



Release Notes for Cisco 4000 Series for Cisco IOS Release 12.0

January 2, 2001

These release notes for Cisco 4000 series support Cisco IOS Release 12.0, up to and including Cisco IOS Release 12.0(15). These release notes are updated as needed to describe new features, memory recommendations, 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(15), 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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System Requirements

This section describes the system requirements for Cisco IOS Release 12.0 and includes the following sections:

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Memory Recommendations

Table 1 describes the memory recommendations of the Cisco IOS feature sets for the Cisco 4000 series for Cisco IOS Release 12.0(15).

Table 1 Memory Recommendations for Cisco 4000 Series

Platform(s)	Feature Sets	Images	Recommended Flash Memory	Recommended DRAM Memory	Runs From
Cisco 4000 and Cisco 4000-M	IP	c4000-i-mz	4 MB	16 MB	RAM
	IP Plus	c4000-is-mz	4 MB	16 MB	RAM
	IP Plus 40	c4000-is40-mz	4 MB	16 MB	RAM
	IP Plus IPsec 56	c4000-is56i-mz	4 MB	16 MB	RAM
	IP/IPX/AT/DEC	c4000-d-mz	4 MB	16 MB	RAM
	IP/IPX/AT/DEC Plus	c4000-ds-mz	4 MB	16 MB	RAM
Cisco 4000-M	Enterprise Plus	c4000-js-mz	8 MB	32 MB	RAM
	Enterprise Plus 40	c4000-js40-mz	8 MB	32 MB	RAM
	Enterprise Plus IPsec 56	c4000-js56i-mz	8 MB	32 MB	RAM
	Enterprise/APPN Plus	c4000-ajs-mz	8 MB	32 MB	RAM
	Enterprise/APPN Plus 40	c4000-ajs40-mz	8 MB	32 MB	RAM
	Enterprise/APPN Plus IPsec 56	c4000-ajs56i-mz	8 MB	32 MB	RAM

Table 1 Memory Recommendations for Cisco 4000 Series (continued)

Platform(s)	Feature Sets	Images	Recommended Flash Memory	Recommended DRAM Memory	Runs From
Cisco 4500, Cisco 4500-M, Cisco 4700, Cisco 4700-M	IP (4500 only)	c4500-i-mz	4 MB	32 MB	RAM
	IP (4500-M, 4700, and 4700-M)	c4500-i-mz	4 MB	16 MB	RAM
	IP Plus	c4500-is-mz	8 MB	32 MB	RAM
	IP Plus 40	c4500-is40-mz	8 MB	32 MB	RAM
	IP Plus IPsec 56	c4500-is56i-mz	8 MB	32 MB	RAM
	IP/IPX/AT/DEC	c4500-d-mz	8 MB	32 MB	RAM
	IP/IPX/AT/DEC Plus	c4500-ds-mz	8 MB	32 MB	RAM
	Enterprise Plus	c4500-js-mz	8 MB	32 MB	RAM
	Enterprise Plus 40	c4500-js40-mz	8 MB	32 MB	RAM
	Enterprise Plus IPsec 56	c4500-js56i-mz	8 MB	32 MB	RAM
	Enterprise/APPN Plus	c4500-ajs-mz	8 MB	32 MB	RAM
	Enterprise/APPN Plus 40	c4500-ajs40-mz	8 MB	32 MB	RAM
	Enterprise/APPN Plus IPsec 56	c4500-ajs56i-mz	8 MB	32 MB	RAM
	Enterprise/APPN/DBCONN	c4500-aejs-mz	8 MB	32 MB	RAM
	Enterprise/APPN/DBCONN Plus 40	c4500-aejs40-mz	8 MB	32 MB	RAM
Enterprise/APPN/DBCONN Plus IPsec 56	c4500-aejs56i-mz	8 MB	32 MB	RAM	

Hardware Supported

Cisco IOS Release 12.0 supports Cisco 4000 series routers:

- Cisco 4000, Cisco 4000-M
- Cisco 4500, Cisco 4500-M
- Cisco 4700, Cisco 4700-M

For detailed descriptions of the new hardware features for Release 12.0, refer to the *Cross-Platform Release Notes for Cisco IOS Release 12.0*.

Table 2 lists the supported interfaces for Cisco IOS Release 12.0(15) for the Cisco 4000 Series.

Table 2 Supported Interfaces for the Cisco 4000 Series

Interface, Network Module, or Data Rate	Platforms Supported	
LAN Interfaces	ATM DS-3	Cisco 4500 and Cisco 4700
	ATM E3	Cisco 4500 and Cisco 4700
	ATM Interface	All Cisco 4000 series platforms
	ATM OC-3c	Cisco 4500 and Cisco 4700
	Channelized E1/T1 ISDN PRI	All Cisco 4000 series platforms
	Ethernet	All Cisco 4000 series platforms
	Fast Ethernet	Cisco 4500 and Cisco 4700
	FDDI	All Cisco 4000 series platforms
	HSSI	Cisco 4500 and Cisco 4700
	ISDN BRI	All Cisco 4000 series platforms
	Serial	All Cisco 4000 series platforms
	Token Ring	All Cisco 4000 series platforms
WAN Data Rates	48/56/64 kbps	All Cisco 4000 series platforms
	1.544/2.048 Mbps	All Cisco 4000 series platforms
WAN Interfaces and Network Modules	56K/64K DSU/CSU	All Cisco 4000 Series platforms
	Channelized E1	All Cisco 4000 Series platforms
	Channelized T1	All Cisco 4000 Series platforms
	E1-G.703/G.704	All Cisco 4000 Series platforms
	EIA-530	All Cisco 4000 Series platforms
	EIA/TIA-232	All Cisco 4000 Series platforms
	EIA/TIA-449	All Cisco 4000 Series platforms
	EIA/TIA-613 (HSSI)	All Cisco 4000 Series platforms
	ISDN BRI	All Cisco 4000 Series platforms
	ISDN PRI	All Cisco 4000 Series platforms
	MultiChannel Interface (Channelized E1/T1)	All Cisco 4000 Series platforms
	Serial	All Cisco 4000 Series platforms
	V.35	All Cisco 4000 Series platforms
X.21	All Cisco 4000 Series platforms	

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco 4000 series, log in to the Cisco 4000 series and enter the **show version EXEC** command:

```
router>#show version
Cisco Internetwork Operating System Software
IOS (tm) 4000 series Software (c4000-i-mz), 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/cisco/mkt/ios/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.

Table 3 lists the Cisco IOS software feature sets available for Cisco IOS Release 12.0(15).

Table 3 Feature Sets Supported by the Cisco 4000 Series

Feature Set	Feature Set Matrix Term	Software Image	Platforms Supported	
IP Standard Feature Sets	IP	Basic ¹	c4000-i-mz	Cisco 4000/4000-M
			c4500-i-mz	Cisco 4500/4500-M, Cisco 4700/4700-M
	IP Plus	Plus ²	c4000-is-mz	Cisco 4000/4000-M
			c4500-is-mz	Cisco 4500/4500-M, Cisco 4700/4700-M
	IP Plus 40	Plus, Plus 40 ³	c4000-is40-mz	Cisco 4000/4000-M
			c4500-is40-mz	Cisco 4500/4500-M, Cisco 4700/4700-M
	IP Plus IPsec 56	Plus, Plus IPsec 56 ⁴	c4000-is56i-mz	Cisco 4000, Cisco 4000-M
			c4500-is56i-mz	Cisco 4500/4500-M, Cisco 4700/4700-M
IP/IPX/AppleTalk/DEC Standard Feature Sets	IP/IPX/AppleTalk/DEC	Basic	c4000-d-mz,	Cisco 4000/4000-M
			c4500-d-mz	Cisco 4500/4500-M, Cisco 4700/4700-M
	IP/IPX/AppleTalk/DEC Plus	Plus	c4000-ds-mz	Cisco 4000/4000-M
			c4500-ds-mz	Cisco 4500/4500-M, Cisco 4700/4700-M

Table 3 Feature Sets Supported by the Cisco 4000 Series (continued)

Feature Set	Feature Set Matrix Term	Software Image	Platforms Supported
Enterprise Standard Feature Sets	Enterprise Plus	Plus	c4000-js-mz Cisco 4000-M
			c4500-js-mz Cisco 4500/4500-M, Cisco 4700/4700-M
	Enterprise Plus 40	Plus, Plus 40	c4000-js40-mz Cisco 4000-M
			c4500-js40-mz Cisco 4500/4500-M, Cisco 4700/4700-M
	Enterprise Plus IPsec 56	Plus, Plus IPsec 56	c4000-js56i-mz Cisco 4000-M
			c4500-js56i-mz Cisco 4500/4500-M, Cisco 4700/4700-M
Enterprise/APPN Standard	Enterprise/APPN Plus	Plus	c4000-ajs-mz Cisco 4000-M
			c4500-ajs-mz Cisco 4500/4500-M, Cisco 4700/4700-M
	Enterprise/APPN Plus 40	Plus, Plus 40	c4000-ajs40-mz Cisco 4000-M
			c4500-ajs40-mz Cisco 4500/4500-M, Cisco 4700/4700-M
	Enterprise/APPN Plus IPsec 56	Plus, Plus IPsec 56	c4000-ajs56i-mz Cisco 4000-M
			c4500-ajs56i-mz Cisco 4500/4500-M, Cisco 4700/4700-M
Enterprise/APPN/DB Conn Standard	Enterprise/APPN/DB Conn	Basic	c4500-aejs-mz Cisco 4500/4500-M, Cisco 4700/4700-M
	Enterprise/APPN/DB Conn Plus 40	Plus, Plus 40	c4500-aejs40-mz Cisco 4500/4500-M, Cisco 4700/4700-M
	Enterprise/APPN/DB Conn Plus IPsec 56	Plus, Plus IPsec 56	c4500-aejs56i-mz Cisco 4500/4500-M, Cisco 4700/4700-M

1. This feature set is offered in the basic feature set.
2. This feature set is offered in the plus feature set.
3. This feature set is offered in the encryption feature sets which consist of 40-bit (Plus 40) data encryption feature sets.
4. This feature set is offered in the encryption feature sets which consist of 56-bit (Plus IPsec 56) data encryption feature sets.

**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, Table 5, Part 1, and Table 5, Part 2 list the features and feature sets supported by Cisco IOS Release 12.0(15) for the Cisco 4000 Series.

- Table 4—Cisco 4000 and Cisco 4000-M
- Table 5, Part 1, and Table 5, Part 2—Cisco 4500, Cisco 4500-M, Cisco 4700, and Cisco 4700-M

All tables use the following conventions to identify features:

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

**Note**

The following feature set tables contain only selected lists of features. These tables are not cumulative or complete lists of all the features in each image.

Table 4 Feature List by Feature Set for the Cisco 4000¹ and Cisco 4000-M Series Routers

Features	Feature Set											
	IP	IP Plus	IP Plus 40	IP Plus IPsec 56	IP/ IPX/ AT/ DEC	IP/ IPX/ AT/ DEC Plus	Enterprise Plus	Enterprise Plus 40	Enterprise Plus IPsec 56	Enterprise/ APPN Plus ²	Enterprise/ APPN Plus 40 ³	Enterprise/ APPN Plus IPsec 56 ⁴
IBM Support												
Bridging Code Rework	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RIF Passthru in DLSw+	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
IP Routing												
IP Type of Service and Precedence for GRE Tunnels (GRE VPN)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OSPF Point to Multipoint	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Management												
Cisco IOS File System	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Entity MIB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Expression MIB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Conditionally Triggered Debugging	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SNMP Inform Request	No	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
SNMP Manager	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VPDN MIB and Syslog Facility	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multimedia												
Protocol-Independent Multicasts (PIM) Version 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 Feature List by Feature Set for the Cisco 4000¹ and Cisco 4000-M Series Routers (continued)

Features	Feature Set											
	IP	IP Plus	IP Plus 40	IP Plus IPsec 56	IP/IPX/AT/DEC	IP/IPX/AT/DEC Plus	Enterprise Plus	Enterprise Plus 40	Enterprise Plus IPsec 56	Enterprise/APPN Plus ²	Enterprise/APPN Plus 40 ³	Enterprise/APPN Plus IPsec 56 ⁴
Scalability												
Airline Product Set (ALPS)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Security												
Named Method Lists for AAA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Additional Vendor-Proprietary RADIUS Attributes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Authenticating ACLs	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Automated Double Authentication	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MS-CHAP Support	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Certificate Authority Interoperability	No	No	No	No	No	No	No	Yes	No	No	No	No
Internet Key Exchange Security Protocol	Yes	Yes	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
IPsec Network Security	No	No	No	Yes	No	No	No	No	Yes	No	No	Yes
Subblock Phase 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN Optimization												
DRP Server Agent Enhancements	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN Services												
Always On/Dynamic ISDN (AO/DI)	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
ATM E.164 Auto Conversion	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dialer Watch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
MS Callback	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Microsoft Point-to-Point Compression (MPPC)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiple ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiprotocol over ATM	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 Feature List by Feature Set for the Cisco 4000¹ and Cisco 4000-M Series Routers (continued)

Features	Feature Set											
	IP	IP Plus	IP Plus 40	IP Plus IPsec 56	IP/IPX/AT/DEC	IP/IPX/AT/DEC Plus	Enterprise Plus	Enterprise Plus 40	Enterprise Plus IPsec 56	Enterprise/APPN Plus ²	Enterprise/APPN Plus 40 ³	Enterprise/APPN Plus IPsec 56 ⁴
National ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
NHRP Enhancements	No	No	No	No	No	No	No	No	No	No	No	No
Stackable Home Gateway	No	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes

1. The Cisco 4000 platform does not support the Enterprise/APPN Plus, Enterprise/APPN Plus 40, and Enterprise/APPN Plus IPsec 56 feature sets.
2. The Enterprise/APPN feature set is not supported on the Cisco 4000 platform, but it is supported on the Cisco 4000-M platform.
3. The Enterprise/APPN Plus feature set is not supported on the Cisco 4000 platform, but it is supported on the Cisco 4000-M platform.
4. The Enterprise/APPN Plus IPsec 56 feature set is not supported on the Cisco 4000 platform, but it is supported on the Cisco 4000-M platform.

Table 5, Part 1 Feature List by Feature Set for the Cisco 4500, Cisco 4500-M, Cisco 4700, and Cisco 4700-M¹ Series Routers

Features	Feature Set									
	IP	IP Plus	IP Plus 40	IP Plus IPsec 56	IP/IPX/AT/DEC	IP/IPX/AT/DEC Plus	Enterprise Plus	Enterprise Plus 40	Enterprise Plus IPsec 56	
IBM Support										
Bridging Code Rework	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	
Cisco Database Connection	No	No	No	No	No	No	No	No	No	
RIF Passthru in DLSw+	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes	
IP Routing										
IP Type of Service and Precedence for GRE Tunnels (GRE VPN)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
OSPF Point to Multipoint	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Management										
Cisco IOS File System	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Entity MIB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Expression MIB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Conditionally Triggered Debugging	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
SNMP Inform Requests	No	No	No	No	No	No	Yes	Yes	Yes	
SNMP Manager	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Table 5, Part 1 Feature List by Feature Set for the Cisco 4500, Cisco 4500-M, Cisco 4700, and Cisco 4700-M¹ Series Routers (continued)

Features	Feature Set								
	IP	IP Plus	IP Plus 40	IP Plus IPsec 56	IP/ IPX/ AT/ DEC	IP/ IPX/ AT/ DEC Plus	Enterprise Plus	Enterprise Plus 40	Enterprise Plus IPsec 56
Multimedia									
Protocol-Independent Multicast (PIM) Version 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Scalability									
Airline Product Set (ALPS)	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Security									
Authenticating ACLs	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Automated Double Authentication	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Certificate Authority Interoperability	No	No	No	No	No	No	Yes	No	No
Internet Key Exchange Security Protocol	No	No	No	No	No	No	Yes	No	No
IPSec Network Security	No	No	No	Yes	No	No	No	No	Yes
MS-CHAP Support	No	No	No	No	No	No	No	Yes	Yes
Named Method Lists for AAA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Subblock Phase 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Switching									
Enhanced ATM VC Configuration and Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
WAN Optimization									
DRP Server Agent Enhancements	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
WAN Services									
Always On/Dynamic ISDN (AO/DI)	No	No	No	No	No	No	No	Yes	Yes
ATM E.164 Auto Conversion	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Dialer Watch	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Microsoft Point-to-Point Compression (MPPC)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
MS Callback	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiple ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multiprotocol over ATM	No	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
National ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
PPP over Frame Relay	No	No	No	No	Yes	No	Yes	Yes	Yes
Stackable Home Gateway	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
VPDN MIB Feature	Yes	No	Yes	Yes	No	No	Yes	Yes	Yes

1. Cisco 4700-M supports the IP Plus 40, Enterprise Plus 40, Enterprise/APPN Plus 40, Enterprise/APPN/DBConn, Enterprise/APPN/DBConn Plus 40, and Enterprise/APPN/DBConn Plus IPsec 56 feature sets only.

Table 5, Part 2 Feature List by Feature Set for the Cisco 4500, Cisco 4500-M, Cisco 4700, and Cisco 4700-M¹ Series Router

Features	Feature Set					
	Enterprise/ APPN Plus	Enterprise/ APPN Plus 40	Enterprise/ APPN Plus IPSec 56	Enterprise/ APPN/ DBConn	Enterprise/ APPN/ DBConn 40	Enterprise/ APPN/ DBConn IPSec 56
IBM Support						
Bridging Code Rework	Yes	Yes	Yes	Yes	Yes	Yes
Cisco Database Connection	No	No	No	Yes	Yes	Yes
RIF Passthru in DLSw+	Yes	Yes	Yes	Yes	Yes	Yes
IP Routing						
IP Type of Service and Precedence for GRE Tunnels (GRE VPN)	Yes	Yes	Yes	Yes	Yes	Yes
OSPF Point to Multipoint	Yes	Yes	Yes	No	No	No
Management						
Cisco IOS File System	Yes	Yes	Yes	No	No	No
Entity MIB	Yes	Yes	Yes	No	No	No
Expression MIB	Yes	Yes	Yes	No	No	No
Conditionally Triggered Debugging	Yes	Yes	Yes	No	No	No
SNMP Inform Requests	Yes	Yes	Yes	Yes	Yes	Yes
SNMP Manager	Yes	Yes	Yes	No	No	No
Multimedia						
Protocol-Independent Multicast (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	Yes
Authenticating ACLs	Yes	Yes	Yes	Yes	Yes	Yes
Automated Double Authentication	Yes	Yes	Yes	Yes	Yes	Yes
Certificate Authority Interoperability	No	No	Yes	No	No	Yes
Internet Key Exchange Security Protocol	No	No	Yes	No	No	Yes
IPSec Network Security	No	No	Yes	No	No	Yes
MS-CHAP Support	Yes	Yes	Yes	Yes	Yes	Yes
Named Method Lists for AAA Authentication & Accounting	Yes	Yes	Yes	Yes	Yes	Yes
Subblock Phase 1	Yes	Yes	Yes	Yes	Yes	Yes

Table 5, Part 2 Feature List by Feature Set for the Cisco 4500, Cisco 4500-M, Cisco 4700, and Cisco 4700-M¹ Series Router (continued)

Features	Feature Set					
	Enterprise/ APPN Plus	Enterprise/ APPN Plus 40	Enterprise/ APPN Plus IPSec 56	Enterprise/ APPN/ DBConn	Enterprise/ APPN/ DBConn 40	Enterprise/ APPN/ DBConn IPSec 56
Switching						
Enhanced ATM VC Configuration and Management	Yes	Yes	Yes	Yes	Yes	Yes
WAN Optimization						
DRP Server Agent Enhancements	Yes	Yes	Yes	Yes	Yes	Yes
WAN Services						
Always On/Dynamic ISDN (AO/DI)	Yes	Yes	Yes	Yes	Yes	Yes
ATM E.164 Auto Conversion	Yes	Yes	Yes	Yes	Yes	Yes
Dialer Watch	Yes	Yes	Yes	Yes	Yes	Yes
Microsoft Point-to-Point Compression (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
Multiprotocol over ATM	Yes	Yes	Yes	Yes	Yes	Yes
National ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes
PPP over Frame Relay	Yes	Yes	Yes	Yes	Yes	Yes
Stackable Home Gateway	Yes	Yes	Yes	Yes	Yes	Yes
VPDN MIB Feature	Yes	Yes	Yes	Yes	Yes	Yes

1. Cisco 4700-M supports the IP Plus 40, Enterprise Plus 40, Enterprise/APPN Plus 40, Enterprise/APPN/DBConn, Enterprise/APPN/DBConn Plus 40, and Enterprise/APPN/DBConn Plus IPSec 56 feature sets only.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 4000 series for Release 12.0(15).

New Hardware Features in Release 12.0(15)

There are no new hardware features supported by the Cisco 4000 series in Cisco IOS Release 12.0(15).

New Software Features in Release 12.0(15)

There are no new software features supported by the Cisco 4000 series in Cisco IOS Release 12.0(15).

Important Notes

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>.

Ordering Cisco IOS Software

Beginning with Cisco IOS Release 12.0(7)XK, Cisco is changing the product numbers you use to order a specific Cisco IOS software image. In short, Cisco will remove the periods separating the release train, maintenance release, and build number. The following table provides some examples.

Old Product Number	New Product Number	Release	Image Description
S364AR1K2-12.0.7XK	S364AR1K2-12007XK	12.0(7)XK	Cisco 3640 Series IOS Enterprise/ SNA SW PLUS IP Sec 3DES
S26CP-12.0.7XK	S26CP-12007XK	12.0(7)XK	Cisco 2600 Series IOS IP Plus

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 6.

Table 6 *Deprecated and Replacement MIBs*

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	In development
OLD-CISCO-DECNET-MIB	In development

Table 6 *Deprecated and Replacement MIBs (continued)*

Deprecated MIB	Replacement
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	In development
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	In development
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	In development

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 Release 12.0 and is located on CCO and the Documentation CD-ROM.

Related Documentation

The following sections describe the documentation available for the Cisco 4000 series. 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 15
- Platform-Specific Documents, page 15
- Cisco IOS Software Documentation Set, page 16

Release-Specific Documents

The following documents are specific to 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

As a supplement to the caveats listed in “Caveats” in these release notes, see *Caveats for Cisco IOS Release 12.0* and *Caveats for Cisco IOS Release 12.0 T*, which contains caveats applicable to all platforms for all maintenance releases of 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. You can reach Bug Navigator II on CCO at **Software Center: Cisco IOS Software: Cisco Bug Toolkit: Cisco Bugtool Navigator II**, or at <http://www.cisco.com/support/bugtools>.

Platform-Specific Documents

These documents are available for the Cisco 4000 series on CCO and the Documentation CD-ROM:

- *Cisco 4000 Hardware Installation and Maintenance*
- *Cisco 4000 Series Configuration Notes*
- *Cisco 4000 Series Regulatory Compliance and Safety Information*
- *Redundant Power Systems*
- *FDDI Frames-Per-Token Limit for the Cisco 4000 Series*

On CCO at:

Technical Documents: Documentation Home Page: Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 4000 Series (4000/4500/4700/4000-M/4500-M/4700-M)

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 4000 Series (4000/4500/4700/4000-M/4500-M/4700-M)

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, which 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

Release 12.0 Documentation Set

Table 7 describes the contents of the Cisco IOS Release 12.0 software documentation set, which is available in electronic form and in printed form upon request.



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 7 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 and 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 7 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 7 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 Queuing Custom Queuing Priority Queuing 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. For the latest list of MIBs supported by Cisco, see *Cisco Network Management Toolkit* on Cisco Connection Online. From CCO, click on the following path: **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 documents mentioned in the “Related Documentation” section on page 14.

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