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Release Notes for Cisco 2600 Series for Cisco IOS Release 12.0(4)XH

December 1, 2000

These release notes for Cisco 2600 series routers support Cisco IOS Release 12.0(4)XH4. These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode or modem code changes and related documents.

Use these release notes with cross-platform *Release Notes for Cisco IOS Release 12.0* located on Cisco Connection Online (CCO) and the Documentation CD-ROM.

For a list of software caveats that apply to Release 12.0(4)XH4, refer to the “Caveats” section on page 10.

Contents

These release notes describe the following topics:

- Introduction, page 2
- System Requirements, page 2
- New and Changed Information, page 7
- Important Notes, page 9
- Limitations and Restrictions, page 10
- Caveats, page 10
- Related Documentation, page 11
- Service and Support, page 16
- Cisco Connection Online, page 17
- Documentation CD-ROM, page 18

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Introduction

The Cisco 2600 series modular access router is part of a family of modular routers which includes the Cisco 1600, Cisco 1700, and Cisco 3600 series. This 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 (Reduced Instruction Set Computing) processor, the Cisco 2600 series supports the advanced Quality of Service (QoS), security, and network integration features required in today's evolving enterprise networks.

System Requirements

- Memory Recommendations, page 2
- Hardware Supported, page 2
- Determining the Version of Your Software Release, page 4
- Upgrading to a New Software Release, page 4
- Feature Set Tables, page 4

Memory Recommendations

Table 1 Memory Recommendations for the Cisco 2600 Series

Feature Set by Platform	Image Name	Recommended Flash Memory	Recommended DRAM Memory	Runs From
IP	c2600-ix-mz	8 MB	32 MB	RAM
Enterprise Plus	c2600-js-mz	8 MB	32 MB	RAM
Enterprise Plus IPsec 56	c2600-js56i-mz	8 MB	40 MB	RAM

Hardware Supported

Cisco IOS Release 12.0(4)XH4 supports the Cisco 2600 series routers:

- Cisco 2610
- Cisco 2611
- Cisco 2612
- Cisco 2613
- Cisco 2620
- Cisco 2621

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

Table 2 Supported Interfaces on the Cisco 2600 Series

Interface, Network Module, or Data Rate ¹	Platforms Supported
LAN Interfaces	
1- or 2-port Ethernet (10BaseT)	Cisco 2610, Cisco 2611, Cisco 2612
1-port Token Ring (RJ-45)	Cisco 2612 and Cisco 2613
10/100 Ethernet, 1 or 2 ports	Cisco 2620 and Cisco 2621
LAN Network Modules	
1-port Ethernet	All Cisco 2600 series platforms
4-port Ethernet	All Cisco 2600 series platforms
1-port ATM-25 RJ-45 interface	All Cisco 2600 series platforms
Serial Network Modules	
16- or 32-port Asynchronous	All Cisco 2600 series platforms
4- or 8-port Asynchronous/ Synchronous Serial low speed (128 kbps max)	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 (NT1) interface	All Cisco 2600 series platforms
8- or 16-port Analog modems	All Cisco 2600 series platforms
Voice/Fax Network Module	
1- or 2- Voice interface card slots	All Cisco 2600 series platforms
Voice/Fax Interface Cards	
2-port FXS Voice/Fax interface card ²	All Cisco 2600 series platforms with Voice/Fax network modules
2-port E&M Voice/Fax interface card ²	All Cisco 2600 series platforms with Voice/Fax network modules
2-port FXO Voice/Fax interface card ²	All Cisco 2600 series platforms with Voice/Fax network modules
2-port ISDN BRI S/T-TE Voice/Fax interface card	All Cisco 2600 series platforms with 2-slot Voice/Fax network modules
WAN Interface Cards	
1-port ISDN BRI S/T interface (requires external NT1)	All Cisco 2600 series platforms
1-port ISDN BRI (NT1) 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	All Cisco 2600 series platforms
1-port High-Speed Serial (up to 2.048 Mbps)	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)	All Cisco 2600 series platforms
Advanced Integration Modules	
Data Compression AIM (up to 8.192 Mbps)	All Cisco 2600 series platforms

¹ The Voice/Fax and ATM-25 network modules require Cisco IOS Plus feature sets.

² This interface card requires the NM-1V or NM-2V network module.

Determining the Version of Your Software Release

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

```
router>show version
Cisco Internetwork Operating System Software
IOS (tm) 2600 Software (c2600-i-mz), Version 12.0(4)XH4, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For information on upgrading to a new software release, refer to the *Cisco IOS Software Release 12.0XH Upgrade Paths and Packaging Simplification* product bulletin located on CCO at:

Service & Support: Product Bulletins: Software.

Under **Cisco IOS 12.0**, click **Cisco IOS Software Release 12.0(4)XH Upgrade (#948: 7/99)**.

Other Firmware Code

The latest version of analog modem firmware for the Cisco 2600 series allows support of the internal analog modems in a wide range of countries. Firmware version 1.2.1 extends support internationally starting with Cisco IOS Release 11.3(5)T and later releases.

You can reach Cisco 2600 firmware documentation on CCO at:

Service & Support: Documentation Home Page: Access Servers and Access Routers: Modular Access Routers: Cisco 2600 Series Routers: Analog Modem Firmware

You can reach Cisco 2600 firmware documentation on the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 2600 Series Routers: Analog Modem Firmware

Feature Set Tables

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. All “Plus” feature sets include voice network support.

Table 3 Feature Sets Supported by the Cisco 2600 Series

Feature Sets	Image Name	Feature Set Matrix Term	Software Image	Platforms
IP Standard Feature Sets	IP/H.323 Gtkpr Prxy	Basic, H.323	c2600-ix-mz	All Cisco 2600 series platforms
Enterprise Standard Feature Sets	Enterprise Plus	Plus	c2600-js-mz	All Cisco 2600 series platforms
	Enterprise Plus IPsec 56	Plus, IPsec 56	c2600-js56i-mz	All Cisco 2600 series platforms



Caution Cisco IOS images with strong encryption (including, but not limited to, 56-bit data encryption feature sets) are subject to United States government export controls and have a limited distribution. Images to be installed outside the United States require an export license. Customer orders may be denied or subject to delay due to United States government regulations. Contact your sales representative or distributor for more information, or send e-mail to export@cisco.com.

Table 4 list the features and feature sets supported by the Cisco IOS Release 12.0(4)XH4 for the Cisco 2600 series and uses the following conventions:

- Yes—The feature is supported in the feature set.
- No—The feature is not supported in the feature set.
- In—The Cisco IOS release that first introduces a feature. For example, (1) means a feature is introduced in 12.0(1)T. If a cell is empty in this column, the feature was included in the initial base release.

Note These feature set tables contain only selected lists of features. These tables are not cumulative—nor do they list all the features in each image.

Table 4 Feature List by Feature Set for the Cisco 2600 Series

Features	In	IP	Enterprise Plus	Enterprise Plus IPsec 56i
IBM Support				
Bridging Code Rework		Yes	Yes	Yes
RIF Passthru in DLSw+		No	Yes	Yes
IP Routing				
Data Compression Advanced Interface Module (AIM)	(1)	Yes	Yes	Yes
IP Precedence for GRE Tunnels (GRE VPN)		Yes	Yes	Yes
Protocol-Independent Multicast (PIM) Version 2		Yes	Yes	Yes
Management				
SNMP Inform Request		No	No	No
VPDN MIB and Syslog Facility		Yes	Yes	Yes
Quality of Service				
CLI String Search	(1)	Yes	Yes	Yes
Scalability				
Airline Product Set (ALPS)		Yes	Yes	Yes
Cisco IOS File System		Yes	Yes	Yes
Entity MIB		Yes	Yes	Yes
Expression MIB		Yes	Yes	Yes
OSPF Point to Multipoint		Yes	Yes	Yes
Per Port Debugging (Conditionally Triggered Debugging)		Yes	Yes	Yes

Table 4 Feature List by Feature Set for the Cisco 2600 Series (continued)

Features	In	IP	Enterprise Plus	Enterprise Plus IPsec 56i
SNMP Manager		Yes	Yes	Yes
Security				
Additional Vendor-Proprietary RADIUS Attributes		Yes	Yes	Yes
Authenticating ACLs		Yes	Yes	Yes
Automated Double Authentication		Yes	Yes	Yes
Certificate Authority Interoperability		No	No	No
Internet Key Exchange Security Protocol		No	No	No
IOS Firewall Feature Set	(1)	No	No	Yes
3DES Network Security	(2)	No	No	No
IPSec Network Security		No	No	No
MS-CHAP Support		No	No	No
Named Method Lists for AAA Authentication & Accounting		Yes	Yes	Yes
Subblock Phase 1		Yes	Yes	Yes
Switching				
Enhanced ATM VC Configuration and Management		No	Yes	Yes
Multiple ISDN Switch Types		Yes	Yes	Yes
Voice/Multimedia				
Voice over IP		No	Yes	Yes
Settlement for Packet Voice	(4)XH	No	Yes	Yes
Debit Card for Packet Telephony on Cisco Access Platforms	(4)XH	No	Yes	Yes
TCLWare	(4)XH	No	Yes	Yes
Interactive Voice Response for Cisco Access	(4)XH	No	Yes	Yes
H.323 Version 2 Support	(4)XH	No	Yes	Yes
WAN Optimization				
ATM PVC Management		No	Yes	Yes
DRP Server Agent		Yes	Yes	Yes
WAN Services				
Always On/ Dynamic ISDN (AO/DI)		Yes	Yes	Yes
Dialer Watch		Yes	Yes	Yes
Interface Name Modularity		Yes	Yes	Yes
Microsoft Point-to-Point Compression (MPPC)		Yes	Yes	Yes
Mobile IP	(1)	No	Yes	Yes

Table 4 Feature List by Feature Set for the Cisco 2600 Series (continued)

Features	In	IP	Enterprise Plus	Enterprise Plus IPsec 56i
MS Callback		Yes	Yes	Yes
National ISDN Switch Types		Yes	Yes	Yes
New and Changed Show Commands for the Cisco 2600 series Routers		Yes	Yes	Yes
Stackable Home Gateway		No	Yes	Yes
Time-based Access List	(1)	Yes	Yes	Yes

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 2600 series for Release 12.0(4)XH4.

Settlements for Packet Voice

Internet voice telephony is often used for toll bypass by using an existing data network or the Internet instead of PSTN trunking. Calls of this nature require an originating and terminating gateway to be completed. When the originating and terminating voice gateways are owned by two different carriers, settlement between these carriers is required. The Settlements for Packet Voice project implements a standardized settlement protocol, which can be implemented between different vendors, gateways, and voice settlement servers.

Debit Card for Packet Telephony on Cisco Access Platforms

The Debit Card feature provides the ability to offer calling service with the use of debit accounting to service providers. The Debit Card for Packet Telephony on Cisco Access Platforms is one application supported by the Cisco Interactive Voice Response (IVR) feature. The IVR voice scripts have been modified to use Tool Command Language (TCL) scripts.

TCLWare

The Debit Card for Packet Telephony on Cisco Access Platforms feature requires the use of both Audio Files and TCL Scripts. Unzip and download the files to your TFTP server.

In addition, download the audio files and TCL scripts from the Access Products Service and Support site on CCO at the following "TCLWare" location:

<http://www.cisco.com/kobayashi/sw-center/sw-access.shtml>

Interactive Voice Response for Cisco Access

Cisco is building voice gateways to connect more traditional telephone networks to voice over IP (VoIP) networks. Customers who are installing VoIP networks often need a mechanism at the gateway to present a customized interface to the caller. The Interactive Voice Response (IVR) feature was first made available to customers with Cisco IOS Release 11.(3)NA2 with the Service Provider VoIP feature set. IVR, with the addition of scripts using Tool Command Language (TCL),

is being introduced with Cisco IOS Release 12.0(4)XH. These TCL IVR scripts are the default scripts that must be used with the IVR application in Cisco IOS Release 12.0(4)XH and future releases.

IVR consists of simple voice prompting and digit collection to gather caller information for authenticating the user and identifying the destination. IVR provides the ability to:

- Play customized prompts
- Collect account numbers and PINs
- Collect destination phone numbers
- Perform Authentication, Authorization, and Accounting (AAA) tasks interacting with a variety of servers

H.323 Version 2 Support

H.323 Version 2 Support upgrades Cisco IOS software to comply with the mandatory requirements in the Version 2 specification. This upgrade enhances the existing Voice Over IP GateWay, the Multimedia Conference Manager (GateKeeper and Proxy), and the DTMF digital relay by using H.245.

DTMF is the tone generated on a touch-tone phone when you press keypad digits. The tones are compressed into a single stream at one end of a call and decompressed at the other end by using H.245 messages. However, doing this can lead to distortion, depending upon the CODEC used. Thus, the DTMF-relay is used to configure a method to transport DTMF tones generated after the call is established out-of-band. The three methods are:

The standard H.323 out-of-band method uses H.245 to send digits as audible DTMF tones with voice; (the “h245-signal” option).

The H.245 “alphanumeric” method (the “h245-alphanumeric” option) also uses User Input Indication as part of a control channel, and is another standard H.245 transmission method.

The “cisco-rtp” method sends the voice stream but with an identifier indicating that the DTMF tones are added.

H.323 Version 2 defines a lightweight registration procedure that requires full registration for initial registration, but uses an abbreviated renewal procedure to update the gatekeeper and minimize overhead. Lightweight registration requires each endpoint to specify a TimeToLive (TTL) value in its Registration Request (RRQ) message.

The H.323 Version 2 gateway supports the registration of fully-qualified E.164 numbers with the gatekeeper for phones connected directly to the gateway. Tunneling through H.225 User-to-User Information Element (UUIE) facilitates transparent handling of supplementary services between two endpoints through a VoIP network. This eliminates the need to interpret various supplementary signaling messages in the VoIP gateways.

The H.323 Version 2 gatekeeper selects a destination gateway by choosing a gateway from among all gateways registered in a zone by allowing you to assign selection priorities to these gateways based on the dialed prefix. Gateway resource reporting allows the gateway to notify the gatekeeper when H.323 resources are getting low. The gatekeeper uses this information to determine which gateway it will use to complete a call and maintains a separate gateway list ordered by priority for each of its zone-prefixes.

Important Notes

This section contains important information about use of your Cisco IOS Release 12.0(4)XH4 software.

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>.

Deprecated MIBs

Older Cisco Management Information Bases (MIBs) will be replaced in a future release. OLD-CISCO-* MIBs are currently migrated into more scalable MIBs without affecting existing Cisco IOS products or NMS applications. You can update from deprecated MIBs to the replacement MIBs as shown in the following table:

Table 5 **Deprecated MIBs**

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

Table 5 **Deprecated MIBs**

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

Limitations and Restrictions

The Settlement for Packet Voice feature is offered only in crypto images, so that Cisco can provide export controls.

Before you can download 56-bit or 56i encryption images, the image must first go through the entitlement process. This process makes sure that the image is from a registered DNS address and that the images are not coming from an encryption-restricted country (Iraq, Libya, etc.). You can entitle yourself by filling out the forms located at the following URL:

<http://www.cisco.com/kobayashi/library/12.0>

Once you are entitled, you can see crypto images in the upgrade planner. You do not have to entitle yourself again, unless you come from a different host. You do not have to entitle yourself for every release. Entitlement is good for all releases.

If there are any problems with your entitlement, you will either be directed to help on DNS registration (if that is your problem), or your case will be escalated to David Moore in ECRA who will review it himself.

Also, all users **MUST** be entitled before they can receive 56 or 56i images. Never give a 56 or 56i image to a customer if you are uncertain about their entitlement status.

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious.

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

All caveats in Release 12.0 and Release 12.0T are also in Release 12.0(4)XH4.

For information on caveats in Cisco IOS Release 12.0, see *Caveats for Cisco IOS Release 12.0*, which lists severity 1 and 2 caveats, and is located on CCO and the Documentation CD-ROM.

For information on caveats in Cisco IOS Release 12.0T, see *Caveats for Cisco IOS Release 12.0T* on CCO and the Documentation CD-ROM.

Note If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. You can reach Bug Navigator II on CCO at **Service & Support: Online Technical Support: Software Bug Toolkit II** or at <http://www.cisco.com/support/bugtools>.

Open Caveats—Release 12.0(4)XH

This section describes possibly unexpected behavior by Release 12.0(2)XH4 and describes only severity 1 and 2 caveats:

Miscellaneous

- CSCdm10475

A Cisco 3640 with PRI gets stuck on Layer 1 activating mode if the PRI D-channel is in **standby** or **shut mode**. The following error message appears:

```
ISDN Se2/0:23: Could not bring up interface
```

Workaround: Remove the D-channel from **standby** or **shut mode**. To do this, remove the **backup interface** command, reload the router, then reinsert the **backup interface** command.

Resolved Caveats—Release 12.0(4)XH

The following caveats have been resolved in Cisco IOS Release 12.0(4)XH.

- CSCdk26221

The following CLI command does not function: **snmp-server packetsize**.

The maximum snmp packetsize for Release 12.0(3)T is fixed at 484. There is no known workaround.

- CSCdk55110

When tunneling IPX over an IP tunnel and using an extended inbound access list for IP on the tunnel interface, the IPX traffic gets blocked by the access list. As a workaround, add a **permit gre** statement in the extended access list.

- CSCdk85615

There is no way to configure MICA modem lines on a Cisco 3640 for dialout only. The **modem dtm-active** command is supposed to work, but this fails with “NO DIALTONE”.

- CSCdk93438

A VIP controller hangs when encryption is used. The problem is intermittent. Reloading the Cisco 7500 returned the connections. The **[shut | no shut]** commands do not help.

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 and command references, system error messages, and other documents.

Documentation is available as printed manuals or electronic documents, except for feature modules, which are only available online.

Use these release notes with these documents:

- Release-Specific Documents, page 12
- Platform-Specific Documents, page 12
- Feature Modules, page 13
- Cisco IOS Software Documentation Set, page 13

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.0 T, and are located on CCO and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.0*

On CCO at:

Service & Support: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Release Notes: Cross-Platform Release Notes

On the Documentation CD-ROM at:

Cisco Product Documentation: **Cisco IOS Software Configuration: Cisco IOS Release 12.0: Release Notes: Cross-Platform Release Notes**

- Product bulletins, field notices, and other release-specific documents on CCO at:

Service & Support: Technical Documents

- *Caveats for Cisco IOS Release 12.0 T*, which contains caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.0 T.

On CCO at:

Service & Support: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Caveats: Caveats for Cisco IOS Release 12.0 T

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS 12.0: Caveats: Caveats for Cisco IOS Release 12.0 T

Note If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. You can reach Bug Navigator II on CCO at: **Service & Support: Online Technical Support: Software Bug Toolkit** or at <http://www.cisco.com/support/bugtools>.

Platform-Specific Documents

The documents listed below are available for the Cisco 2600. These documents are also available online at Cisco Connection Online (CCO) and on the Documentation CD-ROM:

- *Quick Start Guide Cisco 2600 Series Cabling and Setup*
- *Cisco 2600 Series Hardware Installation Guide*
- *Network Modules Hardware Installation Guide*
- *Update to Network Module Hardware and Software Guides*
- *Cisco WAN Interface Cards Hardware Installation Guide*
- *Update to WAN Interface Cards Hardware Installation Guide*
- *Software Configuration Guide For Cisco 3600 and Cisco 2600 Series Routers*
- New and Changed Show Commands for the Cisco 2600 Series Routers
- Cisco 2600 Series Configuration Notes
- Analog Modem Firmware
- Analog modem firmware release notes and AT command set

- Cisco 2600 Series Cabling Specifications
- Cisco Modular Access Router Cable Specifications

On CCO at:

Service & Support: Documentation Home Page: 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 12.0 T 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 CCO at:

Service & Support: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: 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, which are shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

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

On CCO and the Documentation CD-ROM, two master hot-linked documents provide information for the Cisco IOS software documentation set.

You can reach these documents on CCO at:

Service & Support: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References

You can reach these documents on the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References

Cisco IOS Release 12.0 Documentation Set

Table 6 describes the contents of the Cisco IOS Release 12.0 software documentation set, which is available in electronic form and also in printed form upon request.

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

You can reach the Cisco IOS documentation set on CCO at:

Service & Support: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References

You can reach the Cisco IOS documentation set on the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References.

Table 6 Cisco IOS Software Release 12.0 Documentation Set

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Configuration Fundamentals Configuration Guide</i> • <i>Configuration Fundamentals Command Reference</i> 	Configuration Fundamentals Overview Cisco IOS User Interfaces File Management System Management
<ul style="list-style-type: none"> • <i>Bridging and IBM Networking Configuration Guide</i> • <i>Bridging and IBM Networking Command Reference</i> 	Transparent Bridging Source-Route Bridging Token Ring Inter-Switch Link Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN Cisco Database Connection NCIA Client/Server Topologies Cisco Mainframe Channel Connection Airline Product Set

Table 6 Cisco IOS Software Release 12.0 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Dial Solutions Configuration Guide</i> • <i>Dial Solutions Command Reference</i> 	X.25 over ISDN Appletalk Remote Access Asynchronous Callback, DDR, PPP, SLIP Bandwidth Allocation Control Protocol ISDN Basic Rate Service ISDN Caller ID Callback PPP Callback for DDR Channelized E1 & T1 Dial Backup for Dialer Profiles Dial Backup Using Dialer Watch Dial Backup for Serial Lines Peer-to-Peer DDR with Dialer Profiles DialOut Dial-In Terminal Services Dial-on-Demand Routing (DDR) Dial Backup Dial-Out Modem Pooling Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Dialup Networks Dial Business Solutions and Examples
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	Interface Configuration Overview LAN Interfaces Logical Interfaces Serial Interfaces
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 1</i> • <i>Network Protocols Command Reference, Part 1</i> 	IP Overview IP Addressing and Services IP Routing Protocols
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 2</i> • <i>Network Protocols Command Reference, Part 2</i> 	AppleTalk Novell IPX
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	Network Protocols Overview Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Switching Services Switching Paths for IP Networks Virtual LAN (VLAN) Switching and Routing
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	Wide-Area Network Overview ATM Frame Relay SMDS X.25 and LAPB

Table 6 Cisco IOS Software Release 12.0 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Voice, Video, and Home Applications Configuration Guide</i> • <i>Voice, Video, and Home Applications Command Reference</i> 	Voice over IP Voice over Frame Relay Voice over ATM Voice over HDLC Frame Relay-ATM Internetworking Synchronized Clocks Video Support Universal Broadband Features
<ul style="list-style-type: none"> • <i>Quality of Service Solutions Configuration Guide</i> • <i>Quality of Service Solutions Command Reference</i> 	Policy-Based Routing QoS Policy Propagation via BGP Committed Access Rate Weighted Fair Queueing Custom Queueing Priority Queueing Weighted Random Early Detection Scheduling Signaling RSVP Packet Drop Frame Relay Traffic Shaping Link Fragmentation RTP Header Compression
<ul style="list-style-type: none"> • <i>Cisco IOS Software Command Summary</i> • <i>Dial Solutions Quick Configuration Guide</i> • <i>System Error Messages</i> • <i>Debug Command Reference</i> 	

Service and Support

For service and support for a product purchased from a reseller, contact the reseller, who offers a wide variety of Cisco service and support programs described in “Service and Support” of *Cisco Information Packet* shipped with your product.

Note If you purchased your product from a reseller, you can access CCO as a guest. CCO is Cisco Systems’ primary real-time support channel. Your reseller offers programs that include direct access to CCO services.

For service and support for a product purchased directly from Cisco, use CCO.

Software Configuration Tips on Cisco’s Technical Assistance Center Home Page

If you have a CCO login account, you can access the following URL, which contains links and tips on configuring your Cisco products:

http://www.cisco.com/kobayashi/serv_tips.shtml

This URL is subject to change without notice. If it changes, point your Web browser to CCO and click on this path: **Products & Technologies: Products: Technical Tips.**

The following sections are provided from the Technical Tips page:

- Access Dial Cookbook—Contains common configurations or recipes for configuring various access routes and dial technologies.
- Field Notices—Notifies you of any critical issues regarding Cisco products and includes problem descriptions, safety or security issues, and hardware defects.
- Frequently Asked Questions—Describes the most frequently asked technical questions about Cisco hardware and software.
- Hardware—Provides technical tips related to specific hardware platforms.
- Hot Tips—Describes popular tips and hints gathered from the Cisco Technical Assistance Center (TAC). Most of these documents are available from the TAC Fax-on-demand service. To reach Fax-on-demand and receive documents at your fax machine from the United States, call 888-50-CISCO (888-502-4726). From other areas, call 650-596-4408.
- Internetworking Features—Lists tips on using and deploying Cisco IOS software features and services.
- Sample Configurations—Provides actual configuration examples that are complete with topology and annotations.
- Software Products—Contains Cisco IOS Software Bulletins, Cisco TCP/IP Suite 100, General Cisco IOS, Internet/Intranet Applications and Software, Network Management, Network Protection Software Tips, and WAN Switching Products and Software.
- Special Collections—Lists other helpful documents, including Case Studies, References & Request for Comments (RFCs), and Security Advisories.

Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: <http://www.cisco.com>
- Telnet: [cco.cisco.com](telnet://cco.cisco.com)
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Note If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@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, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more current than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at <http://www.cisco.com>. Translated documentation can be accessed at http://www.cisco.com/public/countries_languages.shtml.

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This document is to be used in conjunction with the documents listed in the "Related Documentation" section on page 11.

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