



Release Notes for Cisco AS5300 Universal Access Servers for Cisco IOS Release 11.2 P

March 7, 2002

These release notes for Cisco AS5300 universal access servers support Cisco IOS Release 11.2(26) P. 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 all the software caveats that apply to Release 11.2(26) P1, see *Caveats for Cisco IOS Release 11.2 P* that accompanies these release notes. The caveats document is updated for every maintenance release and is also located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 11.2* on Cisco.com and the Documentation CD-ROM.

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These release notes describe the following topics:

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Introduction

The Cisco AS5300 universal access server is a versatile data communications platform that provides the functions of an access server, router, and digital modems in a single modular chassis. The access server is intended for Internet service providers (ISPs), telecommunications carriers, and other service providers that offer managed Internet connections, in addition to medium to large sites that provide both digital and analog access to users on an enterprise network. By terminating both analog and digital calls on the same chassis simultaneously, the access server provides a clear, simple, and easy migration path from today's analog dial access services to tomorrow's digital dial access services.

For information on new features and Cisco IOS commands supported by Cisco IOS Release 11.2(26) P, see the [“New and Changed Information” section on page 8](#) and the [“Related Documentation” section on page 12](#).

System Requirements

This section describes the system requirements for Cisco IOS Release 11.2 P:

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Memory Recommendations

[Table 1](#) lists the memory recommendations for the Cisco AS5300.

Table 1 *Memory Recommendations for the Cisco AS5300*

Image Name	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
IP	c5300-i-mz	8 MB	32 MB	RAM
IP/Plus	c5300-is-mz	8 MB	32 MB	RAM
Desktop	c5300-d-mz	8 MB	32 MB	RAM
Desktop Plus	c5300-ds-mz	8 MB	32 MB	RAM
Enterprise	c5300-j-mz	8 MB	32 MB	RAM
Enterprise Plus	c5300-js-mz	8 MB	32 MB	RAM

Supported Hardware

Cisco IOS Release 11.2 P supports the Cisco AS5300. [Table 2](#) lists the interfaces and supported modem cards.

For detailed descriptions of the new hardware features, see the “[New and Changed Information](#)” section on [page 8](#).

Table 2 Supported Interfaces for the Cisco AS5300

Interfaces and Modem Cards	Product Description
Supported LAN/WAN Interfaces	Ethernet RJ-45
	Ethernet/Fast Ethernet (RJ-45)
	ISDN PRI
	E1-G.703/G.704
	Channelized T1
	Channelized E1
Modem Cards	MICA modems
	Microcom 56K modems

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco AS5300, log in to the Cisco AS5300 and enter the **show version EXEC** command:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 11.2 P Software (C5300-JS-N), Version 11.2(26) P, 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

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 [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 3 lists the features and feature sets supported by the Cisco AS5300 in Cisco IOS Release 11.2 P and uses the following conventions:

- **Basic**—This feature is offered in the basic feature set.
- **No**—This feature is not offered in the feature set.
- **Plus**—This feature is offered in the Plus feature set, not in the basic feature set.

**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 11.2(26) P by using the Feature Navigator tool at: <http://www.cisco.com/go/fn>.

Table 3 Feature Sets Supported by the Cisco AS5300

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise ¹
LAN Support			
Apollo Domain	No	No	Basic
AppleTalk 1 and 2 ²	No	Basic	Basic
Banyan VINES	No	No	Basic
Concurrent routing and bridging (CRB)	Basic	Basic	Basic
DECnet IV	No	Basic	Basic
DECnet V	No	No	Basic
GRE	Basic	Basic	Basic
Integrated routing and bridging (IRB) ³	Basic	Basic	Basic
IP	Basic	Basic	Basic
LAN extension host	Basic	Basic	Basic
Multiring	Basic	Basic	Basic
Novell IPX ⁴	No	Basic	Basic
Open System Interconnect (OSI)	No	No	Basic
Source-route bridging (SRB)	No	No	Basic
Transparent and translational bridging	Basic	Basic	Basic

Table 3 Feature Sets Supported by the Cisco AS5300 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise ¹
XNS	No	No	Basic
WAN Services			
Combinet Packet Protocol (CPP)	Basic	Basic	Basic
Dialer profiles	Basic	Basic	Basic
Half bridge/half router for CPP and PPP	Basic	Basic	Basic
HDLC	Basic	Basic	Basic
IPXWAN 2.0	No	Basic	Basic
ISDN ⁵	Basic	Basic	Basic
Multichassis Multilink PPP (MMP) ⁶	Plus	Plus	Plus
PPP ⁷	Basic	Basic	Basic
Virtual Private Dial-up Network (VPDN)	Plus	Plus	Plus
WAN Optimization			
Bandwidth-on-demand	Basic	Basic	Basic
Custom and priority queuing	Basic	Basic	Basic
Dial backup	Basic	Basic	Basic
Dial-on-demand	Basic	Basic	Basic
Header, link and payload compression	Basic	Basic	Basic
Snapshot routing	Basic	Basic	Basic
Weighted fair queuing	Basic	Basic	Basic
IP Routing			
BGP	Basic	Basic	Basic
BGP4 ⁸	Basic	Basic	Basic
EGP	Basic	Basic	Basic
Enhanced IGRP	Basic	Basic	Basic
Enhanced IGRP Optimizations	Basic	Basic	Basic
ES-IS	No	No	Basic
IGRP	Basic	Basic	Basic
IS-IS	No	No	Basic
Named IP Access Control List	Basic	Basic	Basic
Network Address Translation (NAT)	Plus	Plus	Plus
NHRP	Basic	Basic	Basic
On Demand Routing (ODR)	Basic	Basic	Basic
OSPF	Basic	Basic	Basic
OSPF Not-So-Stubby-Areas (NSSA)	Basic	Basic	Basic
OSPF On Demand Circuit (RFC 1793)	Basic	Basic	Basic

Table 3 Feature Sets Supported by the Cisco AS5300 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise ¹
PIM	Basic	Basic	Basic
Policy-based routing	Basic	Basic	Basic
RIP	Basic	Basic	Basic
RIP Version 2	Basic	Basic	Basic
Other Routing			
AURP	No	Basic	Basic
IPX RIP	No	Basic	Basic
NLSP	No	Basic	Basic
RTMP	No	Basic	Basic
SMRP	No	Basic	Basic
S RTP	No	No	Basic
Multimedia and Quality of Service			
Generic traffic shaping	Basic	Basic	Basic
Resource Reservation Protocol (RSVP)	Basic	Basic	Basic
Management			
HTTP Server	Basic	Basic	Basic
Modem Management	Plus	Plus	Plus
RMON events and alarms ⁹	Basic	Basic	Basic
RMON full	Plus	Plus	Plus
SNMP	Basic	Basic	Basic
Telnet	Basic	Basic	Basic
Security			
Access lists	Basic	Basic	Basic
Access security	Basic	Basic	Basic
Extended access lists	Basic	Basic	Basic
Kerberized login	No	No	Basic
Kerberos V client support	No	No	Basic
Lock and key	Basic	Basic	Basic
MAC security for hubs	Basic	Basic	Basic
MD5 routing authentication	Basic	Basic	Basic
RADIUS	Basic	Basic	Basic
TACACS+ ¹⁰	Basic	Basic	Basic
IBM Support (Optional)			
APPN (optional)	No	No	No
BAN for SNA Frame Relay support	Plus	Plus	Basic

Table 3 Feature Sets Supported by the Cisco AS5300 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise ¹
Bisync	Plus	Plus	Basic
Caching and filtering	Plus	Plus	Basic
DLSw+ ¹¹	Plus	Plus	Basic
Downstream PU concentration (DSPU)	Plus	Plus	Basic
Native Client Interface Architecture (NCIA) Server	Plus	Plus	Basic
NetView Native Service Point	Plus	Plus	Basic
QLLC	Plus	Plus	Basic
Response Time Reporter (RTR)	Plus	Plus	Basic
SDLC integration	Plus	Plus	Basic
DLSw (RFC 1795)	Plus	Plus	Basic
SDLC transport (STUN)	Plus	Plus	Basic
SDLC-to-LAN conversion (SDLLC)	Plus	Plus	Basic
SNA and NetBIOS WAN optimization via local acknowledgment	Plus	Plus	Basic
SRB/RSRB ¹²	Plus	Plus	Basic
SRT	Plus	Plus	Basic
TG/COS	No	No	Basic
TN3270	No	No	Basic
Protocol Translation			
LAT	No	No	Basic
Rlogin	No	No	Basic
Remote Node¹³			
ARAP 1.0/2.0	No	Basic	Basic
Asynchronous master interfaces	Basic	Basic	Basic
ATCP	No	Basic	Basic
CPPP	Basic	Basic	Basic
CSLIP	Basic	Basic	Basic
DHCP	Basic	Basic	Basic
IP pooling	Basic	Basic	Basic
IPX and ARAP on virtual async interfaces	No	No	Basic
IPXCP	No	Basic	Basic
MacIP	No	Basic	Basic
NASI	No	No	No
NetBEUI over PPP	No	No	No

Table 3 Feature Sets Supported by the Cisco AS5300 (continued)

Features	Feature Images by Feature Sets		
	IP Routing	Desktop (IP/IPX/AT/DEC)	Enterprise ¹
SLIP	Basic	Basic	Basic
Terminal Services¹³			
LAT ¹⁴	No	No	Basic
Rlogin	Basic	Basic	Basic
Telnet	Basic	Basic	Basic
TN3270	No	No	Basic
Xremote	No	No	Basic

- Enterprise is available with APPN in a separate feature set. APPN includes APPN Central Registration (CRR) and APPN over DLSw+.
- This feature includes AppleTalk load balancing.
- IRB supports IP, IPX, and AppleTalk; it is supported for transparent bridging, but not for SRB; it is supported on all media-type interfaces except X.25 and ISDN bridged interfaces; IRB and concurrent routing and bridging (CRB) cannot operate at the same time.
- The Novell IPX feature includes SAP display by name, IPX Access Control List violation logging, and plain-English IPX access lists.
- ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features.
- This feature is available in Plus images only.
- PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, PPP compression, and Multilink PPP.
- BGP4 includes soft configuration, multipath support, and prefix filtering with inbound route maps.
- The RMON events and alarms groups are supported on all interfaces. Full RMON support is available with Plus feature sets.
- TACACS+ Single Connection and TACACS+ SENDAUTH enhancements are supported.
- Cisco IOS Release 11.2 introduces several DLSw+ enhancements available in Plus, Plus 40, and Plus 56 feature sets.
- SRB/RSRB is fast switched. This enhancement is on by default, but can be disabled.
- Terminal services are supported on access servers (with limited support on router auxiliary ports).
- Use of LAT requires a terminal license (FR-L8-10.X= for an 8-user license or FR-L16-10.X= for a 16-user license).

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco AS5300 for Cisco IOS Release 11.2 P.

New Hardware and Software Features in Cisco IOS Release 11.2(26) P

There are no new hardware and software features supported by the Cisco AS5300 for Cisco IOS Release 11.2(26) P.

New Software Features in Cisco IOS Release 11.2(12) P through 11.2(25) P

There are no new software features supported by the Cisco AS5300 for Cisco IOS Release 11.2(12) P through Cisco IOS Release 11.2(25) P.

New Software Features in Cisco IOS Release 11.2(11) P

New Modem Management Command

A new command, **show modemcap**, is supported in Cisco IOS Release 11.2(11) P, but the command does not show up in the show modem help menu. The command output shows the versions of modem code in three locations: bundled with the Cisco IOS software, residing in Flash memory, and mapped to the modems.



Note

The factory might have installed a version of modem code later than the one bundled with the Cisco IOS software.

The modem code release notes are on Cisco.com and on the Documentation CD-ROM:

On Cisco.com:

Technical Documents: Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300: Modem Information: Firmware/Portware Release Notes

On the Documentation CD-ROM:

Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300: Modem Information: Firmware/Portware Release Notes.

New Software Features in Cisco IOS Release 11.2(10) P

Modem Pooling

Modem pooling allows service providers to define, select, and use separate pools of modems within a single access server or router to provide different dial-in services. Modem allocation is based on the dialed number identification service (DNIS) and a predetermined number of modem ports based on DNIS.

There are a number of applications for using the call setup information, including DNIS/ANI, processing incoming call requests with CallerID, and selecting services to set up “automatically” for specified calls. These uses generally fall into two categories: those requiring allocation of a specific number of modems for a specific service, and those requiring allocation of specific physical modems.

Bundled Modem Code

For Microcom modems, Cisco IOS Release 11.2(10) P and later include bundled modem code, Version 3.1.30. The modem code filename is: mcom-modem-code-3.1.30.bin.

For MICA modems, Cisco IOS Release 11.2(10) P and later are bundled with MICA portware Version 2.0.1.7.

**Note**

The factory might have installed a version of modem code later than the one bundled with the Cisco IOS software.

The modem code release notes are on Cisco.com and on the Documentation CD-ROM:

On Cisco.com:

Technical Documents: Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300: Modem Information: Firmware/Portware Release Notes

On the Documentation CD-ROM:

Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300: Modem Information: Firmware/Portware Release Notes

E1 R2 Register Signaling

There are three types of E1 R2 signaling that you can configure with the **cas-group** command: compelled, semi-compelled, and non-compelled. However, each country has its own E1 R2 specifications, which might follow the ITU-T Q.400-Q.490 recommendation for R2 signaling. Unique E1 R2 signaling parameters for specific countries are set by issuing the **cas-custom channel** command followed by the **country name** command.

Channelized E1 Signaling for the Cisco AS5300

In Cisco IOS Release 11.2(10) and later, the Cisco AS5300 access server now supports channel-associated signaling for channelized E1 lines, which are commonly deployed in networks in Latin America, Asia, and Europe.

After this feature is configured on a single E1 controller, up to 30 remote users can simultaneously dial in to the Cisco AS5300 through networks running the R2 protocol. Typically, all channels of a channelized E1 line are used for analog calls. Because the Cisco AS5300 has four physical E1 ports on its quad E1 Primary Rate Interface (PRI) board, up to 120 simultaneous connections can be made through the quad E1/PRI board.

Robbed Bit Signaling for the Cisco AS5300

New types of signaling provided for a channelized T1 include ground-start and loop-start support. This new signaling is set using the **cas-group** controller configuration command.

Quad E1 PRI for the Cisco AS5300

This new E1 PRI card has four E1 controllers, which provide physical termination for four E1 PRI lines. The Cisco AS5300's E1 PRI controllers require a clock source, which is set with the **clock source** command.

In addition, the quad E1 card can be software-configured for channelized or PRI operation. An additional hardware selector switch is provided for configuration for balanced 75-ohm or unbalanced 120-ohm operation.

Important Notes

The following sections contain important notes about Cisco IOS Release 11.2 P that can apply to the Cisco AS5300.

Deferral of Cisco IOS Release 11.2(26)P1, 11.2(26)P2 and 11.2(26)P3 Images

All images in Cisco IOS Release 11.2(26)P1, 11.2(26)P2 and 11.2(26)P3 have been deferred due to the following severe defect:

CSCdw78210-Related to fixes in CSCdw65903 and outlined in

<http://www.cisco.com/warp/public/707/cisco-malformed-snmp-msgs-pub.shtml>.

These releases have been replaced with the following software solution, which is available on CCO:11.2(26)P4.

In order to increase network availability, Cisco recommends that you upgrade affected IOS images with the suggested replacement software images. Cisco will discontinue manufacturing shipment of affected IOS images. Any pending order will be substituted by the replacement software images.



Note

Please be aware that failure to upgrade the affected ios images may result in network downtime.

The terms and conditions that governed your rights and obligations and those of Cisco, with respect to the deferred images will apply to the replacement images.

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 Cisco 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 caveat 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 Cisco 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>.

Microcom Modems

Cisco IOS Releases 11.2(10) P through 11.2(14) P include bundled Microcom firmware Version 3.1.30. Cisco IOS Release 11.2(15) P and later include bundled firmware Version 3.3.20.

MICA Modems

Cisco IOS Releases 11.2(10) P through 11.2(15) P include bundled MICA portware Version 2.0.1.7. Cisco IOS Release 11.2(16) P and later include bundled MICA portware Version 2.3.1.0.

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

All caveats in Cisco IOS Release 11.2 are also in Cisco IOS Release 11.2 P.

For information on caveats in Cisco IOS Release 11.2 P, see *Caveats for Cisco IOS Release 11.2 P* located on Cisco.com and the Documentation CD-ROM.

For information on caveats in Cisco IOS Release 11.2, see the caveats section in *Cross-Platform Release Notes for Cisco IOS Release 11.2*, which lists severity 1 and 2 caveats and select severity 3 caveats and is located on Cisco.com and the Documentation CD-ROM.

**Note**

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

Related Documentation

The following sections describe the documentation available for the Cisco AS5300. These documents consist of hardware and software installation guides, Cisco IOS configuration 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:

- [Release-Specific Documents, page 13](#)
- [Platform-Specific Documents, page 13](#)
- [Feature Modules, page 14](#)
- [Feature Navigator, page 14](#)
- [Cisco IOS Software Documentation Set, page 14](#)

Release-Specific Documents

The following documents are specific to Cisco IOS Release 11.2 and are located on Cisco.com and the Documentation CD-ROM:

- Cross-Platform Release Notes for Cisco IOS Release 11.2 P

On Cisco.com:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Cross-Platform Release Notes for Cisco IOS Release 11.2:

On the Documentation CD-ROM, click on this path:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Cross-Platform Release Notes for Cisco IOS Release 11.2:

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

Technical Documents: Product Bulletins

- Caveats for Cisco IOS Release 11.2 P

On Cisco.com:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Caveats for Release 11.2 P

On the Documentation CD-ROM:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Product Specific Release Notes for Cisco IOS Release 11.2: Caveats for Release 11.2 P



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 are available for the Cisco AS5300 on Cisco.com and the Documentation CD-ROM:

- *Cisco AS5300 Universal Access Server Quick Start Guide (with Fast Step)*
- *Cisco AS5300 Universal Access Server Chassis Installation Guide*
- *Cisco AS5300 Universal Access Server Module Installation Guide*
- *Cisco AS5300 Universal Access Server Software Configuration Guide*
- *Configuring Cisco IOS Software Features*
- Cisco IOS Release Notes
- Dial Case Study
- Port Information
- Documentation for Spare Parts

- *Regulatory Compliance and Safety Information for the Cisco AS5300*
- *Single and High-Density VoIP Support for the Cisco AS5300/Voice Gateway*

On Cisco.com:

Technical Documents: Documentation Home Page: Access Servers and Access Routers: Access Servers: Cisco AS5300

On the Documentation CD-ROM:

Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 11.2 P 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 11.2: Feature Guide for Cisco IOS Release 11.2 P

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Feature Guide for Cisco IOS Release 11.2 P

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 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 11.2: Cisco IOS Release 11.2 Configuration Guide/Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2: Configuration Guides and Command References

Cisco IOS Release 11.2 Documentation Set Contents

[Table 4](#) describes the contents of the Cisco IOS Release 11.2 software documentation set, which is available in electronic form and in printed form if ordered.



Note

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

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 11.2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2

Table 4 Cisco IOS Release 11.2 Documentation Set

Books	Major 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 Interface Configuration System Management
<ul style="list-style-type: none"> <i>Network Protocols Configuration Guide, Part 1</i> <i>Network Protocols Command Reference, Part 1</i> 	IP Addressing IP 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

Table 4 Cisco IOS Release 11.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering Network Data Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
<ul style="list-style-type: none"> • <i>Dial Solutions Configuration Guide</i> • <i>Dial Solutions Command Reference</i> 	Dial Business Solutions and Examples Dial-In Port Setup DDR and Dial Backup Remote Node and Terminal Service Cost-Control and Large-Scale Dial Solutions VPDN
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Switching Paths for IP Networks Fast Switching Autonomous Switching NetFlow Switching Optimum Switching Virtual LAN (VLAN) Switching and Routing Inter-Switch Link Protocol Encapsulation IEEE 802.10 Encapsulation LAN Emulation

Table 4 Cisco IOS Release 11.2 Documentation Set (continued)

Books	Major Topics
<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 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 NCIA Client/Server Topologies IBM Channel Attach
<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> 	

Obtaining Documentation

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

World Wide Web

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

Documentation CD-ROM

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

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

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170 West Tasman Drive
San Jose, CA 95134-9883

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Cisco.com

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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 12](#).

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