



Release Notes for Cisco 2600 Series for Cisco IOS Release 12.2 XT

August 16, 2002

Cisco IOS Release 12.2(2) XT3

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Note

You need to purchase a feature license to turn the Cisco Survivable Remote Site Telephony (SRS Telephony) and Cisco IOS Telephony Service Version 2.0 features on. You also need an account on Cisco.com to access the CiscoIPphone firmware versions.

These release notes for the Cisco 2600 series describe the enhancements provided in Cisco IOS Release 12.2(2) XT3. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.2(2) XT3, see the [“Caveats for Cisco IOS Release 12.2 XT” section on page 14](#) and *Caveats for Cisco IOS Release 12.2 T*. This 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 12.2 T* located on Cisco.com and the Documentation CD-ROM.

Cisco recommends that you view the Field Notices for this release to see if your software or hardware platforms are affected. http://www.cisco.com/kobayashi/support/tac/fn_index.html

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Introduction

With the Cisco 2600 series modular access router family, Cisco Systems extends enterprise-class and managed services CPE versatility, integration, and power to branch offices. The widely deployed Cisco 2600 series modular access routers are designed to enable customers to easily adopt future technologies and scale to accommodate network expansion. The Cisco 2600 series shares modular interfaces with the Cisco 1600, Cisco 1700, and Cisco 3600 series, providing a solution to meet the today branch office needs for applications such as the following:

- Internet/intranet access with firewall security
- Multiservice voice/data integration
- Analog and digital dial access services
- Virtual Private Network (VPN) access
- Inter-VLAN routing
- Routing with bandwidth management

The Cisco 2600 series modular architecture provides the versatility needed to adapt to changes in network technology as new services and applications become available. Driven by a powerful RISC processor, the Cisco 2600 series supports the advanced quality of service (QoS), security, and network integration features required in evolving enterprise networks of today.

For information on new features and Cisco IOS commands supported by Cisco IOS Release 12.2(2) XT3, see the [“New and Changed Information” section on page 8](#) and the [“Related Documentation” section on page 23](#).

System Requirements

This section describes the system requirements for Cisco IOS Release 12.2 XT and includes the following sections:

- [Memory Recommendations, page 3](#)
- [Supported Hardware, page 3](#)
- [Determining the Software Version, page 6](#)
- [Upgrading to a New Software Release, page 7](#)
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Memory Recommendations

Table 1 Memory Recommendations for the Cisco 2600 Series Routers

Feature Set	Software Image	Recommended Flash Memory	Recommended DRAM Memory	Runs From
IP	c2600-i-mz	8 MB	32 MB	RAM
IP Plus	c2600-is-mz	16 MB	64 MB	RAM
IP Plus IPSec 3DES	c2600-ik9s-mz	16 MB	64 MB	RAM
IP/FW/IDS PLUS IPSEC 56	c2600-ik8o3s	16 MB	64 MB	RAM
IP/FW/IDS Plus IPSec 3DES	c2600-ik9o3s-mz	16 MB	64 MB	RAM
Enterprise Plus	c2600-js-mz	32 MB	96 MB	RAM
Enterprise Plus IPSec 3DES ¹	c2600-jk9s-mz	32 MB	96 MB	RAM
Enterprise Plus/H.323 MCM ¹	c-2600-jsx-mz	32 MB	96 MB	RAM
Enterprise/FW/IDS Plus IPSec 3DES ¹	c2600-jk9o3s-mz	32 MB	96 MB	RAM

1. Image not supported on Cisco 2610, 2611, 2612, or 2613 platforms.

Supported Hardware

Cisco IOS Release 12.2 XT supports the following Cisco 2600 series routers:

- Cisco 2610
- Cisco 2611
- Cisco 2612
- Cisco 2613
- Cisco 2620 and 2621
- Cisco 2650 and 2651

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

[Table 2](#) lists the supported interfaces for the Cisco 2600 series routers for Cisco IOS Release 12.2 T.

Table 2 Supported Interfaces for the Cisco 2600 Series Routers

Interface, Network Module, or Data Rate ¹	Platforms Supported	
LAN Interfaces²	1- or 2-port Ethernet (10BASE-T)	All Cisco 2600 series platforms
	1-port Token Ring (RJ-45)	Cisco 2612, Cisco 2613
	1- or 2-port 10/100-Mbps Ethernet	Cisco 2620, Cisco 2621, Cisco 2650, Cisco 2651 ³
LAN Network Modules	1-port Ethernet	All Cisco 2600 series platforms
	4-port Ethernet	All Cisco 2600 series platforms

Table 2 Supported Interfaces for the Cisco 2600 Series Routers (continued)

Interface, Network Module, or Data Rate ¹		Platforms Supported
Mixed Media Network Modules	16-Port Ethernet Switch Module for 2600 or 3600 (NM-16ESW)	All Cisco 2600 and 3600 series platforms
Serial Network Modules	16- or 32-port asynchronous/synchronous serial low speed (128 kbps max)	All Cisco 2600 series platforms
	4- or 8-port asynchronous/synchronous serial low speed (128 kbps max)	All Cisco 2600 series platforms
ATM Network Modules¹	4-port T1 ATM network module with IMA (NM-4T1-IMA)	All Cisco 2600 series platforms
	4-port E1 ATM network module with IMA (NM-4E1-IMA)	All Cisco 2600 series platforms
	8-port T1 ATM network module with IMA (NM-8T1-IMA)	All Cisco 2600 series platforms
	8-port E1 ATM network module with IMA (NM-8E1-IMA)	All Cisco 2600 series platforms
	1-port ATM T3 network module (NM-1A-T3)	All Cisco 2600 series platforms
	1-port ATM E3 network module (NM-1A-E3)	All Cisco 2600 series platforms
	1-port ATM-25 RJ-45 interface	All Cisco 2600 series platforms
Digital T1 Packet Voice Trunk Network Modules and Spare Components	1-port, 24-channel T1 voice/fax module supports 24 channels of medium-complexity codecs: G.729a/b, G.726, G.711, and fax; or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, two PVDM-12s, and one VWIC-1MFT-T1. ⁴ Part number: NM-HDV-1T1-24.	All Cisco 2600 series platforms
	1-port, enhanced 24-channel T1 voice/fax module, supports 24 channels of high- and medium-complexity codecs: G.729a/b, G.726, G.729, G.728, G.723.1, G.711, and fax. Consists of one NM-HDV, four PVDM-12s, and one VWIC-1MFT-T1. ⁴ Part number: NM-HDV-1T1-24E.	All Cisco 2600 series platforms
	2-port, 48-channel T1 voice/fax module supports add/drop multiplexing (drop and insert); 48 channels of medium-complexity codecs: G.729a/b, G.726, G.711, and fax; or 24 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, four PVDM-12, and one VWIC-2MFT-T1-DI. ⁴ Part number: NM-HDV-2T1-48.	All Cisco 2600 series platforms
	High-density voice/fax network module spare (NM-HDV)	Digital T1/E1 packet voice trunk network modules spare component

Table 2 Supported Interfaces for the Cisco 2600 Series Routers (continued)

Interface, Network Module, or Data Rate ¹		Platforms Supported
Digital T1 Packet Voice Trunk Network Modules and Spare Components (continued)	12-channel packet voice DSP module upgrade spare (PVDM-12)	Digital T1/E1 packet voice trunk network modules spare component
	1-port RJ-48 multiflex trunk—T1 (VWIC-1MFT-T1) ⁴	Digital T1/E1 packet voice trunk network modules spare component
	2-port RJ-48 multiflex trunk—T1 (VWIC-2MFT-T1) ⁴	Digital T1/E1 packet voice trunk network modules spare component
	2-port RJ-48 multiflex trunk with drop and insert—T1 (VWIC-2MFT-T1-DI) ⁴	Digital T1/E1 packet voice trunk network modules spare component
Digital E1 Packet Voice Network Modules	1-port 30-channel E1 high-density voice network module (NM-HDV-1E1-30)	All Cisco 2600 series platforms
	1-port enhanced 30-channel E1 high-density voice network module (NM-HDV-1E130E)	All Cisco 2600 series platforms
	2-port 60-channel high-density voice network module (NM-HDV-2E1-60)	All Cisco 2600 series platforms
Dial, ISDN, and Channelized Serial Network Modules	1- or 2-port channelized T1/ISDN PRI	All Cisco 2600 series platforms
	1- or 2-port channelized T1/ISDN PRI with CSU	All Cisco 2600 series platforms
	1- or 2-port channelized E1/ISDN PRI balanced	All Cisco 2600 series platforms
	1- or 2-port channelized E1/ISDN PRI unbalanced	All Cisco 2600 series platforms
	4- or 8-port ISDN BRI S/T interface	All Cisco 2600 series platforms
	4- or 8-port ISDN BRI U (NT-1) interface	All Cisco 2600 series platforms
	8- or 16-port analog modems	All Cisco 2600 series platforms
T1/E1 Multiflex Voice/WAN Interface Cards⁵	1-port T1 multiflex trunk interface (VWIC-1MFT-T1)	All Cisco 2600 series platforms
	1-port E1 multiflex trunk interface (VWIC-1MFT-E1)	All Cisco 2600 series platforms
	2-port T1 multiflex trunk interface (VWIC-2MFT-T1)	All Cisco 2600 series platforms
	2-port E1 multiflex trunk interface (VWIC-2MFT-E1)	All Cisco 2600 series platforms
	2-port T1 multiflex trunk interface with drop and insert (VWIC-2MFT-T1-DI)	All Cisco 2600 series platforms
	2-port E1 multiflex trunk interface with drop and insert (VWIC-2MFT-E1-DI)	All Cisco 2600 series platforms
Other Network Modules	Contact Closure Network Module (NM-AIC-64)	All Cisco 2600 and 3600 series platforms

Table 2 Supported Interfaces for the Cisco 2600 Series Routers (continued)

Interface, Network Module, or Data Rate ¹	Platforms Supported	
Voice/Fax Interface Cards	1- or 2-voice/fax network module (NM-1V and NM-2V)	All Cisco 2600 series platforms
	1-slot high-density T1/E1 voice interface card slots ⁶	All Cisco 2600 series platforms
	2-port FXS voice/fax interface card ⁷	All Cisco 2600 series platforms with voice/fax network modules
	2-port E&M voice/fax interface card ³ (VIC-2E/M)	All Cisco 2600 series platforms with voice/fax network modules
	2-port FXO voice/fax interface card ³ (VIC-2FXO, VIC-2FXO-M3, and VIC-2FXO-EU)	All Cisco 2600 series platforms with voice/fax network modules
WAN Interface Cards	1-Port ADSL WAN Interface Card	All Cisco 2600 series platforms
	1-port ISDN BRI S/T interface (requires external NT-1)	All Cisco 2600 series platforms
	1-port ISDN BRI (NT-1) U	All Cisco 2600 series platforms
	1-port 56/64-kbps DSU/CSU	All Cisco 2600 series platforms
	1-port T1/fractional T1 with DSU/CSU WAN Interface Card (WIC-1DSU-T1)	All Cisco 2600 series platforms
	1-port high-speed serial (up to 2.048 Mbps)	All Cisco 2600 series platforms
	1- and 2-Port V.90 Modem WICs (WIC-1AM and WIC-2AM)	All Cisco 2600 series platforms
	2-port dual high-speed serial (up to 2.048 Mbps; asynchronous/synchronous support)	All Cisco 2600 series platforms
	2-port asynchronous/synchronous (up to 128 kbps) (WIC-2A/S[=])	All Cisco 2600 series platforms
Advanced Integration Module	Data compression AIM (up to 8.192 Mbps)	All Cisco 2600 series platforms
	Hardware encryption AIM	All Cisco 2600 series platforms

1. The voice/fax and ATM-25 network modules require Cisco IOS Plus feature sets.
2. The 1- or 2-port 10/100 Ethernet LAN interface for the Cisco 2620 and Cisco 2621 series routers is only available in Cisco IOS Release 12.0 XC and later releases.
3. Cisco 2650 and 2651 routers require Cisco IOS Release 12.1(3a)T1 or later releases.
4. See T1/E1 multiflex voice/WAN interface cards in this table.
5. T1 multiflex voice/WAN interface cards can be used in a chassis slot or installed in a digital T1 packet voice trunk module. E1 multiflex voice/WAN interface cards can be installed in a chassis slot.
6. Uses the VWIC-MFT T1/E1 interface cards.
7. Requires the NM-1V or NM-2V network module.

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco 2600 series, log in to the Cisco 2600 series and enter the **show version EXEC** command:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.2 XT Software c2600-js-mz, Version 12.2(2) XT3, RELEASE SOFTWARE
```

Upgrading to a New Software Release

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

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

Feature Set Tables

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

Cisco IOS Release 12.2(2) XT3 supports the same feature sets as Cisco IOS Release 12.2(2) T, but Cisco IOS Release 12.2(2) XT3 can include new features supported by the Cisco 2600 series.



Caution

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

Table 3 and Table 4 list the features and feature sets supported by the Cisco 2600 series in Cisco IOS Release 12.2(2) XT3 and uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced.

Table 3 Feature List by Feature Set for the Cisco 2600 Series Routers, Part 1 of 2

Features	In	Software Images by Feature Sets			
		IP	IP Plus	IP Plus IPSec 3DES	IP/FW/IDS Plus IPSec 3DES
Interfaces (LAN, Serial, Logical)					
16 Port Ethernet Switch Module for 2600 or 3600 (NM-16ESW)	12.2(2) XT	No	Yes	No	No
Multiservice Applications - Voice					
4-Port FXO Voice/Fax Expansion Module (for the NM-HDA Network Module)	12.2(2) XT	No	Yes	No	No
Cisco IOS Telephony Service Version 2.0¹	12.2(2) XT	No	Yes	Yes	Yes
Survivable Remote Site Telephony Version 2.0	12.2(2) XT	No	Yes	Yes	Yes

1. The feature name “Cisco IP Keyswitch Version 2.0” has changed to “Cisco IOS Telephony Service Version 2.0” in Cisco IOS Release 12.2(2) XT. The command mode has changed from keyswitch configuration mode to telephony-service configuration mode.

Table 4 Feature List by Feature Set for the Cisco 2600 Routers, Part 2 of 2

Features	In	Software Images by Feature Sets				
		IP/IPX/AT/DEC Plus	Enterprise Plus	Enterprise Plus IPsec 3DES	Enterprise Plus/H.323 MCM	Enterprise FW/IDS Plus IPsec 3DEs
Interfaces (LAN, Serial, Logical)						
16 Port Ethernet Switch Module for 2600 or 3600 (NM-16ESW)	12.2(2) XT	No	Yes	No	Yes	No
Multiservice Applications - Voice						
4-Port FXO Voice/Fax Expansion Module (for the NM-HDA Network Module)	12.2(2) XT	No	Yes	No	Yes	No
Cisco IOS Telephony Service Version 2.0 ¹	12.2(2) XT	Yes	Yes	Yes	Yes	Yes
Survivable Remote Site Telephony Version 2.0	12.2(2) XT	Yes	Yes	Yes	Yes	Yes

1. The feature name "Cisco IP Keyswitch Version 2.0" has changed to "Cisco IOS Telephony Service Version 2.0" in Cisco IOS Release 12.2(2) XT. The command mode has changed from keyswitch configuration mode to telephony-service configuration mode.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 2600 series for Cisco IOS Release 12.2(2) XT3.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XT3

No new hardware and software features are supported by the Cisco 2600 series for Cisco IOS Release 12.2(2) XT3.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XT2

No new hardware and software features are supported by the Cisco 2600 series for Cisco IOS Release 12.2(2) XT2.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XT1

No new hardware and software features are supported by the Cisco 2600 series for Cisco IOS Release 12.2(2) XT1.

New Hardware Features in Cisco IOS Release 12.2(2) XT

The following new hardware features are supported by the Cisco 2600 series for Cisco IOS Release 12.2(2) XT:

16 Port Ethernet Switch Module for 2600 or 3600 (NM-16ESW)

This feature provides layer 2 switching on Network Modules (NMs) on Cisco 2600 and Cisco 3600 platforms. This feature can be one of the following:

- A singlewide NM with 16 10/100BaseTX ports and one optional 10/100/1000BaseT Gigabit Ethernet port
- A doublewide NM with 36 10/100BaseTX ports and up to two optional 10/100/1000BaseT Gigabit Ethernet ports

Both network modules have the capability to provide inline power for IP telephones by adding an optional (singlewide or doublewide) power daughtercard.

Refer to the following document for additional information:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122limit/122x/122xt/122xt_2/ft1636nm.htm

4-Port FXO Voice/Fax Expansion Module (for the NM-HDA Network Module)

The EM-HDA-4FXO is a 4-port FXO expansion module for the NM-HDA network module for Cisco 2600 and Cisco 3600 series routers. Using a combination of ports on the base board and optional expansion modules, the NM-HDA supports up to 12 FXS + 4 FXO ports or 4 FXS + 8 FXO ports.

Refer to the following document for additional information:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122limit/122x/122xt/122xt_2/ft_hdanm.htm

New Software Features in Cisco IOS Release 12.2(2) XT

The following new software features are supported by the Cisco 2600 series for Cisco IOS Release 12.2(2) XT:

Cisco IOS Telephony Service Version 2.0



Note

The feature name "Cisco IP Keyswitch Version 2.0" has changed to "Cisco IOS Telephony Service Version 2.0" in Cisco IOS Release 12.2(2)XT. The command mode has changed from keyswitch configuration mode to telephony-service configuration mode.



Note

You need to purchase a feature license to turn on the Cisco IOS Telephony Service feature. You also need an account on Cisco.com to access the CiscoIPphone firmware versions.

The Cisco IOS Telephony Service, under the IP Telephony services umbrella, provides basic Cisco IP phone call-handling capabilities in a LAN environment on the Cisco routers. This feature enables the Cisco multiservice routers to act as the Cisco IOS Telephony Service for the Cisco IP Phone 7960, Cisco IP Phone 7940, Cisco IP Phone 7910, and Cisco IP Conference Station 7935 and helps download phone software images, configures, and manages the Cisco IP phones in your LAN. The Cisco IOS Telephony Service provides you with a telephony system perfect for a small office with a small number of extensions.

Refer to the following document for additional information:

Cisco IOS Telephony Service Version 2.0

http://www.cisco.com/univercd/cc/td/doc/product/access/ip_ph/ip_ks/ipkey2.htm

If you installed Cisco IOS Telephony Service Version 1.0 using Cisco IOS Release 12.1.5YD or 12.2.2XB, some commands have changed. You need to perform the following steps before you can upgrade your router image to 12.2(2)XT:

-
- Step 1** Download the Cisco IOS 12.2(2)XT image to the Cisco IOS Telephony Service by entering the **copy tftp flash** command at the enabled prompt. Follow the instructions to download the image from the tftp server.
- Step 2** Configure the Cisco IOS Telephony Service to boot from this new image by entering the following at the enabled prompt:
- ```
Router# configure terminal
Router(config)# boot system flash new image name
```
- Step 3** Remove the configuration for booting from the original image, if configured, by entering the following:
- ```
Router(config)# no boot system flash original image name
Router(config)# end
```
- Step 4** Save the configuration by entering **write memory** at the enabled prompt.
- Step 5** Upload the running configuration on the Cisco IOS Telephony Service to a tftp server by entering the **copy running-config tftp** command at the enabled prompt and following the instructions.
- Step 6** Edit the running configuration file on the tftp server by using a text editor to change the word “keyswitch” to “telephony-service.”
- Step 7** Download the edited running configuration file to the Cisco IOS Telephony Service by entering **copy tftp startup-config** at the enabled prompt and following the instructions.
- Step 8** Reload the Cisco IOS Telephony Service by entering **reload** at the enabled prompt. Enter **no** if you are prompted to save the configuration.

If the configuration register is not set to x2 or x2102, but is set to 0x0 instead, you need to boot the router from ROMMON by performing the following steps:

-
- Step 1** Upload the running configuration on the Cisco IOS Telephony Service to a tftp server by entering **copy running-config tftp** at the enabled prompt and following the instructions.
- Step 2** Edit the running configuration file on the tftp server by using a text editor to change the word “keyswitch” to “telephony-service.”
- Step 3** Download the edited running configuration file to the Cisco IOS Telephony Service by entering **copy tftp startup-config** at the enabled prompt and following the instructions.
- Step 4** Download the Cisco IOS 12.2(2)XT image to the Cisco IOS Telephony Service by entering the **copy tftp flash:/slot0** command at the enabled prompt. Follow the instructions to download the image from the tftp server.
- Step 5** Reload the Cisco IOS Telephony Service by entering **reload** at the enabled prompt. Enter **no** if you are prompted to save the configuration.
- Step 6** Boot the Cisco IOS Telephony Service by entering the **boot flash:/slot0:image-name** command at ROMMON prompt.

Survivable Remote Site Telephony Version 2.0

The Survivable Remote Site (SRS) Telephony feature, under the IP Telephony services umbrella, provides the Cisco CallManager with fallback support for the Cisco IP phones attached to the Cisco router on your local Ethernet. The SRS Telephony feature enables the routers to provide call handling support for the Cisco IP phones when the Cisco IP phones lose connection to the remote primary, secondary, or tertiary Cisco CallManager or when the WAN connection is down.

Cisco CallManager 3.0 supports Cisco IP phones at remote sites attached to Cisco branch office multiservice routers across the WAN. Prior to the SRS Telephony feature, when the WAN connection between the remote branch office router and the Cisco CallManager failed or connectivity with the Cisco CallManager was lost for some reason, the Cisco IP phones at the branch office became unusable for the duration of the failure. The SRS Telephony feature overcomes this problem and enables the basic features of the Cisco IP phones by providing call-handling support on the branch office router for its attached Cisco IP phones. The system automatically detects the failure and uses the Simple Network Auto Provisioning (SNAP) technology to autoconfigure the branch office router to provide call processing for the local Cisco IP phones. When the WAN link or connection to the primary Cisco CallManager is restored, call-handling capabilities for the Cisco IP phones switch back to the primary Cisco CallManager. During a failure when SRS Telephony feature is enabled, the Cisco IP phone displays a message to inform you that the Cisco IP phones are in the Cisco CallManager fallback mode and are able to perform limited functions.

Refer to the following document for additional information:

Survivable Remote Site Telephony Version 2.0

http://www.cisco.com/univercd/cc/td/doc/product/access/ip_ph/srs/fallbak2.htm

MIBs

Current MIBs

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

Deprecated and Replacement MIBs

Old Cisco MIBs will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs without affecting existing Cisco IOS products or network management system (NMS) applications. You can update from deprecated MIBs to the replacement MIBs as shown in [Table 5](#).

Table 5 *Deprecated and Replacement MIBs*

Deprecated MIB	Replacement
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be determined
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB

Table 5 *Deprecated and Replacement MIBs (continued)*

Deprecated MIB	Replacement
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be determined
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be determined

Limitations and Restrictions

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>

Important Notes

The following sections contain important notes about Cisco IOS Release 12.2(2) XT that can apply to the Cisco 2600 series.

Addition of squeeze Command for Cisco 2600 and Cisco 3600 Series Routers

The **squeeze** command, which is used to erase all files marked for deletion on a Flash file system, is now available on Cisco 2600 and Cisco 3600 series routers.

Changes to output attenuation Command

In Cisco IOS Release 12.2(2), the range of the output attenuation command for voice ports has changed. The old range was 0 to 14. The new range is -6 to 14.

Changes to Feature Support with Cisco IOS Release 12.2(2) XT

Cisco IOS Release 12.2(2)XT does not support the following features:

- Remote Source-Route Bridging (RSRB)
- AppleTalk
- Apollo Domain
- Banyan Virtual Integrated Network Service (VINES)
- DECnet
- Xerox Network Systems (XNS)
- LAN Emulation
- LAT
- XRemote

Caveats for Cisco IOS Release 12.2 XT

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

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

All caveats in Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T are also in Cisco IOS Release 12.2(2) XT3.

For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*.

For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*, 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, **log in** to Cisco.com and click **Service and Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

Open Caveats—Cisco IOS Release 12.2(2) XT3

This section documents possible unexpected behavior by Cisco IOS Release 12.2(2) XT3 and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdx04374

If CLNS is configured on the SVI interface (Vlan), the SNPA/MAC is not learned correctly by the router in which the SVI is present. This results in the router sending packets to a non-existent destination MAC address.

There is no workaround.

- CSCdw46537

Symptom:

SPAN doesn't work after moving one port from multi span src ports. Disabling a source interface from a monitor session results in disabling the entire monitor session, not just the specified port.

Workaround:

If a particular source port is required to be removed from a SPAN session, stop the entire SPAN session and re-configure with only the required source ports.

- CSCdw29549

Symptom:

Port security failed when configuring secure MAC addresses on an irrelevant port. When Port Security is configured on two interfaces P1 & P2, and secure MAC addresses M1 & M2 are configured on interfaces P1 & P2 respectively, P1 should only allow packets with source MAC address M1 and P2 should only allow M2. But if a packet with secure MAC address M1 ingresses port P1, then the switch treats it like a station movement and allows the packet to be switched.

Workaround:

Cisco Systems recommends that when station movement takes place, the MAC addresses associated with the port should be cleared in the switch's tables before moving them to another port.

- CSCdw14813

Symptom:

The command **show mac count** shows the wrong number of MAC addresses when compared to the count of addresses shown by the **show mac** command.

There is no workaround.

- CSCdw20431

Symptom:

Traceback is seen on configuring the duplex and speed.

There is no workaround.

Resolved Caveats—Cisco IOS Release 12.2(2) XT3

This section documents possible unexpected behavior by Cisco IOS Release 12.2(2) XT3 and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdv24152
Symptom:
A Cisco router that is running Cisco IOS Release 12.0(17)S and later 12.0 S releases may reset if Frame Relay has been incorrectly configured. If you apply the same data link control (DLC) value on an interface and on its subinterface twice in a row, the router may reset.
There is no workaround.
- CSCdw14262
Symptom:
Cisco Voice over IP (VoIP) gateways that are running a Cisco IOS Release 12.2(1a) IP plus image may experience a high central processing unit (CPU) memory utilization condition at the CCH323_CT process.
There is no workaround.
- CSCin02687
Symptom:
When using the Cisco 7200 series router as a Survivable Remote Site Telephony (SRST) and IOS telephony service router and making more than 30 three-party conference calls, the router crashes. The tracebacks point to the fast-ethernet interface that is being used to connect the router to the IP phones or rather the IP phone simulator.
Workaround:
Restrict the number of three-party conference calls.
- CSCdv62649
Symptom:
The command **ip tacacs source-interface** does not work properly.
Workaround:
If configured to use loopback interface for tacacs packets, the router may still use the interface address.
- CSCdw08182
Symptom:
The VWIC installed in NM-1FE2W appears in **show diag** response but not in the configuration. The router is recognizing that it has a VWIC-1MFT-T1 in a NM-1FE2W in the show diag. The problem is that the T1 controller doesn't appear in the configuration. The FastEthernet is present.
There is no work-around.
- CSCdw26331
Symptom:
A call to a busy FXS port produces an incorrect release cause code. Calls may receive a "no route to destination" message and an incorrect clearing cause code (instead of a user busy cause code) when calls are placed to a Foreign Exchange Station (FXS) on a busy interface. Depending on the equipment that is used, the caller may receive a "number unobtainable" message or fast busy tones instead of a busy tone when this condition occurs.
Workaround:
Add a huntstop on the dial peer that is assigned to the FXS interface.

- CSCdw38767

Symptom:

Some ports on the NM-16ESW / NMD-36-ESW may not be assigned MAC addresses properly.

Conditions:

This occurs when the last digit of the base MAC address burnt in the NM cookie is in the range 0xF0-0xFF for NM-16ESW and range 0xDA-0xFF for NMD-36-ESW.

Workaround:

None.
- CSCdw46803

Symptom:

After a Cisco 1751 router that is running Cisco IOS Release 12.2(2)XT and that has a BRI network termination/traffic engineering (NT/TE) is reloaded, Layers 1 and 2 may become deactivated.

Workaround:

Enter the **shutdown** interface configuration command followed by the **no shutdown** interface configuration command on the BRI interface.
- CSCdw51152

Symptom:

PCI Fatal Error on DMA CH1

When access to Flash/NVRAM occurs as a result of **write memory** or **show run** commands, and the CPU utilization is high due to heavy packet traffic, this error message can sometimes occur.

This is due to the PCI device timing out on the PCI bus waiting for DMA access to memory.

Workaround:
- CSCdu53333

Symptom:

A Cisco router that is running Cisco IOS Release 12.2(1) or 12.2(0.5g) may experience digital signal processor (DSP) reloads or fail to respond after the following DSP Timeout error messages are displayed:

```
%VTSP-3-DSP_TIMEOUT: DSP timeout on event 6: DSP ID=0x1: DSP error stats, chnl
info(5, 13, 0) %VTSP-3-MSGSNDFAIL: channel:5/0:15 (54516) DSP ID:0x1 Message
ID:0x47
```

The problem is intermittent, and DSPs may hang indefinitely as rarely as only once every few weeks. The problem is likely to appear when T.38 fax mode is used and is likely to appear when "codec complexity medium" is configured for the voice card and there is frequent switching between the fax and voice modes.

Workaround:

This DSP firmware defect is fixed in DSP Release 3.6.15 / VCWare Release 9.19 and DSP Release 3.4.49 / VCWare Release 7.38, as well as newer versions of these firmware releases.

- CSCdw54986
Symptom:
A router with primary-ni switchtype will not be able to interoperate with switches that sends CLID/CLIP/CLIR information in FACILITY messages. The router does not accept the FACILITY and disconnects the call.
Workaround:
None
- CSCdw57198
Symptom:
SRST router with FXO ports typically has a connection plan (opx) to route an incoming call on the port to an extension in the router. With this problem, the incoming call cannot be transferred.
There is no workaround.
- CSCdw62829
Symptom:
The High-Density Analog Voice/Fax Network Modules (NM-HDA) for the Cisco 2600 series and Cisco 3600 series routers support Local Voice Busyout (LVBO) features. The **busyout monitor** command can be configured under NM-HDA voice-ports to permit busyout monitoring of local interfaces or remote IP interfaces via Service Assurance Agent (SAA) probes. These features can be configured and can be saved to Non-Volatile RAM (NVRAM) successfully, but on a router reload, the boot-time parser rejects the **busyout monitor** commands.

Any **busyout monitor** command configured under a voice-port on a NM-HDA will disappear from the running-configuration if the router is rebooted. This problem does not occur on VIC-2E/M, VIC-2FXS, and VIC-2FXO voice-ports housed on the NM-1V and NM-2V products.
Workaround:
Issue a **copy startup-config running-config** to re-assert the missing commands.
- CSCdw70410
Symptom:
A Cisco router may reload after a high-density analog voice or fax network module (NM-HDA) that is installed in a slot is replaced by another NM-HDA that has a different hardware configuration.
Workaround:
Use a replacement card that is the same as the original card. This condition will not occur if a card that is the same as the original is used or if a differently configured card is placed in a different slot.
- CSCdw71436
Symptom:
Under rare circumstances, a Cisco router may reload because of a segmentation violation (SegV) when fax calls are present.
There is no workaround.

- CSCdw73302
Symptom:
When using a TCL IVR 2.0 application on a Cisco voice gateway for 2-stage calls, the configured translation rule may be applied for each received digit, instead of only for the initial digit.
Workaround:
None
- CSCdw73507
Symptom:
Ringback is not available for calls coming in from a PSTN. IP phones do not ringback on the network side. When a call comes in from a PSTN, the call should tell the PSTN end so that it can generate ringback on behalf of the IP phones by sending progress ind as 3.
Workaround:
None
- CSCdw75065
Symptom:
Alignment traceback when transfer and conference call. Tracebacks are observed during conference and at times, during regular calls. The tracebacks are on misaligned accesses to memory.
Workaround:
They are subsequently corrected by the hardware but prints to console are annoying and can be viewed as serious potential issues.
- CSCdw82677
Symptom:
Bad voice-quality during conference call. This happens when a Survivable Remote Site Telephony (SRST) ITS GW with loop-back-dns is used in conferencing with a remote GW and where a mis-match of codec types results if the GWs do not have the same codec type configured. Conferencing a-law and u-law mixes doesn't work as some legs in ITS end up with a-law and some with u-law which gives bad voice quality.
Workaround:
This fix is only applicable for a network that has a mixture of A-law and U-law codecs configured in the network. Configure all gateways in the network to use same codec type of either A-law or U-law.
- CSCdw84594
Symptom:
Show diag for Cisco 2600 series routers gives wrong values for NMs which uses TLV_IDPROM. This problem is only on Cisco 2600 series platform
Conditions:
While issuing **sh diag <slot>** command, HDA uses TLV_IDPROM. The hardware version, revision information, and other conditions are displayed wrongly.
Workaround:
None

- CSCdw85359

Symptom:

Caller ID is discarded when an incoming PSTN call through FXO-M1/FXS-M1 is transferred to another number. The Caller-ID displayed after the transfer is "From Private....".

Workaround:

None:

- CSCdx01445

Symptom:

The port does not go on-hook when a supervisory disconnect tone is sent from the PSTN. When call comes in through FXO port to IP Phone, the IP Phone goes into Alerting state. If the caller hangs up at this point, the PSTN sends a supervisory disconnect tone to the FXO where no action is taken which results in not freeing up the port immediately.

Workaround:

None

- CSCuk31298

Symptom:

The IP phone locks during a call to a call forward busy number. This condition occurs in a setup whereby the call forward busy feature is configured using the Cisco IOS Telephony Service (ITS) on an IP phone (phone A) to a second IP phone (phone B). When a call is made from phone A to another phone (phone C), the call can be answered normally.

When a second call is placed from another phone to phone A via a loopback-directory number (loopback-dn), the call is forwarded to phone B. As this call is received, the original call is incorrectly cleared by the node on phone C while the call is still shown as "up" on phone A. When this condition occurs, phone A is no longer able to place or receive calls and has to be powered down to be restored to working condition.

Workaround:

This condition affects only the first IP phone in the internal control table on the router. The first IP phone is typically indicated as "ephone 1" when the **show ephone EXEC** command is issued.

To prevent this condition from occurring when the router is operating in the ITS mode, add a dummy phone entry as the first IP phone or "ephone 1" in the internal control table on the router to prevent an active phone from being listed as the first IP phone in the internal control table of the router.

Reload the router to ensure that the dummy phone occupies the first position in the control table. There is currently no workaround to this condition if the router is operating in the Survivable Remote Site Telephony (SRST) mode (call manager fall back).

- CSCuk31300

Symptom:

Ringling presented to caller before state of called number is known.

When using loopback-dns for outgoing calls, the router presents a ringing tone to the IP phone caller as soon as the call has been routed and before the state of the called number is known.

If the called number is busy, this can result in a ringing and then busy tone being played to the caller. This does not happen if loopback-dns are not used, or if they are used for incoming calls.

Workaround:

Do not use loopback-dns for outgoing calls.

- CSCuk31512

Symptom:

On a miss dialed call transfer, a new call shows previously dialed digits.

When a Keyswitch IP phone user receives an incoming call, and they then attempt to transfer that call, but while dialling they realize they are dialling a wrong number, the transferrer has two options. If they incorrectly select "New Call", the phone displays the previous dialed digits. If the caller then dials more digits, these appear after the previous digits. The phone however only dials the digits presented after the "New Call" button was pressed, and the call is successful.

Workaround.

None

- CSCuk31658

Symptom:

On three-way calls setup by a Survivable Remote Site Telephony / Keyswitch IP phone, if the second call leg to be setup clears their call, the speech path from the IP phone where the conference was setup to the other phone is lost. The problem is observed only when the second call clears, and only if another IP phone is used in addition to the IP phone which set the conference up. Voice path is re-established if the phone that initiated the conference temporarily places the remaining caller on-hold and then immediately resumes the call.

Workaround:

None

- CSCdw62185

This release integrates the DSPware 3.6.15 release. Upgrading to the DSPware 3.6.15 release to fix CSCdu53333 (dsp timeout) remedies the voice quality problem in this caveat.

Open Caveats—Cisco IOS Release 12.2(2) XT2

There are no open caveats specific to Cisco IOS Release 12.2(2)XT2 that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.2(2) XT2

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(2)XT2. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdw65903

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

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

Open Caveats—Cisco IOS Release 12.2(2) XT1

There are no open caveats specific to Cisco IOS Release 12.2(2) XT1 that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.2(2) XT1

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(2) XT1. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdv48261

The IOS Firewall Feature set, also known as Cisco Secure Integrated Software, also known as Context Based Access Control (CBAC), and introduced in IOS version 11.2P, has a vulnerability that permits traffic normally expected to be denied by the dynamic access control lists.

This vulnerability is documented as Cisco Bug ID CSCdv48261.

No other Cisco product is vulnerable.

There is no workaround.

This advisory is available at

<http://www.cisco.com/warp/public/707/IOS-cbac-dynacl-pub.shtml>

- CSCdv51007

GE interface shows huge no of input/output pkts without sending any from anywhere.

- CSCdv90919

Problem is occurring when the customer is attempting to receive dial-tone on ISDN trunks. The method that the customer uses to obtain this dial-tone is to configure the ISDN trunks for overlap-receiving, and send in a setup message with no called party number. The connected PBX then allows the calling party to hear this dial-tone, but continues to collect digits, which will be sent over the ISDN link as INFO messages. In this case, if the router has an incoming dial-peer that has an exact match to the calling party number, a PI value is not returned in the SETUP_ACK message. This causes the dial-tone from the router to not be heard.

There is no workaround.

- CSCdw16602

IOS will Release a call when receiving a disconnect with cause=user busy.

- CSCdw29595

Symptoms: Performance for the encrypt path degrades when using this image with the hardware encryption card. The performance loss is due to encrypted packets being process instead of fastswitched.

Conditions: IPSEC applied to interfaces while using the encryption accel card.

There is no workaround.

Open Caveats—Cisco IOS Release 12.2(2) XT

This section documents possible unexpected behavior by Cisco IOS Release 12.2(2) XT and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdw04503

Call-forward commands not entered for E164 dial-peers.

When dialplan pattern is configured for the local IP Phones, the existing call-forward commands under ephone-dn are not entered under the E.164 dial-peers created by the dialplan pattern command. This can cause a call not getting forwarded if you dial the entire E164 number.

This problem happens only if you add or edit the existing dialplan pattern with call-forward commands already in place. One way to avoid this problem is to configure the right dialplan pattern before configuring the call-forward commands. Additionally, if you modify the dialplan pattern commands, configure the call forward commands again under ephone-dn. This creates the call-forward commands under the E164 dial-peers created.

- CSCdv78130

Inconsistent music on hold (MOH) during conference.

Music on hold works inconsistently in certain conditions. A calls B and conferences to C. B puts the conference on hold. Both A and C hear the MOH. B resumes the call and after a while puts the conference on hold again. Now only A (initiator) hears the MOH.

There is no workaround.

- CSCdv72916

Remote branch Analog Phone to IP Phone call disconnected during CM reconnect.

Calls from Analog Phone to IP Phone during call-manager-fallback mode may get disconnected when the WAN link to CM comes back up. If a call is made in “normal mode” and the WAN link fails, the call stays up even though the WAN link failed. If the WAN link comes back up during the call and the call is between two IP phones or two analog phones, the call is not dropped. However, if the call is between an IP phone and an analog phone, the call is dropped.

There is no workaround.

Resolved Caveats—Cisco IOS Release 12.2(2) XT

There are no resolved caveats specific to Cisco IOS Release 12.2(2) XT that require documentation in the release notes.

Related Documentation

The following sections describe the documentation available for the Cisco 2600 series. These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, feature modules, and other documents.

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

Use these release notes with these documents:

- [Release-Specific Documents, page 24](#)
- [Platform-Specific Documents, page 24](#)
- [Feature Modules, page 25](#)
- [Cisco IOS Software Documentation Set, page 25](#)

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.2 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.2 T*

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Release Notes: Cross-Platform Release Notes

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Release Notes: Cross-Platform Release Notes

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

Technical Documents

- Section “[Caveats for Cisco IOS Release 12.2 XT](#)” in these release notes

As a supplement to the caveats listed in “[Caveats for Cisco IOS Release 12.2 XT](#)” in these release notes, see *Caveats for Cisco IOS Release 12.2*. and *Caveats for Cisco IOS Release 12.2 T*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Release Notes: Caveats

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Caveats



Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, log in to Cisco.com and click **Service & Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to <http://www.cisco.com/support/bugtools/bugtool.shtml>.

Platform-Specific Documents

These documents are available for the Cisco 2600 series on Cisco.com and the Documentation CD-ROM:

- *Cisco 2600 Series Modular Routers Quick Start Guide*
- Hardware Installation Documents for Cisco 2600 Series
- Software Configuration Documents for Cisco 2600 Series
- Regulatory Compliance and Safety Documents for Cisco 2600 Series

On Cisco.com at:

Technical Documents: Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 2600 Series Routers

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 2600 Series Routers

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.2(2) XT3 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: Cisco IOS Software: Cisco IOS Release 12.2: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: New Feature Documentation

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents. The Cisco IOS software documentation set is shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. Chapters in a configuration guide describe protocols, configuration tasks, and Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Configuration Guides and Command References

Cisco IOS Release 12.2 Documentation Set Contents

Table 6 lists the contents of the Cisco IOS Release 12.2 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: Cisco IOS Software: Cisco IOS Release 12.2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2

Table 6 Cisco IOS Release 12.2 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> • <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	<ul style="list-style-type: none"> Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> • <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2</i> 	<ul style="list-style-type: none"> Transparent Bridging SRB Token Ring Inter-Switch Link Token Ring Route Switch Module RSRB¹ DLSW+ Serial Tunnel and Block Serial Tunnel LLC2 and SDLC IBM Network Media Translation SNA Frame Relay Access NCIA Client/Server Airline Product Set DSPU and SNA Service Point SNA Switching Services Cisco Transaction Connection Cisco Mainframe Channel Connection CLAW and TCP/IP Offload CSNA, CMPC, and CMPC+ TN3270 Server
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Technologies Configuration Guide: Dial Access</i> • <i>Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications</i> • <i>Cisco IOS Dial Technologies Command Reference, Volume 1 of 2</i> • <i>Cisco IOS Dial Technologies Command Reference, Volume 2 of 2</i> 	<ul style="list-style-type: none"> Dial Access Modem and Dial Shelf Configuration and Management ISDN Configuration Signaling Configuration Point-to-Point Protocols Dial-on-Demand Routing Dial Backup Dial Related Addressing Service Network Access Solutions Large-Scale Dial Solutions Cost-Control Solutions Internetworking Dial Access Scenarios

Table 6 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	LAN Interfaces Serial Interfaces Logical Interfaces
<ul style="list-style-type: none"> • <i>Cisco IOS IP Configuration Guide</i> • <i>Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services</i> • <i>Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols</i> • <i>Cisco IOS IP Command Reference, Volume 3 of 3: Multicast</i> 	IP Addressing IP Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i> 	AppleTalk ¹ Novell IPX
<ul style="list-style-type: none"> • <i>Cisco IOS Voice, Video, and Fax Configuration Guide</i> • <i>Cisco IOS Voice, Video, and Fax Command Reference</i> 	Voice over IP Call Control Signaling Voice over Frame Relay Voice over ATM Telephony Applications Trunk Management Fax, Video, and Modem Support
<ul style="list-style-type: none"> • <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms
<ul style="list-style-type: none"> • <i>Cisco IOS Security Configuration Guide</i> • <i>Cisco IOS Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options Supported AV Pairs
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation ¹
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	ATM Frame Relay SMDS X.25 and LAPB

Table 6 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> <i>Cisco IOS Mobile Wireless Configuration Guide</i> <i>Cisco IOS Mobile Wireless Command Reference</i> 	General Packet Radio Service
<ul style="list-style-type: none"> <i>Cisco IOS Terminal Services Configuration Guide</i> <i>Cisco IOS Terminal Services Command Reference</i> 	ARA LAT ¹ NASI Telnet TN3270 XRemote ¹ X.28 PAD Protocol Translation
<ul style="list-style-type: none"> <i>Cisco IOS Configuration Guide Master Index</i> <i>Cisco IOS Command Reference Master Index</i> <i>Cisco IOS Debug Command Reference</i> <i>Cisco IOS Software System Error Messages</i> <i>New Features in 12.2-Based Limited Lifetime Releases</i> <i>New Features in Release 12.2 T</i> <i>Release Notes</i> (Release note and caveat documentation for 12.2-based releases and various platforms) 	

1. Not supported in Cisco IOS Release 12.2(2)XT.

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>
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