



# Release Notes for Cisco IOS Release 12.3(4)XG on the Cisco ICS 7750

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April, 2004

These release notes describe features and functionality of Cisco IOS Release 12.3(4)XG 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 Release 12.3](#) 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 12.3(4)XG on the Cisco ICS 7750. It includes the following sections:

- [Memory Requirements, page 2](#)
- [Hardware Supported, page 3](#)
- [Determining Your Software Release, page 9](#)
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## Memory Requirements

[Table 1](#) describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.3(4)XG on analog station interface cards (ASIs) and multiservice route processor cards (MRPs) in a Cisco ICS 7750.


**Note**

If you intend to use Survivable Remote Site Telephony (SRST) and if you expect the amount of voice traffic to reach two full T1s (48 channels) on an MRP300, the amount of DRAM that is required on the MRP300 increases to 96 MB. Refer to [Installing Memory, PVD, and VPN Modules in ASI Cards, MRP Cards, and SPE Cards in the Cisco ICS 7750](#) for memory upgrade instructions.

**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 <sup>1</sup> , MRP3-16FXS	Required Flash Memory for the MRP200, ASI81, ASI160 <sup>2</sup>	Required DRAM Memory <sup>3</sup>	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

**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 <sup>1</sup> , MRP3-16FXS	Required Flash Memory for the MRP200, ASI81, ASI160 <sup>2</sup>	Required DRAM Memory <sup>3</sup>	Runs From
	IP/IPX/AT/IBM/FW/ Voice, Plus IPSec 3DES	ics7700-bk9no3r2sv3y-mz	S77f-k9-x.x.x	16MB	Not applicable	64 MB	RAM
	Reduced-IP/ Analog Voice Plus <sup>4</sup>	ics7700-sv12y10-mz	ICS-7750-AV	16MB	Not applicable	64 MB	RAM
	Reduced-IP/ Voice Plus <sup>4</sup>	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, PVD, 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 12.3(4)XG 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.	<ul style="list-style-type: none"> <li>• SPE200<sup>1</sup>: No front-panel ports.</li> <li>• SPE310: Front-panel ports for video, keyboard, and universal serial bus (USB).</li> </ul>

**Table 2** Cisco ICS 7750 Processor Cards (continued)

Card	Card Description	Port Description
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 <a href="#">Table 5</a> .
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.	<ul style="list-style-type: none"> <li>• Eight FXS ports</li> <li>• One slot that supports the data and voice interface port types listed in <a href="#">Table 5</a></li> </ul>
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.  See the “ <a href="#">Open Caveats - Release 12.3(4)XG</a> ” section on page 11 for more information about connections to the central office.	<ul style="list-style-type: none"> <li>• Eight FXO<sup>2</sup> ports</li> <li>• One slot that supports the data and voice interface port types listed in <a href="#">Table 5</a></li> </ul>
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.	<ul style="list-style-type: none"> <li>• Two COM ports</li> <li>• One console port</li> </ul>
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

Refer to *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 <sup>1</sup> Mode
2-port FXS voice/fax interface card	VIC-2FXS	Yes
2-port FXO voice/fax interface card	VIC-2FXO	Yes
4-port FXO voice/fax interface card with battery reversal detection and caller ID support (for the United States, Europe, and Australia) [Replaces the VIC-4FXO-M1, VIC-2FXO-M1, VIC-2FXO-M2, and VIC-2FXO-M3]	VIC2-4FXO	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

**Table 5 Supported WICs, VICs and VWICs (continued)**

Card Description	Abbreviated Name	Support in MGCP <sup>1</sup> Mode
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
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 <sup>2</sup> voice/fax interface card	VIC2-2E/M	No
2-port E&M voice/fax interface card	VIC-2E/M	No
2-port analog DID <sup>3</sup> voice/fax interface card	VIC-2DID	FXS mode only
4-port analog FXS/DID voice/fax interface card	VIC-4FXS/DID	FXS mode only
2-port ISDN BRI voice/fax interface card (network and terminal side) [Replaces the VIC-2BRI-NT/TE]	VIC2-2BRI-NT/TE	Yes
2-port ISDN BRI voice/fax interface card (network and terminal side)	VIC-2BRI-NT/TE	Yes
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 <sup>4</sup> BRI <sup>5</sup> (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 <sup>6</sup>	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

Slot 0	MRP300 (Voice Only) <sup>1</sup>	MRP300 (Data Only)	MRP300 (Voice and Data)	MRP3-8FXOM1	MRP3-8FXS
	Slot 1				
VWIC-1MFT-E1 (voice)	VIC-2BRI-NT/TE, VIC2-2BRI-NT/TE, VIC-2DID, VIC2-2E/M, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1, VIC2-4FXO, 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
VWIC-1MFT-T1 (voice)	VWIC-1MFT-T1 (voice), VIC-2BRI-NT/TE, VIC2-2BRI-NT/TE, VIC-2DID, VIC2-2E/M, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1, VIC2-4FXO, 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

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

	MRP300 (Voice Only) <sup>1</sup>	MRP300 (Data Only)	MRP300 (Voice and Data)	MRP3-8FXOM1	MRP3-8FXS
Slot 0	Slot 1				
VWIC-2MFT-T1 (voice) or VWIC-2MFT-E1 (voice)	Empty slot	Not applicable	Empty slot	Not applicable	Not applicable
8-port FXO-M1 module	Not applicable	Not applicable	Not applicable	VIC-2DID, VIC2-2E/M, VIC-2E/M, VIC-2-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1, VIC2-4FXO, 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

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

Slot 0	MRP300 (Voice Only) <sup>1</sup>	MRP300 (Data Only)	MRP300 (Voice and Data)	MRP3-8FXOM1	MRP3-8FXS
8-port FXS module	Not applicable	Not applicable	Not applicable	Not applicable	VIC-2DID, VIC2-2E/M, VIC-2E/M, VIC-2FXO, VIC-2FXO-M1, VIC-2FXO-M2, VIC-2FXO-M3, VIC-4FXO-M1, VIC2-4FXO, 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.

## 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 12.3(2)XE, 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. Cisco IOS Release 12.3(4)XG supports the same feature sets as Releases 12.2 and 12.2T, but Release 12.3(4)XG 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     |
| 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 <sup>1</sup>    | Reduced-IP/Analog Voice Plus            | ics7700-sv12y10-mz      |
| Cisco ICS 7750 IOS Reduced IP, Voice, Plus <sup>1</sup>           | 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 15](#) for additional information.

# New and Changed Information

There are no new hardware or software features for the Cisco ICS 7750 on Cisco IOS Release 12.3(4)XG.

## Important Notes

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

## 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 Release 12.3(4)XG. 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.



**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](http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl).

## Open Caveats - Release 12.3(4)XG

This section describes unexpected behavior in Release 12.3(4)XG.

### CSCec88384

#### Symptom

MGCP BRI has one-way voice only. This problem does not occur with BRI under H.323.

#### Workaround

Use BRI under H.323.

**CSCed27956****Symptom**

TCP checks should verify ACK sequence number.

A vulnerability in the Transmission Control Protocol (TCP) specification (RFC793) has been discovered by an external researcher. The successful exploitation enables an adversary to reset any established TCP connection in a much shorter time than was previously discussed publicly. Depending on the application, the connection may get automatically re-established. In other cases, a user will have to repeat the action (for example, open a new Telnet or SSH session). Depending upon the attacked protocol, a successful attack may have additional consequences beyond terminated connection which must be considered. This attack vector is only applicable to the sessions which are terminating on a device (such as a router, switch, or computer) and not to the sessions that are only passing through the device (for example, transit traffic that is being routed by a router). In addition, this attack vector does not directly compromise data integrity or confidentiality.

All Cisco products which contain TCP stack are susceptible to this vulnerability.

**Workaround**

This advisory is available at <http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-ios.shtml>, and it describes this vulnerability as it applies to Cisco products that run Cisco IOS® software.

A companion advisory that describes this vulnerability for products that do not run Cisco IOS software is available at <http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-nonios.shtml>.

**CSCed27956****Symptom**

TCP checks should verify SYN sequence number.

A vulnerability in the Transmission Control Protocol (TCP) specification (RFC793) has been discovered by an external researcher. The successful exploitation enables an adversary to reset any established TCP connection in a much shorter time than was previously discussed publicly. Depending on the application, the connection may get automatically re-established. In other cases, a user will have to repeat the action (for example, open a new Telnet or SSH session). Depending upon the attacked protocol, a successful attack may have additional consequences beyond terminated connection which must be considered. This attack vector is only applicable to the sessions which are terminating on a device (such as a router, switch, or computer) and not to the sessions that are only passing through the device (for example, transit traffic that is being routed by a router). In addition, this attack vector does not directly compromise data integrity or confidentiality.

All Cisco products which contain TCP stack are susceptible to this vulnerability.

**Workaround**

This advisory is available at <http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-ios.shtml>, and it describes this vulnerability as it applies to Cisco products that run Cisco IOS software.

A companion advisory that describes this vulnerability for products that do not run Cisco IOS software is available at <http://www.cisco.com/warp/public/707/cisco-sa-20040420-tcp-nonios.shtml>.

## 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, page 13](#)
- [Cisco ICS 7750 Documents, page 14](#)
- [Feature Navigator, page 15](#)
- [Cisco IOS Software Documentation Set, page 15](#)

## Release-Specific Documents



### Note

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Defects or problems related to the Cisco ICS 7750 platform are no longer addressed or corrected in maintenance releases for IOS releases 12.2, 12.2T, and 12.3.

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The following documents are specific to Release 12.3 and Release 12.2, and apply to Release 12.3(4)XG. They are located on Cisco.com:

- [Release Notes for Cisco IOS Release 12.3\(4\)XG](#)

To reach the *Release Notes for Cisco IOS Release 12.3(4)XG on the Cisco ICS 7750* from Cisco.com, click this path:

**Products & Services: IOS Software: Cisco IOS Software Releases 12.3: Cisco IOS Software Release 12.3(4)XG: Technical Documentation: Release Notes: Cisco ICS 7750 - Cisco IOS Release 12.3(4)XG**

- [Release Notes for Cisco IOS Release 12.3T](#)

To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.3T* from Cisco.com, click this path:

**Products & Services: IOS Software: Cisco IOS Software Releases 12.3: Cisco IOS Software Releases 12.3T: Technical Documentation: Release Notes: Cisco IOS Software Releases 12.3 T**

- [Release Notes for Cisco IOS Release 12.3](#)

To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.3* from Cisco.com, click this path:

**Products & Services: IOS Software: Cisco IOS Software Releases 12.3: Cisco IOS Software Releases 12.3: Technical Documentation: Release Notes: Cisco IOS Software Releases 12.3**

- [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**

- [Caveats for Cisco IOS Release 12.3](#)

The *Caveats for Cisco IOS Release 12.3* and the *Caveats for Cisco IOS Release 12.3 T* documents contain caveats applicable to all platforms for all maintenance releases of Release 12.3.

To reach the caveats document from Cisco.com, click this path:

**Products & Services: IOS Software: Cisco IOS Software Releases 12.3: Cisco IOS Software Releases 12.3T: Technical Documentation: Release Notes: Cisco IOS Software Releases 12.3T**

- [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**



**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](http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl).

## Cisco ICS 7750 Documents

The documents described in this section are available at this URL:

<http://www.cisco.com/univercd/cc/td/doc/product/voice/ics/index.htm>

You can click this path to reach the documents on Cisco.com.

**Products & Services: Voice Application Systems: Cisco ICS 7700 Series Integrated Communications Systems: Technical Documentation**

## Documentation Set

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

## 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](mailto: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 available on Cisco.com—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. To reach the Cisco IOS software documentation set on Cisco.com, click this path:

**Products & Services: IOS Software: Cisco IOS Software Releases 12.2 Mainline: Technical Documentation: Master Indices**

### Release 12.3 Documentation Set

Table 8 describes the contents of the Cisco IOS Release 12.3 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.



#### Note

Some aspects of the complete Cisco IOS Release 12.3 software documentation set might not apply to the Cisco ICS 7750.

**Table 8 Cisco IOS Release 12.3 Documentation Set**

| Books                                                                                                                                                                                                                                                                                                                                                      | Major Topics                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Cisco IOS Configuration Fundamentals Configuration Guide</li> <li>• Cisco IOS Configuration Fundamentals Command Reference</li> </ul>                                                                                                                                                                             | Cisco IOS User Interfaces<br>File Management<br>System Management                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <ul style="list-style-type: none"> <li>• Cisco IOS Bridging and IBM Networking Configuration Guide</li> <li>• Cisco IOS Bridging and IBM Networking Command Reference, Volume 1 of 2</li> <li>• Cisco IOS Bridging and IBM Networking Command Reference, Volume 2 of 2</li> </ul>                                                                          | Transparent Bridging<br>SRB<br>Token Ring Inter-Switch Link<br>Token Ring Route Switch Module<br>RSRB<br>DLSW+<br>Serial Tunnel and Block Serial Tunnel<br>LLC2 and SDLC<br>IBM Network Media Translation<br>SNA Frame Relay Access<br>NCIA Client/Server<br>Airline Product Set<br>DSPU and SNA Service Point<br>SNA Switching Services<br>Cisco Transaction Connection<br>Cisco Mainframe Channel Connection<br>CLAW and TCP/IP Offload<br>CSNA, CMPC, and CMPC+<br>TN3270 Server |
| <ul style="list-style-type: none"> <li>• Cisco IOS Dial Technologies Configuration Guide: Dial Access</li> <li>• Cisco IOS Dial Technologies Configuration Guide: Large-Scale Dial Applications</li> <li>• Cisco IOS Dial Technologies Command Reference, Volume 1 of 2</li> <li>• Cisco IOS Dial Technologies Command Reference, Volume 2 of 2</li> </ul> | Dial Access<br>Modem and Dial Shelf Configuration and Management<br>ISDN Configuration<br>Signaling Configuration<br>Point-to-Point Protocols<br>Dial-on-Demand Routing<br>Dial Backup<br>Dial Related Addressing Service<br>Network Access Solutions<br>Large-Scale Dial Solutions<br>Cost-Control Solutions<br>Internetworking Dial Access Scenarios                                                                                                                              |
| <ul style="list-style-type: none"> <li>• Cisco IOS Interface Configuration Guide</li> <li>• Cisco IOS Interface Command Reference</li> </ul>                                                                                                                                                                                                               | LAN Interfaces<br>Serial Interfaces<br>Logical Interfaces                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <ul style="list-style-type: none"> <li>• Cisco IOS IP Configuration Guide</li> <li>• Cisco IOS IP Command Reference, Volume 1 of 3: Addressing and Services</li> <li>• Cisco IOS IP Command Reference, Volume 2 of 3: Routing Protocols</li> <li>• Cisco IOS IP Command Reference, Volume 3 of 3: Multicast</li> </ul>                                     | IP Addressing<br>IP Services<br>IP Routing Protocols<br>IP Multicast                                                                                                                                                                                                                                                                                                                                                                                                                |
| <ul style="list-style-type: none"> <li>• Cisco IOS AppleTalk and Novell IPX Configuration Guide</li> <li>• Cisco IOS AppleTalk and Novell IPX Command Reference</li> </ul>                                                                                                                                                                                 | AppleTalk<br>Novell IPX                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**Table 8** Cisco IOS Release 12.3 Documentation Set (continued)

| Books                                                                                                                                                                                                                                  | Major Topics                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</li> <li>• Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</li> </ul> | Apollo Domain<br>Banyan VINES<br>DECnet<br>ISO CLNS<br>XNS                                                                                                                                                                     |
| <ul style="list-style-type: none"> <li>• Cisco IOS Voice, Video, and Fax Configuration Guide</li> <li>• Cisco IOS Voice, Video, and Fax Command Reference</li> </ul>                                                                   | Voice over IP<br>Call Control Signaling<br>Voice over Frame Relay<br>Voice over ATM<br>Telephony Applications<br>Trunk Management<br>Fax, Video, and Modem Support                                                             |
| <ul style="list-style-type: none"> <li>• Cisco IOS Quality of Service Solutions Configuration Guide</li> <li>• Cisco IOS Quality of Service Solutions Command Reference</li> </ul>                                                     | Packet Classification<br>Congestion Management<br>Congestion Avoidance<br>Policing and Shaping<br>Signaling<br>Link Efficiency Mechanisms                                                                                      |
| <ul style="list-style-type: none"> <li>• Cisco IOS Security Configuration Guide</li> <li>• Cisco IOS Security Command Reference</li> </ul>                                                                                             | AAA Security Services<br>Security Server Protocols<br>Traffic Filtering and Firewalls<br>IP Security and Encryption<br>Passwords and Privileges<br>Neighbor Router Authentication<br>IP Security Options<br>Supported AV Pairs |
| <ul style="list-style-type: none"> <li>• Cisco IOS Switching Services Configuration Guide</li> <li>• Cisco IOS Switching Services Command Reference</li> </ul>                                                                         | Cisco IOS Switching Paths<br>NetFlow Switching<br>Multiprotocol Label Switching<br>Multilayer Switching<br>Multicast Distributed Switching<br>Virtual LANs<br>LAN Emulation                                                    |
| <ul style="list-style-type: none"> <li>• Cisco IOS Wide-Area Networking Configuration Guide</li> <li>• Cisco IOS Wide-Area Networking Command Reference</li> </ul>                                                                     | ATM<br>Frame Relay<br>SMDS<br>X.25 and LAPB                                                                                                                                                                                    |
| <ul style="list-style-type: none"> <li>• Cisco IOS Mobile Wireless Configuration Guide</li> <li>• Cisco IOS Mobile Wireless Command Reference</li> </ul>                                                                               | General Packet Radio Service                                                                                                                                                                                                   |

**Table 8 Cisco IOS Release 12.3 Documentation Set (continued)**

| Books                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Major Topics                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Cisco IOS Terminal Services Configuration Guide</li> <li>• Cisco IOS Terminal Services Command Reference</li> </ul>                                                                                                                                                                                                                                                                                                                                          | ARA<br>LAT<br>NASI<br>Telnet<br>TN3270<br>XRemote<br>X.28 PAD<br>Protocol Translation |
| <hr/> <ul style="list-style-type: none"> <li>• <i>Cisco IOS Configuration Guide Master Index</i></li> <li>• <i>Cisco IOS Command Reference Master Index</i></li> <li>• Cisco IOS Debug Command Reference</li> <li>• Cisco IOS Software System Error Messages</li> <li>• New Features in 12.2-Based Limited Lifetime Releases</li> <li>• New Features in Release 12.2T</li> <li>• Release Notes (Release note and caveat documentation for 12.2-based releases and various platforms)</li> </ul> <hr/> |                                                                                       |

## Obtaining Documentation

Cisco documentation and additional literature are available on Cisco.com. Cisco also provides several ways to obtain technical assistance and other technical resources. These sections explain how to obtain technical information from Cisco Systems.

### Cisco.com

You can access the most current Cisco documentation on the World Wide Web at this URL:

<http://www.cisco.com/univercd/home/home.htm>

You can access the Cisco website at this URL:

<http://www.cisco.com>

International Cisco websites can be accessed from this URL:

[http://www.cisco.com/public/countries\\_languages.shtml](http://www.cisco.com/public/countries_languages.shtml)

### Ordering Documentation

You can find instructions for ordering documentation at this URL:

[http://www.cisco.com/univercd/cc/td/doc/es\\_inpk/pdi.htm](http://www.cisco.com/univercd/cc/td/doc/es_inpk/pdi.htm)

You can order Cisco documentation in these ways:

- Registered Cisco.com users (Cisco direct customers) can order Cisco product documentation from the Ordering tool:

<http://www.cisco.com/en/US/partner/ordering/index.shtml>

- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco Systems Corporate Headquarters (California, USA) at 408 526-7208 or, elsewhere in North America, by calling 800 553-NETS (6387).

## Documentation Feedback

You can submit e-mail comments about technical documentation to [bug-doc@cisco.com](mailto:bug-doc@cisco.com).

You can submit comments by using the response card (if present) behind the front cover of your document or by writing to the following address:

Cisco Systems  
Attn: Customer Document Ordering  
170 West Tasman Drive  
San Jose, CA 95134-9883

We appreciate your comments.

## Obtaining Technical Assistance

For all customers, partners, resellers, and distributors who hold valid Cisco service contracts, the Cisco Technical Assistance Center (TAC) provides 24-hour-a-day, award-winning technical support services, online and over the phone. Cisco.com features the Cisco TAC website as an online starting point for technical assistance. If you do not hold a valid Cisco service contract, please contact your reseller.

## Cisco TAC Website

The Cisco TAC website provides online documents and tools for troubleshooting and resolving technical issues with Cisco products and technologies. The Cisco TAC website is available 24 hours a day, 365 days a year. The Cisco TAC website is located at this URL:

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

Accessing all the tools on the Cisco TAC website requires a Cisco.com user ID and password. If you have a valid service contract but do not have a login ID or password, register at this URL:

<http://tools.cisco.com/RPF/register/register.do>

## Opening a TAC Case

Using the online TAC Case Open Tool is the fastest way to open P3 and P4 cases. (P3 and P4 cases are those in which your network is minimally impaired or for which you require product information.) After you describe your situation, the TAC Case Open Tool automatically recommends resources for an immediate solution. If your issue is not resolved using the recommended resources, your case will be assigned to a Cisco TAC engineer. The online TAC Case Open Tool is located at this URL:

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

For P1 or P2 cases (P1 and P2 cases are those in which your production network is down or severely degraded) or if you do not have Internet access, contact Cisco TAC by telephone. Cisco TAC engineers are assigned immediately to P1 and P2 cases to help keep your business operations running smoothly.

To open a case by telephone, use one of the following numbers:

Asia-Pacific: +61 2 8446 7411 (Australia: 1 800 805 227)

EMEA: +32 2 704 55 55

USA: 1 800 553-2447

For a complete listing of Cisco TAC contacts, go to this URL:

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

## TAC Case Priority Definitions

To ensure that all cases are reported in a standard format, Cisco has established case priority definitions.

Priority 1 (P1)—Your network is “down” or there is a critical impact to your business operations. You and Cisco will commit all necessary resources around the clock to resolve the situation.

Priority 2 (P2)—Operation of an existing network is severely degraded, or significant aspects of your business operation are negatively affected by inadequate performance of Cisco products. You and Cisco will commit full-time resources during normal business hours to resolve the situation.

Priority 3 (P3)—Operational performance of your network is impaired, but most business operations remain functional. You and Cisco will commit resources during normal business hours to restore service to satisfactory levels.

Priority 4 (P4)—You require information or assistance with Cisco product capabilities, installation, or configuration. There is little or no effect on your business operations.

## Obtaining Additional Publications and Information

Information about Cisco products, technologies, and network solutions is available from various online and printed sources.

- Cisco Marketplace provides a variety of Cisco books, reference guides, and logo merchandise. Go to this URL to visit the company store:

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

- The *Cisco Product Catalog* describes the networking products offered by Cisco Systems, as well as ordering and customer support services. Access the Cisco Product Catalog at this URL:

<http://cisco.com/univercd/cc/td/doc/pcat/>

- *Cisco Press* publishes a wide range of general networking, training and certification titles. Both new and experienced users will benefit from these publications. For current Cisco Press titles and other information, go to Cisco Press online at this URL:

<http://www.ciscopress.com>

- *Packet* magazine is the Cisco quarterly publication that provides the latest networking trends, technology breakthroughs, and Cisco products and solutions to help industry professionals get the most from their networking investment. Included are networking deployment and troubleshooting tips, configuration examples, customer case studies, tutorials and training, certification information, and links to numerous in-depth online resources. You can access Packet magazine at this URL:

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

- *iQ Magazine* is the Cisco bimonthly publication that delivers the latest information about Internet business strategies for executives. You can access iQ Magazine at this URL:

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

- *Internet Protocol Journal* is a quarterly journal published by Cisco Systems for engineering professionals involved in designing, developing, and operating public and private internets and intranets. You can access the Internet Protocol Journal at this URL:

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

- Training—Cisco offers world-class networking training. Current offerings in network training are listed at this URL:

<http://www.cisco.com/en/US/learning/index.html>

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

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