



Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(15)ZN

September 8, 2006

These release notes describe new features and significant software components for the Cisco 1700 series routers that support the Cisco IOS Release 12.2 T, up to and including Release 12.2(15)ZN. 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.

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System Requirements

This section describes the system requirements for Release 12.2(15)ZN and includes the following sections:

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Memory Requirements

Table 1 describes the memory requirements for the Cisco IOS feature sets supported by the Cisco IOS Release 12.2(15)ZN 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
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	64 MB
	Cisco 1710 IOS IP/FW/IDS PLUS IPSEC 3DES	IP/FW/IDS PLUS IPSEC 3DES	c1710-k9o3sy-mz	16 MB	64 MB
Cisco 1720, Cisco 1721, Cisco 1751, Cisco 1751- V and Cisco 1760	Cisco 1700 IOS IP/PLUS	IP/PLUS	c1700-sy-mz	16 MB	48 MB
Cisco 1721, Cisco 1751, Cisco 1751- V and Cisco 1760	Cisco 1700 IOS IP/ADSL/FW/IDS PLUS IPSEC 3DES	IP/ADSL/FW/IDS PLUS IPSEC 3DES	c1700-k9o3sy7-mz	16 MB	64 MB
	Cisco 1700 IOS IP/ADSL PLUS IPSEC 3DES	IP/ADSL PLUS IPSEC 3DES	c1700-k9sy7-mz	16 MB	64 MB

Hardware Supported

Cisco IOS Release 12.2(15)ZN supports the following Cisco 1700 series routers:

- Cisco 1710 router
- Cisco 1720 router
- Cisco 1721 router
- Cisco 1751 and 1751-V router
- Cisco 1760

The Cisco 1710, Cisco 1720, and Cisco 1721 routers run data images only. The Cisco 1751, Cisco 1751-V, and 1760 routers run data or data-and-voice images, providing digital and analog voice support.



Note

This Cisco IOS Release 12.2(15)ZN does not include any data- and voice- images.

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 is 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(15)ZN, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)
Synched to technology version 12.3(16.5)p1a
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer the *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(15)ZN supports the same feature sets as Releases 12.2 and 12.2(15)T, but Release 12.2(15)ZN includes new features supported by the Cisco 1700 series routers.



Caution

The 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 through Table 4 list the features and feature sets supported in the Cisco IOS Release 12.2(15)ZN.

The tables use 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(15)ZN” means that the feature was introduced in 12.2(15)ZN. 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(13)*nm* early deployment releases only (*nm* 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
Layer 2 Tunneling Protocol version 3	12.2(15)ZN	Yes	Yes

Table 3 Feature List by Feature Set for Cisco 1720, 1721, 1751, 1751-V, and 1760 Routers

Feature	In	Feature Set
		IP/PLUS
Layer 2 Tunneling Protocol version 3	12.2(15)ZN	Yes

Table 4 Feature List by Feature Set for Cisco 1721, 1751, 1751-V, and 1760 Routers

Feature	In	Feature Set	
		IP/ADSL/FW/IDS PLUS IPSEC 3DES	IP/ADSL PLUS IPSEC 3DES
Layer 2 Tunneling Protocol version 3	12.2(15)ZN	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(15)ZN.

New Software Features in Release 12.2(15)ZN

The following sections describe the new software features supported by the Cisco 1700 series routers for Release 12.2(15)ZN.

Layer 2 Tunneling Protocol version 3

Layer 2 Tunneling Protocol version 3 (L2TPv3) allows service providers and large enterprises with native IP core networks to offer high-speed Layer 2 tunneling or Virtual Private Network (VPN) services to end-user customers, in conjunction with their Layer 3 VPN offerings. L2TPv3 VPN services can be provided without increasing the expenditure for capital equipment by simply upgrading the Cisco IOS software. L2TPv3 is provided as part of the Unified VPN portfolio of leading-edge VPN technologies available over the widest breadth of Cisco routers.

L2TPv3 is emerging as a core tunneling and VPN technology for next-generation networks. L2TPv3 provides the flexibility and scalability of IP with the privacy of Frame Relay and Asynchronous Transfer Mode (ATM). L2TPv3 will allow network services to be delivered over routed IP networks. Service decisions will be made at the VPN and tunnel endpoints and switched without requiring intermediate preprocessing, providing higher efficiency and scalability.

By reducing customer networking complexity and cost, L2TPv3 VPNs allow service providers to serve a more diverse base of small and medium-sized businesses. Rather than setting up and managing individual point-to-point circuits between each office, a business provides only one connection from its office router to a service-provider edge router. Service providers expand service offerings and generate additional revenue by offering customers VPNs with managed Internet, intranet, and extranet without the complexity that these applications previously required.

L2TPv3 offers the following advantages for service providers:

- Provides a simple tunneling mechanism to implement transparent LAN and IP functionality, offering a simple means for IP VPN services.
- Simplifies the interaction between Service Provider networks and Service Provider/Customer networks.
- Protect existing investment while building packet core enhanced VPN support.
- Facilitates new services.
- Allows the transport of non-IP protocols, such as Internetwork Packet Exchange (IPX) and SNA, as well as other desktop protocols.

L2TPv3 offers the following advantages for enterprise customers:

- Simplifies the interaction between Service Provider and Customer networks.
- Allows customer to selectively utilize service provider or corporate facilities in order to deploy VPNs
- Allows the transport of non-IP protocols, such as Internetwork Packet Exchange (IPX) and SNA, as well as other desktop protocols.
- Easy configuration.
- Enhanced VPN Support though the use of the Cisco IOS software features such as security, quality of service (QoS) and management VPNs can be tailored to meet customer requirements.

For more details on this feature, refer to the following URLs:

- http://www.cisco.com/en/US/netsol/ns110/ns170/ns172/ns155/networking_solutions_white_paper09186a00800a8444.shtml
- http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/l2tun_ds.htm
- <http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/120newft/120limit/120s/120s25/l2tpv325.htm>

For configuration information for this feature, refer to L2TPv3 configuration guide for the Cisco IOS 12.0(23)S release at the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/120newft/120limit/120s/120s23/l2tpv3.htm>

New Software Features in Release 12.2(15)T

For information regarding the features supported in the 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)

Caveats

Caveats describe unexpected behavior or defects in the 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 Cisco IOS Release 12.2(15)T are also in Release 12.2(15)ZN1. For information on caveats in Cisco IOS Release 12.2(15)T, refer to the [Caveats for Cisco IOS Release 12.2\(15\)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; the documents 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 for Release 12.2(15)ZN

The following sections list the resolved caveats for the Cisco IOS Release 12.2(15)ZN.

- CSCdu53656

A Cisco device running IOS and enabled for the Border Gateway Protocol (BGP) is vulnerable to a Denial of Service (DOS) attack from a malformed BGP packet. The BGP protocol is not enabled by default, and must be configured in order to accept traffic from an explicitly defined peer. Unless the malicious traffic appears to be sourced from a configured, trusted peer, it would be difficult to inject a malformed packet. BGP MD5 is a valid workaround for this problem.

Cisco has made free software available to address this problem. For more details, please refer to this advisory, available at <http://www.cisco.com/warp/public/707/cisco-sa-20040616-bgp.shtml>.

- CSCdv59309

Two vulnerabilities exist in the virtual private dial-up network (VPDN) solution when Point-to-Point Tunneling Protocol (PPTP) is used in certain Cisco IOS releases prior to 12.3. PPTP is only one of the supported tunneling protocols used to tunnel PPP frames within the VPDN solution.

The first vulnerability is a memory leak that occurs as a result of PPTP session termination. The second vulnerability may consume all interface descriptor blocks on the affected device because those devices will not reuse virtual access interfaces. If these vulnerabilities are repeatedly exploited, the memory and/or interface resources of the attacked device may be depleted.

Cisco has made free software available to address these vulnerabilities for affected customers.

There are no workarounds available to mitigate the effects of these vulnerabilities.

This advisory is posted at <http://www.cisco.com/warp/public/707/cisco-sa-20080326-pptp.shtml>

- CSCea22552

GRE implementation of Cisco IOS is compliant with RFC2784 and RFC2890 and backward compatible with RFC1701.

As an RFC compliancy this DDTS adds the check for bits 4-5 (0 being the most significant) of GRE header.

This issue does not cause any problem for router operation.

- CSCei62762

Symptoms: Router may generate and/or forward crafted IP packets with the source IP address being the routers tunnel interface for GRE or mGRE tunnels. Incorrect packet decoding may be seen with “debug tunnel.”

Conditions: The router needs to receive a specially crafted GRE packet sent to the tunnel end-point. The outer IP packet must come from the configured tunnel source and be sent to the configured tunnel destination IP address Present Routed bit must be set to 1.

Workaround: Upgrade Cisco IOS to a version containing fixes for: CSCuk27655 or CSCea22552 or CSCei62762.

Further information: On the 6th September 2006, Phenoelit Group posted an advisory:

* Cisco Systems IOS GRE decapsulation fault

Cisco’s statement and further information are available on the Cisco public website at:

<http://www.cisco.com/warp/public/707/cisco-sr-20060906-gre.shtml>

- CSCuk27655

GRE implementation of Cisco IOS is compliant with RFC2784 and RFC2890 and backward compatible with RFC1701.

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(15)ZN. 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.

Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the *Cisco Product Catalog* at this URL:
http://www.cisco.com/en/US/products/products_catalog_links_launch.html
- Cisco Press publishes a wide range of networking publications. Cisco suggests these titles for new and experienced users: *Internetworking Terms and Acronyms Dictionary*, *Internetworking Technology Handbook*, *Internetworking Troubleshooting Guide*, and the *Internetworking Design Guide*. For current Cisco Press titles and other information, go to Cisco Press online at this URL:
<http://www.ciscopress.com>
- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access *Packet* magazine at this URL:
<http://www.cisco.com/go/packet>
- iQ Magazine is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:
<http://www.cisco.com/go/iqmagazine>
- Internet Protocol Journal is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private Internets and Intranets. You can access the Internet Protocol Journal at this URL:
http://www.cisco.com/en/US/about/ac123/ac147/about_cisco_the_internet_protocol_journal.html
- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:
http://www.cisco.com/en/US/learning/le31/learning_recommended_training_list.html

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section.

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