



Release Notes for the Cisco SOHO 70 Series for Cisco IOS Release 12.1(5)YC

March 25, 2002

These release notes for the Cisco SOHO series routers describe the enhancements provided in Cisco IOS Release 12.1(5)YC3. These release notes are updated as needed. Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.1* located on Cisco.com and the Documentation CD-ROM.

For a list of the software caveats that apply to Cisco IOS Release 12.1(5)YC3, see the [“Caveats” section on page 6](#) and *Caveats for Cisco IOS Release 12.1 T*. The caveats document is updated for every maintenance release and is located on Cisco.com and the Documentation CD-ROM.

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System Requirements

This section describes the system requirements for Cisco IOS Release 12.1(5)YC3 and includes the following sections:

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Memory Requirements

Table 1 Memory Requirements for the Cisco SOHO Series

Platform Name	Software Image	Flash Memory	DRAM Memory	Runs from
SOHO 76 and SOHO 77	soho70-y1-mz	8 MB	16 MB	RAM

Hardware Supported

Cisco IOS Release 12.1(5)YC3 supports the Cisco SOHO series routers:

- SOHO 76
- SOHO 77

The SOHO 76 and SOHO 77 are small office and home office (SOHO) asymmetric digital subscriber line (ADSL) routers each with one Ethernet interface for connection to a service provider networks.

The SOHO routers also provide the following key hardware features:

- Connection to an ADSL network through an ADSL port.
- A central processing unit: 50 MHz MPC 855T RISC processor.
- Ability to be stacked or mounted on a wall.
- Locking power connectors and a Kensington-compatible locking slot.

For detailed descriptions of the new hardware features, see the [“New and Changed Information” section on page 5](#).

Table 2 Supported Interfaces for the Cisco SOHO Series

Router	Ethernet Ports	ADSL Ports	Console Ports
SOHO 76 and SOHO 77	One 10BaseT (RJ-45)	RJ-11	RJ-45

Determining Your Software Release

To determine the version of Cisco IOS software running on your Cisco 800 series router, log in to the router and enter the **show version EXEC** command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 800 Software (C800-Y6-MW), Version 12.1(5)YC3, 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

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 12.1(5)YC3 supports the same feature sets as Releases 12.1 and 12.1 T, but Release 12.1(5) can include new features supported by the Cisco SOHO series routers.

Table 3 lists the features and feature sets supported by the Cisco SOHO series routers in Cisco IOS Release 12.1(5)YC3, and uses the following conventions:

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



Note

This table might not be cumulative or list all the features in each image. You can find the most current Cisco IOS documentation on Cisco.com. These electronic documents may contain updates and modifications made after the hardcopy documents were printed.

Table 3 Feature List by Feature Set for the Cisco SOHO Series

Features	Feature Set
	soho70-y1-mz
Address Conservation	
DHCP Client Address Negotiation	Yes
IPCP Address Negotiation	Yes
NAT	Yes
Bandwidth Optimization	
NetBIOS Name Caching	No
STAC Compression	Yes

Table 3 Feature List by Feature Set for the Cisco SOHO Series (continued)

Features	Feature Set
	soho70-y1-mz
Business-Class Quality of Service	
CBR, VBRnrt, UBR Traffic Classes	Yes
Class-Based Weighted Fair Queuing	No
IP Policy Routing	No
Per-Virtual Circuit Queuing	No
Per-Virtual Circuit Shaping	No
Weighted Random Early Detection	No
Business-Class Security	
GRE Tunneling	No
IP Basic and Extended Access Lists	Yes
NetBIOS Access Lists	No
PAP, CHAP, Local Password	Yes
Route and Router Authentication	Yes
Ease of Use and Deployment	
Cisco Fast Step Software	No
Easy IP Phase I and II	Yes
PPPoE MTU Adjustment	Yes
Enhanced Security	
Cisco IOS Firewall	No
Context-Based Access Control Lists	No
Denial-of-Service Detection	No
IPSec Encryption with 3DES and L2TP	No
Java Blocking	No
Real-Time Alerts	No
LAN	
IP	Yes
IPX	No
Transparent Bridging	Yes
Management	
CiscoView	No
OpenDSL	Yes
SNTP	Yes
SNMP, Telnet, Console Port	Yes
Syslog	Yes

Table 3 Feature List by Feature Set for the Cisco SOHO Series (continued)

Features	Feature Set
	soho70-y1-mz
TACACS+ (also a security feature)	No
TFTP Client and Server	Yes
Routing	
IP Enhanced IGRP	No
IP Multicast (relay only)	No
IP-Policy Routing	No
IPX RIP/SAP IPX WAN	No
RIP, RIPv2	Yes

New and Changed Information

The following section lists the new software features supported by the Cisco SOHO series for Release 12.1(5)YC3 and above.

New Software Features in Release 12.1(5)YC1

The following new software features are supported by the Cisco SOHO series for Cisco IOS Release 12.1(5)YC1 and above:

OpenDSL

This feature implements auto-provisioning of the Cisco SOHO 70 Series routers. Auto-provisioning operates at bootup, and includes two procedures: Device Authentication and Image Maintenance. The router will be authenticated at bootup using its vendor ID and serial number. It then requests the Proxy Element to download its configuration file, and configures itself from CLIs in this file. It then polls for configuration changes, and downloads a new image and configuration file, if available, to retrieve the latest changes.

Limitations and Restrictions

The CISCO-DSL-CPE-MIB is partially supported by the Cisco SOHO 70 routers for the OpenDSL feature. Only those objects used in the Device Authentication and Image Maintenance procedures are supported. These objects are:

- All objects in the cdcAssetGroup
- All objects in the cdcImageGroup
- Objects cdcAutoConfRestartRequired and cdcAutoConfRestart in the cdcAutoConfGroup

Important Notes

The following sections contain important notes about Cisco IOS Release 12.1(5)YC3.

OpenDSL Issues for the Cisco SOHO 70 Routers

The Cisco SOHO 70 routers with OpenDSL are preloaded with a CLI configuration such as “autoconfigure” instead of with no configuration. If a router is not loaded with some configuration, it will enter the initial console-user configuration dialog, which requires input from the user to get the router started.

If the image has been deleted by the user, the user needs to clear flash memory to allow the downloading of a new image during auto provisioning.

There is no WarmRestart action available for the routers. Selecting WarmRestart on CDCM will not reload the routers.

Configuration files must conform to the following.

- There must be no leading or trailing spaces in the name and revision fields of the image name or configuration file name. The dot symbol “.” can only be used as the separator between ID and Revision fields.
- Configuration files downloaded from the PE must not contain any of the following CLIs:
 - **snmp server**
 - **engineID**
 - **local**
 - any CLI from the configuration terminal mode, such as **help** or **write memory**

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

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



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 - Releases 12.1(5)YC2 and 12.1(5)YC3

This section describes unexpected behavior that is fixed in Releases 12.1(5)YC2 and 12.1(5)YC3.

Management

CSCdw65903

An error can occur with management protocol processing. Please use the following URL for further information:

<http://www.cisco.com/cgi-bin/bugtool/onebug.pl?bugid=CSCdw65903>

Caveats for Release 12.1(5)YC1

This section describes possibly unexpected behavior by Release 12.1(5)YC1, specific to the Cisco SOHO 70 routers. These caveats are all of severity 3 (moderate).

Resolved Caveats - Release 12.1(5)YC1

This section describes possibly unexpected behavior by software releases prior to Release 12.1(5)YC1 that have been resolved in Release 12.1(5)YC1 and above.

CSCdt77246:

When a router is configured for PPPoE and IP NAT, and an incoming packet does not contain an MSS field or its TCP option field is not terminated by 0, the router might stop routing packets. This defect has been fixed in 12.1(5)YC1 release.

CSCdt35967:

When using CODEC g711alaw & g711ulaw, c827-4v fails to make an outgoing call to another Cisco voice gateway. This defect has been fixed in 12.1(5)YC1 release.

CSCds92106:

C827-4v may hang during system bootup. This defect has been fixed in 12.1(5)YC1 release.

Unresolved Caveats - Release 12.1(5)YC1

This section describes possibly unexpected behavior by Release 12.1(5)YC1.

CSCdt47054

When the router is configured to an ATM PVC with PPPoE encapsulation, it unexpectedly resets when the ATM PVC is removed in a subsequent configuration while the PPPoE session is still active.

CSCdt61879

When the configuration file URL in the ImageTable script is changed to point to a different, new configuration file and the router is reloaded, the previous configuration file is downloaded, rather than the new one. The problem has been traced to the cache in the PE, which retains the previous URL of the configuration file and sends that URL to the tftp server. The workaround is to clear the PE cache before reloading the router. This forces the PE to reload its cache with the latest information from the ImageTable script.

CSCdt61928

The router unexpectedly resets when executing **cl** or **de** commands in exec mode. The workaround is to expand these commands to at least **cle** and **deb**.

CSCdt61929

A zero byte configuration file will cause the router to operate in a loop and repeatedly download the configuration file.

Related Documentation

The following sections describe the documentation available for the Cisco SOHO 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-ROM.

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

- [Release-Specific Documents](#)
- [Platform-Specific Documents](#)
- [Feature Modules](#)
- [Cisco IOS Software Documentation Set](#)

Release-Specific Documents

The following documents are specific to Release 12.1. They are located on Cisco.com and the Documentation CD-ROM.

- *Release Notes for Cisco IOS Release 12.1*

On Cisco.com at:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: Release Notes: Cross-Platform Release Notes

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 Cisco.com at:

Technical Documents: Product Bulletins

- Caveats for Cisco IOS Release 12.1 and 12.1 T

As a supplement to the caveats listed in the “[Caveats](#)” section on page 6 section in these release notes, see the *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T* documents, which contain caveats applicable to all platforms for all maintenance releases of IOS Releases 12.1 and 12.1 T.

On Cisco.com 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 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

These documents are available for the Cisco SOHO series routers on Cisco.com and the Documentation CD-ROM:

- *Cisco SOHO Series - Release Notes for Release 12.1(5)YC*
- *Configuration Note for Cisco SOHO Series Routers*
- *Regulatory Compliance and Safety Information for Cisco SOHO 76 and 77 Routers*

On Cisco.com at:

Technical Documents: Documentation Home Page: Access Servers and Access Routers: Fixed Configuration Access Routers: Cisco SOHO Series Routers

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Fixed Configuration Access Routers: Cisco SOHO Series Routers

Feature Modules

Feature modules describe new features supported by Release 12.1(5)YC3 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.

To reach the Release 12.1(5)YC3 feature modules:

- On Cisco.com, click on this path:

Technical Documents: Documentation Home Page: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation: New Features in 12.1-Based Limited Lifetime Releases: New Features in Release 12.1 YC: New Features in Release 12.1(5)YC

- From the Documentation CD-ROM, click on this path:
Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation: New Features in 12.1-Based Limited Lifetime Releases: New Features in Release 12.1 YC: New Features in Release 12.1(5)YC

Feature Navigator

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a particular set of features and which features are supported in a particular Cisco IOS image. Feature Navigator is available 24 hours a day, 7 days a week.

To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, e-mail the Contact Database Administration group at cdbadmin@cisco.com. If you do not have an account on Cisco.com, go to <http://www.cisco.com/register> and follow the directions to set up an account.

To use Feature Navigator, you must have a JavaScript-enabled web browser such as Netscape 3.0 or later, or Internet Explorer 4.0 or later. Internet Explorer 4.0 always has JavaScript enabled. To enable JavaScript for Netscape 3.x or Netscape 4.x, follow the instructions provided with the web browser. For JavaScript support and enabling instructions for other browsers, check with the browser vendor.

Feature Navigator is updated when major Cisco IOS software releases and technology releases occur. You can access Feature Navigator at the following URL:

<http://www.cisco.com/go/fn>

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 printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of two types of 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.

The Cisco IOS software documentation set is available on Cisco.com and on the Documentation CD-ROM.

On Cisco.com 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

Release 12.1 Documentation Set

Table 4 describes the contents of the Cisco IOS Release 12.1 software documentation set, which is available in both electronic and printed form.



Note

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

On Cisco.com 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 4 Cisco IOS Software Release 12.1 Documentation Set

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> • <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	Configuration Fundamentals Overview Using the Command-Line Interface (CLI) Using Configuration Tools Configuring Operating Characteristics Managing Connections, Menus, and System Banners Using the Cisco Web Browser Using the Cisco IOS File System Modifying, Downloading, & Maintaining Configuration Files Loading and Maintaining System Images Maintaining Router Memory Rebooting a Router Configuring Additional File Transfer Functions Monitoring the Router and Network Troubleshooting a Router Performing Basic System Management System Management Using System Controllers Web Scaling Using WCCP Managing Dial Shelves
<ul style="list-style-type: none"> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</i> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</i> 	Overview of Apollo Domain, Banyan VINES, DECNET, ISO CLNS, and XNS Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring IOS CLNS Configuring XNS
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco AppleTalk and Novell IPX Command Reference</i> 	AppleTalk and Novel IPX Overview Configuring AppleTalk Configuring Novell IPX

Table 4 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume I</i> • <i>Cisco Bridging and IBM Networking Command Reference, Volume II</i> 	<ul style="list-style-type: none"> Overview of SNA Internetworking Overview of Bridging Configuring Transparent Bridging Configuring Source-Route Bridging Configuring Token Ring Inter-Switch Link Configuring Token Ring Route Switch Module Overview of IBM Networking Configuring Remote Source-Route Bridging Configuring Data-Link Switching Plus+ Configuring Serial Tunnel and Block Serial Tunnel Configuring LLC2 and SDLC Parameters Configuring IBM Network Media Translation Configuring Frame Relay Access Support Configuring NCIA Server Configuring the Airline Product Set Configuring DSPU and SNA Service Point Support Configuring SNA Switching Services Configuring Cisco Transaction Connection Configuring Cisco Mainframe Channel Connection Adapters Configuring CLAW and TCP/IP Offload Support Configuring CMPC and CSNA Configuring CMPC+ Configuring the TN3270 Server
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Services Configuration Guide: Terminal Services</i> • <i>Cisco IOS Dial Services Configuration Guide: Network Services</i> • <i>Cisco IOS Dial Services Command Reference</i> 	<ul style="list-style-type: none"> Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Internetworking Dial Access Scenarios 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
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Guide</i> 	<ul style="list-style-type: none"> Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces

Table 4 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Cisco IOS IP and IP Routing Configuration Guide</i> • <i>Cisco IOS IP and IP Routing Command Reference</i> 	<ul style="list-style-type: none"> IP Overview Configuring IP Addressing Configuring DHCP Configuring IP Services Configuring Mobile IP Configuring On-Demand Routing Configuring RIP Configuring IGRP Configuring OSPF Configuring IP Enhanced IGRP Configuring Integrated IS-IS Configuring BGP Configuring Multicast BGP (MBGP) Configuring IP Routing Protocol-Independent Features Configuring IP Multicast Routing Configuring Multicast Source Discovery Protocol Configuring PGM Router Assist Configuring Unidirectional Link Routing Using IP Multicast Tools
<ul style="list-style-type: none"> • <i>Cisco IOS Multiservice Applications Configuration Guide</i> • <i>Cisco IOS Multiservice Applications Command Reference</i> 	<ul style="list-style-type: none"> Multiservice Applications Overview Configuring Voice over IP Configuring Gatekeepers (Multimedia Conference Manager) Configuring Voice over Frame Relay Configuring Voice over ATM Configuring Voice over HDLC Configuring Voice-Related Support Features Configuring PBX Signaling Configuring Store and Forward Fax Configuring Video Support Configuring Head-End Broadband Access Router Features Configuring Subscriber-End Broadband Access Router Features Configuring Synchronized Clocking

Table 4 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Cisco Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	<ul style="list-style-type: none"> Quality of Service Overview Classification Overview Configuring Policy-Based Routing Configuring QoS Policy Propagation via Border Gateway Protocol Configuring Committed Access Rate Congestion Management Overview Configured Weighted Fair Queueing Configuring Custom Queueing Configuring Priority Queueing Congestion Avoidance Overview Configuring Weighted Random Early Detection Policing and Shaping Overview Configuring Generic Traffic Shaping Configuring Frame Relay and Frame Relay Traffic Shaping Signalling Overview Configuring RSVP Configuring Subnetwork Bandwidth Manager Configuring RSVP-ATM Quality of Service Internetworking Link Efficiency Mechanisms Overview Configuring Link Fragmentation and Interleaving for Multilink PPP Configuring Compressed Real-Time Protocol IP to ATM CoS Overview Configuring IP to ATM CoS QoS Features for Voice Introduction
<ul style="list-style-type: none"> • <i>Cisco IOS Security Configuration Guide</i> • <i>Cisco IOS Security Command Reference</i> 	<ul style="list-style-type: none"> TACACS+ Commands Access Control Lists: Overview and Guidelines Cisco Secure Integrated Software Firewall Overview Configuring Lock-and-Key Security (Dynamic Access Lists) Configuring IP Session Filtering (Reflexive Access Lists) Configuring TCP Intercept (Prevent Denial-of-Service Attacks) Configuring Context-Based Access Control Configuring Cisco Secure Integrated Software Intrusion Detection System Configuring Authentication Proxy Configuring Port to Application Mapping IP Security and Encryption Overview Configuring IPSec Network Security Configuring Certification Authority Interoperability Configuring Internet Key Exchange Security Protocol Configuring Passwords and Privileges Neighbor Router Authentication: Overview and Guidelines Configuring IP Security Options

Table 4 Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	<ul style="list-style-type: none"> Configuring MPLS Configuring IP Multilayer Switching Configuring IP Multicast Multilayer Switching Configuring IPX Multilayer Switching Configuring Multicast Distributed Switching Routing Between VLANs Overview Configuring Routing Between VLANs with ISL Encapsulation Configuring Routing Between VLANs with IEEE 802.10 Encapsulation Configuring Routing Between VLANs with IEEE 802.1Q Encapsulation LAN Emulation Overview Configuring LAN Emulation Configuring Token Ring LANE MPOA Overview Configuring the MPOA Client Configuring the MPOA Server Configuring Token Ring LANE for MPOA
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	<ul style="list-style-type: none"> Wide-Area Networking Overview Configuring ATM Frame Relay Frame Relay-ATM Internetworking Configuring SMDS Configuring X.25 and LAPB
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Guide Master Index</i> • <i>Cisco IOS Command Reference Master Index</i> • <i>Cisco IOS Command Summary</i> • <i>Cisco IOS Debug Command Reference</i> • <i>Cisco IOS Dial Services Quick Configuration Guide</i> • <i>Cisco IOS New Features Index</i> (Cisco.com and Documentation CD only) • <i>Cisco IOS System Error Messages</i> 	

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

Documentation CD-ROM

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

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered 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 corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

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

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

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

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

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

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

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

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

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

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

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

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

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

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