



Release Notes for Cisco Signaling Link Terminal for Cisco IOS Release 12.2 XA

February 9, 2002

Cisco IOS Release 12.2(2) XA5

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These release notes for the Cisco Signaling Link Terminal support Cisco IOS Release 12.2(2) XA5. These release notes are updated as needed.

For a list of the software caveats that apply to Release 12.2(2) XA5, see the [“Caveats for Cisco IOS Release 12.2 XA” section on page 7](#) and [Caveats for Cisco IOS Release 12.2T](#). This caveats document is updated for every maintenance release and is also located on Cisco.com and the Documentation CD-ROM.

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-ROM.

Contents

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Introduction

The Cisco Signaling Link Terminal (SLT) enables service providers to reliably transport SS7 protocols across an IP network. The Cisco SLT uses the Cisco IOS SS7 Signaling Link Terminal feature set, providing reliable interoperability with the Cisco Media Gateway Controller. The Cisco SLT is responsible for terminating the Message Transfer Part (MTP) 1 and MTP 2 layers of the SS7 protocol stack. Using the Cisco Reliable User Datagram Protocol (RUDP), the Cisco SLT backhauls, or transports, upper-layer SS7 protocols across an IP network to the Cisco Media Gateway Controller (Cisco VSC3000 or Cisco SC2200).

In combination with this application-specific version of the Cisco IOS software, the Cisco SLT hardware component leverages the widely deployed Cisco 2600 series multiservice access router. The Cisco 2600 series, driven by a powerful RISC processor, provides the high performance required in complex networking infrastructures.

**Note**

When used as a Cisco Signaling Link Terminal device integrated into a Cisco Media Gateway Controller, the Cisco 2611 has SS7 functionality only; all standard Cisco 2611 software features are disabled when running the Cisco SLT image. In that case, only the *Cisco Signaling Link Terminal* document and the Cisco Media Gateway Controller documentation are relevant.

When used for Signaling Link Terminal applications, the modular Cisco 2611 dual-Ethernet port router can be configured with dual serial and the multiflex interface cards. The E1 multiflex interface cards offer integrated DSUs, and the T1 multiflex interface cards offer integrated CSU/DSUs. For additional flexibility, the multiflex interface cards can also be ordered with a dual-port drop-and-insert capability. All of these interface cards are Field Replaceable Units (FRUs).

The Cisco SLT supports only the SS7 MTP 2 serial protocol. Therefore, the serial interfaces cannot be configured for other protocols such as HDLC, PPP, X.25, LAPB, and Frame Relay.

The Cisco SLT functions as a component of several solutions that are currently under development. Participants in lab trials can obtain solution documentation from their Cisco representative.

For Cisco SLT documentation, see the following URL:
<http://www.cisco.com/univercd/cc/td/doc/product/access/sc/slt/index.htm>

System Requirements

This section describes the system requirements for Release 12.2(2) XA5:

- [Memory Recommendations, page 3](#)
- [Hardware Supported, page 3](#)
- [Determining the Software Version, page 4](#)
- [Upgrading to a New Software Release, page 4](#)
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Memory Recommendations

Table 1 Memory Recommendations for the Cisco 2611 and Cisco 2651 with Cisco SLT

Image Name	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
SS7 Signaling Link Termination	c2600-ipss7-mz	16 MB	48 MB	RAM

Hardware Supported

The Cisco SLT feature in Cisco IOS Release 12.2(2) XA5 supports the Cisco 2611 series routers and Cisco 2651 series routers. The Cisco SLT feature is not supported with any other Cisco 2600 series chassis. For more information about the Cisco 2600 series in Cisco IOS Release 12.2(2) XA5, see the Release Notes for Cisco 2610 series for Cisco IOS Release 12.2 XA.

Table 2 lists the supported interfaces for the Cisco SLT.

Table 2 Supported Interfaces for the Cisco SLT

Interface, Network Module, or Data Rate ¹	Other Platforms Supporting These Modules	
LAN Interfaces	2-port Ethernet (10BASE-T) ²	Cisco 2611
	4-port Ethernet (10BASE-T) ³	Cisco 2651
E1/T1 Multiflex Voice/WAN Interface Cards	1-port T1 multiflex trunk interface (VWIC-1MFT-T1)	All Cisco 2600 series platforms
	1-port E1 multiflex trunk interface (VWIC-1MFT-E1)	All Cisco 2600 series platforms
	2-port T1 multiflex trunk interface (VWIC-2MFT-T1)	All Cisco 2600 series platforms
	2-port E1 multiflex trunk interface (VWIC-2MFT-E1)	All Cisco 2600 series platforms
	2-port T1 multiflex trunk interface with drop-and-insert (VWIC-2MFT-T1-DI)	All Cisco 2600 series platforms
	2-port E1 multiflex trunk interface with drop-and-insert (VWIC-2MFT-E1-DI)	All Cisco 2600 series platforms
WAN Interface Cards	1-port high-speed serial (up to 2.048 Mbps)	All Cisco 2600 series platforms
	2-port dual high-speed serial (up to 2.048 Mbps; asynchronous/ synchronous support)	All Cisco 2600 series platforms

1. See E1/T1 Multiflex Voice/WAN Interface Cards in this table.
2. The Cisco SLT does not support SS7/IP over both Ethernet ports.
3. The Cisco SLT does not support SS7/IP over both Ethernet ports.

Determining the Software Version

To determine the version of Cisco IOS software running on a Cisco Signaling Link Terminal, log in to the router and enter the **show version** EXEC command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) SLT Software (c2600-ipss7-mz), Version 12.2(2) XA5, RELEASE SOFTWARE
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer to *Upgrading the Cisco IOS Software Release in Cisco Routers and Modems* located at:

http://www.cisco.com/warp/public/130/upgrade_index.shtml

Features

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

Cisco IOS Release 12.2(2) XA supports the same feature sets as Cisco IOS Release 12.2(2)T, but Cisco IOS Release 12.2(2) XA can include new features supported by the Cisco Signaling Link Terminal.



Note

If you have a Cisco.com login account, you can find image and release information regarding features prior to Cisco IOS Release 12.2(2) T by using the Feature Navigator tool at <http://www.cisco.com/go/fn>.

Cisco IOS Release 12.2(2) XA supports one new feature: Four SS7 Link Support for Cisco Signaling Link Terminal. This feature is described in the “New and Changed Information” section below and is included in all of the images listed in [Table 1](#).



Caution

Cisco IOS images with strong encryption (including, but not limited to 168-bit (3DES) data encryption feature sets) are subject to U.S. government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay because of U.S. 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.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco Signaling Link for Release 12.2(2) XA5.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XA5

There are no new hardware and software features supported in Cisco IOS Release 12.2(2) XA5.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XA4

There are no new hardware and software features supported in Cisco IOS Release 12.2(2) XA4.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XA3

Cisco IOS Release 12.2(2) XA3 does not support the Cisco Signaling Link Terminal.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XA2

Cisco IOS Release 12.2(2) XA2 does not support the Cisco Signaling Link Terminal.

New Hardware and Software Features in Cisco IOS Release 12.2(2) XA1

There are no new hardware and software features supported in Cisco IOS Release 12.2(2) XA1.

New Hardware Features in Cisco IOS Release 12.2(2) XA

There are no new hardware features supported in Cisco IOS Release 12.2(2) XA.

New Software Features in Cisco IOS Release 12.2(2) XA

The following new software features are supported by the Cisco Signaling Link Terminal for Cisco IOS Release 12.2(2) XA:

Four SS7 Link Support for Cisco Signaling Link Terminal

**Note**

The Cisco2651 SLT supports 4 SS7 links, but it cannot support SS7 links on NM-2W modules. The WAN interface card (WIC) contained in the NM-2W network module cannot be used to support SS7 links: There is no communication path between the network module and the processor for SS7 message packets (affecting drop and insert). This restriction affects the Cisco2651 SLT used with Cisco IOS Release 12.2(2)XA and higher.

The Four SS7 Link Support on the Cisco Signaling Link Terminal feature introduces support for up to four Cisco SS7 links on a new platform for the Cisco SLT, the Cisco 2651 Multi-Service Access Router. All existing Cisco 2611-based Cisco SLT functionality is supported on the new platform, and both Cisco SLT platforms use the same Cisco IOS software image.

The Cisco 2651-based Cisco SLT supports up to four SS7 A-links and F-links, and each SS7 link can support up to 0.4 erlangs of signaling traffic during normal operation. A pair of Cisco 2651-based Cisco SLTs running two links per Cisco SLT can support a failover situation with 0.4 erlangs of traffic. A Cisco SLT pair running four links per Cisco SLT can support a failover situation with 0.2 erlangs of traffic.

The Cisco 2611-based Cisco SLT continues to support up to two SS7 links at 0.8 erlang maximum. The 4-Link Cisco SLT software image is backward compatible with the Cisco 2611-based Cisco SLT and will not degrade current configurations of the Cisco SLT on Cisco 2611 Multi-Service Access Routers. This feature also works within the memory configuration specified in the current release of the Cisco SLT (48 Mb D-RAM core memory, 16 Mb Flash memory). The Cisco 2611-based SLT continues to support up to two SS7 links.

Refer to the following document for additional information:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122newft/122limit/122x/122xa/122xa_2/ft_4lnk.htm

Important Notes

The following information applies to Cisco IOS Release 12.2(2) XA5.

Changes to output attenuation Command

In Cisco IOS Release 12.2(2), the range of the **output attenuation** command for voice ports has changed from *0–14* to *–6–14*.

MIBs

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at the following URL:

<http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

Deprecated and Replacement MIBs

Old Cisco MIBs will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs without affecting existing Cisco IOS products or network management system (NMS) applications. You can update from deprecated MIBs to the replacement MIBs as shown in [Table 3](#).

Table 3 *Deprecated and Replacement MIBs*

Deprecated MIB	Replacement
OLD-CISCO-APPLETALK-MIB	RFC1243-MIB
OLD-CISCO-CHASSIS-MIB	ENTITY-MIB
OLD-CISCO-CPUK-MIB	To be determined
OLD-CISCO-DECNET-MIB	To be determined
OLD-CISCO-ENV-MIB	CISCO-ENVMON-MIB
OLD-CISCO-FLASH-MIB	CISCO-FLASH-MIB
OLD-CISCO-INTERFACES-MIB	IF-MIB CISCO-QUEUE-MIB
OLD-CISCO-IP-MIB	To be determined
OLD-CISCO-MEMORY-MIB	CISCO-MEMORY-POOL-MIB
OLD-CISCO-NOVELL-MIB	NOVELL-IPX-MIB
OLD-CISCO-SYS-MIB	(Compilation of other OLD* MIBs)
OLD-CISCO-SYSTEM-MIB	CISCO-CONFIG-COPY-MIB
OLD-CISCO-TCP-MIB	CISCO-TCP-MIB
OLD-CISCO-TS-MIB	To be determined
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be determined

**Note**

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

Caveats for Cisco IOS Release 12.2 XA

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.

All caveats in Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T are also in Cisco IOS Release 12.2(2) XA.

For information on caveats in Cisco IOS Release 12.2, see *Caveats for Cisco IOS Release 12.2*.

For information on caveats in Cisco IOS Release 12.2 T, see *Caveats for Cisco IOS Release 12.2 T*, which lists severity 1 and 2 caveats and select severity 3 caveats and is located on Cisco.com and the Documentation CD-ROM.

This section contains only open and resolved caveats for the current Cisco IOS maintenance release.

Caveat numbers and brief descriptions for Cisco IOS Release 12.2(2) XA are listed in [Table 5](#) and [Table 6](#). For details about a particular caveat, go to Bug Toolkit at:

http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl

To access this location, 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 edbadmin@cisco.com. If you do not have an account on Cisco.com, go to <http://www.cisco.com/register> and follow the directions to establish an account

**Note**

If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, **log in** to Cisco.com and click **Service and Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Open Caveats—Cisco IOS Release 12.2(2)XA5

There are no open caveats specific to Cisco IOS Release 12.2(2)XA5 that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.2(2)XA5

All the caveats listed in [Table 4](#) are resolved in Cisco IOS Release 12.2(2)XA5. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- SNMP

Table 4 Resolved Caveats for Release 12.2(2) XA5

Caveat ID Number	Description
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

Open Caveats—Cisco IOS Release 12.2(2) XA4

There are no open caveats specific to Cisco IOS Release 12.2(2) XA4 that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.2(2) XA4

There are no resolved caveats specific to Cisco IOS Release 12.2(2) XA4 that require documentation in the release notes.

Open and Resolved Caveats—Cisco IOS Release 12.2(2) XA3

Cisco IOS Release 12.2(2) XA3 does not support the Cisco Signaling Link Terminal.

Open and Resolved Caveats—Cisco IOS Release 12.2(2) XA2

Cisco IOS Release 12.2(2) XA2 does not support the Cisco Signaling Link Terminal.

Open Caveats—Cisco IOS Release 12.2(2) XA1

All the caveats listed in [Table 5](#) are open in Cisco IOS Release 12.2(2) XA1. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 5 Open Caveats for Release 12.2(2) XA1

DDTS Number	Description
CSCdu44402	ISDN holding CCBs and call confirm err after interface shut/noshut
CSCdu87761	SIP: Gateway adds visual separator + to Request URI causing 404 err
CSCdu61792	Router crashing + tracebacks Process= CC-API_VCM
CSCdu84589	Call Manager / 2651 not interoperating correctly
CSCdv14134	*TS* 2600 crashes on applying map-class to frame-relay interface
CSCdu71583	Get no response to the ISDN Setup msg after a while

Resolved Caveats—Cisco IOS Release 12.2(2) XA1

All the caveats listed in [Table 6](#) are resolved in Cisco IOS Release 12.2(2) XA1. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 6 Resolved Caveats for Release 12.2(2) XA1

DDTS Number	Description
CSCdu46942	NU tone is not heard on ivr calls
CSCdt59455	vtv-async virtual-template doesn't work with no peer default ip addr
CSCuk21553	Telnet client fails to perform DNS lookup of hostname
CSCdu70661	All channels except 24th channel stay busied out after configuration
CSCdu08214	Calltracker MIB returns NULL for userid when DNIS/ANI is not present
CSCdt93862	Access level issue while using Web interface
CSCdu62721	Candidate fails to bring up B-channels (not du42219)
CSCdu59975	Glare Conditions are not detected in vtsp
CSCdu57066	CONN_LOST event needs to be handled in ACC_FASTSTART_PROGRESS state
CSCdu56186	H323 GW:RSVP and Signal only call cleared by TGW after ACF received
CSCdu82224	V120 calls were mis-identified as PIAFS calls
CSCdu87080	Attach domain name to TGCP
CSCdv01493	NAS Send MLP bundle ID for non-MLP VPDN call.
CSCdu09342	ISDN network-side continuously sends RESTART after user-side reloads

Table 6 Resolved Caveats for Release 12.2(2) XA1

DDTS Number	Description
CSCdu30345	DSP stopped collection digits - phone # with 0 length
CSCdu04555	Incorrect bearer capability on BRI for calls from netmeeting
CSCdu56329	SIP: Gateway issue with 606 Not Acceptable response to Forked INVITE
CSCdu86477	SIP: CANCEL without 487 renders voice ports unusable for 35 secs.
CSCdu09342	ISDN network-side continuously sends RESTART after user-side reloads
CSCdu30345	DSP stopped collection digits - phone # with 0 length

Open Caveats—Cisco IOS Release 12.2(2) XA

There are no resolved caveats specific to Cisco IOS Release 12.2(2) XA that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.2(2) XA

All the caveats listed in [Table 7](#) are resolved in Cisco IOS Release 12.2(2) XA. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 7 Closed and Resolved Caveats for Release 12.2(2) XA

Caveat ID Number	Description
CSCdt39366	E1R2 non-compelled configuration does not work

Related Documentation

The following sections describe the documentation available for the Cisco AS2600. These documents consist of hardware and software installation guides, Cisco IOS configuration guides 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 these documents:

- [Release-Specific Documents, page 10](#)
- [Platform-Specific Documents, page 11](#)
- [Feature Modules, page 12](#)
- [Cisco IOS Software Documentation Set, page 12](#)

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.2 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.2* and *Cross-Platform Release Notes for Cisco IOS Release 12.2 T*

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Release Notes: Cross-Platform Release Notes

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Release Notes: Cross-Platform Release Notes

- Product bulletins, field notices, and other release-specific documents on Cisco.com at:

Technical Documents

- The “[Caveats for Cisco IOS Release 12.2 XA](#)” section on page 7

As a supplement to the caveats listed in [Caveats for Cisco IOS Release 12.2 XA](#) in these release notes, see *Caveats for Cisco IOS Release 12.2* and *Caveats for Cisco IOS Release 12.2 T*, which contain caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.2 and Cisco IOS Release 12.2 T.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: Release Notes: Caveats

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Caveats



Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. To reach Bug Navigator II, log in to Cisco.com and click **Service & Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. 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 AS2600 on Cisco.com and the Documentation CD-ROM:

- *Cisco Signaling Link Terminal*
- *Cisco SS7 Interconnect for Voice Gateways Solution, Release 1.1*
- *Cisco SS7 Interconnect for Access Servers Solution Release 2.2*

On Cisco.com at:

Technical Documents: Access Servers and Access Routers: Cisco Media Gateway Controllers: Cisco Signaling Link Terminal

On the Documentation CD-ROM at:

Cisco Product Documentation: Access Servers and Access Routers: Cisco Media Gateway Controllers: Cisco Signaling Link Terminal

Feature Modules

Feature modules describe new features that are supported in Cisco IOS Release 12.2(2) XA5 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 into the next printing of the Cisco IOS documentation set.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.2: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: New Feature Documentation

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents. The Cisco IOS software documentation set is shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. Chapters in a configuration guide describe protocols, configuration tasks, and 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: Cisco IOS Software: Cisco IOS Release 12.2: Configuration Guides and Command References

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Configuration Guides and Command References

Cisco IOS Release 12.2 Documentation Set

Table 8 lists the contents of the Cisco IOS Release 12.2 software documentation set, which is available in electronic form and in printed form if ordered.

**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: Cisco IOS Software: Cisco IOS Release 12.2

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2

Table 8 Cisco IOS Release 12.2 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> • <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	Cisco IOS User Interfaces File Management System Management
<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 1 of 2</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2</i> 	Transparent Bridging SRB Token Ring Inter-Switch Link Token Ring Route Switch Module RSRB DLSw+ Serial Tunnel and Block Serial Tunnel LLC2 and SDLC IBM Network Media Translation SNA Frame Relay Access NCIA Client/Server Airline Product Set DSPU and SNA Service Point SNA Switching Services Cisco Transaction Connection Cisco Mainframe Channel Connection CLAW and TCP/IP Offload CSNA, CMPC, and CMPC+ TN3270 Server
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Technologies Configuration Guide</i> • <i>Cisco IOS Dial Technologies Command Reference</i> 	Preparing for Dial Access Modem and Dial Shelf Configuration and Management ISDN Configuration Signaling Configuration Dial-on-Demand Routing Configuration Dial Backup Configuration Dial Related Addressing Service Virtual Templates, Profiles, and Networks PPP Configuration Callback and Bandwidth Allocation Configuration Dial Access Specialized Features Dial Access Scenarios
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	LAN Interfaces Serial Interfaces Logical Interfaces

Table 8 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS IP Configuration Guide</i> • <i>Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services</i> • <i>Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols</i> • <i>Cisco IOS IP Command Reference, Volume 3 of 3: Multicast</i> 	<ul style="list-style-type: none"> IP Addressing and Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i> 	<ul style="list-style-type: none"> AppleTalk Novell IPX
<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> 	<ul style="list-style-type: none"> Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Cisco IOS Voice, Video, and Fax Configuration Guide</i> • <i>Cisco IOS Voice, Video, and Fax Command Reference</i> 	<ul style="list-style-type: none"> Voice over IP Call Control Signaling Voice over Frame Relay Voice over ATM Telephony Applications Trunk Management Fax, Video, and Modem Support Debit Card Applications TCL IVR Applications Configuring Media Gateway Control Protocol and Related Protocols Dial Plans, Dial Peers, and Digit Manipulation SIP
<ul style="list-style-type: none"> • <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	<ul style="list-style-type: none"> Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms
<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"> AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options Supported AV Pairs

Table 8 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Paths NetFlow Switching Multiprotocol Label Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	ATM Broadband Access Frame Relay SMDS X.25 and LAPB
<ul style="list-style-type: none"> • <i>Cisco IOS Mobile Wireless Configuration Guide</i> • <i>Cisco IOS Mobile Wireless Command Reference</i> 	General Packet Radio Service
<ul style="list-style-type: none"> • <i>Cisco IOS Terminal Services Configuration Guide</i> • <i>Cisco IOS Terminal Services Command Reference</i> 	ARA LAT NAS1 Telnet TN3270 XRemote X.28 PAD Protocol Translation
<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 Debug Command Reference</i> • <i>Cisco IOS Software System Error Messages</i> • <i>New Features in 12.2 T-Based Limited Lifetime Releases</i> • <i>New Features in Release 12.2 T T</i> • <i>Release Notes</i> (Release note and caveat documentation for 12.2 T-based releases and various platforms) 	

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