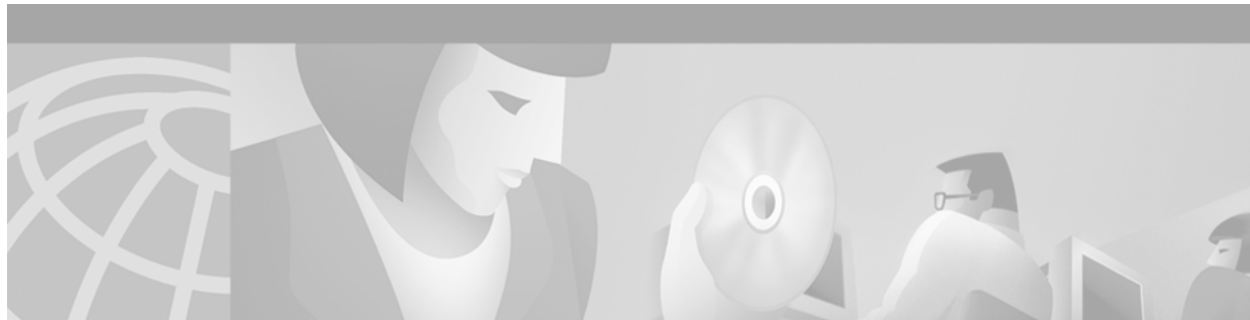




Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.2(4)XL

February 16, 2002

These release notes describe features and functionality of Cisco IOS Release 12.2(4)XL that are supported on analog station interface (ASI) cards and multiservice route processor (MRP) cards in the Cisco Integrated Communications System (ICS) 7750.

IOS software for ASI and MRP cards is provided with other system software for the Cisco ICS 7750, as follows:

- Previous releases:
 - System software release 1.1.1, 7/9/2001: Cisco IOS Release 12.2(1)XD1
 - System software release 1.1.0, 5/25/2001: Cisco IOS Release 12.2(1a)
 - System software release 1.0.6, 4/30/2001: Cisco IOS Release 12.1(5)T7
 - System software release 1.0.5, 4/20/2001: Cisco IOS Release 12.1(5)T2
 - System software release 1.0.4, 12/6/2000, and system software release 1.0.3, 11/16/2000: Cisco IOS Release 12.1(3a)XI2
 - System software release 1.0.2, 10/6/2000: Cisco IOS Release 12.1(3a)XI1



Caution

Software upgrades for the Cisco ICS 7750 are typically delivered in packaged system software bundles that are distributed on CD-ROM. Each Cisco ICS 7750 system software bundle is certified with a specific IOS release. Appropriate consideration must be given to the other software in the bundle when installing Cisco IOS software in the Cisco ICS 7750. Contact your sales representative for ordering instructions.

These release notes are updated as needed to describe new memory requirements, new features, new hardware support, software platform deferrals, microcode changes, related document changes, and any other important changes. Use these release notes with the [Cross-Platform Release Notes for Cisco IOS 12.2T](#) located on CCO and the Documentation CD-ROM.

Contents

These release notes discuss the following topics:

- [System Requirements, page 2](#)
- [New and Changed Information, page 7](#)
- [Important Notes, page 8](#)
- [Caveats, page 8](#)
- [Related Documentation, page 10](#)
- [Obtaining Documentation, page 17](#)
- [Obtaining Technical Assistance, page 18](#)

System Requirements

This section describes the system requirements for Release 12.2(4)XL on the Cisco ICS 7750. It includes the following sections:

- [Memory Requirements, page 2](#)
- [Hardware Supported, page 3](#)
- [Determining Your Software Release, page 6](#)
- [Feature Set Tables, page 7](#)

Memory Requirements

[Table 1](#) describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.2(4)XL on ASI and MRP cards inside a Cisco ICS 7750 chassis.

Table 1 Available Software Images and Memory Requirements for ASI and MRP Cards

Platform	Image Name	Image	Software Bundles ¹	Required Flash Memory ²	Required DRAM Memory ³	Runs From
Cisco ICS 7750	IP/Voice Plus	ics7700-sv3y-mz	S77a-x.x.x	Not applicable	64 MB	RAM
	IP/FW/Voice Plus IPSec 56	ics7700-k8o3sv3y-mz	S77b-k8-x.x.x	Not applicable	64 MB	RAM
	IP/FW/Voice Plus IPSec 3DES	ics7700-k9o3sv3y-mz	S77c-k9-x.x.x	Not applicable	64 MB	RAM
	IP/IPX/AT/IBM/ Voice, Plus	ics7700-bnr2sv3y-mz	S77d-x.x.x	Not applicable	64 MB	RAM

Table 1 Available Software Images and Memory Requirements for ASI and MRP Cards (continued)

Platform	Image Name	Image	Software Bundles ¹	Required Flash Memory ²	Required DRAM Memory ³	Runs From
	IP/IPX/AT/IBM/FW/Voice, Plus IPsec 56	ics7700-bk8no3r2sv3y-mz	S77e-k8-x.x.x	Not applicable	64 MB	RAM
	IP/IPX/AT/IBM/FW/Voice, Plus IPsec 3DES	ics7700-bk9no3r2sv3y-mz	S77f-k9-x.x.x	Not applicable	64 MB	RAM

1. In addition to the IOS software listed above, each software bundle contains the following software: Cisco IOS software for the system switch processor (SSP) card, ICS System Manager, ICS Core Software, and system alarm processor (SAP) software.
2. Flash memory is not used for the Cisco IOS image on a Cisco ICS 7750. A Cisco IOS compressed image resides on the system processing engine (SPE) card and is downloaded to the RAM of each ASI or MRP card before image decompression.
3. You can upgrade ASI or MRP card memory to 80 MB or 96 MB by installing a dual in-line memory module (DIMM) in the card DIMM slot. For memory upgrade instructions, refer to [Installing Memory, PVDm, and VPN Modules in ASI Cards, MRP Cards, and SPE Cards in the Cisco ICS 7750](#).

Hardware Supported

Cisco IOS Release 12.2(4)XL supports ASI and MRP cards in a Cisco ICS 7750. For detailed descriptions of new hardware features, see [New and Changed Information, page 7](#).

Processor Cards

[Table 2](#) lists the processor cards in the Cisco ICS 7750.

Table 2 Cisco ICS 7750 Processor Cards

Card	Card Description	Port Description
System processing engine (SPE)	A single-board computer that runs system software applications such as ICS System Manager and Cisco CallManager.	• SPE 200¹: No front-panel ports. • SPE 310: Front-panel ports for video, keyboard, and universal serial bus (USB).
Multiservice route processor (MRP)	A voice-and-data-capable router that can carry voice traffic over an IP network and can link remote Ethernet LANs to central offices over WAN links. The multiservice route processor has two slots that support combinations of WAN interface cards (WICs), voice WAN interface cards (VWICs), and Voice interface cards (VICs). It also has two slots to support Packet Voice Data modules (PVDMs). Five versions of PVDMs are available.	Supports the data and voice interface port types listed in Table 5 .
Analog station interface (ASI 81)	A voice-and-data-capable router that can carry voice traffic over an IP network and can link small-to- medium-size remote Ethernet LANs to central offices over WAN links (depending on the type of card installed in its WIC/VIC/VWIC slot) and can support connections to analog telephones, fax machines, and polycoms. It also has two PVDm slots.	• Eight FXS ports • One slot that supports the data and voice interface port types listed in Table 5

Table 2 Cisco ICS 7750 Processor Cards

Card	Card Description	Port Description
ASI 160	An analog gateway that supports connections to telephones, fax machines, and polycoms. It also has two PVDM slots.	Sixteen FXS ports
System alarm processor (SAP)	A module that monitors the status of the chassis, power supply modules, and fans, and feeds real-time data to the system processing engines. The SAP card delivers its data to the SPE running System Manager.	- Two COM ports - One console port
System switch processor (SSP)	An Ethernet switch that passes data between all system cards and to any other Ethernet switches connected to the system.	Two Ethernet 10/100 ports

1. SPE 310s are required in order to run system software release 2.1.0 and later.

Table 3 lists the number of processor cards supported by a Cisco ICS 7750.

Table 3 Number of Cards Supported in a Cisco ICS 7750 Chassis

Card	Minimum Required	Maximum Allowed
SAP	1	1
SSP	1	1
MRP	0	5
ASI 81 or ASI 160	0	5
SPE 310 ¹	1	5
200W power supply module	1	2

1. SPE 310s are required in order to run system software release 2.1.0 and later.

MRP and ASI Card Upgrades

You can upgrade MRP and ASI cards as follows:

- Memory. MRP and ASI cards ship with 64 MB of dynamic RAM (DRAM). You can upgrade MRP and ASI card memory to 80 MB or 96 MB by installing a dual in-line memory module (DIMM) in the card DIMM slot.
- Voice and data processing power. VICs, VWICs, and FXS modules installed in MRP or ASI cards might require additional digital signal processors (DSPs) for processing heavier volumes of voice traffic. You can install Packet Voice/Data Modules (PVDMs) in one or both of the card PVDM slots to give MRP and ASI cards more processing power.



Note

See [Installing Memory, PVDM, and VPN Modules in ASI Cards, MRP Cards, and SPE Cards in the Cisco ICS 7750](#) for instructions on how to upgrade ASI and MRP cards.

Table 4 provides information about the modules that you can install in ASI and MRP cards

Table 4 Cisco ASI and MRP Card Replacement DIMMs and PVDMs

Description	Cisco Part Number
16-MB SDRAM DIMM	MEM-MRP-16D=
32-MB SDRAM DIMM	MEM-MRP-32D=

Table 4 Cisco ASI and MRP Card Replacement DIMMs and PVDMs (continued)

Description	Cisco Part Number
4-channel packet voice/fax data DSP module	PVDM-256K-4=
8-channel packet voice/fax data DSP module	PVDM-256K-8=
12-channel packet voice/fax data DSP module	PVDM-256K-12=
16-channel packet voice/fax data DSP module	PVDM-256K-16= ¹
20-channel packet voice/fax data DSP module	PVDM-256K-20=

1. The PVDM-256K-16 is the recommended DSP module for ASI cards. Refer to the “PVDM Requirements” appendix in the *Cisco ICS 7750 Hardware Installation Guide*.

Wide Area Network Interface Cards, Voice Interface Cards, and Voice WAN Interface Cards

Table 5 lists the WICs, VICs, and VWICs that you can order in Cisco ICS 7750 MRP and ASI 81 cards. Refer to the *Cisco ICS 7750 Software Configuration Guide* and the ICS System Manager online help for configuration instructions.

Table 5 Supported WICs, VICs and VWICs

Card Description	Abbreviated Name
1-port serial, asynchronous and synchronous (T1/E1)	WIC-1T
2-port serial, asynchronous and synchronous (T1/E1)	WIC-2T
2-port serial, low speed (up to 128 kbps), asynchronous and synchronous	WIC-2A/S
1-port ISDN ¹ BRI ² (S/T interface)	WIC-1B-ST
1-port ISDN BRI with integrated NT1 (U interface)	WIC-1B-U
1-port, four-wire 56-kbps CSU/DSU ³	WIC-1DSU-56K4
1-port, T1/fractional T1 CSU/DSU	WIC-1DSU-T1
2-port FXS ⁴ voice/fax interface card	VIC-2FXS
2-port FXO ⁵ voice/fax interface card	VIC-2FXO
2-port FXO voice/fax interface card with battery reversal detection and caller ID support (for the United States)	VIC-2FXO-M1
2-port FXO voice/fax interface card with battery reversal detection and caller ID support (for Europe)	VIC-2FXO-M2
2-port FXO voice/fax interface card with battery reversal detection (for Australia)	VIC-2FXO-M3
2-port E&M ⁶ voice/fax interface card	VIC-2E/M
2-port analog DID ⁷ voice/fax interface card	VIC-2DID
2-port ISDN BRI voice/fax interface card (network and terminal side)	VIC-2BRI-NT/TE
1-port T1/fractional T1 multiflex trunk with CSU/DSU	VWIC-1MFT-T1
2-port T1/fractional T1 multiflex trunk with CSU/DSU	VWIC-2MFT-T1
1-port E1/fractional E1 multiflex trunk with CSU/DSU	VWIC-1MFT-E1
2-port E1/fractional E1 multiflex trunk with CSU/DSU	VWIC-2MFT-E1

1. ISDN = Integrated Services Digital Network
2. BRI = Basic Rate Interface
3. CSU/DSU = channel services unit/data services unit
4. FXS = Foreign Exchange Station
5. FXO = Foreign Exchange Office
6. E&M = Ear and Mouth
7. DID = Direct Inward Dial

SPE Card Support

Release 2.1.0 is supported only on SPE 310s. The SPE 310 offers a keyboard port, a video port, and two universal serial bus (USB) ports supporting standard USB devices such as mice, keyboards, and CD-ROM drives.

The SPE 310 also features a 700-MHz Pentium III processor, a 20.4-GB hard disk drive, and 512 MB of onboard memory. You can upgrade SPE 310 memory to a maximum of 1536 MB by installing 256-MB or 512-MB dual in-line memory modules (DIMMs) in one or both of the SPE card DIMM slots.

For instructions on how to upgrade the memory on SPE 310 cards, refer to [Installing Memory, PVD, and VPN Modules in ASI Cards, MRP Cards, and SPE Cards in the Cisco ICS 7750](#).

Determining Your Software Release

Complete the following steps to determine the Cisco IOS software version running on Cisco ICS 7750 ASI, MRP, or SSP cards:

-
- Step 1** On a PC, choose **Start > Run**.
- Step 2** Enter the following command to open a Telnet session, where *IP address* is the IP address of the card that you wish to verify:
- ```
telnet IP address
```
- Step 3** Enter your login password.
- Step 4** Enter the **show version** command:
- ```
card> show version
```

The following is some of the output that is displayed after entering the command **show version** on an ASI or MRP card:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) ICS7750 Software (ics7700-sv3y-mz), Version 12.2(4)XL, RELEASE SOFTWARE
```

Additional output lines from the **show version** command include information such as the processor revision numbers, amount of available memory, hardware IDs, and partition information.

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(4)XL supports the same feature sets as Releases 12.2 and 12.2T, but Release 12.2(4)XL can include new features supported by the Cisco ICS 7750 platform. [Table 6](#) lists the feature sets supported by the Cisco ICS 7750.

Table 6 *Feature Sets Supported by the Cisco ICS 7750*

Image Name	Feature Set Matrix Terms	Software Image
Cisco ICS 7750 IOS IP, Voice, Plus	IP/Voice Plus	ics7700-sv3y-mz
Cisco ICS 7750 IOS IP, FW, Voice, Plus, IPSec 56	IP/FW/Voice Plus IPSec 56	ics7700-k8o3sv3y-mz
Cisco ICS 7750 IOS IP, FW, Voice, Plus, IPSec, 3DES	IP/FW/Voice Plus IPSec 3DES	ics7700-k9o3sv3y-mz
Cisco ICS 7750 IOS IP, IPX, AT, IBM, Voice, Plus	IP/IPX/AT/IBM/Voice Plus	ics7700-bnr2sv3y-mz
Cisco ICS 7750 IOS IP, IPX, AT, IBM, FW, Voice, Plus, IPSec 56	IP/IPX/AT/IBM/FW/ Voice Plus IPSec 56	ics7700-bk8no3r2sv3y-mz
Cisco ICS 7750 IOS IP, IPX, AT, IBM, FW, Voice, Plus, IPSec, 3DES	IP/IPX/AT/IBM/FW/ Voice Plus IPSec 3DES	ics7700-bk9no3r2sv3y-mz

New and Changed Information

The following sections list the new features supported by the Cisco ICS 7750 series for Cisco IOS software releases Release 12.2(4)XL.

New Software Features in Release 12.2(4)XL

Cisco IOS Release 12.2(4)XL on the Cisco ICS 7750 supports Caller ID, as described below.

Caller ID

The Cisco ICS 7750 supports Caller ID functions on analog FXS, FXO-M1, and FXO-M2 voice interfaces, and on the FXS mode of the Direct Inward Dialing (DID) voice interface card, VIC-2DID.

Caller ID (sometimes called *CLID* for calling line identification) is an analog service offered by a Central Office (CO), which supplies calling party information to subscribers. Typically, the calling party number and the name appears on a station (also called *extension*) device such as a PC telephony software application screen or the display on a telephone. Type 1 Caller ID provides the calling party information while the call is ringing, and Type 2 Caller ID provides the additional convenience of calling number display while the recipient is on another call. In this release, only Type 1 Caller ID is supported.

Important Notes

The following sections contain important notes about Cisco IOS-related issues that can apply to the Cisco ICS 7750. (Also, see the [“Caveats” section on page 8.](#))

Networks with Cisco 2600 and Cisco 3600 Series Routers

In a network environment that uses Cisco 2600 series routers, Cisco 3600 series routers, and Cisco ICS 7750s, to avoid intermittent call setup failures all platforms should run Cisco IOS Release 12.2(4)XL or later.

Software Images on MRP and ASI Cards

All of the MRP and ASI cards in a Cisco ICS 7750 must run the same Cisco IOS image.

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.

All caveats in Release 12.2 T are also in Release 12.2(4)XL. 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-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 - Release 12.2(4)XL

This section describes unexpected behavior that is fixed in Release 12.2(4)XL.

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>

Resolved Caveats

The caveats listed in this section are resolved in Cisco IOS Release 12.2(4)XL.

- If you have a PVDM-4 (1 DSP), a PVDM-8 (2 DSPs), or a PVDM-12 (3 DSPs) installed in the first MRP PVDM slot and a PVDM-16 (4 DSPs) installed in the second MRP PVDM slot, the eighth DSP (the last of the four DSPs in the PVDM-16) will not be available for processing voice traffic. (CSCdv25648)

Open Caveats

This section describes open caveats in Release 12.2(4)XL.

- If you place a call that passes through an FXO port on the Cisco ICS 7750 and that call is routed through an FXS port on a Lucent PBX, you might hear a beep coming from the telephone that is connected to the Lucent PBX, or the line might be disconnected and an error tone might be heard (CSCdv16369).

There is no workaround.

- Connections over T1 endpoints might experience unacceptable levels of background white noise, or “hiss,” if Voice Activity Detection (VAD) is enabled on the MRP card. VAD, which is enabled by default, causes the Cisco IP Phone 7960 to generate a low level hiss to simulate the background circuit noise users experience on non-IP connections. (CSCdr31192)

Workaround—Disabling VAD can solve this problem, however, if you disable VAD on a network that exhibits a significant amount of jitter (for example, greater than 100 milliseconds per second), latency becomes noticeable to the user in the form of delay and packet loss. Also, if the codec clocks are out of sync among the devices participating in the call, latency increases for the duration of the call. For example, if the codec clock at the transmitting end is 100 parts per million faster than the codec clock at the receiving end, latency increases to one-half second over the course of a one hour long connection (at 8 kHz).

- If you attempt to place a call through a MFT-T1 or MFT-E1 port (on an MRP card) that is directly connected to another MRP MFT-T1/MFT-E1 and configured with the **connection trunk** command (which creates a VoIP call between two MRPs), the call will not go through or you will experience one-way voice (CSCdv46240).

If you are not sure whether this condition is present, after entering the **connection trunk** command, if you enter the **show voice port summary** command, the command output does not show that the voice-port is “trunked.”

A sample topology where this is observed is shown below:

```

Analog telephone
|
MRP1 (FXO)
|
T1
|
MRP2 (FXS)
|
Connection trunk (VoIP)

```

|
MRP3 (FXO)

|
MRP2 (FXS)

|
Analog telephone

There is no workaround.

- When placing a call through an MRP card to an IVR system, greeting messages played by the IVR might be clipped. (CSCds04904)

There is no workaround.

Related Documentation

The following sections describe the documentation available for the Cisco ICS 7750. 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](#)
- [Cisco ICS 7750 Documents](#)
- [Feature Modules](#)
- [Cisco IOS Software Documentation Set](#)

Release-Specific Documents

The following documents are specific to Release 12.2 and apply to Release 12.2(4)XL. They are located on Cisco.com and the Documentation CD-ROM:

- [Release Notes for Cisco IOS Release 12.2\(4\)XL](#)
 - To reach the *Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.2(4)XL* from Cisco.com, click this path (under the heading **Service & Support**):
Technical Documents: Cisco IOS Software: Release 12.2: Release Notes: Cisco Integrated Communications System 7750 : Release Notes for the Cisco ICS 7750 for IOS Release 12.2(2)XL
 - To reach the *Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.2(4)XL* on the Documentation CD-ROM, click this path:
Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Release Notes: Cisco Integrated Communications System 7750 : Release Notes for the Cisco ICS 7750 for IOS Release 12.2(2)XL
- [Release Notes for Cisco IOS Release 12.2 T](#)
 - To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* from Cisco.com, click this path (under the heading **Service & Support**):
Technical Documents: Cisco IOS Software: Release 12.2: Release Notes: Cisco IOS Release 12.2 T
 - To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.2* on the Documentation CD-ROM, click this path:
Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: Release Notes: Cisco IOS Release 12.2 T
- Product bulletins, field notices, and other release-specific documents
To reach these documents from Cisco.com, click this path (under the heading **Service & Support**):
Technical Documents: Product Bulletins
- [Caveats for Cisco IOS Release 12.2 and 12.2 T](#)
The [Caveats for Cisco IOS Release 12.2](#) and [Caveats for Cisco IOS Release 12.2 T](#) documents contain caveats applicable to all platforms for all maintenance releases of Release 12.2.
 - To reach the caveats document from Cisco.com, click this path (under the heading **Service & Support**):
Technical Documents: Cisco IOS Software: Release 12.2: Caveats
 - To reach the caveats document on the Documentation CD-ROM, click this path:
Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS 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.

Cisco ICS 7750 Documents

The documents described in this section are available on Cisco.com and on CD:

On Cisco.com, beginning under the **Service & Support** heading:

Technical Documents: Documentation Home Page: Voice Products: Cisco Integrated Communications System 7750

On the Documentation CD-ROM (order number DOC-CONDOCCD=) at:

Cisco Product Documentation: Voice Products: Cisco Integrated Communications System 7750

The following documents are available:

- *Cisco ICS 7750 System Description*
- *Cisco ICS 7750 Getting Started Guide*
- *Cisco ICS 7750 Hardware Installation Guide*
- *Cisco ICS 7750 Administration and Troubleshooting Guide*
- *Cisco ICS 7750 Software Configuration Guide*
- Installation and Configuration Notes:
 - *Installing Memory, PVDM, and VPN Modules in ASI Cards, MRP Cards, and SPE Cards in the Cisco ICS 7750*
 - *Cisco ICS 7750 FRU Installation and Replacement*
- Software Feature Module:
 - *Cisco ICS 7750 Multiservice Route Processor Model 200 Configuration*
- Release Notes:
 - *Release Notes for the Cisco ICS 7750 for System Software Release 2.x.x*
 - *Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.2(2)XL (this document)*
- *Regulatory Compliance and Safety Information for the Cisco ICS 7750*

Documentation Set

Printed versions of most of the platform-specific documents can be ordered as a boxed set (order number DOCS-7750=).

Feature Modules

Feature modules describe new features supported by Release 12.2 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 12.2 feature modules:

- From Cisco.com, click this path (under the heading **Service & Support**):

Technical Documents: Cisco IOS Software: Release 12.2: New Feature Documentation: New Features in 12.2-Based Limited Lifetime Releases: New Features in 12.2X Releases

- From the Documentation CD-ROM, click this path:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.2: New Feature Documentation: New Features in 12.2-Based Limited Lifetime Releases: New Features in 12.2X Releases

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 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](http://www.cisco.com) (under the heading **Service & Support**) at:

Technical Documents: Cisco IOS Software: 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

Release 12.2 Documentation Set

Table 7 describes the contents of the Cisco IOS Release 12.2 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 (under the heading **Service & Support**) at:

Technical Documents: Cisco IOS Software: Release 12.2

On the Documentation CD-ROM at:

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



Note

Some aspects of the complete Cisco IOS Release 12.2 software documentation set might not apply to the Cisco ICS 7750.

Table 7 Cisco IOS Release 12.2 Documentation Set

Books	Major Topics
<i>Cisco IOS Configuration Fundamentals Configuration Guide</i> <i>Cisco IOS Configuration Fundamentals Command Reference</i>	Cisco IOS User Interfaces File Management System Management
<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

Table 7 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
• <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
• <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i>	LAN Interfaces Serial Interfaces Logical Interfaces
• <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>	IP Addressing and Services IP Routing Protocols IP Multicast
• <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i>	AppleTalk Novell IPX
• <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>	Apollo Domain Banyan VINES DECnet ISO CLNS XNS
• <i>Cisco IOS Voice, Video, and Fax Configuration Guide</i> • <i>Cisco IOS Voice, Video, and Fax Command Reference</i>	Voice over IP Call Control Signaling Voice over Frame Relay Voice over ATM Telephony Applications Trunk Management Fax, Video, and Modem Support
• <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i>	Packet Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms

Table 7 Cisco IOS Release 12.2 Documentation Set (continued)

Books	Major Topics
• <i>Cisco IOS Security Configuration Guide</i> • <i>Cisco IOS Security Command Reference</i>	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
• <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
• <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
• <i>Cisco IOS Mobile Wireless Configuration Guide</i> • <i>Cisco IOS Mobile Wireless Command Reference</i>	General Packet Radio Service
• <i>Cisco IOS Terminal Services Configuration Guide</i> • <i>Cisco IOS Terminal Services Command Reference</i>	ARA LAT NASI Telnet TN3270 XRemote X.28 PAD Protocol Translation
• <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> • New Features in 12.2-Based Limited Lifetime Releases • New Features in Release 12.2 T • Release Notes (Release note and caveat documentation for 12.2-based releases and various platforms)	

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, for your convenience many documents contain a response card behind the front cover. Otherwise, you can mail your comments to the following address:

Cisco Systems, Inc.
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 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.

CCIP, the Cisco *Powered* Network mark, the Cisco Systems Verified logo, Cisco Unity, Fast Step, Follow Me Browsing, FormShare, Internet Quotient, iQ Breakthrough, iQ Expertise, iQ FastTrack, the iQ Logo, iQ Net Readiness Scorecard, Networking Academy, ScriptShare, SMARTnet, TransPath, and Voice LAN are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, Discover All That’s Possible, The Fastest Way to Increase Your Internet Quotient, and iQuick Study are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, the Cisco IOS logo, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherSwitch, GigaStack, IOS, IP/TV, LightStream, MGX, MICA, the Networkers logo, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, RateMUX, Registrar, SlideCast, StrataView Plus, Stratm, SwitchProbe, TeleRouter, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0201R)

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

