



Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(11)YV

July 29, 2003

These release notes describe new features and significant software components for the Cisco 1700 series routers that support Cisco IOS Release 12.2 T, up to and including Release 12.2(11)YV2. These release notes are updated as needed to describe new memory requirements, new features, new hardware support, software platform deferrals, microcode or modem code changes, related document changes, and any other important changes. Use these release notes with the [Cross-Platform Release Notes for Cisco IOS Release 12.2 T](#) located on Cisco.com and the Documentation CD.

For a list of the software caveats that apply to Release 12.2(11)YV2, see the “[Caveats](#)” and the online [Caveats for Cisco IOS Release 12.2 T](#) document. The caveats document is updated for every 12.2 T maintenance release and is located on Cisco.com and the Documentation CD.

Contents

These release notes discuss the following topics:

- [System Requirements, page 2](#)
- [New and Changed Information, page 7](#)
- [Limitations, page 8](#)
- [Caveats, page 9](#)
- [Related Documentation, page 11](#)
- [Obtaining Documentation, page 12](#)
- [Obtaining Technical Assistance, page 13](#)



Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

Copyright © 2002. Cisco Systems, Inc. All rights reserved.

System Requirements

This section describes the system requirements for Release 12.2(11)YV2 and includes the following sections:

- [Memory Requirements, page 2](#)
- [Hardware Supported, page 4](#)
- [Determining the Software Version, page 5](#)
- [Upgrading to a New Software Release, page 5](#)
- [Feature Set Tables, page 5](#)

Memory Requirements

This section describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.2(11)YV2 on the Cisco 1700 series routers.

Table 1 Recommended Memory for the Cisco 1700 Series Routers

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory
Cisco 1710	Cisco 1710 IOS IP/IPX/AT/IBM/FW/IDS PLUS IPSEC 3DES	IP/IPX/AT/IBM/ FW/IDS PLUS IPSEC 3DES	c1710-bk9no3r2sy-mz	16 MB	48 MB
	Cisco 1710 IOS IP/FW/IDS PLUS IPSEC 3DES	IP/FW/IDS PLUS IPSEC 3DES	c1710-k9o3sy-mz	16 MB	48 MB
Cisco 1751 and Cisco 1760	Cisco 1700 IOS IP ADSL/IPX/ AT/IBM/VOX/FW/IDS PLUS IPSEC 56	IP ADSL/IPX/ AT/IBM/VOX/FW/ IDS IPSEC 56	c1700-bk8no3r2sv8y7-mz	32 MB	96 MB
	Cisco 1700 IOS IP/ADSL/IPX/AT/IBM/VOX/FW/ IDS PLUS IPSEC 3DES	IP ADSL/IPX/ AT/IBM/VOX/FW/ IDS IPSEC 3DES	c1700-bk9no3r2sv8y7-mz	32 MB	96 MB
	Cisco 1700 IOS IP/ADSL/VOX/FW/IDS PLUS IPSEC 56	IP/ADSL/ VOX/FW/IDS PLUS IPSEC 56	c1700-k8o3sv8y7-mz	16 MB	96 MB
	Cisco 1700 IOS IP/ADSL/VOX PLUS IPSEC 56	IP/ADSL/VOX PLUS IPSEC 56	c1700-k8sv8y7-mz	16 MB	96 MB
	Cisco 1700 IOS IP/ADSL/VOX/FW/IDS PLUS IPSEC 3DES	IP/ADSL/VOX/FW/ IDS PLUS IPSEC 3DES	c1700-k9o3sv8y7-mz	16 MB	96 MB
	Cisco 1700 IOS IP/ADSL/VOX PLUS IPSEC 3DES	IP/ADSL/VOX PLUS IPSEC 3DES	c1700-k9sv8y7-mz	16 MB	96 MB
	Cisco 1700 IOS IP/ADSL/IPX/VOX/FW/IDS PLUS	IP/ADSL/IPX/ VOX/FW/IDS PLUS	c1700-no3sv8y7-mz	16 MB	64 MB

Table 1 Recommended Memory for the Cisco 1700 Series Routers

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory
Cisco 1751 and Cisco 1760	Cisco 1700 IOS IP/ADSL/VOX/FW/IDS PLUS	IP/ADSL/VOX/ FW/IDS PLUS	c1700-o3sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/VOX PLUS	IP/ADSL/VOX PLUS	c1700-sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/IPX/ AT/IBM/VOICE/FW/IDS PLUS IPSEC 56	IP ADSL/IPX/ AT/IBM/VOICE/ FW/IDS IPSEC 56	c1700-bk8no3r2sv3y7-mz	32 MB	64 MB
	Cisco 1700 IOS IP/ADSL/IPX/AT/IBM/VOICE/ FW/IDS PLUSIPSEC 3DES	IP ADSL/IPX/ AT/IBM/VOICE/ FW/IDS IPSEC 3DES	c1700-bk9no3r2sv3y7-mz	32 MB	64 MB
Cisco 1750 and Cisco 1760	Cisco 1700 IOS IP/ADSL/VOICE/FW/IDS PLUS IPSEC 56	IP/ADSL/ VOICE/FW/IDS PLUS IPSEC 56	c1700-k8o3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/VOICE PLUS IPSEC 56	IP/ADSL/VOICE PLUS IPSEC 56	c1700-k8sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/VOICE/FW/IDS PLUS IPSEC 3DES	IP/ADSL/ VOICE/FW/IDS PLUS IPSEC 3DES	c1700-k9o3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/VOICE PLUS IPSEC 3DES	IP/ADSL/VOICE PLUS IPSEC 3DES	c1700-k9sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/IPX/VOICE/FW/IDS PLUS	IP/ADSL/IPX/ VOICE/FW/IDS PLUS	c1700-no3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/VOICE/FW/IDS PLUS	IP/ADSL/ VOICE/FW/IDS PLUS	c1700-o3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/VOICE PLUS	IP/VOICE PLUS	c1700-sv3y7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/ADSL/VOICE PLUS	IP/ADSL/VOICE PLUS	c1700-sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/VOX PLUS	IP/VOX PLUS	c1700-sv8y7-mz	16 MB	64 MB

Table 1 Recommended Memory for the Cisco 1700 Series Routers

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory
Cisco 1721/ Cisco 1751 and Cisco 1760	Cisco 1700 IOS IP/ADSL/IPX/AT/IBM/FW/IDS PLUS IPSEC 56	IP ADSL/IPX/ AT/IBM/FW/IDS PLUS IPSEC 56	c1700-bk8no3r2sy7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/IPX/AT/IBM/FW/IDS PLUS IPSEC 3DES	IP ADSL/IPX/ AT/IBM/FW/IDS IPSEC 3DES	c1700-bk9no3r2sy7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL/IPX/AT/IBM PLUS	IP /ADSL/IPX/ AT/IBM PLUS	c1700-bnr2sy7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/IPX/AT/IBM	IP/IPX/AT/IBM	c1700-bnr2y-mz	8 MB	32 MB
	Cisco 1700 IOS IP/ADSL/FW/IDS PLUS IPSEC 56	IP/ADSL/FW/IDS PLUS IPSEC 56	c1700-k8o3sy7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/ADSL PLUS IPSEC 56	IP/ADSL PLUS IPSEC 56	c1700-k8sy7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/ADSL/FW/IDS PLUS IPSEC 3DES	IP/ADSL/FW/IDS PLUS IPSEC 3DES	c1700-k9o3sy7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/ADSL PLUS IPSEC 3DES	IP/ADSL PLUS IPSEC 3DES	c1700-k9sy7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/ADSL/IPX/FW/IDS PLUS	IP/ADSL/IPX/ FW/IDS PLUS	c1700-no3sy7-mz	16 MB	48 MB
	Cisco 1700 IOS IP/IPX	IP/IPX	c1700-ny-mz	8 MB	32 MB
	Cisco 1700 IOS IP/FW/IDS	IP/FW/IDS	c1700-o3y-mz	8 MB	32 MB

Hardware Supported

Cisco IOS Release 12.2(11)YV2 supports the following Cisco 1700 series routers:

- Cisco 1710 routers
- Cisco 1721 routers
- Cisco 1751 and 1751-V routers
- Cisco 1760 and 1760-V routers

The Cisco 1710 and Cisco 1721 routers run data images only. The Cisco 1751, 1751-V, 1760, and 1760-V routers run data or data-and-voice images, providing digital and analog voice support.

For descriptions of existing hardware features and supported modules, see the hardware installation guides, configuration and command reference guides, and additional documents specific to the Cisco 1700 series routers, which are available on Cisco.com and the Documentation CD at the following location:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/index.htm

This URL is subject to change without notice. If it changes, point your web browser to Cisco.com, and click the following path:

Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1700 Series Routers: <platform_name>

Determining the Software Version

To determine which version of Cisco IOS software currently running on your Cisco 1700 series router, log in to the router and enter the **show version** EXEC command. The following sample output from the **show version** command indicates the version number.

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) C1700 Software (C1700-NY-MZ), Version 12.2(11)YV2, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)
Synched to technology version 12.2(13.1u)T
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see *Software Installation and Upgrade Procedures* located at http://www.cisco.com/warp/public/130/upgrade_index.shtml.

Feature Set Tables

The Cisco IOS software is packaged in feature sets consisting of software images, depending on the platform. Each feature set contains a specific set of Cisco IOS features. Release 12.2(11)YV2 supports the same feature sets as Releases 12.2 and 12.2(8)T, but Release 12.2(11)YV2 includes 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 will likely require an export license. Customer orders can be denied or subject to delay as a result of United States government regulations. When applicable, the 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.

Table 2 lists the features and feature sets supported in Cisco IOS Release 12.2(11)YV2.

The table uses the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, “12.2(11)YV” means that the feature was introduced in 12.2(11)YV. If a cell in this column is empty, the feature was included in a previous release or in the initial base release.



Note

These feature set tables contain only a selected list of features, which are cumulative for Release 12.2(11)*nn* early deployment releases only (*nn* identifies each early deployment release). The tables do not list all features in each image—additional features are listed in the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* and Release 12.2 T Cisco IOS documentation.

Table 2 Feature List by Feature Set for Cisco 1710 Routers

Feature	In	Feature Set	
		IP/IPX/AT/IBM/FW/IDS PLUS IPSEC 3DES	IP/FW/IDS PLUS IPSEC 3DES
Channel bank	12.2(11)YV	No	No

Table 3 Feature List by Feature Set for Cisco 1721 Routers

Feature	In	Feature Set				
		IP ADSL/IPX/AT/IBM/FW/IDS PLUS IPSEC 56	IP ADSL/IPX/AT/IBM/FW/IDS IPSEC 3DES	IP/ADSL/FW/IDS PLUS IPSEC 56	IP/ADSL PLUS IPSEC 56	IP/ADSL/FW/IDS PLUS IPSEC 3DES
Channel bank	12.2(11)YV	No	No	No	No	No

Table 4, Part 1 Feature List by Feature Set for Cisco 1751 and 1760 Routers

Feature	In	Feature Set					
		IP ADSL/IPX/AT/IBM/FW/IDS PLUS IPSEC 56	IP ADSL/IPX/AT/IBM/VOX/FW/IDS IPSEC 3DES	IP/ADSL/VOX/FW/IDS PLUS IPSEC 56	IP/ADSL/VOX PLUS IPSEC 56	IP/ADSL/VOX/FW/IDS PLUS IPSEC 3DES	IP/ADSL/VOX PLUS IPSEC 3DES
Channel bank	12.2(11)YV	No	Yes	Yes	Yes	Yes	Yes

Table 4, Part 2 Feature List by Feature Set for Cisco 1751 and 1760 Routers

Feature	In	Feature Set			
		IP/ADSL/IPX/VOX/FW/IDS PLUS	IP/ADSL/VOX/FW/IDS PLUS	IP ADSL/IPX/AT/IBM/VOICE/FW/IDS IPSEC 56	IP ADSL/IPX/AT/IBM/VOICE/FW/IDS IPSEC 3DES
Channel bank	12.2(11)YV	Yes	Yes	Yes	Yes

New and Changed Information

The following sections list the new software features supported by the Cisco 1700 series routers for Release 12.2(11)YV2.

New Software Features in Release 12.2(11)YV

The following sections describe the new software features supported by the Cisco 1700 series routers for Release 12.2(11)YV.

Channel Bank

The channel bank feature provides support for the time-division multiplexing (TDM) cross-connect functionality on the Cisco 1760 router between analog voice ports and digital DS0s. This feature will provide support for 2 to 6 ports cross connected to a T1 channel associated signal (CAS) using a 2-port Voice Interface Card (VIC), and a maximum of 12 ports using a 4-port VIC.

To establish a channel bank connection between an analog voice port and a T1 DS0, configure the **connect** command in the global configuration mode. To verify the channel bank connection, use **show connection all** command.

Syntax

connect *connection name* **voice-port** *analog voice port* **T1** *T1 endpoint*

no connect *connection name* [**voice-port** *analog voice port* **T1** *T1 endpoint*]

connection name ::= name string

analog voice port ::= slot number of port/port number of port

T1 endpoint ::= slot number of controller/port number of controller DS0-group number

The DS0 group must contain only one time slot. The signaling type of the DS0 group must match that of the analog voice port.

The channel bank feature is not supported on the Cisco 1751 router.

Configuration Example

In the following example, E&M port 2/1 is configured for a Channel Bank connection with timeslot 1 on T1 1/0.

```
!
(config)#controller T1 1/0
(config-controller)#ds0-group 1 timeslot 1 type e&m-wink
(config-controller)#exit
(config)#voice-port 2/1
(config-voiceport)#operation 4-wire
(config-voiceport)#type 2
(config-voiceport)#signal wink
(config-voiceport)#exit
(config)#connect connect2 voice-port 2/1 T1 1/0 1
(config-ipm_dsprm-conn)#end
!
```

To verify the channel bank connection:

```

!
#show connection ?
all All Connections
elements Show Connection Elements
id ID Number
name Connection Name
port Port Number
#show connection all
ID      Name      Segment 1      Segment 2      State
-----
5       connect1  voice-port    2/0 T1 1/0 01  UP
!

```

New Software Features in Release 12.2(11)T

For information regarding the features supported in Cisco IOS Release 12.2 T, refer to the Cross-Platform Release Notes and New Feature Documentation links at the following location on Cisco.com:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/xprn122t/index.htm>

This URL is subject to change without notice. If it changes, point your web browser to Cisco.com, and click the following path:

[Service & Support: Technical Documents: Cisco IOS Software: Release 12.2: Release Notes: Cross-Platform Release Notes \(Cisco IOS Release 12.2T\)](#)

Limitations

The following sections describe limitations of the new software features supported by the Cisco 1700 series routers for Release 12.2(11)YV2.

Channel Bank

- Once a channel bank connection is configured, the presence or absence of traffic cannot be indicated to the user.
- The users hear silence (not a busy signal) if the DSO time slot of a configured channel bank connection is busied out during the call. The channel bank connection will go down when the DSO time slot is busy.
- The **show voice port** command will not return the correct call state of a configured channel bank connection. The command always reports the port as being idle.
- Channel bank requires digital signal processing (DSP) resources for signaling. If the DSP fails, the connection will be down until the DSP recovers automatically.
- The port LED will not indicate the hook state of the analog port.
- The caller ID feature will not be available on the ports of a channel bank.
- During periods of high CPU use, signaling transfer between the ports of channel bank could be delayed.

- No VoIP or POTS calls should be designated to any of the voice ports in the channel bank connection.

Important Notes

The following sections describe important notes concerning the new software features supported by the Cisco 1700 series routers for Release 12.2(11)YV2.

Channel Bank

The port LED is illuminated when the channel bank connection is up. The port LED is turned off when the connection goes down. If a call gets connected to a channel bank port, any conversation in progress or in future through the channel bank will fail until **shut** or **no-shut** command is issued on the voice port. Alternately the connection can be removed and created again to recover.

Following syslog messages will be generated for indicating channel bank status.

```
%CHANNEL_BANK-5-UPDOWN:Channel Bank <connection_name> state is DOWN
```

```
%CHANNEL_BANK-5-UPDOWN:Channel Bank <connection_name> state is UP
```

The analog voice port LED will also indicate the channel bank status: on when the connection is UP and off when the connection is DOWN.

Caveats

Caveats describe unexpected behavior or defects in Cisco IOS software releases. Severity 1 caveats are the most serious caveats, severity 2 caveats are less serious, and severity 3 caveats are the least serious of these three severity levels.

Caveats in Release 12.2 T are also in Release 12.2(11)YV2. For information on caveats in Cisco IOS Release 12.2 T, refer to the *Caveats for Cisco IOS Release 12.2 T* document. For information on caveats in Cisco IOS Release 12.2, refer to the *Caveats for Cisco IOS Release 12.2* document. These documents list severity 1 and 2 caveats, and are located on Cisco.com and the Documentation CD.



Note

If you have an account with Cisco.com, you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, log in to Cisco.com and click **Service & Support: Technical Assistance Center: Tool Index: Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Resolved Caveats - Release 12.2(11)YV2

Cisco IOS Release 12.2(11)YV2 is a rebuild release for Cisco IOS Release 12.2(11)YV. This section describes unexpected behavior that is fixed in Release 12.2(11)YV2.

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 for Release 12.2(11)YV

The following sections lists the open caveats for the Cisco IOS release 12.2(11)YV.

CSCdz65951

Calls using E&M Immediate Start and Delay Start lines on a channel bank connection do not succeed. First dialed digit from the E&M analog/T1 line on a call that flows through a Cisco 1760 router channel bank connection does not reach the destination end. This happens only when the dial out delay is configured to be less than 135 ms at the call originating node. This problem happens only when the call flows through a Cisco 1760 router channel bank connection. It does not happen on switched calls through the Cisco 1760 router.

Workaround

Configure the dialout delay to be at least 135 ms.

CSCdz67774

Channel bank does not work with analog FXS ground start.

Related Documentation

The following sections describe the documentation available for the Cisco 1700 series routers. Typically, 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 Cisco.com and the Documentation CD.

Use these release notes with the documents listed in the following sections:

- [Release-Specific Documents](#)
- [Platform-Specific Documents](#)

Release-Specific Documents

The following documents are specific to Release 12.2 and apply to Release 12.2(11)YV2. They are located on Cisco.com and the Documentation CD (under the heading Service & Support):

- To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T*, click this path:
Technical Documents: Cisco IOS Software: Release 12.2: Release Notes: Cisco IOS Release 12.2 T
- To reach product bulletins, field notices, and other release-specific documents, click this path:
Technical Documents: Product Bulletins
- To reach the *Caveats for Cisco IOS Release 12.2* and *Caveats for Cisco IOS Release 12.2 T* documents, which contain caveats applicable to all platforms for all maintenance releases of Release 12.2, click this path:
Technical Documents: Cisco IOS Software: Release 12.2: Caveats



Note

If you have an account with Cisco.com, you can also use the Bug Toolkit to find selected caveats of any severity. To reach the Bug Toolkit, log in to Cisco.com, and click **Service & Support: Technical Assistance Center: Tool Index: Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Platform-Specific Documents

Hardware installation guides, configuration and command reference guides, and additional documents specific to Cisco 1700 series routers are available on Cisco.com and the Documentation CD at the following location:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/index.htm

This URL is subject to change without notice. If it changes, point your web browser to Cisco.com, and click the following path:

Cisco Product Documentation: Access Servers and Access Routers: Modular Access Routers: Cisco 1700 Series Routers: <platform_name>

Obtaining Documentation

These sections explain how to obtain documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com>

Translated documentation is available at this URL:

http://www.cisco.com/public/countries_languages.shtml

Documentation CD-ROM

Cisco documentation and additional literature are available in a Cisco Documentation CD-ROM package, which is shipped 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 through an annual subscription.

Ordering Documentation

You can order Cisco documentation in these ways:

- Registered Cisco.com users (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 Systems Corporate Headquarters (California, U.S.A.) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

Documentation Feedback

You can submit comments electronically on Cisco.com. In the Cisco Documentation home page, click the **Fax** or **Email** option in the “Leave Feedback” section at the bottom of the page.

You can e-mail your comments to bug-doc@cisco.com.

You can submit your comments by mail by using the response card behind the front cover of your document or by writing to the following address:

Cisco Systems
Attn: Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain online documentation, troubleshooting tips, and sample configurations from online tools by using the Cisco Technical Assistance Center (TAC) Web Site. Cisco.com registered users have complete access to the technical support resources on the Cisco TAC Web Site.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information, networking solutions, services, programs, and resources at any time, from anywhere in the world.

Cisco.com is a highly integrated Internet application and a powerful, easy-to-use tool that provides a broad range of features and services to help you with these tasks:

- Streamline business processes and improve productivity
- Resolve technical issues with online support
- Download and test software packages
- Order Cisco learning materials and merchandise
- Register for online skill assessment, training, and certification programs

If you want to obtain customized information and service, you can self-register on Cisco.com. To access Cisco.com, go to this URL:

<http://www.cisco.com>

Technical Assistance Center

The Cisco Technical Assistance Center (TAC) is available to all customers who need technical assistance with a Cisco product, technology, or solution. Two levels of support are available: the Cisco TAC Web Site and the Cisco TAC Escalation Center.

Cisco TAC inquiries are categorized according to the urgency of the issue:

- Priority level 4 (P4)—You need information or assistance concerning Cisco product capabilities, product installation, or basic product configuration.
- Priority level 3 (P3)—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- Priority level 2 (P2)—Your production network is severely degraded, affecting significant aspects of business operations. No workaround is available.
- Priority level 1 (P1)—Your production network is down, and a critical impact to business operations will occur if service is not restored quickly. No workaround is available.

The Cisco TAC resource that you choose is based on the priority of the problem and the conditions of service contracts, when applicable.

Cisco TAC Web Site

You can use the Cisco TAC Web Site to resolve P3 and P4 issues yourself, saving both cost and time. The site provides around-the-clock access to online tools, knowledge bases, and software. To access the Cisco TAC Web Site, go to this URL:

<http://www.cisco.com/tac>

All customers, partners, and resellers who have a valid Cisco service contract have complete access to the technical support resources on the Cisco TAC Web Site. The Cisco TAC Web Site requires a Cisco.com login ID and password. If you have a valid service contract but do not have a login ID or password, go to this URL to register:

<http://www.cisco.com/register/>

If you are a Cisco.com registered user, and you cannot resolve your technical issues by using the Cisco TAC Web Site, you can open a case online by using the TAC Case Open tool at this URL:

<http://www.cisco.com/tac/caseopen>

If you have Internet access, we recommend that you open P3 and P4 cases through the Cisco TAC Web Site.

Cisco TAC Escalation Center

The Cisco TAC Escalation Center addresses priority level 1 or priority level 2 issues. These classifications are assigned when severe network degradation significantly impacts business operations. When you contact the TAC Escalation Center with a P1 or P2 problem, a Cisco TAC engineer automatically opens a case.

To obtain a directory of toll-free Cisco TAC telephone numbers for your country, go to this URL:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

Before calling, please check with your network operations center to determine the level of Cisco support services to which your company is entitled: for example, SMARTnet, SMARTnet Onsite, or Network Supported Accounts (NSA). When you call the center, please have available your service agreement number and your product serial number.

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

a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networkers, Networking Academy, Network Registrar, PIX, ProConnect, ScriptShare, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0711R)
partnership relationship between Cisco and any other company. (U/11K)

Copyright © 2002, Cisco Systems, Inc.
All rights reserved.