Release Notes for Cisco IOS Release 12.2(13)ZH on the Cisco ICS 7750

April 28, 2003

These release notes describe features and functionality of Cisco IOS Cisco IOS Release 12.2(13)ZH8 on the Cisco Integrated Communications System (ICS) 7750.

Caution Software upgrades for the Cisco ICS 7750 are delivered in packaged system software bundles that are distributed on Cisco.com and/or on CD-ROM. Each Cisco ICS 7750 system software bundle is certified with a specific Cisco 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 Cisco.com and the Documentation CD-ROM.

Contents

These release notes discuss the following topics:

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System Requirements

This section describes the system requirements for Release 12.2(13)ZH 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 12.2(13)ZH on analog station interface cards (ASIs) and multiservice route processor cards (MRPs) in a Cisco ICS 7750.

Table 1 Available Software Images and Memory Requirements for ASIs and MRPs

Platform	Image Name	Image	Software Bundles	Required Flash Memory for the MRP300, MRP3-8FXS[1], MRP3-16FXS	Required Flash Memory for the MRP200, ASI81, ASI160[2]	Required DRAM Memory[3]	Runs From
Cisco ICS 7750	IP/Voice Plus	ics7700-sv3y-mz	S77a-x.x.x	16MB	Not applicable	64 MB	RAM
	IP/FW/Voice Plus IPSec 56	ics7700-k8o3sv3y-mz	S77b-k8-x.x.x	16MB	Not applicable	64MB	RAM
	IP/FW/Voice Plus IPSec 3DES	ics7700-k9o3sv3y-mz	S77c-k9-x.x.x	16MB	Not applicable	64MB	RAM
	IP/IPX/AT/ IBM/ Voice, Plus	ics7700-bnr2sv3y-mz	S77d-x.x.x	16MB	Not applicable	64MB	RAM
	IP/IPX/AT/IBM/FW/ Voice, Plus IPSec 56	ics7700-bk8no3r2sv3y-mz	S77e-k8-x.x.x	16MB	Not applicable	64MB	RAM
	IP/IPX/AT/IBM/FW/ Voice, Plus IPSec 3DES	ics7700-bk9no3r2sv3y-mz	S77f-k9-x.x.x	16MB	Not applicable	64 MB	RAM

Table 1 Available Software Images and Memory Requirements for ASIs and MRPs (continued)

Platform	Image Name	Image	Software Bundles	Required Flash Memory for the MRP300, MRP3-8FXS[1], MRP3-16FXS	Required Flash Memory for the MRP200, ASI81, ASI160[2]	Required DRAM Memory[3]	Runs From
	Reduced-IP/ Analog Voice Plus[4]	ics7700-sv12y10-mz	ICS-7750-AV	16MB	Not applicable	64 MB	RAM
	Reduced-IP/ Voice Plus[4]	ics7700-sv3y10-mz	ICS-7750-DV	16MB	Not applicable	64 MB	RAM

1. FXS = Foreign Exchange Station.
2. Flash memory is not used for the Cisco IOS image on ASIs and MRP200s. Since onboard flash is not available on ASIs and MRP200s, a Cisco IOS compressed image resides on the system processing engine (SPE) and is downloaded to the RAM of each ASI or MRP200 before image decompression.
3. You can upgrade ASI or MRP card memory to 80 MB, 96 MB, or 128MB 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*.
4. This image comprises one of the voice-only packages, and does not include data networking support.

Hardware Supported

Cisco IOS Release 12.2(13)ZH supports ASIs and MRPs in a Cisco ICS 7750. See Table 2 for a description of the processor cards which are supported in the Cisco ICS 7750.

Processor Cards

Table 2 lists the processor cards that can be used in the Cisco ICS 7750.

Table 2 Cisco ICS 7750 Processor Cards

Card	Card Description	Port Description
SPE	A single-board computer that runs system software applications such as ICS System Manager and Cisco CallManager.	• SPE200[1]: No front-panel ports. • SPE310: Front-panel ports for video, keyboard, and universal serial bus (USB).
MRP200 MRP300	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. The MRP 300 has onboard flash memory.	Supports the data and voice interface port types listed in Table 5.

Table 2 Cisco ICS 7750 Processor Cards (continued)

Card	Card Description	Port Description
ASI 81 MRP3-8FXS	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. The MRP3-8FXS has onboard flash memory.	• Eight FXS ports • One slot that supports the data and voice interface port types listed in Table 5
MRP3-8FXOM1	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 trunks between a Central Office (CO) and an IP telephony system. It also has two PVDM slots and onboard flash memory.	• Eight FXO[2] ports • One slot that supports the data and voice interface port types listed in Table 5
ASI 160 MRP3-16FXS	An analog gateway that supports connections to telephones, fax machines, and polycoms. It also has two PVDM slots. The MRP3-16FXS has onboard flash memory.	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. System software release 2.1.0 or later is supported only on SPE 310s.
2. FXO = Foreign Exchange Office.

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	0	5
SPE310	1	5
200W power supply module	1	2

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, 96, or 128 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=
64-MB SDRAM DIMM	MEM-MRP-64D=
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 and ASI 81 cards. Refer to the *Cisco ICS 7750 Installation and Configuration Guide* and the ICS System Manager online help for configuration instructions.

Table 5 Supported WICs, VICs and VWICs

Card Description	Abbreviated Name	Support in MGCP[1] Mode
2-port FXS voice/fax interface card	VIC-2FXS	Yes
2-port FXO voice/fax interface card	VIC-2FXO	Yes
2-port FXO voice/fax interface card with battery reversal detection and caller ID support (for the United States)	VIC-2FXO-M1	No MGCP support if Caller ID or battery reversal detection enabled
4-port FXO voice/fax interface card with battery reversal detection and caller ID support (for the United States)	VIC-4FXO-M1	No MGCP support if Caller ID or battery reversal detection enabled
2-port FXO voice/fax interface card with battery reversal detection and caller ID support (for Europe)	VIC-2FXO-M2	No MGCP support if Caller ID or battery reversal detection enabled
2-port FXO voice/fax interface card with battery reversal detection (for Australia)	VIC-2FXO-M3	No MGCP support if Caller ID or battery reversal detection enabled
2-port E&M[2] voice/fax interface card	VIC-2E/M	No
2-port analog DID[3] voice/fax interface card	VIC-2DID	FXS mode only
4-port analog FXS/DID voice/fax interface card	VIC-4FXS/DID	FXS mode only

Table 5 Supported WICs, VICs and VWICs (continued)

Card Description	Abbreviated Name	Support in MGCP[1] Mode
2-port ISDN BRI voice/fax interface card (network and terminal side)	VIC-2BRI-NT/TE	No
1-port T1/fractional T1 multiflex trunk with CSU/DSU	VWIC-1MFT-T1	Yes
2-port T1/fractional T1 multiflex trunk with CSU/DSU	VWIC-2MFT-T1	Yes
1-port E1/fractional E1 multiflex trunk with CSU/DSU	VWIC-1MFT-E1	Yes
2-port E1/fractional E1 multiflex trunk with CSU/DSU	VWIC-2MFT-E1	Yes
1-port serial, asynchronous and synchronous (T1/E1)	WIC-1T	Not applicable
2-port serial, asynchronous and synchronous (T1/E1)	WIC-2T	Not applicable
2-port serial, low speed (up to 128 kbps), asynchronous and synchronous	WIC-2A/S	Not applicable
1-port ISDN[4] BRI[5] (S/T interface)	WIC-1B-ST	Not applicable
1-port ISDN BRI with integrated NT1 (U interface)	WIC-1B-U	Not applicable
1-port, four-wire 56-kbps CSU/DSU[6]	WIC-1DSU-56K4	Not applicable
1-port, T1/fractional T1 CSU/DSU	WIC-1DSU-T1	Not applicable

1. MGCP = Media Gateway Control Protocol
2. E&M = Ear and Mouth
3. DID = Direct Inward Dial
4. ISDN = Integrated Services Digital Network
5. BRI = Basic Rate Interface
6. CSU/DSU = channel services unit/data services unit

Table 6 lists the combinations of WICs, VICs, and VWICs that are supported on MRP300s, MRP3-8FXOM1s, and MRP3-8FXSs, where the left column of the table shows that a T1, E1, 8-port FXO-M1, or 8-port FXS module is installed in Slot 0, and where the remaining columns of the table show the types of modules that could be installed in Slot 1 of a given type of MRP.

Table 6 Supported Combinations of WICS, VICs, and VWICs on MRP300s, MRP3-8FXOM1s, and MRP3-8FXSs

	MRP300 (Voice Only)[1]	MRP300 (Data Only)	MRP300 (Voice and Data)	MRP3-8FXOM1	MRP3-8FXS
Slot 0	**Slot 1**				
VWIC-1MFT-E1 (voice)	VIC-2BRI-NT/TE, VIC-2DID, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1, VIC-2FXS, VIC-4FXS/DID	Not applicable	VWIC-1MFT-E1 (data), WIC-1T, WIC-2T, WIC-2A/S, WIC-1B-ST, WIC-1B-U, WIC-1DSU-56K4, WIC-1DSU-T1	Not applicable	Not applicable

Table 6 Supported Combinations of WICS, VICs, and VWICs on MRP300s, MRP3-8FXOM1s, and MRP3-8FXSs

	MRP300 (Voice Only)[1]	MRP300 (Data Only)	MRP300 (Voice and Data)	MRP3-8FXOM1	MRP3-8FXS
Slot 0	**Slot 1**				
VWIC-1MFT-T1 (voice)	VWIC-1MFT-T1 (voice), VIC-2BRI-NT/TE, VIC-2DID, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1, VIC-2FXS, VIC-4FXS/DID	Not applicable	VWIC-1MFT-T1 (data), WIC-1T, WIC-2T, WIC-2A/S, WIC-1B-ST, WIC-1B-U, WIC-1DSU-56K4, WIC-1DSU-T1	Not applicable	Not applicable
VWIC-1MFT-T1 (data) or VWIC-1MFT-E1 (data)	Not applicable	WIC-1T, WIC-2T, WIC-2A/S, WIC-1B-ST, WIC-1B-U, WIC-1DSU-56K4, WIC-1DSU-T1	VWIC-1MFT-T1 (voice), VWIC-1MFT-E1 (voice)	Not applicable	Not applicable
VWIC-2MFT-T1 (data) or VWIC-2MFT-E1 (data)	Not applicable	Empty slot	Empty slot	Not applicable	Not applicable
VWIC-2MFT-T1 (voice) or VWIC-2MFT-E1 (voice)	Empty slot	Not applicable	Empty slot	Not applicable	Not applicable

Table 6 Supported Combinations of WICS, VICs, and VWICs on MRP300s, MRP3-8FXOM1s, and MRP3-8FXSs

Slot 0	MRP300 (Voice Only)[1]	MRP300 (Data Only)	MRP300 (Voice and Data)	MRP3-8FXOM1	MRP3-8FXS
	Slot 1				
8-port FXO-M1 module	Not applicable	Not applicable	Not applicable	VIC-2DID, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1 , VIC-2FXS, VIC-4FXS/DID, VWIC-1MFT-T1 (voice), VWIC-1MFT-E1 (voice), VWIC-2MFT-T1 (1 voice, 1 data), VWIC-2MFT-E1 (1 voice, 1 data) WIC-1T, WIC-2T, WIC-2A/S, WIC-1B-ST, WIC-1B-U, WIC-1DSU-56K4, WIC-1DSU-T1	Not applicable
8-port FXS module	Not applicable	Not applicable	Not applicable	Not applicable	VIC-2DID, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1 , VIC-2FXS, VIC-4FXS/DID, VWIC-1MFT-T1 (voice), VWIC-1MFT-E1 (voice), VWIC-2MFT-T1 (1 voice, 1 data), VWIC-2MFT-E1 (1 voice, 1 data) WIC-1T, WIC-2T, WIC-2A/S, WIC-1B-ST, WIC-1B-U, WIC-1DSU-56K4, WIC-1DSU-T1

1. Up to 48 voice channels are now supported on the same MRP300, in certain configurations. See the "New Software Features in Release 12.2(13)ZH" section on page 10 for more information.

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) ICS7700 Software (ICS7700-SV3Y-M), Version 12.2(13)ZH, EARLY DEPLOYMENT RELEASE
SOFTWARE (fc1)
```

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(13)ZH supports the same feature sets as Releases 12.2 and 12.2T, but Release 12.2(13)ZH can include new features supported by the Cisco ICS 7750 platform. Table 7 lists the feature sets supported by the Cisco ICS 7750.

Table 7 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

Table 7 Feature Sets Supported by the Cisco ICS 7750

Image Name	Feature Set Matrix Terms	Software Image
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
Cisco ICS 7750 IOS Reduced IP, Analog Voice, Plus[1]	Reduced-IP/Analog Voice Plus	ics7700-sv12y10-mz
Cisco ICS 7750 IOS Reduced IP, Voice, Plus[1]	Reduced-IP/Voice Plus	ics7700-sv3y10-mz

1. This image comprises one of the new voice-only packages, and does not include data networking support.

Note For additional information about feature support for this Cisco IOS release, use the Feature Navigator. See the "Feature Navigator" section on page 16 for additional information.

New and Changed Information

The following section lists the new hardware and software features supported by the Cisco ICS 7750, beginning with Cisco IOS software Release 12.2(13)ZH.

New Software Features in Release 12.2(13)ZH

Cisco IOS Release 12.2(13)ZH on the Cisco ICS 7750 supports the following features:

- Enhanced ITU-T G.168 Echo Cancellation
- E1 PRI QSIG and BRI QSIG (H.323)
- E1 PRI QSIG Backhaul (MGCP)

Enhanced ITU-T G.168 Echo Cancellation

This feature provides an alternative to the default Cisco-proprietary G.165 echo canceller (EC). The new extended EC provides improved performance for trunking gateway applications and provides a configurable tail length that supports up to 64 ms of echo cancellation.

The IOS command-line interface (CLI) has been modified to make the extended EC the default on the Cisco ICS 7750.

The extended EC offers the following improvements over the Cisco default EC:

- Complies with the ITU-T G.168 (2000) standard in addition to maintaining support for the old ITU-T G.165 standard.
- Increases the configurable tail length from a maximum of 32 ms to a maximum of 64 ms.

For additional information about this feature, including the **voice echo-canceller extended** command, refer to the document *Enhanced ITU-T G.168 Echo Cancellation*.

E1 PRI QSIG and BRI QSIG (H.323)

This feature enables Cisco CallManager and the Cisco ICS 7750 to interoperate with legacy private branch exchanges (PBXs) in corporate networks, in H.323 mode. QSIG protocol support allows Cisco voice switching services to connect private branch exchanges (PBXs), key systems (KTs), and central office switches (COs) that communicate by using the QSIG protocol, which is becoming the standard for PBX interoperability in Europe and North America. QSIG is a variant of ISDN D-channel signaling. With QSIG, Cisco networks emulate the functionality of the public-switched telephone network (PSTN), and QSIG signaling messages allow the dynamic establishment of voice connections across a Cisco wide-area network (WAN) to a peer router, which can then transport the signaling and voice packets to a second private integrated services network exchange (PINX).

The Cisco voice packet network appears to the traditional QSIG PBXs as a distributed transit PBX that can establish calls to any PBX, non-QSIG PBX, or other telephony endpoint served by a Cisco gateway, including non-QSIG endpoints. When originating and terminating on QSIG endpoints, the QSIG messages are passed transparently across the network; the PBXs are responsible for processing and provisioning the supplementary services. When linking QSIG and non-QSIG endpoints served by a Cisco packet voice gateway, only basic calls are supported. In addition, all switched voice connections must be established and torn down in response to QSIG control messages.

E1 PRI QSIG Backhaul (MGCP)

PRI/Q.931 signaling backhaul is the transport of PRI signaling (Q.931 and above layers) between a media gateway (such as a Cisco access server, router, or concentrator) and a media gateway controller (such as Cisco CallManager). The media gateway controller is also referred to as a *Virtual Switch Controller* (VSC). Communication between the media gateway and the VSC is managed by the Media Gateway Control Protocol (MGCP).

The signaling backhaul takes place between a media gateway and the VSC. The media gateway provides an interface between the Public Switched Telephone Network (PSTN) and the packet network (IP or ATM). The VSC provides call processing and gateway control.

The general principle behind signaling backhaul is to pass as many layers of a protocol stack as possible through a gateway directly to the VSC.

Signaling backhaul usually occurs at a common boundary for all protocols. For ISDN, the signaling backhaul takes place at the boundary between Layer 2 (Q.921) and Layer 3 (Q.931). The lower layers of the protocol are terminated and processed on the gateway. The upper layers of the protocol are backhauled, or transported, to the VSC using Cisco Reliable User Datagram Protocol (RUDP) over IP. RUDP provides autonomous notification of connected and failed sessions and guarantees delivery of signaling protocols across an IP network.

Signaling backhaul provides the additional advantage of distributed protocol processing. This permits greater expandability and scalability, while offloading lower-layer protocol processing from the VSC.

Important Notes

The following sections contain important notes about Cisco IOS-related issues that can apply to the Cisco ICS 7750.

Codec Complexity Changes for BRI VICs

Before Release 12.2(13)ZH, MRPs in the Cisco ICS 7750 had to use the high-complexity image in order to support the VIC-2BRI-NT/TE. Beginning with Release 12.2(13)ZH, the following changes apply:

- The medium-complexity image is supported on BRI VICs
- The medium-complexity image is the default image on MRPs. (To use the high-complexity image, enter the **codec complexity** command.)
- Assuming that you are using the default configuration (high-complexity), a single DSP (a PVDM-4) is sufficient for the VIC-2BRI-NT/TE. (Before Release 12.2(13)ZH, two DSPs [a PVDM-8] were required to support the VIC-2BRI-NT/TE.)

Note For additional information about the use of codecs and DSPs, refer to the "Configuring the Cisco ICS 7750" chapter in the *Cisco ICS 7750 Installation and Configuration Guide*.

Software Images on MRP and ASI Cards

All of the MRPs and ASIs 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.

Caveats in Release 12.2 T are also in Cisco IOS Release 12.2(13)ZH8. 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.

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 **Technical Support**: **Tools & Utilities: Software Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Open Caveats - Release 12.2(13)ZH

This section describes unexpected behavior in Release 12.2(13)ZH.

CSCea88896

A problem has been observed when the following Cisco ICS 7750 topology is in use:

Telephone --- PSTN --- VIC-2DID --- IOS Gateway (MRP) --- VoIP--- IP phone

In this topology, if both MGCP and H.323 are configured on the gateway (MRP), after a caller places a call through the PSTN to the IP phone, the caller does not hear a ringback tone when the IP phone rings.

The same problem occurs if the IP phone is replaced with an analog phone that is connected to the gateway (MRP) through an FXS port.

The following is a sample configuration that would exhibit this problem, provided that the MGCP stack is active:

```
mgcp
mgcp call-agent a.b.c.d service-type mgcp version 0.1
!

dial-peer voice 1 pots
 application mgcpapp
!
```

That is, if you are using this configuration, the DID ports that are under H.323 control do not generate a ringback tone.

Workaround—Downgrade the MRP IOS image to Release 12.2(8)YN.

CSCdy19867

When a call to the PSTN is being made through MRP FXS and FXO interfaces on which the **forward-digits all** command has been entered, it is possible that the DTMF tones might be echoed back to the call originator, due to a suspected problem with the echo canceller.

Workaround—Tuning the echo canceller settings and disabling the forward all digits functionality on the necessary FXS and FXO interfaces should help solve this problem. Refer to the following documentation for more information:

- Cisco IOS Voice, Video, and Fax Configuration Guide
- IP Telephony Solution Guide
- Voice Parameters and Tuning Guide

CSCdy02040

If you are using an MRP or ASI with an E1 or T1 CAS trunk, if you change the TDM clocking on an E1 or T1 controller from an export clock configuration to an import clock configuration, and if the E1 or T1 controller is shut down when its clocking is changed, then configuring a DS0 group and entering a **no shut** command on that controller will cause intermittent call failures on some time slots.

For example, if interface T1 0/0 is configured as an export clock and interface T1 0/1 is also configured as an export clock, the following sequence of commands will cause intermittent call failures on T1 0/1:

```
controller T1 0/0
shutdown
no ds0-group 0 timeslots 1-24
no tdm clock T1 0/0
```

```
controller T1 0/1
shutdown
no ds0-group 1 timeslots 1-24
no tdm clock T1 0/1

tdm clock T1 0/0 voice export line
tdm clock T1 0/1 voice import T1 0/0 internal

controller T1 0/0
ds0-group 0 timeslots 1-24 type e&m-wink-start
no shutdown

controller T1 0/1
ds0-group 1 timeslots 1-24 type e&m-wink-start
no shutdown
```

Workaround—Do not shut down the E1 or T1 controller before changing its tdm clock configuration. Based on the example shown above, the following configuration will work:

```
controller T1 0/0
no ds0-group 0 timeslots 1-24
no tdm clock T1 0/0

controller T1 0/1
no ds0-group 1 timeslots 1-24
no tdm clock T1 0/1

tdm clock T1 0/0 voice export line
tdm clock T1 0/1 voice import T1 0/0 internal

controller T1 0/0
ds0-group 0 timeslots 1-24 type e&m-wink-start

controller T1 0/1
ds0-group 1 timeslots 1-24 type e&m-wink-start
```

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
- Additional References
- Feature Navigator
- Cisco IOS Software Documentation Set

Release-Specific Documents

The following documents are specific to Release 12.2 and apply to Cisco IOS Release 12.2(13)ZH8. They are located on Cisco.com and the Documentation CD-ROM:

- Release Notes for Cisco IOS Cisco IOS Release 12.2(13)ZH8
  - To reach the *Release Notes for Cisco IOS Cisco IOS Release 12.2(13)ZH8 on the Cisco 1CS 7750* from Cisco.com, click this path:

    Products & Services: IOS Software: Cisco IOS Software Releases 12.2: Cisco IOS Software Releases 12.2 YN: Technical Documentation: Release Notes: Cisco ICS 7750 - Cisco IOS Release 12.2(13)ZH
  - To reach the *Release Notes for Cisco IOS Cisco IOS Release 12.2(13)ZH8 on the Cisco 1CS 7750* on the Documentation CD-ROM, click this path:

    Product Documentation: Cisco IOS Software: Release 12.2: **Release Notes**: **Cisco Integrated Communications System 7750: Release Notes for Cisco IOS Cisco IOS Release 12.2(13)ZH8 on the Cisco ICS 7750**
- 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:

    Products & Services: IOS Software: Cisco IOS Software Releases 12.2: Cisco IOS Software Releases 12.2 T: Technical Documentation: Release Notes: Cisco IOS Software Releases 12.2 T
  - To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.2* on the Documentation CD-ROM, click this path:

    Product Documentation: Cisco IOS Software: **Cisco IOS Release 12.2**: **Release Notes**: **Cisco IOS Release 12.2 T**
- *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:

    Products & Services: IOS Software: Cisco IOS Software Releases 12.2: Cisco IOS Software Releases 12.2 T: Technical Documentation: Release Notes: Cisco IOS Software Releases 12.2 T
  - To reach the caveats document on the Documentation CD-ROM, click this path:

    Product Documentation: Cisco IOS Software: **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 **Technical Support**: **Tools & Utilities: Software Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Additional References

The following sections describe the documentation available for the Cisco SOHO 71, SOHO 76, SOHO 77, and the Cisco 826, Cisco 827, and Cisco 828 routers. Typically, these documents consist of hardware and software installation guides, Cisco IOS configuration and command references, system error messages, feature modules, and other documents. Documentation is available as printed manuals or electronic documents, except for feature modules, which are available online on Cisco.com in pdf or html form.

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

- Release-Specific Documents, page 16
- Platform-Specific Documents, page 16

Release-Specific Documents

The following documents are specific to Release 12.2 and apply to Cisco IOS Release 12.2(13)ZH8. They are located on Cisco.com:

- *Cross-Platform Release Notes for Cisco IOS Release 12.2T*
- *Field Notices:* http://www.cisco.com/warp/public/tech_tips/index/fn.html.
- *Caveats for Cisco IOS Release 12.2* and *Caveats for Cisco IOS Release 12.2T*

Platform-Specific Documents

Hardware installation guides, configuration and command reference guides, and additional documents specific to the Cisco SOHO 71, SOHO 76, SOHO 77, and the Cisco 826, Cisco 827, and Cisco 828 routers are available on Cisco.com at the following location:

http://www.cisco.com/en/US/products/hw/routers/tsd_products_support_category_home.html

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.2 and Cisco IOS Release 12.2(13)ZH8, 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.

Cisco Feature Navigator

Cisco 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. Cisco Feature Navigator is available 24 hours a day, 7 days a week.

To use Cisco 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.

Cisco 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/cfn

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.

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. *Cisco IOS Software Documentation* is available in html or pdf form.

Select your release and click the command references, configuration guides, or any other Cisco IOS documentation you need

Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feed-back, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Use this document in conjunction with the documents listed in the "Additional References" section.