



# Release Notes for Cisco 7000 Family for Cisco IOS Release 12.2 XA

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February 9, 2002

Cisco IOS Release 12.2(2)XA5

OL-1670-02 Rev. B0



Note

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You can find the most current Cisco IOS documentation on Cisco.com. This set of electronic documents may contain updates and modifications made after the hard-copy documents were printed.

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These release notes for the Cisco 7000 Family describe the enhancements provided in Cisco IOS Release 12.2(2)XA4. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.2(2)XA4, see the [“Important Notes” section on page 7](#) and *Caveats for Cisco IOS Release 12.2*. The caveats document is updated for every maintenance release and is located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.2* located on Cisco.com and the Documentation CD-ROM.

## Contents

These release notes describe the following topics:

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# System Requirements

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

- [Memory Recommendations, page 2](#)
- [Supported Hardware, page 2](#)
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- [Upgrading to a New Software Release, page 3](#)
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## Memory Recommendations

[Table 1](#) describes the memory recommendations and the images supported by Cisco IOS Release 12.2(2)XA4 for the Cisco 7000 family of routers.

**Table 1** Memory Recommendations for Cisco IOS Release 12.2 XA

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco 7200	Enterprise Standard Feature Set	Enterprise	c7200-js-mz	16 MB	128 MB	RAM

## Supported Hardware

Cisco IOS Release 12.2(2)XA4 supports the following Cisco 7000 family platforms:

- Cisco 7200 series routers (including the Cisco 7202, Cisco 7204, and Cisco 7206)
- Cisco 7200 VXR routers (including the Cisco 7204VXR and Cisco 7206VXR)

For detailed descriptions of the new hardware features, see the [“New and Changed Information” section on page 4](#).

## Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco 7000 family router, log in to the Cisco 7000 family router and enter the **show version EXEC** command:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.2 XA Software (c7200-js-mz), Version 12.2(2)XA4, 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](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)XA4 supports the same feature sets as Cisco IOS Release 12.2, but Cisco IOS Release 12.2(2)XA4 can include new features supported by the Cisco 7000 Family.



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](mailto:export@cisco.com).

Table 2 lists the features and feature sets supported by the Cisco 7000 family in Cisco IOS Release 12.2(2)XA4 and uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, (1) means a feature was introduced in 12.2(1)MB.



Note

This table might not be cumulative or list all the features in each image. You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.

**Table 2** Feature List by Feature Set for the Cisco 7500 Series

Features	In	Software Images by Feature Sets			
		Enterprise			
<b>Miscellaneous</b>					
Cisco H.323 Scalability and Interoperability Enhancements	(2)	Yes			

# New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA.

## New Hardware Features in Cisco IOS Release 12.2(2)XA4

There are no new hardware features supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA4.

## New Software Features in Cisco IOS Release 12.2(2)XA4

There are no new software features supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA4.

## New Hardware Features in Cisco IOS Release 12.2(2)XA1

There are no new hardware features supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA1.

## New Software Features in Cisco IOS Release 12.2(2)XA1

There are no new software features supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA1.

## New Hardware Features in Cisco IOS Release 12.2(2)XA

There are no new hardware features supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA.

## New Software Features in Cisco IOS Release 12.2(2)XA

The following new software features are supported by the Cisco 7000 family for Cisco IOS Release 12.2(2)XA:

### Cisco H.323 Scalability and Interoperability Enhancements

Platforms: Cisco 7200 series routers

The Cisco H.323 Scalability and Interoperability Enhancements feature upgrades the Cisco H.323 Gatekeeper (GK) and Cisco H.323 Gateway to comply with H.323 Version 3. The enhancements include:

- Support for mandatory H.323 Version 3 elements in the gateway and GK, including:
  - multipleCalls—This field is set to TRUE in all H.225 messages for TCP calls.
  - maintainConnection— If the call-idle timer is set to a nonzero value, this field is set to TRUE in all H.225 messages for TCP calls. Otherwise, it is set to FALSE.
  - alternateTransportAddresses—This structure contains the keyword **annexE** and the transport address of an alternate Annex E.
  - useSpecifiedTransport—This field is marked as **annexE**. It is accompanied by the alternateTransportAddresses structure which specifies the Annex E transport address.
- Support for H.225 call signalling over UDP. H.225 messages can be transported over TCP or UDP (as described in Annex E). At registration time, a Cisco H.323 Gateway indicates to the GK whether it is capable of transmitting over both TCP and UDP. If it is, the Cisco H.323 Gateway registers both its TCP and UDP addresses.
- Address resolution using border elements (BE). The BE (as described in Annex G) is colocated with the Cisco H.323 Gatekeeper and provides additional address resolution capabilities. The BE can cache address information from neighboring BEs. When the GK receives a call that it cannot resolve, it can contact its local BE. If the address is in the BE's cache, the BE on the GK sends an AccessRequest to the BE in the terminating domain. If the address is not in the BE's cache, then the BE attempts to resolve the address by sending an AccessRequest to each of its neighboring BEs.
- Support for bandwidth request (BRQ) messages. The Cisco H.323 Gateway requests the maximum bandwidth required to establish a call when it requests call admission using the admission request (ARQ) message. If the Codec type used for the established call requires less bandwidth than that allocated, the Cisco H.323 Gateway reports the lesser amount using the BRQ message. This BRQ message reports the actual bandwidth being utilized by the call. The bandwidth reported in the BRQ overrides the value previously reported in the ARQ message.
- Support for concurrent calls over a single H.225 call signalling channel. The call signalling channel is capable of carrying signalling for many concurrent calls. It uses the call reference value to associate a message with the call. H.323 endpoints indicate whether they are capable of handling multiple calls by setting a flag in the H.225 messages. If endpoint is unable to process any new calls on a given TCP connection, it can request a new connection by rejecting the SETUP message with a ReleaseComplete message with the cause code set to NewConnectionNeeded. The originating endpoint then establishes a new TCP connection and continues with the call setup. Cisco gateways have been enhanced to establish a new connection if a third-party endpoint requests one.

# 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 3](#).

**Table 3** *Deprecated and Replacement MIBs*

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be determined
OLD-CISCO-DECNET-MIB	To be determined
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be determined
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be determined
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be determined

# Important Notes

## Image Obsolescence, Cisco IOS Release 12.2(2)XA

All Cisco 7200 series images in Cisco IOS Releases 12.2(2)XA have been obsoleted from manufacturing.

These images are now available in Cisco IOS Release 12.2(2)XA1.



### Note

Disclaimer: In order to increase network availability, Cisco recommends that you upgrade affected IOS images with the suggested replacement software images. Cisco will discontinue manufacturing shipment of affected IOS images. Any pending order will be substituted by the replacement software images. PLEASE BE AWARE THAT FAILURE TO UPGRADE THE AFFECTED IOS IMAGES MAY RESULT IN NETWORK DOWNTIME. The terms and conditions that governed your rights and obligations and those of Cisco, with respect to the deferred images, will apply to the replacement images.

## Caveats for Cisco IOS Release 12.2 XA

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)XA4.

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 **Software Center: Cisco IOS Software: Bug Toolkit: Bug Navigator II**. Another option is to go to [http://www.cisco.com/cgi-bin/Support/Bugtool/launch\\_bugtool.pl](http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl).

Because Cisco IOS Release 12.2(2)XA is the initial base release, there are no resolved caveats. For a list of the resolved caveats, refer to the next set of release notes for this release version.

DDTS Number	Open in Release	Resolved in Release
CSCdr56330		12.2(2)XA
CSCds24111		12.2(2)XA1
CSCdt30211		12.2(2)XA
CSCdt59455		12.2(2)XA1

CSCdt87418	12.2(2)XA1	
CSCdt93862		12.2(2)XA1
CSCdu04236		12.2(2)XA1
CSCdu07504		12.2(2)XA1
CSCdu08214		12.2(2)XA1
CSCdu30105		12.2(2)XA1
CSCdu46942		12.2(2)XA1
CSCdu52821	12.2(2)XA1	
CSCdu56186		12.2(2)XA1
CSCdu57066		12.2(2)XA1
CSCdu59975		12.2(2)XA1
CSCdu62721		12.2(2)XA1
CSCdu63369		12.2(2)XA1
CSCdu70661		12.2(2)XA1
CSCdu78226	12.2(2)XA1	
CSCdu82224		12.2(2)XA1
CSCdu87080		12.2(2)XA1
CSCuk21553		12.2(2)XA1
CSCuk23244		12.2(2)XA1

## Resolved Caveats—Release 12.2(2)XA5

All caveats in this section have been resolved in Cisco IOS Release 12.2(2)XA5 but may be open in previous Cisco IOS releases.

- 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)XA4

This section documents possible unexpected behavior by Cisco IOS Release 12.2(2)XA4 and describes only severity 1 and 2 caveats and select severity 3 caveats.

There are no open caveats for Cisco IOS Release 12.2(2)XA4.

## Resolved Caveats—Cisco IOS Release 12.2(2)XA4

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(2)XA4. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

There are no resolved caveats for Cisco IOS Release 12.2(2)XA4.



## Open Caveats—Cisco IOS Release 12.2(2)XA1

This section documents possible unexpected behavior by Cisco IOS Release 12.2(2)XA1 and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdt87418

Call redirection on a Cisco IOS voice gateway may fail when “huntstop” is configured on the incoming Voice over IP (VoIP) dial-peer.

Workaround: Remove the huntstop configuration from the incoming VoIP dial-peer.

- CSCdu52821

A Cisco 7200 router with PA-VXC-2TE1+ may, under heavy stress, experience Digital Signal Processor (DSP) timeouts followed by a router reload due to a Watchdog Hard Reset.

There are no known workarounds.

- CSCdu78226

On a Cisco 7200 series router, calls may fail several hours into a load run and the following message is shown on the console:

```
%VTSP-3-DSP_TIMEOUT: DSP timeout on event 0x6:
```

One or more Digital Signal Processors (DSP) may be shown as not responding.

Workaround: Reset the DSP.

Alternative Workaround: Invoke shut/noshut on the voice port when the problem occurs.

## Resolved Caveats—Cisco IOS Release 12.2(2)XA1

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(2)XA1. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCds24111

On a Cisco 7200 series router, the ATM sub-interface can be entered without specifying link type. It is a parser related issue and once the subinterface is created it doesn't show up in the config.

Cache entries are not formed properly for the commands that use TEST macros like IFELSE, ASSERT, etc.

Workaround: Disable the parser cache using the **no parser cache** config command.

- CSCdt59455

A Cisco router executing the **vty-async virtual-template <n>** command may have the Point-to-Point Protocol (PPP) connection abruptly terminated if the “virtual-template <n>” interface has “no peer default ip address”.

Workaround: Configure “peer default ip address pool WORKAROUND” and then “ip local pool WORKAROUND a.b.c.d” where a.b.c.d is an IP address.

- CSCdt93862

When HTTP server is enabled and local authorization is used, it is possible, under some circumstances, to bypass the authentication and execute any command on the device. In that case, the user will be able to exercise complete control over the device. All commands will be executed with the highest privilege (level 15).

All releases of Cisco IOS® software, starting with the release 11.3 and later, are vulnerable. Virtually, all mainstream Cisco routers and switches running Cisco IOS are affected by this vulnerability.

Products that are not running Cisco IOS software are not vulnerable.

The workaround for this vulnerability is to disable HTTP server on the router or to use Terminal Access Controller Access Control System (TACACS+) or Radius for authentication.

This advisory will be posted at <http://www.cisco.com/warp/public/707/IOS-httplevel-pub.html>

- CSCdu04236

A Cisco 7200 series router running Cisco IOS Release 12.2(1c) and voice features may crash with the following message:

```
System was restarted by error - a Software forced crash, PC 0x60437124 at 17:43:43 UTC
Thu Aug 23 2001
```

There are no known workarounds.

- CSCdu07504

A Cisco router that is running Cisco IOS Release 12.1(5)XM2 may experience a software-forced reload when the **show voice dsp EXEC** command is entered. The following message is displayed when the **show version EXEC** command is entered:

```
mc3810-sm-ish02 uptime is 10 minutes System returned to ROM by error - software forced crash,
PC 0x2242AC System image file is "flash:mc3810-a2jsv5-mz.121-5.xm2"
```

There are no known workarounds.

- CSCdu08214

A Cisco router using the CallTracker Management Information Base (MIB) to poll for the userid of active users will have NULL return when Calling Line Identification (CLID) and Digital Number Identification Service (DNIS) information is not available.

There are no known workarounds.

- CSCdu30105

A Cisco 7200 series router running Cisco IOS Release 12.1(7.3)E or 12.2(1.3) may experience a reload when a vendor-specific challenge handshake authentication protocol authentication is performed through a RADIUS server when the wrong username or password is entered and when the RADIUS server returns an access-reject with at least one attribute other than the vendor-specific attribute (VSA).

There are no known workarounds.

- CSCdu46942

A Cisco router with Interactive Voice Response (IVR) scripts playing a “Number Unobtainable” (NU) tone will result in a dial tone. If cptone is set to *GB*, then there will be silence (no tone).

There are no known workarounds.

- CSCdu56186

On a Cisco router, a Resource Reservation Protocol (RSVP) and signal-only call is cleared by a terminating gateway after the gateway receives a Admission Confirm (ACF) message from the gatekeeper. This is the same problem as that reported with CSCdt66034. The fix for CSCdt66034 does not include the gatekeeper configuration case.

There are no workarounds.
- CSCdu57066

A Cisco router with voice ports can get stuck in the S\_PROCEEDING state because the CCH323\_H225\_EVENT\_CONN\_LOST event is not handled in the CCH323\_H225\_STATE\_ACC\_FASTSTART\_PROGRESS state.

There are no known workarounds.
- CSCdu59975

On a Cisco router, a glare condition may occur randomly on all voice platforms in Cisco IOS Release 12.2(1a), 12.2(2)T, or 12.2 XA when a busy port is assigned to a new incoming call. A glare condition occurs when two calls are assigned to the same port. For example, if there are only two ports, and they are both busy on a call when a new call comes in without a check for glare, one of the busy ports is allocated to the new call. This condition causes the preexisting call to be disconnected and the new call to receive a busy signal.

There are no known workarounds.
- CSCdu62721

On a Cisco router, incoming calls may fail to connect and may be released. The system does not put B channels on the first E1/T1 in service. Incoming calls are failing with channel unavailable. If the channels are "busyout" and "unbusy" the service is restored and calls can be properly accepted. This is observed on Cisco 5300 and 5800 universal access servers.

There are no known workarounds.
- CSCdu63369

On a Cisco router, traceback messages may be observed on the Cisco Router console during call disconnect. This does not affect any functionality.

There are no known workarounds.
- CSCdu70661

On the Cisco AS5800 running IOS version 12.1(5)XM4, after provisioning the AS5800 to use SS7 Interconnect for Voice Gateways services for the first time, all the channels except for the 24th channel of the primary NFAS span may be stuck in channel service state = outofservice.

Workaround: Reload the box or perform a shut/no shut on the T3 controller or the individual T1 controllers.

- CSCdu82224  
 A Cisco router sending a V.120 64Kbps call may have the call be mis-identified as a Personal Handy Phone System (PIAFS) call by the Cisco Universal Access Server AS5300/AS5400/AS5800/AS5850. This occurs if the Terminal Adaptor sent a Q.931 SETUP frame matching the following criterias:
  1. The Low Layer Compatibility fields were present in SETUP frame.
  2. The Octet 5 identify this was a V.120 call and Octet 5A user rate was 64Kbps or 32Kbps.
 Workaround: Configure the Terminal Adaptor not to send any Lower Layer Compatibility fields for V.120 calls and use the **autodetect encapsulation ppp v120** command at the D-channel configuration.
- CSCdu87080  
 A Cisco router using a Trunking Gateway Control Protocol (TGCP) endpoint name with a domain name attached, such as ds/s-0/ds1-1/1@testnet.com, will have the endpoint name parsing fail and the message rejected with 500 error code.  
 Workaround: Use the local name for TGCP endpoints (ds/s-0/ds1-1/1) only.
- CSCuk21553  
 A Cisco router performing the **telnet** command with the /ipv6 and /ipv4 flags may not function properly. With or without these flags, telnet fails to perform a DNS lookup of the target hostname. However, if some application other than telnet should first perform the DNS lookup so that the host of interest is in the cache, then telnet will be able to contact the host by name.  
 Workaround: Specify the telnet server by IP address rather than by hostname.  
 Alternative workaround: Use the **ip host** command to enter the name->address mapping locally.
- CSCuk23244  
 On a Cisco router, configuring a Primary Rate Interface (PRI) controller for an Integrated Services Digital Network (ISDN) using the **pri-group** command may cause an ISDN layer 2 failure.  
 Workaround: Save the ISDN configuration and reload the router.  
 Alternative workaround: Perform a **shut** command followed by a **no shut** command on the PRI controller.

## Resolved Caveats—Cisco IOS Release 12.2(2)XA

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

- CSCdr56330  
 On a Cisco router with Gatekeeper running Cisco IOS Release 12.1(1)T, when the Gatekeeper has endpoint registrations with E.164 numbers, new “zone prefix” entries cannot be added to the Gatekeeper routing table.  
 Workaround: Shutdown the Gatekeeper before adding new “zone prefix” entries.
- CSCdt30211  
 On a Cisco Route Switch Processor (RSP) that is running Cisco IOS Release 12.1, using the **no encapsulation smds** interface configuration command on a serial interface may cause the Ethernet interface on a connected router to go down.  
 There are no known workarounds.

## Related Documentation

The following sections describe the documentation available for the Cisco 7000 family. 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 13](#)
- [Platform-Specific Documents, page 14](#)
- [Feature Modules, page 15](#)
- [Cisco IOS Software Documentation Set, page 15](#)

## 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*

On Cisco.com at:

**Technical Documents: Cisco IOS Software Configuration: 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**

- *Caveats for Cisco IOS Release 12.2*

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

On Cisco.com at:

**Technical Documents: Cisco IOS Software Configuration: 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**

- *Caveats for Cisco IOS Release 12.2 T*

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

On Cisco.com at:

**Technical Documents: Cisco IOS Software Configuration: 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**




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**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 **Software Center: Cisco IOS Software: Bug Toolkit: Bug Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools/bugtool.shtml>.

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## Platform-Specific Documents

These documents are available for the Cisco 7000 family of routers on Cisco.com and the Documentation CD-ROM:

- *Cisco 7200 VXR Installation and Configuration Guide*
- *Cisco 7206 Installation and Configuration Guide*
- *Cisco 7204 Installation and Configuration Guide*
- *Quick Reference for Cisco 7204 Installation*
- *Cisco 7202 Installation and Configuration Guide*
- *Quick Start Guide Cisco 7100 Series VPN Router*
- *Cisco 7010 User Guide*
- *Cisco 7000 User Guide*
- *Cisco 7000 Hardware Installation and Maintenance*

On Cisco.com at:

**Technical Documents: Documentation Home Page: Core/High-End Routers**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Core/High-End Routers**

## Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.2(2)XA4 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 Configuration: 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: Documentation Home Page: Cisco IOS Software Configuration: 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 4 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: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.2**

On the Documentation CD-ROM at:

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

**Table 4 Cisco IOS Release 12.2 Documentation Set**

Books	Major Topics
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Configuration Fundamentals Configuration Guide</i></li> <li>• <i>Cisco IOS Configuration Fundamentals Command Reference</i></li> </ul>	<ul style="list-style-type: none"> <li>Cisco IOS User Interfaces</li> <li>File Management</li> <li>System Management</li> </ul>
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i></li> <li>• <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2</i></li> <li>• <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2</i></li> </ul>	<ul style="list-style-type: none"> <li>Transparent Bridging</li> <li>SRB</li> <li>Token Ring Inter-Switch Link</li> <li>Token Ring Route Switch Module</li> <li>RSRB</li> <li>DLSW+</li> <li>Serial Tunnel and Block Serial Tunnel</li> <li>LLC2 and SDLC</li> <li>IBM Network Media Translation</li> <li>SNA Frame Relay Access</li> <li>NCIA Client/Server</li> <li>Airline Product Set</li> <li>DSPU and SNA Service Point</li> <li>SNA Switching Services</li> <li>Cisco Transaction Connection</li> <li>Cisco Mainframe Channel Connection</li> <li>CLAW and TCP/IP Offload</li> <li>CSNA, CMPC, and CMPC+</li> <li>TN3270 Server</li> </ul>



**Table 4 Cisco IOS Release 12.2 Documentation Set (continued)**

Books	Major Topics
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Dial Technologies Configuration Guide: Dial Access</i></li> <li>• <i>Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications</i></li> <li>• <i>Cisco IOS Dial Technologies Command Reference, Volume 1 of 2</i></li> <li>• <i>Cisco IOS Dial Technologies Command Reference, Volume 2 of 2</i></li> </ul>	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
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Interface Configuration Guide</i></li> <li>• <i>Cisco IOS Interface Command Reference</i></li> </ul>	LAN Interfaces Serial Interfaces Logical Interfaces
<ul style="list-style-type: none"> <li>• <i>Cisco IOS IP Configuration Guide</i></li> <li>• <i>Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services</i></li> <li>• <i>Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols</i></li> <li>• <i>Cisco IOS IP Command Reference, Volume 3 of 3: Multicast</i></li> </ul>	IP Addressing IP Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> <li>• <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i></li> <li>• <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i></li> </ul>	AppleTalk Novell IPX
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</i></li> <li>• <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</i></li> </ul>	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Voice, Video, and Fax Configuration Guide</i></li> <li>• <i>Cisco IOS Voice, Video, and Fax Command Reference</i></li> </ul>	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"> <li>• <i>Cisco IOS Quality of Service Solutions Configuration Guide</i></li> <li>• <i>Cisco IOS Quality of Service Solutions Command Reference</i></li> </ul>	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms

**Table 4 Cisco IOS Release 12.2 Documentation Set (continued)**

Books	Major Topics
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Security Configuration Guide</i></li> <li>• <i>Cisco IOS Security Command Reference</i></li> </ul>	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"> <li>• <i>Cisco IOS Switching Services Configuration Guide</i></li> <li>• <i>Cisco IOS Switching Services Command Reference</i></li> </ul>	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Wide-Area Networking Configuration Guide</i></li> <li>• <i>Cisco IOS Wide-Area Networking Command Reference</i></li> </ul>	ATM Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Mobile Wireless Configuration Guide</i></li> <li>• <i>Cisco IOS Mobile Wireless Command Reference</i></li> </ul>	General Packet Radio Service
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Terminal Services Configuration Guide</i></li> <li>• <i>Cisco IOS Terminal Services Command Reference</i></li> </ul>	ARA LAT NASI Telnet TN3270 XRemote X.28 PAD Protocol Translation
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Configuration Guide Master Index</i></li> <li>• <i>Cisco IOS Command Reference Master Index</i></li> <li>• <i>Cisco IOS Debug Command Reference</i></li> <li>• <i>Cisco IOS Software System Error Messages</i></li> <li>• <i>New Features in 12.2-Based Limited Lifetime Releases</i></li> <li>• <i>New Features in Release 12.2 T</i></li> <li>• <i>Release Notes</i> (Release note and caveat documentation for 12.2-based releases and various platforms)</li> </ul>	

# Obtaining Documentation

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

## World Wide Web

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

## Documentation CD-ROM

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

## Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:  
[http://www.cisco.com/cgi-bin/order/order\\_root.pl](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 products 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](mailto:bug-doc@cisco.com).

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

The following sections provide sources for obtaining technical assistance from Cisco Systems.

## 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/>

Cisco.com registered users who cannot resolve a technical issue by using the TAC online resource 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.

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