Release Notes for Cisco 7000 Family for Cisco IOS Release 12.2 YZ

June 26, 2003

Cisco IOS Release 12.2(11)YZ2

OL-1620-03

These release notes for the Cisco 7000 family describe the enhancements provided in Cisco IOS Release 12.2(11)YZ2. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.2(11)YZ2, see the "Important Notes" section on page 10 and *Caveats for Cisco IOS Release 12.2 T.* 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 T* located on Cisco.com and the Documentation CD-ROM.

Documentation Survey

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http://forums.cisco.com/eforum/servlet/viewsflash?cmd=showform&pollid=rtgdoc01!rtgdoc.

Contents

These release notes describe the following topics:

CISCO SYSTEMS

System Requirements

This section describes the system requirements for Cisco IOS Release l2.2 B and includes the following sections:

Memory Recommendations

Table 1   Images and Memory Recommendations for Cisco IOS Release 12.2(11)YZ2

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco 7300 Series	IP Standard Feature Set	IP	c7300-is-mz	64MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS IPSec 3DES	c7300-ik9o3s-mz	64 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7300-js-mz	64MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS IPSec 3DES	c7300-jk9o3s-mz	64 MB	128 MB	RAM
	Enterprise/ SNASW Standard Feature Set	SNASW	c7300-a3jk9s-mz	64MB	128MB	RAM
	IP Standard Feature Set	IP	c7301-is-mz	64MB	128 MB	RAM
		IP IPSec 3DES	c7301-ik9s-mz	64 MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS IPSec 3DES	c7301-ik9o3s-mz	64 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7301-js-mz	64MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS IPSec 3DES	c7301-jk9o3s-mz	64 MB	128 MB	RAM

Table 2   Images and Memory Recommendations for Cisco IOS Release 12.2(11)YZ1

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco 7300 Series	IP Standard Feature Set	IP	c7300-is-mz	64MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS IPSec 3DES	c7300-ik9o3s-mz	64 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7300-js-mz	64MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS IPSec 3DES	c7300-jk9o3s-mz	64 MB	128 MB	RAM
	Enterprise/ SNASW Standard Feature Set	SNASW	c7300-a3jk9s-mz	64MB	128MB	RAM
	IP Standard Feature Set	IP	c7301-is-mz	64MB	128 MB	RAM
		IP IPSec 3DES	c7301-ik9s-mz	64 MB	128 MB	RAM
	IP Firewall Standard Feature Set	IP/FW/IDS IPSec 3DES	c7301-ik9o3s-mz	64 MB	128 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7301-js-mz	64MB	128 MB	RAM
	Enterprise Firewall Standard Feature Set	Enterprise/FW/IDS IPSec 3DES	c7301-jk9o3s-mz	64 MB	128 MB	RAM

Table 3   Images and Memory Recommendations for Cisco IOS Release 12.2(11)YZ

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco 7300 Series	IP Standard Feature Set	IP	c7300-is-mz	64MB	256 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7300-js-mz	64MB	256 MB	RAM
	IP Standard Feature Set	IP	c7301-is-mz	64MB	256 MB	RAM
	Enterprise Standard Feature Set	Enterprise	c7301-js-mz	64MB	256 MB	RAM

Supported Hardware

Cisco IOS Release 12.2(11)YZ2 supports the following Cisco 7000 family platforms:

• Cisco 7300 series routers

For detailed descriptions of the new hardware features, see the "New and Changed Information" section on page 6.

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco family router, log in to the Cisco family router and enter the **show version** EXEC command. The following sample **show version** command output is from a router running a Cisco 7200 series software image with Cisco IOS Release 12.2(11)YZ2:

```
Router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.2 YZ Software (c7300-is-mz), Version 12.2(11)YZ2, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer to *Upgrading the Cisco IOS Software Release in Cisco Routers and Modems* located at:

http://www.cisco.com/warp/public/620/6.html

New and Changed Information

The following is a list of the new hardware and software features supported by the Cisco 7000 family for Cisco IOS Release 12.2 YZ.

New Hardware Features in Cisco IOS Release 12.2(11)YZ2

There are no new hardware features supported by the Cisco 7000 family for Cisco IOS Release 12.2(11)YZ2.

New Software Features in Cisco IOS Release 12.2(11)YZ2

There are no new software features supported by the Cisco 7000 family for Cisco IOS Release 12.2(11)YZ2.

New Hardware Features in Cisco IOS Release 12.2(11)YZ1

There are no new hardware features supported by the Cisco 7000 family for Cisco IOS Release 12.2(11)YZ1.

New Software Features in Cisco IOS Release 12.2(11)YZ1

There are no new software features supported by the Cisco 7000 family for Cisco IOS Release 12.2(11)YZ1.

New Hardware Features in Cisco IOS Release 12.2(11)YZ

The following new hardware features are supported in Cisco IOS Release 12.2(11)YZ:

7300-CC-PA

Platforms: Cisco 7304 routers

The 7304 Peripheral Component Interconnect (PCI) port adapter carrier card (7300-CC-PA) makes it possible to use Cisco 7200 series and Cisco 7500 series PCI port adapters on the Cisco 7304 router.

The Cisco 7304 router hosts centralized processing on a network services engine (NSE) or network processing engine (NPE). The 7300-CC-PA acts as a pass-through device so that the NSE or NPE processes all packets from a PCI port adapter installed on a Cisco 7304.

The 7300-CC-PA supports one single-width port adapter.

Cisco 7301 Router Platform

Platforms: Cisco 7301 routers

The Cisco 7301 router provides application-specific features for broadband subscriber aggregation and network application services with high processing performance.

Each Cisco 7301 router consists of the following features:

- Small form-factor—One rack-unit (RU) high with stacking capability:
  1.73 in. x 17.3 in. x 13.87 in. (4.39 cm x 43.9 cm x 35.23 cm). The weight is approximately 10.5 lbs (4.76) kg).

- Three native Gigabit Ethernet interfaces—six ports:
  - Three optical fiber Gigabit Ethernet (1000 Mbps) ports that use a small form factor pluggable (SFP) Gigabit Interface Converters (GBICs) with LC connectors
  - Three Gigabit Ethernet (10/100/1000 Mbps) ports with RJ-45 connectors (Any three ports are available at any one time)

- Both 25-MHz and 50-MHz port adapter operation

- A 64- or 128-MB CompactFlash Disk

- Two SFP GBIC modules: SX and LH options

- Power supplies:
  - Single or dual AC power supplies
  - Single 24V DC power supply
  - Dual 48V DC power supply

- BCM 1250 microprocessor that operates at an internal clock speed of 700 MHz

- 512-KB Boot ROM

- 32-MB Boot Flash

- Three SDRAM memory options: 256 MB, 512 MB, and 1 GB

- Auxiliary port

- Console port

- Online insertion and removal (OIR)—Allows you to add, replace, or remove port adapters with minimal interruption of the system

- Environmental monitoring and reporting functions—Allow you to maintain normal system operation by resolving adverse environmental conditions prior to loss of operation

- Downloadable software—Allows you to load new images into Flash memory remotely, without having to physically access the router, for fast, reliable upgrades

- Front-to-back airflow—Allows you to mount the router from either front or back into 19-inch two-post racks and 21-23 inch four-post racks

Cisco 7304 Router Platform

Platforms: Cisco 7304 routers

The Cisco 7304 router is a high-performance Enterprise Edge LAN/WAN integration and service provider aggregation router.

The Cisco 7304 router supports the following features:

- Online insertion and removal (OIR)—Provides the capability to add, replace, or remove line cards without interrupting the system

- Environmental monitoring and reporting functions—Provides the capability to maintain normal system operation by resolving adverse environmental conditions prior to loss of operation

- Downloadable software—Provides the capability to load new images into Flash memory remotely, without having to physically access the router, for fast, reliable upgrades

- Front to back airflow—Provides the capability to mount the router from either front or back into telco or 19-inch racks

- Small form-factor—Provides four rack-units high with stacking capability: 6.94 in. x 17.6 in. x 20.5 in. (17.63 cm x 44.70 cm x 52.07 cm)

The Cisco 7304 router uses high speed point-to-point serial link technology to interconnect the processor card (NSE) and each line card. An NSE provides connectivity to three physical Ethernet ports, two Gigabit Ethernet ports and one FastEthernet/Ethernet management port.

A fully configured Cisco 7304 router comes equipped with one AC-input power supply that supplies 540w of power to the router. A Cisco 7304 router, however, can operate two power supplies on a single chassis. The additional power supply provides a hot-swappable, load-sharing redundant power supply. Redundant power is useful as a fail-over; if a situation occurs where one power supply is down (for instance, a power supply fails or a new power supply needs to be installed), the router can continue to run properly using the other power supply.

New Software Features in Cisco IOS Release 12.2(11)YZ

The following new software feature is supported in Cisco IOS Release 12.2(11)YZ:

New Quality of Service Features for PXF

Platforms: Cisco 7304 routers

The following Quality of Service features were introduced for Parallel eXpress Forwarding in this IOS release.

- Traffic Shaping (the **shape average** command)

- Class-Based Weighted Fair Queueing (the **bandwidth** command)

- Matching by IP precedence, DSCP, and RTP values (the **match ip precedence**, **match ip dscp**, and **match ip rtp** commands)

- IP DSCP-based WRED (the **random detect dscp** and **random detect dscp-based** commands)

- Queue Limit Setting (the **queue-limit** command)

- ATM CLP Marking (the **set atm-clp** command and the **set-clp-transmit** action in the **police** command)

- WRED on Frame Relay point-to-point subinterfaces

- Traffic Shaping per VLAN or Frame Relay Virtual Circuits using nested policy maps.

- Traffic Policing in the child policy of nested policy maps on Frame Relay and 802.1q subinterfaces.

- Class-Based Quality of Service MIB Support

Beginning in Cisco IOS Release 12.2(11)YZ, there is no longer a reserved queue for priority traffic. A queue will be designated for priority traffic based on the configuration of a priority class. One queue is still reserved for the default class traffic, and one queue is reserved for critical locally-sourced traffic (such as keepalives and routing protocol hellos), thus leaving six user configurable queues (including one for priority).

For additional information on these and other PXF features on the Cisco 7304 router, see the *Cisco 7304 Troubleshooting and Configuration Notes* document.

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 4.

Table 4   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

Table 4   Deprecated and Replacement MIBs (continued)

Deprecated MIB	Replacement
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 Deferral, Cisco IOS Release 12.2(11)YZ1

All Cisco 7300 series crypto images in Cisco IOS Release 12.2(11)YZ have been deferred to Cisco IOS Release 12.2(11)YW1 due to the following caveat:

- CSCdz78611—Crypto image not available for initial release of 12.2(11)YZ

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 YZ

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

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

All caveats in Cisco IOS Release 12.2 are also in Cisco IOS Release 12.2 T.

For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*, which lists severity 1 and 2 caveats and select severity 3 caveats and is located on Cisco.com and the Documentation CD-ROM.

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(11)YZ2.

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, l**og 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/support/bugtools/.

Table 5   Caveats Reference for Cisco IOS Release 12.2 YZ

DDTS Number	Open in Release	Resolved in Release
CSCdx80714	12.2(11)YZ	
CSCdy75015	12.2(11)YZ	
CSCdz28290	12.2(11)YZ	
CSCdz71127		12.2(11)YZ2
CSCdz78288		12.2(11)YZ1
CSCdz81656	12.2(11)YZ2	
CSCea02355		12.2(11)YZ2

Open Caveats—Cisco IOS Release 12.2(11)YZ2

This section documents possible unexpected behavior by Cisco IOS Release 12.2(11)YZ2 and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdz81656

    This is fix is require to avoid port flap on connected GE ports.

    There are no known workarounds.

Resolved Caveats—Cisco IOS Release 12.2(11)YZ2

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(11)YZ2. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdz71127

    Cisco routers and switches running Cisco IOS software and configured to process Internet Protocol version 4 (IPv4) packets are vulnerable to a Denial of Service (DoS) attack. A rare sequence of crafted IPv4 packets sent directly to the device may cause the input interface to stop processing traffic once the input queue is full. No authentication is required to process the inbound packet. Processing of IPv4 packets is enabled by default. Devices running only IP version 6 (IPv6) are not affected. A workaround is available.

    Cisco has made software available, free of charge, to correct the problem.

    This advisory is available at

    http://www.cisco.com/warp/public/707/cisco-sa-20030717-blocked.shtml

- CSCea02355

  Cisco routers and switches running Cisco IOS software and configured to process Internet Protocol version 4 (IPv4) packets are vulnerable to a Denial of Service (DoS) attack. A rare sequence of crafted IPv4 packets sent directly to the device may cause the input interface to stop processing traffic once the input queue is full. No authentication is required to process the inbound packet. Processing of IPv4 packets is enabled by default. Devices running only IP version 6 (IPv6) are not affected. A workaround is available.

  Cisco has made software available, free of charge, to correct the problem.

  This advisory is available at

  http://www.cisco.com/warp/public/707/cisco-sa-20030717-blocked.shtml

Open Caveats—Cisco IOS Release 12.2(11)YZ1

This section documents possible unexpected behavior by Cisco IOS Release 12.2(11)YZ1 and describes only severity 1 and 2 caveats and select severity 3 caveats.

There are no known open caveats for Cisco IOS Release 12.2(11)YZ1.

Resolved Caveats—Cisco IOS Release 12.2(11)YZ1

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(11)YZ1. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdz78288

  The OAM managed PVCs may be down forever after interface shutdown and no shutdown are executed, if the PVCs are configured under subinterfaces on PA-A3-T3/PA-A3-E3 with C7300-PA-CC board. Another shutdown / no shutdown on the interface may resolve the problem.

  The problem does not happen with every shutdown / no shutdown operation. The cause of the problem is that the data path is sometimes blocked following shutdown / no shutdown and the OAM cells do not pass through. The problem has been fixed.

  There are no known workarounds.

Open Caveats—Cisco IOS Release 12.2(11)YZ

This section documents possible unexpected behavior by Cisco IOS Release 12.2(11)YZ and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdx80714

  The router will crash when configuring stm-1 port adapter. This occurs when two routers are connected back-to-back in IOS configuration mode when applying "clock source internal".

  Workarounds: Shutdown the controllers on both routers and then configure both controllers and serial interfaces, and then no shutdown controller.

- CSCdy75015

  Issuing a break key at a certain point in order to bring the router into a rommon mode will cause the router to reset. This occurs when the router starts to boot or reload.

  Workaround: Issue the break key after the following line is displayed C7301 platform with 262144 Kbytes of main memory

- CSCdz28290

  Change stopbits configuration under line console 0 will lose connection to the router console until "write memory" command is issued either from a telnet session or AUX port. This occurs when changing the Console port's stopbit value hile consoled into the router via console port.

  Workaround: Do not change Console port stopbit value when accessing the router from Console port.

  Alternative workaround: To restore Console port connection, either telnet to the router or access the router via Aux port then issue "write memory" command.

Resolved Caveats—Cisco IOS Release 12.2(11)YZ

All the caveats listed in this section are resolved in Cisco IOS Release 12.2(11)YZ. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

There are no known resolved caveats for Cisco IOS Release 12.2(11)YZ.

Related Documentation

The following sections describe the documentation available for the Cisco 7000 family of routers. These documents consist of hardware and software installation guides, Cisco IOS configuration guides and command references, system error messages, and other documents.

Documentation is available as printed manuals or electronic documents.

Use these release notes with these documents:

Release-Specific Documents

For Use in T Train and Special Train Release Notes

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**: **Cisco IOS Release 12.2**: **Release Notes**: **Cisco IOS Release 12.2**

   On the Documentation CD-ROM at:

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

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

   Technical Documents

• *Caveats for Cisco IOS Release 12.2* and *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* and *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 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 7000 family of routers on Cisco.com and the Documentation CD-ROM:

• *Cisco 7300 Series Internet Router Documentation Master Index*

• *Cisco 7300 Series Internet Router Line Card and Port Adapter Master Index*

• *Cisco 7300 Series Internet Routers Regulatory Compliance and Safety Information*

• *Cisco 7300 Series Internet Router Troubleshooting Master Index*

• *Cisco 7301 Installation and Configuration Guide*

• *Cisco 7301 Router Quick Start Guide*

- *Cisco 7301 Router Troubleshooting*
- *Cisco 7301 Router Troubleshooting and Configuration Notes*
- *Cisco 7304 Router Installation and Configuration Guide*
- *Cisco 7304 Online Troubleshooting*
- *Cisco 7304 Router Quick Start Guide*
- *Cisco 7304 Router Troubleshooting and Configuration Notes*
- *Cisco 7304 Series Platform-Specific Commands*
- *Gigabit Interface Converter Installation Instructions*
- *Network Services Engine Installation and Configuration Guide*

Change the paths in this section so they go to your platform-specific documents.

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(11)YZ2 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
• Cisco IOS Configuration Fundamentals Configuration Guide • Cisco IOS Configuration Fundamentals Command Reference	Cisco IOS User Interfaces File Management System Management
• Cisco IOS Bridging and IBM Networking Configuration Guide • Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2 • Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2	Transparent Bridging SRB Token Ring Inter-Switch Link Token Ring Route Switch Module RSRB 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
• Cisco IOS Dial Technologies Configuration Guide: Dial Access • Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications • Cisco IOS Dial Technologies Command Reference, Volume 1 of 2 • Cisco IOS Dial Technologies Command Reference, Volume 2 of 2	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
• *Cisco IOS Interface Configuration Guide* • *Cisco IOS Interface Command Reference*	LAN Interfaces Serial Interfaces Logical Interfaces
• Cisco IOS IP Configuration Guide • Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services • Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols • Cisco IOS IP Command Reference, Volume 3 of 3: Multicast	IP Addressing IP Services IP Routing Protocols IP Multicast
• Cisco IOS AppleTalk and Novell IPX Configuration Guide • Cisco IOS AppleTalk and Novell IPX Command Reference	AppleTalk Novell IPX

Table 6   Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
• Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide • Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
• Cisco IOS Voice, Video, and Fax Configuration Guide • *Cisco IOS Voice, Video, and Fax Command Reference*	Voice over IP Call Control Signaling Voice over Frame Relay Voice over ATM Telephony Applications Trunk Management Fax, Video, and Modem Support
• Cisco IOS Quality of Service Solutions Configuration Guide • *Cisco IOS Quality of Service Solutions Command Reference*	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms
• Cisco IOS Security Configuration Guide • *Cisco IOS Security Command Reference*	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
• Cisco IOS Switching Services Configuration Guide • Cisco IOS Switching Services Command Reference	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
• Cisco IOS Wide-Area Networking Configuration Guide • Cisco IOS Wide-Area Networking Command *Reference*	ATM Frame Relay SMDS X.25 and LAPB
• Cisco IOS Mobile Wireless Configuration Guide • Cisco IOS Mobile Wireless Command Reference	General Packet Radio Service

Table 6   Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
• Cisco IOS Terminal Services Configuration Guide • Cisco IOS Terminal Services Command Reference	ARA LAT NASI Telnet TN3270 XRemote X.28 PAD Protocol Translation
• *Cisco IOS Configuration Guide Master Index* • *Cisco IOS Command Reference Master Index* • Cisco IOS Debug Command Reference • Cisco IOS Software System Error Messages • *New Features in 12.2-Based Limited Lifetime Releases* • New Features in Release 12.2 T • Release Notes (Release note and caveat documentation for 12.2-based releases and various platforms)	

Obtaining Documentation

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

World Wide Web

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

Documentation CD-ROM

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

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco product documentation from the Networking Products MarketPlace:

  http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:

  http://www.cisco.com/go/subscription

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

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.

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.