



Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(8)YM

July 30, 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(8)YM1. 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 CCO and the Documentation CD.

For a list of the software caveats that apply to Release 12.2(8)YM1, refer to the section “[Caveats](#)” and to 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 Connection Online (CCO) and the Documentation CD.

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System Requirements

This section describes the system requirements for Release 12.2(8)YM1 and includes the following sections:

- [Memory Requirements, page 2](#)
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Memory Requirements

This section describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.2(8)YM1 on the Cisco 1700 series routers

Table 1 Recommended Memory for the Cisco 1700 Series Routers

Platforms	Image Name	Feature Set	Image	Flash Memory	DRAM Memory
Cisco 1751 and Cisco 1760	Cisco 1700 IOS IP ADSL/IPX/AT/IBM/Voice/FW/IDS Plus IPSec 56	IP Plus ADSL/IPX/AT/IBM/Voice/FW/IDS IPSec 56	c1700-bk8no3r2sv3y7-mz	32 MB	64 MB
	Cisco 1700 IOS IP ADSL/IPX/AT/IBM/VOX/FW/IDS Plus IPSec 56	IP Plus ADSL/IPX/AT/IBM/VOX/FW/IDS IPSec 56	c1700-bk8no3r2sv8y7-mz	32 MB	64 MB
	Cisco 1700 IOS IP ADSL/IPX/AT/IBM/Voice/FW/IDS Plus IPSec 3DES	IP Plus ADSL/IPX/AT/IBM/Voice/FW/IDS IPSec 3DES	c1700-bk9no3r2sv3y7-mz	32 MB	64 MB
	Cisco 1700 IOS IP ADSL/IPX/AT/IBM/VOX/FW/IDS Plus IPSec 3DES	IP Plus ADSL/IPX/AT/IBM/VOX/FW/IDS IPSec 3DES	c1700-bk9no3r2sv8y7-mz	32 MB	64 MB
	Cisco 1700 IOS IP ADSL/ Voice/ FW/IDS Plus IPSec 56	IP Plus ADSL/Voice/ FW/IDS IPSec 56	c1700-k8o3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/VOX/ FW/IDS Plus IPSec 56	IP Plus ADSL/VOX/ FW/IDS IPSec 56	c1700-k8o3sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/Voice Plus IPSec 56	IP Plus ADSL/Voice IPSec 56	c1700-k8sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/VOX Plus IPSec 56	IP Plus ADSL/VOX IPSec 56	c1700-k8sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/Voice/ FW/IDS Plus IPSec 3DES	IP Plus ADSL/Voice/ FW/IDS IPSec 3DES	c1700-k9o3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/ VOX/ FW/IDS Plus IPSec 3DES	IP Plus ADSL/VOX/ FW/IDS IPSec 3DES	c1700-k9o3sv8y7-mz	16 MB	64 MB
Cisco 1700 IOS IP ADSL/Voice Plus IPSec 3DES	IP Plus ADSL/Voice IPSec 3DES	c1700-k9sv3y7-mz	16 MB	64 MB	

Table 1 Recommended Memory for the Cisco 1700 Series Routers

Platforms	Image Name	Feature Set	Image	Flash Memory	DRAM Memory
Cisco 1751 and Cisco 1760 (Continued)	Cisco 1700 IOS IP ADSL/VOX Plus IPSec 3DES	IP Plus ADSL/VOX IPSec 3DES	c1700-k9sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/IPX/ Voice/FW/IDS Plus	IP Plus ADSL/IPX/ Voice/FW/IDS	c1700-no3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/IPX/ VOX/FW/IDS Plus	IP Plus ADSL/IPX/ VOX/FW/IDS	c1700-no3sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/Voice/ FW/IDS Plus	IP Plus ADSL/Voice/ FW/IDS	c1700-o3sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/VOX/ FW/IDS Plus	IP Plus ADSL/VOX/ FW/IDS	c1700-o3sv8y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/Voice Plus	IP Plus ADSL/Voice	c1700-sv3y7-mz	16 MB	64 MB
	Cisco 1700 IOS IP VOX Plus	IP Plus VOX	c1700-sv8y-mz	16 MB	64 MB
	Cisco 1700 IOS IP ADSL/VOX Plus	IP Plus ADSL/VOX	c1700-sv8y7-mz	16 MB	64 MB

Hardware Supported

Cisco IOS Release 12.2(8)YM1 supports the following Cisco 1700 series routers:

- Cisco 1751 and 1751-V Routers
- Cisco 1760 and 1760-V Routers

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

For detailed descriptions of new hardware features and which features are supported on each router, see the “[New and Changed Information](#)” section on page 5. For descriptions of existing hardware features and supported modules, see the hardware installation guides, configuration and command reference guides, and additional documents specific to 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 CCO, 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 the 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 on the second output line:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) C1700 Software (C1700-Y-MZ), Version 12.2(8)YM1, EARLY DEPLOYMENT RELEASE SOFTWARE
(fc1)
Synched to technology version 12.2(5.4)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(8)YM1 supports the same feature sets as Releases 12.2 and 12.2(8)T, but Release 12.2(8)YM1 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 are likely to require an export license. Customer orders can be denied or subject to delay due to 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(8)YM1.

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(8)YM” means the feature was introduced in 12.2(8)YM. If a cell in this column is empty, the feature was included in a previous release or the initial base release.



Note

These feature set tables only contain a selected list of features, which are cumulative for Release 12.2(8)*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 1751 and 1760 Routers, Part 1 of 3

Feature	In	Feature Set					
		IP Plus ADSL/IPX/AT/IBM/Voice/FW/IDS IPsec 56	IP Plus ADSL/ IPX/ AT/IBM/ VOX/FW/IDS IPsec 56	IP Plus ADSL/ IPX/ AT/IBM/ Voice/FW/IDS IPsec 3DES	IP Plus ADSL/ IPX/ AT/IBM/ VOX/FW/IDS IPsec 3DES	IP Plus ADSL/Voice/ FW/IDS IPsec 56	IP Plus ADSL/VO X/ FW/IDS IPsec 56
IOS Telephony							
Live Feed Music on Hold	12.2(8)YM	No	Yes	No	Yes	No	Yes
Speed-dial Directory	12.2(8)YM	No	Yes	No	Yes	No	Yes
Top-line Description	12.2(8)YM	No	Yes	No	Yes	No	Yes

Table 2 Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 2 of 3

Feature	In	Feature Set					
		IP Plus ADSL/Voice IPSec 56	IP Plus ADSL/VOX IPSec 56	IP Plus ADSL/Voice / FW/IDS IPSec 3DES	IP Plus ADSL/VOX/ FW/IDS IPSec 3DES	IP Plus ADSL/Voice IPSec 3DES	IP Plus ADSL/VOX/ IPSec 3DES
IOS Telephony							
Live Feed Music on Hold	12.2(8)YM	No	Yes	No	Yes	No	Yes
Speed-dial Directory	12.2(8)YM	No	Yes	No	Yes	No	Yes
Top-line Description	12.2(8)YM	No	Yes	No	Yes	No	Yes

Table 2 Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 3 of 3

Feature	In	Feature Set						
		IP Plus ADSL/IPX/ Voice/FW/ IDS	IP Plus ADSL/IPX/ VOX/FW/IDS	IP Plus ADSL/ Voice/ FW/IDS	IP Plus ADSL/VOX/ FW/IDS	IP Plus ADSL/ Voice	IP Plus VOX	IP Plus ADSL/ VOX
IOS Telephony								
Live Feed Music on Hold	12.2(8)YM	No	Yes	No	Yes	No	Yes	Yes
Speed-dial Directory	12.2(8)YM	No	Yes	No	Yes	No	Yes	Yes
Top-line Description	12.2(8)YM	No	Yes	No	Yes	No	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 12.2(8)YM1.

New Software Features in Release 12.2(8)YM

The following sections describe the new software features supported by the Cisco 1700 series routers for Release 12.2(8)YM.

For additional information on these features and their configurations, refer to *Cisco IOS Telephony Feature Enhancements for Cisco IOS Release 12.2(8)YM* at

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122limit/122y/122ym/1228ym/its122ym.fm>.

Live Feed Music on Hold (MoH)

This feature provides support for MoH from a live audio feed connected to the router by an analog voice port. A Foreign Exchange Office (FXO) analog voice port or Ear and Mouth (E&M) analog voice port on the router provides MoH to the ITS system. The router checks the connection every 30 seconds and re-establishes it if the MoH call is terminated. In addition, the music file in the flash memory provides redundancy if the live audio feed is disconnected or discontinued.

Speed-Dial Directory

Local speed-dial is a new option on the Cisco IP Phone. For the local speed-dial option to be selected, a flash file named “speeddial.xml” is sent to a phone. In order for this feature to function, the “speeddial.xml” file must be in flash memory.

Top-Line Description

The top-line description is a software-generated label on the top black bar of the display on the Cisco 7960 or Cisco 7940 IP Phone. The top-line description can be labeled using a configuration command. Example of the label are “Cisco Systems” or “408-525-6000.”

New Software Features in Release 12.2(8)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 CCO:
<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 CCO, 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

Live Feed MoH

Only one Live Feed MoH is supported per system.

Live feed MoH on an FXS voice port is not a realistic option.

Speed-Dial Directory Capacity

A maximum of 32 entries is allowed in the “speeddial.xml” file.

Important Notes

The following sections contain important notes about Cisco IOS Release 12.2(8)YM1 that can apply to the Cisco 1700 series routers. (Also, see the [“Caveats” section on page 8.](#))

T1/E1 VWIC Support on Cisco 1751 and 1760 Routers

The Cisco 1751 and 1760 routers no longer need a voice image to support data applications on T1/E1 VWICs.

Fan Operation in Cisco 1700 Series Routers

Cisco 1760 and 1760-V router fans are always on, and Cisco 1710 routers do not contain a fan. However, the fans in Cisco 1720, 1721, 1750, and 1751 routers 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.

Peak Cell Rate and Sustainable Cell Rate Values

On Cisco 1700 routers, specify the Peak Cell Rate (PCR) and Sustainable Cell Rate (SCR) as multiples of 32 Kbps. Other rates are treated as the next lower value of a multiple of 32. For example, an entered PCR value of 150 is considered 128.

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:**).

Using Dialer Interface with MLPPPoATM

This feature is not supported on the Cisco 1700 series platforms. Please use the Virtual Template interface instead.

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(8)YM1. 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 CCO 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(8)YM1

Cisco IOS Release 12.2(8)YM1 is a rebuild release for Cisco IOS Release 12.2(8)YL. This section describes unexpected behavior that is fixed in Release 12.2(8)YM1.

Miscellaneous

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 - Release 12.2(8)YM

No new open caveats have been reported for Release 12.2(8)YM.

Resolved Caveats - Release 12.2(8)YM

This section describes unexpected behavior that is fixed in Release 12.2(8)YM.

Miscellaneous

CSCdx32291

When initiating a tunnel from a encryption module(EM) the following console error is generated:

```
00:11:24: %CRYPTO-4-IKMP_BAD_MESSAGE: IKE message from 10.0.0.1 failed its sanity check or is malformed
```

CSCdx63850

The Mac-Address of the boom interface is set to broadcast address ffff.ffff.ffff , when the boom wic is in slot 1 & adsl wic is in slot 0 .

CSCdx64971

When two routers are configured so that they can ping each other over WIC-2T interfaces, and IPsec is configured on both routers and applied to the WIC-2T interfaces, further pinging can fail with the following message received:

```
%CRYPTO-6-IKMP_MODE_FAILURE: Processing of Quick mode failed with peer at 10.0.0.1
```

CSCdy03960

When configuring MLP on a Cisco 1720 router, it crashes the moment an interface is linked to a multilink-group.

CSCdy05964

A Cisco 1760 router crashes at memcpy(0x817b3568)+0x10c while the router is booting up on a 12.2(8)YL image.

CSCin11039

Gateway uses Cisco fax-relay for the transmission when gateway is loaded with Tomcat image and fx=gw or fx="" (Empty Array) is given in LCO option. T.38 is configured in the router for the T.38 fax transmission, but it uses Cisco fax-relay mode.

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(8)YM1. They are located on Cisco.com and the Documentation CD (under the heading **Service & Support**):

- To reach the [Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2\(8\)YM](#), click this path:
Technical Documents: Cisco IOS Software: Release 12.2: Release Notes: Cisco 1700 Series Routers: Cisco 1700 Series - Release Notes for Release 12.2(8)YM
- 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 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.

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 CCO, 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.

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