configuration Guide</i> <i>Quality of Service Solutions Command Reference</i> 	Policy-Based Routing QoS Policy Propagation via BGP Committed Access Rate Weighted Fair Queueing Custom Queueing Priority Queueing Weighted Random Early Detection Scheduling Signaling RSVP Packet Drop Frame Relay Traffic Shaping Link Fragmentation RTP Header Compression
<ul style="list-style-type: none"> <i>Cisco IOS Software Command Summary</i> <i>Dial Solutions Quick Configuration Guide</i> <i>System Error Messages</i> <i>Debug Command Reference</i> 	



Note

Cisco Management Information Base (MIB) User Quick Reference is no longer published. If you have an account with CCO, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit*, go to CC, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

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 the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

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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