



# Release Notes for Cisco 1700 Series Routers for Cisco IOS Release 12.1 T

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March 27, 2000



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You can find the most current Cisco IOS documentation on Cisco Connection Online (CCO). These electronic documents may contain updates and modifications made after the hardcopy documents were printed.

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These release notes for the Cisco 1700 series routers describe the enhancements provided in Cisco IOS Release 12.1 T. These release notes are updated as needed.

For a list of the software caveats that apply to Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T* that accompanies these release notes. The caveats document is updated for every maintenance release and is located on Cisco Connection Online (CCO) and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.1* on CCO and the Documentation CD-ROM.

## Contents

These release notes describe the following topics:

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## Early Deployment Releases

These release notes describe the Cisco 1700 series routers for Cisco IOS Release 12.1 T, which is an early deployment (ED) release based on Cisco IOS Release 12.1. Early deployment releases contain fixes for software caveats and support for new Cisco hardware and software features.

The following list shows the recent early deployment releases of the Cisco 1720 router:

- Release 12.0(1)XA
- Release 12.0(2)T to 12.0(7)T
- Release 12.1 T, up to 12.1(1)T

The following list shows the recent early deployment releases of the Cisco 1750 router:

- Release 12.0(5)XQ
- Release 12.0(7)T
- Release 12.1 T, up to 12.1(1)T

For more information, see the “Platform-Specific Documents” section on page 13 about accessing related release note documents.

## System Requirements

This section describes the system requirements for Cisco IOS Release 12.1 T:

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- Hardware Supported, page 3
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## Memory Requirements

**Table 1** Memory Requirements for the Cisco 1700 Series

Platforms	Feature Sets	Image Name	Software Image	Flash Memory Required	DRAM Memory Required	Runs from
Cisco 1700 Series	IP Feature Sets	IP	c1700-y-mz	4 MB	16 MB	RAM
		IP Plus	c1700-sy-mz	8 MB	24 MB	RAM
		IP Plus IPSEC 56	c1700-sy56i-mz	8 MB	32 MB	RAM
		IP/FW/IDS	c1700-o3y-mz	4 MB	20 MB	RAM
		IP/FW/IDS Plus IPsec 56	c1700-o3sy56i-mz	8 MB	32 MB	RAM
		IP/IPX	c1700-ny-mz	4 MB	20 MB	RAM
		IP/IPX/FW/IDS Plus	c1700-no3sy-mz	8 MB	24 MB	RAM
		IP/IPX/AT/IBM	c1700-bnr2y-mz	8 MB	24 MB	RAM
		IP/IPX/AT/IBM Plus	c1700-bnr2sy-mz	8 MB	32 MB	RAM
		IP/Voice Plus IPSEC 56	c1700-sv3y56i-mz	8 MB	32 MB	RAM
		IP/Voice/FW/IDS Plus	c1700-o3sv3y-mz	8 MB	32 MB	RAM
		IP/Voice/FW/IDS Plus IPsec 56	c1700-o3sv3y56i-mz	8 MB	32 MB	RAM
		IP/IPX/Voice/FW/IDS Plus	c1700-no3sv3y-mz	8 MB	32 MB	RAM
		IP Plus IPSEC 3DES	c1700-k2sy-mz	8 MB	32 MB	RAM
		IP/FW/IDS Plus IPsec 3DES	c1700-k2o3sy-mz	8 MB	32 MB	RAM
		IP/Voice Plus IPSEC 3DES	c1700-k2sv3y-mz	8 MB	32 MB	RAM
IP/Voice/FW/IDS Plus IPsec 3DES	c1700-k2o3sv3y-mz	8 MB	32 MB	RAM		

## Hardware Supported

Cisco IOS Release 12.1 T supports the Cisco 1700 series routers:

- Cisco 1720—Runs data images only.
- Cisco 1750—Runs data and data-plus-voice images.

For detailed descriptions of the new hardware features, see “New and Changed Information” section on page 7.

### Cisco 1720

The 1720 router provides Internet and intranet access and includes the following:

- Support for virtual private networking
- Modular architecture
- Network device integration

The Cisco 1720 router has the following hardware components:

- One autosensing 10/100 Fast Ethernet port
- Two WAN interface card slots
- One auxiliary (AUX) port (up to 115.2 kbps asynchronous serial)
- One console port
- RISC Processor for high performance encryption
- One internal expansion slot for support of future hardware-assisted services such as encryption (up to T1/E1) and compression
- DRAM memory: 16 MB default, expandable to 48 MB
- Flash memory: 4 MB default, expandable to 16 MB
- Desktop form factor

The Cisco 1720 router supports any combination of one or two of the following WAN interface cards, which are shared with the Cisco 1600, 2600, and 3600 routers:

- WIC-1T: One port high speed serial (sync/async)
- WIC-2T: Two port high speed serial (sync/async)
- WIC-2A/S: Two port low speed serial (sync/async) (up to 128 kbps)
- WIC-1B-S/T: One port ISDN BRI S/T
- WIC-1B-U: One port ISDN BRI U
- WIC-1DSU-56K4: One port integrated 56/64 kbps 4-wire DSU/CSU
- WIC-1DSU-T1: One port integrated T1 / Fractional T1 DSU/CSU

## Cisco 1750

The voice-and-data capable Cisco 1750 router provides global Internet and company intranet access and includes the following:

- Voice-over-IP (VoIP) voice-and-data functionality; the router can carry voice traffic (for example, telephone calls and faxes) over an IP network
- Support for virtual private networking
- Modular architecture
- Network device integration

The Cisco 1750 router has the following hardware components:

- One autosensing 10/100 Fast Ethernet port, which operates in full- or half-duplex mode (with manual override available)
- One Voice interface card slot—Supports a single voice interface card (Table 4) with two ports per card
- Two WAN interface card slots for either WAN interface cards (WICs) or voice interface cards (VICs)
- Synchronous serial interfaces on serial WAN interface cards
- Asynchronous serial interfaces on serial WAN interface cards
- ISDN WAN interface cards—ISDN dialup and ISDN leased line (IDSL) at 144 kbps; encapsulation over ISDN leased line: Frame Relay and PPP

- One auxiliary (AUX) port (up to 115.2 kbps asynchronous serial)
- One console port
- One internal expansion slot—Supports future hardware-assisted services such as encryption (up to T1/E1) and compression processor
- RISC Processor—Motorola MPC860T PowerQUICC at 48 MHz
- One security slot that supports Kensington or similar lockdown equipment
- DRAM memory: 16 MB default, expandable to 48 MB
- Flash memory: 4 MB default, expandable to 16 MB
- Desktop form factor

The Cisco 1750 router also supports any combination of one or two of the following WAN interface cards, which are shared with the Cisco 1600, 1720, 2600, and 3600 routers:

- WIC-1T: One port high speed serial (sync/async)(T1/E1)
- WIC-2T: Two port high speed serial (sync/async) (T1/E1)
- WIC-2A/S: Two port low speed serial (sync/async) (up to 128 kbps)
- WIC-1B-S/T: One port ISDN BRI S/T
- WIC-1B-U: One port ISDN BRI U with integrated NT1
- WIC-1DSU-56K4: One port integrated 56/64 kbps 4-wire DSU/CSU
- WIC-1DSU-T1: One port integrated T1 / Fractional T1 DSU/CSU

The Cisco 1750 router supports any combination of one or two of the following voice interface cards, which are shared with the Cisco 2600 and 3600 routers:

- VIC-2FXS: Two port Foreign Exchange Station (FXS) voice/fax interface card for voice/fax network module
- VIC-2FXO: Two port Foreign Exchange Office (FXO) voice/fax interface card for voice/fax network module
- VIC-2FXO-EU: Two port FXO voice/fax interface card for Europe
- VIC-2E/M: Two port Ear & Mouth (E&M) voice/fax interface card for voice/fax network module

## Determining the Software Release

To determine the version of Cisco IOS software running on your Cisco 1700 series router, log in to the router and enter the **show version EXEC** command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 12.1 T Software (C1700-oy-mz), Version 12.1(1)T, RELEASE SOFTWARE
```

## Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Cisco IOS Upgrade Ordering Instructions* located at:

[http://www.cisco.com/warp/public/cc/cisco/mkt/ios/prodlit/957\\_pp.htm](http://www.cisco.com/warp/public/cc/cisco/mkt/ios/prodlit/957_pp.htm)

## Feature Set Tables

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

Cisco IOS Release 12.1 T supports the same feature sets as Cisco IOS Release 12.1, but Release 12.1 T can include new features supported by the Cisco 1700 series routers.



### Caution

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

Table 2, Table 3, and Table 4 list the features and feature sets supported by the Cisco 1700 series in Cisco IOS Release 12.1 T. All three tables use the following conventions:

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



### Note

These feature set tables contain only the features specific to the T-train. For a more complete list of features, see the feature set tables in the mainline release notes on CCO: <http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121relnt/xprn121/121feats.htm>.

**Table 2** Feature List by Feature Set for the Cisco 1700 Series, Part 1

Features	Feature Sets					
	IP	IP Plus	IP Plus IPSEC 56	IP/FW/ IDS	IP/FW/ IDS Plus IPSec 56	IP/IPX
<b>Miscellaneous</b>						
Vela-H.323 V2 Enhancements	No	No	No	No	No	No
<b>Security</b>						
SSH Version 1 Server Support	Yes	Yes	Yes	Yes	Yes	Yes

**Table 3** Feature List by Feature Set for the Cisco 1700 Series, Part 2

Features	Feature Sets					
	IP/IPX/FW/IDS Plus	IP/IPX/AT/IBM	IP/IPX/AT/IBM Plus	IP/Voice Plus IPSEC 56	IP/Voice/FW/IDS Plus	IP/Voice/FW/IDS Plus IPSEC 56
Miscellaneous						
Vela-H.323 V2 Enhancements	No	No	No	Yes	Yes	Yes
Security						
SSH Version 1 Server Support	Yes	Yes	Yes	Yes	Yes	Yes

**Table 4** Feature List by Feature Set for the Cisco 1700 Series, Part 3

Features	Feature Sets				
	IP/IPX/Voice/FW/IDS Plus	IP Plus IPSEC 3DES	IP/FW/IDS Plus IPsec 3DES	IP/Voice Plus IPSEC 3DES	IP/Voice/FW/IDS Plus IPsec 3DES
Miscellaneous					
Vela-H.323 V2 Enhancements	Yes	No	No	Yes	Yes
Security					
SSH Version 1 Server Support	Yes	Yes	Yes	Yes	Yes

## New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 1700 series routers for Release 12.1 T.

### New Software Features in Cisco IOS Release 12.1 T

The following new software features are supported by the Cisco 1700 series routers for Release 12.1(1)T:

#### SSH Version 1 Server Support

Secure Shell (SSH) is a protocol that provides a secure, remote connection to a router. There are currently two versions of SSH available: SSH Version 1 and SSH Version 2. Only SSH Version 1 is implemented in Cisco IOS software.

The SSH server feature enables a SSH client to make a secure, encrypted connection to a Cisco router. This connection provides functionality that is similar to an inbound Telnet connection. The SSH server in Cisco IOS software will work with publicly and commercially available SSH clients.

## Vela-H.323 V2 Enhancements

Cisco H.323 Version 2 Phase 2 enhancements upgrade several optional features of the H.323 Version 2 specification, and facilitate customized extensions to the Cisco Gatekeeper.

- **H.323v2 Fast Connect**—The Fast Connect feature allows endpoints to establish media channels without waiting for a separate H.245 connection to be opened. This streamlines the number of messages that are exchanged and the amount of processing before endpoint connections can be established.
- **H.245 Tunneling**—Through H.245 tunneling, H.245 messages are encapsulated within Q.931 messages without using a separate H.245 TCP connection. When tunneling is enabled, one or more H.245 messages can be encapsulated in any Q.931 message. H.245 tunneling is not supported as a stand-alone feature; initiation of H.245 tunneling procedures can be initiated only by using the **dtmf-relay** command, and only from an active Fast Connect call. Furthermore, if **dtmf-relay** is configured on a Version 2 VoIP dial peer and the active call has been established by using Fast Connect, tunneling procedures initiated by the opposite endpoint are accepted and supported. H.245 tunneling is backward compatible with H.323 Version 1 configurations.
- **H.450.2 Call Transfer**—Call Transfer allows an H.323 endpoint to redirect an answered call to another H.323 endpoint. Cisco gateways support H.450.2 Call Transfer as the transferred and transferred-to party. The transferring endpoint must be an H.450-capable terminal; the Cisco gateway cannot act as the transferring endpoint. Gatekeeper-controlled or Gatekeeper-initiated Call Transfer is not supported.



### Note

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Certain devices are limited in their support of H.450. The Cisco 1700 and ubr820 platforms do not support Interactive Voice Response (IVR). Therefore, these platforms are not able to act as H.450 Transferring endpoints.

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- **H.450.3 Call Deflection**—Call Deflection is a feature under H.450.3 Call Diversion (Call Forwarding) that allows a called H.323 endpoint to redirect the unanswered call to another H.323 endpoint. Cisco gateways support H.450.3 Call Deflection as the originating, deflecting, and deflected-to gateway. The Cisco gateway as the deflecting gateway will support invocation of Call Deflection only by using an incoming PRI QSIG message (a Call Deflection cannot be invoked by using any other trunk type).
- **Hookflash Relay**—A “hookflash” indication is a brief on-hook condition during a call. The indication is not long enough in duration to be interpreted as a signal to disconnect the call. You can create a hookflash indication by quickly depressing and releasing the hook on your telephone.
- **H.235 Security**—Security for Registration, Admission, and Status protocol (RAS) signaling between H.323 endpoints and Gatekeepers is enhanced in H.323 Version 2 Phase 2 by including secure endpoint registration of the Cisco gateway to the Cisco Gatekeeper and secure per-call authentication. The authentication type is “password with hashing” as described in ITU H.235. Specifically, the encryption method is MD5 with password hashing. This functionality is provided by the security token required-for CLI on the Gatekeeper and the security password CLI on the gateway.
- **GKTMP**—The Gatekeeper Transaction Message Protocol (GKTMP) for the Cisco Gatekeeper provides a transaction-oriented application protocol that allows an external application to modify Gatekeeper behavior by processing specified RAS messages.



- Gateway Support for Alternate Endpoints—The Alternate Endpoint feature allows a Gatekeeper to specify alternative destinations for a call when queried with an Admission Request (ARQ) by an originating gateway. If the first destination gateway fails to connect, the Gatekeeper tries all the alternate destinations before going to the next dial peer rotary (if a rotary is configured).
- Gateway Support for a Network-Based Billing Number—This feature informs the Gatekeeper of the specific voice port or T1/E1 span from which an incoming call entered the ingress gateway. This is done using a Cisco proprietary, nonstandard field that has been added to the Admission Request (ARQ) message sent by the ingress gateway. No configuration is necessary for this feature.
- Gateway Support for Voice-Port Description—This feature provides the Gatekeeper with a configurable string that identifies the voice port or T1/E1 span from which an incoming call entered the ingress gateway. This is done using a Cisco proprietary, nonstandard field that has been added to the ARQ message sent by the ingress gateway. The string in the ARQ corresponds to the setting of the voice-port description command.

## Limitations and Restrictions

### MIBs

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

**Table 5** *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 decided
OLD-CISCO-DECNET-MIB	To be decided
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 decided
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 decided
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be decided

**Note**


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*Cisco Management Information Base (MIB) User Quick Reference* is no longer published. If you have an account with CCO, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit*, go to CCO, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

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## Important Notes

The following sections contain important notes about Cisco IOS Release 12.1 T that can apply to the Cisco 1700 series routers.

### VIC-2FXO-M3 Not Supported by the Cisco 1750

The Australian variant of the two-port Foreign Exchange Office (FXO) voice/fax interface card for the voice/fax network module (VIC-2FXO-M3) is not supported by the Cisco 1750 at this time.

### Using the boot flash Command

Booting a Cisco 1700 series router with the commands **boot flash** or **boot system flash** results in unpredictable behavior. To work around this problem, be sure to enter a colon (:) following both commands (for example, **boot flash:** or **boot system flash:**).

### Fan Operation in Cisco 1720 Router

Be advised that the fans in the Cisco 1720 router stay off until thermally activated.

### Flash defaults to Flash:1 on Multipartition Flash

When using a multipartition flash card, the various flash partitions are referred to as “flash:1:”, “flash:2:”, etc. If you specify only “flash” in a multipartition flash, the parser assumes “flash:1:.” For example, if you enter **show flash all** the parser defaults to “show flash:1: all” and only the flash information for the first partition displays. To see information for all flash partitions, enter **show flash ?**. This will list all of the valid partitions. Then enter **show flash:xx: all** on each valid partition.

### Traffic Shaping

On the ATM25 interface of the C1400 there are two types of traffic shaping: hardware-based and software-based. Hardware-based traffic shaping is provided by the ATM SAR chip and is enabled on a per-pvc basis by one of the following IOS PVC configuration commands:

```
ubr      <peak-cell-rate>
ubr+    <peak-cell-rate> <minimum-guaranteed-cell-rate>
vbr-nrt <peak-cell-rate> <sustainable-cell-rate> <maximum-burst-size>
```

The SAR chip has “rate counters” that control the rate at which the current buffer up for segmentation is going to be transmitted. Ideally, the SAR chip could be programmed with values for all of the above command parameters. Unfortunately, it only has the rate counters, which specify a divisor of the basic line rate of 25 Mbps and which really sets the maximum transmission rate (peak-cell-rate) for the channel. Note that with the “ubr” and “ubr+” commands, the rate counter for the PVC is obtained from the <peak-cell-rate> parameter. With the “vbr-nrt” command, the rate counter is obtained from the <sustainable-cell-rate> parameter. While the <minimum-guaranteed-cell-rate> parameter in the “ubr+” command and the <peak-cell-rate> parameter in the “vbr-nrt” command can be specified by the user, they are ignored by the ATM25 driver.

Software-based traffic shaping is enabled on a per-interface basis via the “traffic-shape” interface configuration command. For performance reasons, and since for ATM interfaces you most likely want to do shaping on a per-pvc basis, the ATM driver does not support software-based traffic shaping while fastswitching. However, if fast-switching is disabled and the “traffic-shape” interface configuration command is enabled, then software traffic shaping will occur. (See CSCdk28377 for more information).

## Caveats

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

For information on caveats in Cisco IOS Release 12.1 T, see *Caveats for Cisco IOS Release 12.1 T*.

All caveats in Cisco IOS Release 12.1 are also in Cisco IOS Release 12.1 T.

For information on caveats in Cisco IOS Release 12.0, see *Caveats for Cisco IOS Release 12.1*, which lists severity 1 and 2 caveats and is located on CCO and the Documentation CD-ROM.



### Note

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If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to CCO and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools>.

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## Caveats for Release 12.1(1)T

This section describes possibly unexpected behavior by Release 12.1(1)T, specific to the Cisco 1700 series routers. Only severity 1 and 2 caveats are included.

### CSCdp97036

The Australian variant of the two-port Foreign Exchange Office (FXO) voice/fax interface card for the voice/fax network module (VIC-2FXO-M3) is not supported by the Cisco 1750 at this time.

## Related Documentation

The following sections describe the documentation available for the Cisco 1700 series routers. These documents consist of hardware and software installation guides, Cisco IOS configuration 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 CCO and the Documentation CD-ROM.

Use these release notes with these documents:

- Release-Specific Documents, page 12
- Platform-Specific Documents, page 13
- Feature Modules, page 14
- Cisco IOS Software Documentation Set, page 14

## Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.1 and are located on CCO and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.1*

On CCO at:

**Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Release Notes: Cross-Platform Release Notes**

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

**Technical Documents**

- *Caveats for Cisco IOS Release 12.1*

See *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.1 and Release 12.1 T.

On CCO at:

**Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Caveats**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Caveats**



**Note** If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, go to CCO and press **Login**. Then go to **Software Center: Cisco IOS Software: Cisco Bugtool Navigator II**. Another option is to go to <http://www.cisco.com/support/bugtools>.

## Platform-Specific Documents

### Cisco 1720 Router

These individual and groups of documents are available for the Cisco 1720 router on CCO and the Documentation CD-ROM:

- *Installing Your Cisco 1720*
- *Cisco 1720 Router Hardware Installation Guide*
- *Cisco 1700 Router Software Configuration Guide*
- *Regulatory Compliance and Safety Information*
- Configuration notes
- Release notes for the Cisco 1720 router
- *WAN Interface Cards Hardware Installation Guide*

On CCO at:

**Technical Documents: Documentation Home Page: Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1720 Router**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1720 Router**

### Cisco 1750 Router

These individual and groups of documents are available for the Cisco 1750 router on CCO and the Documentation CD-ROM:

- *Cisco 1750 Router Hardware Installation Guide*
- *Voice-over-IP Quick Start Guide*
- Cisco 1750 software configuration guides
- *Cisco WAN Interface Cards Hardware Installation Guide*
- *Installing and Removing Packet Voice DSP Modules Configuration Note*
- Release notes for the Cisco 1750 router
- Safety information for Cisco 1600 and 1700 routers

On CCO at:

**Technical Documents: Documentation Home Page: Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1750 Router**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1750 Router**

## Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.1 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:

**Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: 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 that are shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

### Documentation Modules

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

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

On CCO at:

**Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Configuration Guides and Command References**

### Cisco IOS Release 12.1 Documentation Set

Table 6 describes the contents of the Cisco IOS Release 12.1 software documentation set, which is available in electronic form and in printed form ordered.



#### Note

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

On CCO at:

**Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1**

On the Documentation CD-ROM at:

**Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1**

**Table 6** Cisco IOS Software Release 12.1 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>	Cisco IOS User Interfaces Cisco IOS File Management Cisco IOS System Management
<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 I</i></li> <li>• <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume II</i></li> </ul>	Using Cisco IOS Software Overview of SNA Internetworking Bridging IBM Networking
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Dial Services Configuration Guide: Terminal Services</i></li> <li>• <i>Cisco IOS Dial Services Configuration Guide: Network Services</i></li> <li>• <i>Cisco IOS Dial Services Command Reference</i></li> </ul>	Preparing for Dial Access Modem Configuration and Management ISDN and Signalling Configuration PPP Configuration Dial-on-Demand Routing Configuration Dial-Backup Configuration Terminal Service Configuration Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Interworking 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>	Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces
<ul style="list-style-type: none"> <li>• <i>Cisco IOS IP and IP Routing Configuration Guide</i></li> <li>• <i>Cisco IOS IP and IP Routing Command Reference</i></li> </ul>	IP Addressing and 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 and Novell IPX Overview Configuring AppleTalk Configuring Novell IPX

**Table 6 Cisco IOS Software Release 12.1 Documentation Set (continued)**

Books	Major Topics
<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, and XNS Overview Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring ISO CLNS Configuring XNS
<ul style="list-style-type: none"> <li>• <i>Cisco IOS Multiservice Applications Configuration Guide</i></li> <li>• <i>Cisco IOS Multiservice Applications Command Reference</i></li> </ul>	Multiservice Applications Overview Voice Video Broadband
<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>	Quality of Service Overview Classification Congestion Management Congestion Avoidance Policing and Shaping Signalling Link Efficiency Mechanisms Quality of Service Solutions
<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>	Security Overview Authentication, Authorization, and Accounting (AAA) Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Other Security Features
<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 Services Overview Cisco IOS Switching Paths Cisco Express Forwarding NetFlow Switching MPLS 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>	Wide-Area Networking Overview Configuring ATM Configuring Frame Relay Configuring Frame Relay-ATM Interworking Configuring SMDS Configuring X.25 and LAPB
<ul style="list-style-type: none"> <li>• <i>New Features in 12.1-Based Limited Lifetime Releases</i></li> <li>• <i>New Features in Release 12.1 T</i></li> <li>• Release Notes (Release note and caveat documentation for 12.1-based releases and various platforms)</li> <li>• <i>Cisco IOS Debug Command Reference</i></li> <li>• <i>Cisco IOS Dial Services Quick Configuration Guide</i></li> </ul>	



**Note**

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*Cisco Management Information Base (MIB) User Quick Reference* is no longer published. If you have an account with CCO, you can find the current list of MIBs supported by Cisco. To reach the *Cisco Network Management Toolkit*, go to CC, press **Login**, and click to **Software Center: Network Mgmt Products: Cisco Network Management Toolkit: Cisco MIB**.

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### World Wide Web

You can access the most current Cisco documentation on the World Wide Web at <http://www.cisco.com>, <http://www-china.cisco.com>, or <http://www-europe.cisco.com>.

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

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- Telnet: [cco.cisco.com](http://cco.cisco.com)
- Modem using standard connection rates and the following terminal settings: VT100 emulation; 8 data bits; no parity; and 1 stop bit.
  - From North America, call 408 526-8070
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To contact by e-mail, use one of the following:

Language	E-mail Address
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Hanzi (Chinese)	<a href="mailto:chinese-tac@cisco.com">chinese-tac@cisco.com</a>
Kanji (Japanese)	<a href="mailto:japan-tac@cisco.com">japan-tac@cisco.com</a>
Hangul (Korean)	<a href="mailto:korea-tac@cisco.com">korea-tac@cisco.com</a>
Spanish	<a href="mailto:tac@cisco.com">tac@cisco.com</a>
Thai	<a href="mailto:thai-tac@cisco.com">thai-tac@cisco.com</a>

In North America, TAC can be reached at 800 553-2447 or 408 526-7209. For other telephone numbers and TAC e-mail addresses worldwide, consult the following web site: <http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>.

## Software Configuration Tips on the Cisco Technical Assistance Center Home Page

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

[http://www.cisco.com/kobayashi/technotes/serv\\_tips.shtml](http://www.cisco.com/kobayashi/technotes/serv_tips.shtml)

This URL is subject to change without notice. If it changes, point your Web browser to CCO, press **Login**, and click on this path: **Technical Assistance Center: 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 Cisco IOS software features and services.
- Sample Configurations—Provides actual configuration examples that are complete with topology and annotations.

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170 West Tasman Drive  
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This document is to be used in conjunction with the documents listed in the “Related Documentation” section on page 12.

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