Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.1(5)T2

April 20, 2001

These release notes describe features and functionality of Cisco IOS Release 12.1(5)T2 that runs on the multiservice route processor (MRP) card in the Cisco Integrated Communications System (ICS) 7750.

IOS software for the MRP card is bundled with other system software for the Cisco ICS 7750, as follows:

- Current release (system software release 1.0.5, 4/23/2001): Cisco IOS Release 12.1(5)T2

- Previous releases:

  - 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

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Caution   Software upgrades for the Cisco ICS 7750 are distributed in packaged system software bundles; 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 Release 12.1* located on CCO and the Documentation CD-ROM.

For a list of the software caveats that apply to Release 12.1(5)T2 on the Cisco ICS 7750, refer to the section "Caveats" and to the online *Caveats for Cisco IOS Release 12.1 T* document. The caveats document is updated for every 12.1 T maintenance release and is located on Cisco Connection Online (CCO) and the Documentation CD-ROM.

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Caution   Although the Cisco ICS 7750 accepts command line interface (CLI) input, it is intended to be configured using the Cisco ICS System Manager software.

CISCO SYSTEMS

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Contents

These release notes discuss the following topics:

System Requirements

This section describes the system requirements for Release 12.1(5)T2 on the Cisco ICS 7750. It includes the following sections:

Memory Requirements

Table 1 describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.1(5)T2 on each MRP card inside a Cisco ICS 7750 chassis.

Table 1   Available Software Images and Memory Requirements for the MRP Card

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-1.0.5	Not applicable	64 MB	RAM
	IP/FW/Voice Plus IPSec 56	ics7700-o3sv3y56i-mz	S77b-k8-1.0.5	Not applicable	64 MB	RAM
	IP/FW/Voice Plus IPSec 3DES	ics7700-k2o3sv3y-mz	S77c-k9-1.0.5	Not applicable	64 MB	RAM
	IP/IPX/AT/IBM/ Voice, Plus	ics7700-bnr2sv3y-mz	S77d-1.0.5	Not applicable	64 MB	RAM

Table 1   Available Software Images and Memory Requirements for the MRP Card (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-bno3r2sv3y56i-mz	S77e-k8-1.0.5	Not applicable	64 MB	RAM
	IP/IPX/AT/IBM/FW/ Voice, Plus IPSec 3DES	ics7700-bk2no3r2sv3y-mz	S77f-k9-1.0.5	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, Cisco ICS 7700 System Manager, Cisco CallManager, 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 MRP card before image decompression.

3. You can upgrade 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 SPE Cards and MRP Cards in the Cisco ICS 7750*.

Hardware Supported

Cisco IOS Release 12.1(5)T2 supports MRP cards in a Cisco ICS 7750. For detailed descriptions of new hardware features, see New and Changed Information, page 9.

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 Cisco ICS System Manager and Cisco CallManager.	• SPE 200: 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.
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 Cisco ICS System Manager application on the SPE card.	• 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

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
SPE[1]	1	2
200W power supply module	1	2

1. Two SPEs are recommended to support system failover and to provide redundant call processing and local mirroring of database information

MRP Card Upgrades

You can upgrade MRP cards as follows:

- Memory. MRP cards ship with 64 MB of dynamic RAM (DRAM). You can upgrade MRP 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 and VWICs installed in the MRP card 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 MRP card PVDM slots to give MRPs more processing power.

Note See *Installing Memory, PVDM, and VPN Modules in SPE Cards and MRP Cards in the Cisco ICS 7750* for instructions on how to upgrade MRP cards.

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

Table 4   Cisco MRP Card Replacement DIMMs and PVDMs

Description	Cisco Part Number
16-MB SDRAM DIMM	MEM-MRP-16D=
32-MB SDRAM DIMM	MEM-MRP-32D=
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=
20-channel packet voice/fax data DSP module	PVDM-256K-20=

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 cards. Refer to the *Cisco ICS 7750 Software Configuration Guide* for configuration instructions.

Table 5   Supported WICs and VICs and VWICs

Card Description	Voice or Data	Abbreviated Name
1-port serial	Data only	1T WIC
2-port serial	Data only	2T WIC
2-port asynchronous/synchronous serial	Data only	2A/S WIC
1-port ISDN[1] BRI[2] S/T	Data only	1B-ST WIC
1-port ISDN BRI U	Data only	1B-U WIC
1-port 56/64-kbps DSU/CSU[3]	Data only	1DSU-56K4 WIC
1-port T1/FT1	Data only	1DSU-T1 WIC
2-port FXS[4] voice/fax interface	Voice only	2FXS VIC
2-port FXO[5] voice/fax interface	Voice only	2FXO VIC
2-port E&M[6] voice/fax interface	Voice only	2E&M VIC
1-port T1 multiflex trunk interface	Voice and data	1MFT-T1 VWIC[7]
2-port T1 multiflex trunk interface	Voice and data	2MFT-T1 VWIC

1. ISDN = Integrated Services Digital Network
2. BRI = Basic Rate Interface
3. DSU/CSU = Data service unit/channel service unit
4. FXS = Foreign Exchange Station
5. FXO = Foreign Exchange Office
6. E&M = Receive and transmit (or ear and mouth)
7. VWIC = Voice WAN interface card

Key Hardware Features

The Cisco ICS 7750 provides the following key hardware features:

- MRP card dynamic RAM: Default is 64 MB and is expandable to 96 MB, which must be obtained from Cisco Systems.
- The SPE 200 card contains an Intel Pentium II 266 MHz processor; the SPE 310 cards contains an Intel Pentium III 700 MHz processor.
- Two SPE cards can be installed in a Cisco ICS 7750 for failover operation.
- MRPs, power supplies, and the fan tray can be hot-swapped.
- The fixed slot SSP card provides an internal 10/100 MB autosensing data switch backplane to communicate with the other cards in the chassis.
- The SAP card serial (COM) ports are used for Simplified Messaging Desktop Interface (SMDI) connections and external modem support.
- Interchangeable, universal SPE and MRP slots.
- Optional redundant power supplies and uninterruptible power supply (UPS).
- The Cisco ICS 7750 can be mounted in a 19-inch rack mount or as a standalone system.

Determining Your Software Release

Complete the following steps to determine the Cisco IOS software version running on the Cisco ICS 7750 system cards:

Step 1 On a PC, open Netscape Communicator or Microsoft Internet Explorer.

Step 2 In the Location: or Address: field, enter the following URL, replacing *IP address* with the IP address of the primary SPE:

`http://IP address/ics`

Step 3 Log in as an administrator (user ID *administrator*), and enter your password (the default is *changeme*).

Step 4 Click **Login**.

Step 5 Click the **Configure** tab on the System Manager home page.

Step 6 Click **MRP Manager**.

Step 7 Click the drop-down arrow to view a list of choices for the Current MRP field, and choose an MRP.

The page refreshes, displaying the selected MRP.

Step 8 In the left pane of the window, under Management, click **Issue Command**.

Step 9 Click the drop-down arrow to view a list of choices for the Select or enter an IOS show command field, and choose **show version**.

Step 10 Click **Execute** to display the results of the command.

The following is sample output after entering the command **show version** on the MRP card:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) ICS7750 Software (ics7700-sv3y-mz), Version 12.1(5)T2, RELEASE SOFTWARE
```

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

Upgrading to a New Software Release

This section directs you to the documents that explain how to upgrade the software that runs on the Cisco ICS 7750.

Software upgrades for the Cisco ICS 7750 are distributed on CCO. Contact your sales representative for ordering instructions. For additional information about software image distribution, instructions for copying the software image from a PC to the Cisco ICS 7750, and installing the software, see the section "Upgrading to System Software Release 1.0.5 or 1.0.6" in the *Release Notes for the Cisco ICS 7750 for System Software Release 1.0.x*.

This information is available on CCO and the Documentation CD-ROM:

- To reach the *Cisco ICS 7750 Release Notes* from CCO, click on this path (under the heading **Service & Support**):

  Technical Documents: **Documentation Home Page**: **Voice Products**: **Cisco Integrated Communications System 7750**: **Cisco ICS 7750 Release Notes**: **Release Notes for the Cisco ICS 7750 for System Software Release 1.0.x**

- To reach the *Cisco ICS 7750 Release Notes* on the Documentation CD-ROM, click on this path:

  Cisco Product Documentation: **Voice Products**: **Cisco Integrated Communications System 7750**: **Cisco ICS 7750 Release Notes**: **Release Notes for the Cisco ICS 7750 for System Software Release 1.0.x**

> **Note** There are two types of release notes for the Cisco ICS 7750: platform release notes and Cisco IOS platform-specific release notes (this document). Respectively, the titles of these documents are:
> •*Release Notes for the Cisco ICS 7750 for System Software Release 1.0.x*
> •*Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.1(5)T2*

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)T2 supports the same feature sets as Releases 12.1 and 12.1 T, but Release 12.1(5)T2 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-o3sv3y56i-mz
Cisco ICS 7750 IOS IP, FW, Voice, Plus, IPSec, 3DES	IP/FW/Voice Plus IPSec 3DES	ics7700-k2o3sv3y-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-bno3r2sv3y56i-mz
Cisco ICS 7750 IOS IP, IPX, AT, IBM, FW, Voice, Plus, IPSec, 3DES	IP/IPX/AT/IBM/FW/ Voice Plus IPSec 3DES	ics7700-bk2no3r2sv3y-mz

Table 7 lists the features and feature sets supported by the Cisco ICS 7750 in Cisco IOS Release 12.1(5)T2. The table uses the following conventions:

- Yes—The feature is supported in the software image.

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

Table 7   ***Feature List by Feature Set for the Cisco ICS 7750 Series***

Features	Feature Sets					
	IP/Voice Plus	IP/FW/Voice Plus IPSec 56	IP/FW/Voice Plus IPSec 3DES	IP/IPX/AT/IBM/FW/ Voice Plus	IP/IPX/AT/ IBM/Voice Plus IPSec 56	IP/IPX/AT/IBM/ FW/Voice Plus IPSec 3DES
IP Multicast						
Bidirectional PIM	Yes	Yes	Yes	Yes	Yes	Yes
IP Routing Protocols						
OSPF Flooding Reduction	Yes	Yes	Yes	Yes	Yes	Yes
Security						
Secure Shell Version Integrated Client	No	Yes	Yes	Yes	No	Yes
SSH Version 1 Server Support	Yes	Yes	Yes	Yes	Yes	Yes
Virtual Private Network (VPN) Module	Yes	Yes	Yes	Yes	Yes	Yes
WAN						
1- and 2-Port T1 Multiflex VWICs	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Switching Enhancements: Shaping and Policing	Yes	Yes	Yes	Yes	Yes	Yes

Note   These feature set tables only contain a selected list of features. These tables are not cumulative—nor do they list all the features in each image.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco ICS 7750 series for Cisco IOS software releases Release 12.1(5)T2.

New Hardware and Software Features in Release 12.1(5)T2

The following sections list the new hardware and software features supported by the Cisco ICS 7750 for Release 12.1(5)T2.

Cisco ICS 7750

The Cisco Integrated Communications System (ICS) 7750 is an IP telephony system that provides managed Web-based communications applications for transforming branch-office and mid-sized business environments into Internet e-businesses. The system is built on the open and scalable Cisco AVVID (Architecture for Voice, Video and Integrated Data).

The Cisco ICS 7750 integrates the functionality of the following voice and data network components:

- Internet Protocol (IP) routing
- Switched Ethernet local area network (LAN) interface
- IP telephony
- Call processing and computer telephony applications

The Cisco ICS 7750 incorporates all of the following elements needed to deliver converged data, voice and video:

- Multiservice router and voice gateways based on Cisco IOS technology
- Application servers running core voice applications
- CallManager software
- Integrated web-based system management in the Cisco ICS System Manager
- A data switching interface for seamless connectivity to recommended Cisco Catalyst quality of service (QoS)-enabled switches

The Cisco ICS 7750 is a six-slot system, which houses any combination of Cisco IOS-based MRPs and/or SPEs. Various combinations of MRP and SPE cards allow a network administrator to customize the configuration to meet voice and data processing needs, such as telephony, in one integrated system. The SAP card provides fault management and events-driven alarms through electronic mail or paging and the SSP card provides Ethernet switching.

The MRP supports both digital and analog voice-trunk gateways and WAN interfaces. The MRP enables businesses to use virtual private network (VPN), firewall, IP Security (IPSec), and QoS for voice and data transmission. The Cisco ICS 7750 system uses the MRP to link to the Public Switched Telephone Network (PSTN) and existing private branch exchanges (PBXs), as well as other common analog devices, such as fax machines and teleconferencing stations. Each MRP card has two slots that accept existing Cisco Voice interface cards (VICs) and WAN interface cards (WICs). Refer to Table 5 for a complete list.

The SPE is a single-board computer that can run Cisco CallManager for intelligent call processing.

A Cisco ICS 7750 network includes peripheral hardware components, such as the following:

- Ethernet switches
- Digital Cisco IP Phones
- Analog telephony devices, such as telephones and fax machines

New Software Features in Release 12.1(5)T2

For information regarding the features supported in Cisco IOS Release 12.1, refer to the Cross-Platform Release Notes and New Feature Documentation links at the following location on Cisco.com:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/index.htm

This URL is subject to change without notice. If it changes, point your web browser to Cisco.com, and click on the following path:

Service & Support: **Technical Documents**: **Documentation Home Page**: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**

Important Notes

The following sections contain important notes about Cisco IOS-related issues for that can apply to the Cisco ICS 7750. (Also, see the "Caveats" section on page 11.)

Entering IOS Commands

This section describes the Cisco IOS commands that should be run only in the System Manager.

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Caution   Cisco strongly recommends that you use System Manager for configuration of the Cisco ICS 7750 and its cards, whenever possible. Although some tasks require use of the Cisco IOS CLI, use of the CLI for some tasks can cause unrecoverable problems.

You should not use the CLI for the following tasks:

- Changing the login and password for Telnet access to the system.
- Changing the enable or secret password for access to the system.
- Changing the syslog logging host.
- Managing Simple Network Management Protocol (SNMP) community strings.
- Managing the SNMP server.
- Changing the server destination for SNMP traps.
- Shutting down an Ethernet interface.
- Changing an Ethernet or virtual LAN (VLAN) interface.
- Disabling Cisco Discovery Protocol (CDP), including on an Ethernet or VLAN interface.
- Creating an access control list or setting up a firewall.
- Upgrading Cisco IOS software images.

- Assigning or changing the IP addresses of system cards.
- Assigning or changing the host name
- Configuring the Domain Name System (DNS) on SPE cards.
- Disabling Network Time Protocol (NTP).

Note For System Manager usage instructions, refer to the System Manager online help.

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 12.1(5)T2 or later.

Software Images on MRP Cards

All of the MRP 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.

This section is organized as follows:

- Resolved Caveats
- Open Caveats

All caveats in Release 12.1(5)T are also in Release 12.1(5)T2. For information on caveats in Cisco IOS Release 12.1(5)T, refer to the *Caveats for Cisco IOS Release 12.1T* document. For information on caveats in Cisco IOS Release 12.1, refer to the *Caveats for Cisco IOS Release 12.1* document. These publications list severity 1 and 2 caveats, and are located on Cisco.com and the Documentation CD-ROM.

Note If you have an account with Cisco.com, you can use Bug Navigator II to find caveats of any severity for any release. You can reach Bug Navigator II on Cisco.com at **Software Center**: **Cisco IOS Software**: **BUG TOOLKIT**: **Cisco Bug Navigator II**, or at http://www.cisco.com/support/bugtools/bugtool.shtml.

Resolved Caveats

This section describes resolved caveats in Release 12.1(5)T2:

- Users may experience jitter when sending fax calls through an MRP card. In some cases, the jitter can cause the fax call to fail. (CSCds13020)

- The MRP card interfaces use process switching, even if fast switching has been configured on an interface. (CSCds17850)

Open Caveats

This section describes open caveats in Release 12.1(5)T2.

- 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 run multiple voice calls over a single DSP on an MRP card that is configured for echo cancellation coverage of 32 milliseconds on its voice ports, some voice quality degradation might be noticeable. (CSCdr66308)

  Workaround—Limit the echo-coverage setting to 16 milliseconds in the voice-port configuration. For example, enter the command **echo {coverage} 16ms voice-port**.

- 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.

- The slot 1 analog voice interface card (VIC) ports (including FXS, FXO and E&M) of a Cisco ICS7750 Multiservice Route Processor (MRP) becomes unusable after you use the **show diag** EXEC command. This situation occurs when the VIC uses the PVDM in a PVDM slot 1 (the second PVDM slot). (CSCds37541)

  Workaround—Use the PVDM in slot 0 for a 2-port analog VIC. For example, if two 2-port FXO cards are on the MRP, plug in a PVDM-8 or a higher PVDM (PVDM with 2 or more DSPs) into slot 0. There are no known problems caused by using the **show diag** EXEC command for this configuration.

- By default, fax relay is supported if a fax machine is directly connected to the MRP using an FXS port. However, fax relay is not supported if the fax call is routed through a T1 line. (CSCdu06186)

  Workaround—Disable fax relay so that the fax call makes use of the established voice path. Do this by adding the following configuration to the routers on both sides of the VoIP call leg:

  ```
  router(config)# dial-peer voice tag voip
  router(config-dial-peer)# fax rate disable
  router(config-dial-peer)# no vad
  ```

  where *tag* is the dial peer tag you assign.

- If the Cisco ICS 7750 MRP card is loaded with Cisco IOS release 12.1(5)T2 or 12.1(5)T7, the IP network might be variably and incorrectly masked after the MRP boots. (CSCdu06266)

  If this is the case, entering the **show ip route** EXEC command generates output similar to the following:

  ```
  10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
  C 10.0.0.0/8 is directly connected, FastEthernet0/0
  C 10.34.207.0/25 is directly connected, FastEthernet0/0
  S* 0.0.0.0/0 [1/0] via 10.34.207.1
  ```

  In the **show ip route** command output shown above, being in the subnet 10.0.0.0/8 prevents the MRP from pinging Cisco IP Phones with addresses such as 10.34.207.140 (which are in a different network).

  Workaround—Enter the **clear ip route** EXEC command.

  After you enter the **clear ip route** EXEC command, if you enter the **show ip route** EXEC command again, you should see output similar to the following:

  ```
  10.0.0.0/25 is subnetted, 1 subnets
  C 10.34.207.0 is directly connected, FastEthernet0/0
  S* 0.0.0.0/0 [1/0] via 10.34.207.1
  ```

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 12.1. They are located on Cisco.com and the Documentation CD-ROM:

- *Release Notes for Cisco IOS Release 12.1*

  – To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.1* from Cisco.com, click on this path (under the heading **Service & Support**):

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

  – To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.1* on the Documentation CD-ROM, click on this path:

    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

  To reach these documents from Cisco.com, click on this path (under the heading **Service & Support**):

  Technical Documents: **Product Bulletins**

- *Caveats for Cisco IOS Release 12.1 and 12.1 T*

  The *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1 T* documents contain caveats applicable to all platforms for all maintenance releases of Release 12.1.

  – To reach the caveats document from Cisco.com, click on this path (under the heading **Service & Support**):

    Technical Documents: **Documentation Home Page**: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**: **Caveats**

  – To reach the caveats document on the Documentation CD-ROM, click on this path:

    Cisco Product Documentation: **Cisco IOS Software Configuration**: **Cisco IOS Release 12.1**: **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. You can reach Bug Navigator II on Cisco.com at **Software Center**: **Cisco IOS Software**: **BUG TOOLKIT**: **Cisco Bug Navigator II**, or at http://www.cisco.com/support/bugtools/bugtool.shtml.

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 (customer order number DOC-CONDOCCD=) at:

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

The following documents are available:

- *Cisco ICS 7750 Site and Network Design Guide*
- *Cisco ICS 7750 Getting Started Guide*
- *Cisco ICS 7750 Hardware Installation Guide*
- *Cisco ICS 7700 System Manager User Guide*
- *Cisco ICS 7750 Administration and Troubleshooting Guide*
- *Cisco ICS 7750 Software Configuration Guide*
- *Cisco ICS 7750 Command Reference*
- Configuration Notes:
    - *Using Cisco CallManager 3.0 on the Cisco ICS 7750*
    - *Installing Memory, PVDM, and VPN Modules in SPE Cards and MRP Cards in the Cisco ICS 7750*
- 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 1.0.x*
    - *Release Notes for the Cisco ICS 7750 for Cisco IOS Release 12.1(5)T2* (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 (customer order number DOCS-7750=).

Feature Modules

Feature modules describe new features supported by Release 12.1 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 Cisco ICS 7750-related Release 12.1 feature module:

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

    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**

- 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**

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 8 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

> **Note** Some aspects of the complete Cisco IOS Release 12.1 software documentation set might not apply to the Cisco ICS 7750.

Table 8   Cisco IOS Software Release 12.1 Documentation Set

Books	Chapter Topics
• *Cisco IOS Configuration Fundamentals Configuration Guide* • *Cisco IOS Configuration Fundamentals Command Reference*	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
• *Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide* • *Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference*	Overview of Apollo Domain, Banyan VINES, DECNET, ISO CLNS, and XNS Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring IOS CLNS Configuring XNS
• *Cisco IOS AppleTalk and Novell IPX Configuration Guide* • *Cisco AppleTalk and Novell IPX Command Reference*	AppleTalk and Novel IPX Overview Configuring AppleTalk Configuring Novell IPX

Table 8   Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *Cisco IOS Bridging and IBM Networking Configuration Guide* • *Cisco IOS Bridging and IBM Networking Command Reference, Volume I* • *Cisco Bridging and IBM Networking Command Reference, Volume II*	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
• *Cisco IOS Dial Services Configuration Guide: Terminal Services* • *Cisco IOS Dial Services Configuration Guide: Network Services* • *Cisco IOS Dial Services Command Reference*	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
• *Cisco IOS Interface Configuration Guide* • *Cisco IOS Interface Command Guide*	Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces

Table 8   Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *Cisco IOS IP and IP Routing Configuration Guide* • *Cisco IOS IP and IP Routing Command Reference*	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
• *Cisco IOS Multiservice Applications Configuration Guide* • *Cisco IOS Multiservice Applications Command Reference*	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
• *Cisco Quality of Service Solutions Configuration Guide* • *Cisco IOS Quality of Service Solutions Command Reference*	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

Table 8   Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
(Continued) • *Cisco Quality of Service Solutions Configuration Guide* • *Cisco IOS Quality of Service Solutions Command Reference*	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
• *Cisco IOS Security Configuration Guide* • *Cisco IOS Security Command Reference*	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
• *Cisco IOS Switching Services Configuration Guide* • *Cisco IOS Switching Services Command Reference*	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

Table 8   Cisco IOS Software Release 12.1 Documentation Set (continued)

Books	Chapter Topics
• *Cisco IOS Wide-Area Networking Configuration Guide* • *Cisco IOS Wide-Area Networking Command Reference*	Wide-Area Networking Overview Configuring ATM Frame Relay Frame Relay-ATM Internetworking Configuring SMDS Configuring X.25 and LAPB
• *Cisco IOS Configuration Guide Master Index* • *Cisco IOS Command Reference Master Index* • *Cisco IOS Command Summary* • *Cisco IOS Debug Command Reference* • *Cisco IOS Dial Services Quick Configuration Guide* • *Cisco IOS New Features Index* (Cisco.com and Documentation CD only) • *Cisco IOS System Error Messages*	

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

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.

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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:

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Document Resource Connection
170 West Tasman Drive
San Jose, CA 95134-9883

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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.

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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 with the documents listed in the "Related Documentation" section.

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