



Release Notes for Cisco 3600 Series for Cisco IOS Release 12.1 XM

June 13, 2002

Cisco IOS Release 12.1(5) XM7

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These release notes for the Cisco 3600 series support Cisco IOS Release 12.1(5) XM7. These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode or modem code and related documents.

For a list of the software caveats that apply to Release 12.1(5) XM7, see the [“Caveats for Cisco IOS Release 12.1 XM” section on page 18](#) and *Caveats for Cisco IOS Release 12.1T* that accompanies these release notes. This caveats document is updated for every maintenance release and is also located on Cisco.com and the Documentation CD-ROM.

Use these release notes with *Cross-Platform Release Notes for Cisco IOS Release 12.1* located on Cisco.com and the Documentation CD-ROM.

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Corporate Headquarters:
Cisco Systems, Inc., 170 West Tasman Drive, San Jose, CA 95134-1706 USA

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Introduction

The Cisco 3600 series includes the Cisco 3620, Cisco 3640, and Cisco 3660 routers. As modular solutions, the Cisco 3600 series routers enable corporations to increase dial-up density and take advantage of current and emerging WAN technologies and networking capabilities. The Cisco 3600 series routers are fully supported by Cisco IOS software, which includes dial-up connectivity, LAN-to-LAN routing, data and access security, WAN optimization, and multimedia features.

For information on new features and Cisco IOS commands supported by Cisco IOS Release 12.1(5) XM7, see the [“New and Changed Information”](#) section on page 11 and the [“Related Documentation”](#) section on page 25.

System Requirements

This section describes the system requirements for Release 12.1(5)XM4:

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Memory Recommendations

Cisco IOS Release 12.1(5) XM7 supports Cisco 3660 routers only.

Table 1 Memory Recommendations for the Cisco 3660 Router

Image Name	Software Image	Flash Memory Recommended	SDRAM Memory Recommended	Runs From
IP	c3660-i-mz	8 MB	32 MB	RAM
IP Plus	c3660-is-mz	16 MB	64 MB	RAM
IP Plus/IPSec 56	c3660-is56i-mz	32 MB	64 MB	RAM
IP/FW/IDS	c3660-io3-mz	8 MB	64 MB	RAM
IP/FW/IDS Plus IPSec 56	c3660-io3s56i-mz	32 MB	64 MB	RAM
IP/H.323 Gtkpr Prxy	c3660-ix-mz	8 MB	64 MB	RAM
IP Plus/IPSec 3DES	c3660-ik2s-mz	32 MB	64 MB	RAM
IP/FW/IDS Plus IPSec 3DES	c3660-ik2o3s-mz	32 MB	64 MB	RAM
IP/IPX/AT/DEC	c3660-d-mz	8 MB	64 MB	RAM
IP/IPX/AT/DEC Plus	c3660-ds-mz	16 MB	64 MB	RAM
IP/IPX/AT/DEC FW IDS Plus	c3660-do3s-mz	16 MB	64 MB	RAM
Enterprise/SNASw Plus	c3660-a3js-mz	32 MB	96 MB	RAM
Enterprise/SNASw Plus/IPSec 56	c3660-a3js56i-mz	32 MB	96 MB	RAM

Table 1 Memory Recommendations for the Cisco 3660 Router

Image Name	Software Image	Flash Memory Recommended	SDRAM Memory Recommended	Runs From
Enterprise/SNASw Plus IPSec 3DES	c3660-a3jk2s-mz	32 MB	96 MB	RAM
Enterprise Plus	c3660-js-mz	32 MB	96 MB	RAM
Enterprise Plus IPSec 56	c3660-js56i-mz	32 MB	96 MB	RAM
Enterprise Plus/IPSec 3DES	c3660-jk2s-mz	32 MB	96 MB	RAM
Enterprise/FW/IDS Plus IPSec 56	c3660-jo3s56i-mz	32 MB	96 MB	RAM
Enterprise/FW/IDS Plus IPSec 3DES	c3660-jk2o3s-mz	32 MB	96 MB	RAM
Enterprise Plus/H323 MCM	c3660-jsx-mz	32 MB	96 MB	RAM
Telco ¹	c3660-telco-mz	16 MB	64 MB	RAM
Telco Plus ¹	c3660-telcoent-mz	32 MB	96 MB	RAM
Telco Plus IPSec 3DES ¹	c3660-telcoentk2-mz	32 MB	96 MB	RAM

1. The Telco images only run on the 3660-AC-CO and 3660-DC-CO.

Hardware Supported

Cisco IOS Release 12.1(5) XM7 supports the following Cisco 3600 series routers:

- Cisco 3660 (3661 and 3662)



Note

For important information about the ATM OC-3 network modules and compatibility with the Cisco 3620 router, please review the field notice on Cisco.com, at <http://www.cisco.com/warp/customer/770/51.shtml>

[Table 2](#) lists the supported interfaces for the Cisco 3600 series routers for Cisco IOS Release 12.1(5) XM7.

Table 2 Supported Interfaces for the Cisco 3600 Series

Interface, Network Module, or Data Rate	Platforms Supported
Dial Access Network Modules	16- and 32-port asynchronous (NM-16A and NM-32A)
	6- to 30-port integrated digital modems network modules (NM-6DM, NM-12-DM, NM-18DM, NM-24DM, NM-30DM)
	6 digital modem upgrade (MICA-6MOD)
	8- or 16-port integrated analog network modules (NM-8AM and NM-16AM)
	4- and 8-port BRI network module with NT1 (NM-4B-U and NM-8B-U)
	4- and 8-port BRI network module with S/T interface (NM-4B-S/T and NM-8B-S/T)
	4- and 8-port synchronous/asynchronous (NM-4A/S and NM-8A/S)
LAN Interface Network Modules	1- and 4-port Ethernet (AUI and 10BaseT, NM-1E and NM-4E)
	1-port Fast Ethernet (100BaseTX and 100BaseFX, NM-1FE-TX and NM-1FE-FX)
Mixed Media Network Modules	1-port 10/100BaseTX with 1-port channelized/PRI /E1 balanced mode (NM-1FE1CE1B)
	1-port 10/100BaseTX with 1-port channelized/PRI/E1 unbalanced mode (NM-1FE1CE1U)
	1-port 10/100BaseTX with 1-port channelized/PRI/T1 (NM-1FE1CT1)
	1-port 10/100BaseTX with 1-port channelized/PRI /T1 with CSU (NM-1FE1CT1-CSU)
	1-port 10/100BaseTX with 2-port channelized/PRI/ E1 balanced mode (NM-1FE2CE1B)
	1-port 10/100BaseTX with 2-port channelized/PRI /E1 unbalanced mode (NM-1FE2CE1U)
	1-port 10/100BaseTX with 2-port channelized/PRI /T1 (NM-1FE2CT1)
	1-port 10/100BaseTX with 2-port channelized/PRI/ T1 with CSU (NM-1FE2CT1-CSU)
	1 Ethernet and 2 WAN card slots (NM-1E2W)
	1 Ethernet, 1 Token Ring, and 2 WAN card slots (NM-1E1R2W)
	2 Ethernet and 2 WAN card slots (NM-2E2W)
	1-port fast Ethernet, 1-port Token Ring with 2 WAN card slots (NM-1FE1R2W[=])
	1-port fast Ethernet with 2 WAN card slots (NM-1FE2W[=])

Table 2 Supported Interfaces for the Cisco 3600 Series (continued)

Interface, Network Module, or Data Rate	Platforms Supported
Mixed Media Network Modules (continued)	All Cisco 3600 series platforms
2-port fast Ethernet with 2 WAN card slots (NM-2FE2W[=])	
2 WAN card slots (NM-2W[=])	All Cisco 3600 series platforms
Digital T1/E1 Packet Voice Trunk Network Modules and Spare Components	All Cisco 3600 series platforms
1-port, 24-channel T1 voice/fax module, supports 24 channels of medium-complexity codecs: G.729a/b, G.726, G.711 and fax or 12 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, two PVDM-12s, and one VWIC-1MFT-T1 ¹ . Part number: NM-HDV-1T1-24	
1-port, enhanced 24-channel T1 voice/fax module, supports 24 channels of high- and medium-complexity codecs: G.729a/b, G.726, G.729, G.728, G.723.1, G.711, and fax. Consists of one NM-HDV, four PVDM-12s, and one VWIC-1MFT-T1 ² . Part number: NM-HDV-1T1-24E	All Cisco 3600 series platforms
2-port, 48-channel T1 voice/fax module, supports add/drop multiplexing (drop and insert); 48 channels of medium-complexity codecs: G.729a/b, G.726, G.711, and fax; or 24 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, four PVDM-12, and one VWIC-2MFT-T1-D1 ² . Part number: NM-HDV-2T1-48	All Cisco 3600 series platforms
1-port, 30-channel E1 voice/fax module, supports 30 channels of G.729a/b, G.726, G.711 and fax or 18 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, three PVDM-12s, and one VWIC-1MFT-E1 ¹ . (NM-HDV-1E1-30[=])	All Cisco 3600 series platforms
1-port, enhanced 30-channel E1 voice/fax module, supports 30 channels of G.729a/b, G.726, G.729, G.728, G.723.1, G.711, and fax. Consists of one NM-HDV, five PVDM-12s, and one VWIC-1MFT-E1 ¹ . (NM-HDV-1E1-30E[=])	All Cisco 3600 series platforms
2-port, 60-channel E1 voice/fax module, supports add/drop multiplexing (drop and insert); 60 channels of G.729a/b, G.726, G.711, and fax or 30 channels of G.726, G.729, G.723.1, G.728, G.729a/b, G.711, and fax. Consists of one NM-HDV, five PVDM-12s, and one VWIC-2MFT-E1-D1 ¹ . (NM-HDV-2E1-60[=])	All Cisco 3600 series platforms
High-density voice/fax network module spare (NM-HDV)	Digital T1 Packet Voice Trunk Network Modules spare component
12-channel packet voice DSP module upgrade spare (PVDM-12=)	Digital T1 Packet Voice Trunk Network Modules spare component

Table 2 Supported Interfaces for the Cisco 3600 Series (continued)

Interface, Network Module, or Data Rate	Platforms Supported	
Digital T1/E1 Packet Voice Trunk Network Modules and Spare Components (continued)	1-port RJ-48 multiflex trunk—T1 (VWIC-1MFT-T1) ²	Digital T1 Packet Voice Trunk Network Modules spare component
	2-port RJ-48 multiflex trunk—T1 (VWIC-2MFT-T1) ²	Digital T1 Packet Voice Trunk Network Modules spare component
	2-port RJ-48 multiflex trunk with drop and insert—T1 (VWIC-2MFT-T1-DI(=)) ²	Digital T1 Packet Voice Trunk Network Modules spare component
T1/E1 Multiflex Voice/WAN Interface Cards	1-port T1 multiflex trunk interface (VWIC-1MFT-T1)	All Cisco 3600 series platforms
	1-port E1 multiflex trunk interface (VWIC-1MFT-E1)	All Cisco 3600 series platforms
	2-port T1 multiflex trunk interface (VWIC-2MFT-T1)	All Cisco 3600 series platforms
	2-port T1 multiflex trunk interface with drop and insert (VWIC-2MFT-T1-DI) ²	All Cisco 3600 series platforms
	2-port E1 multiflex trunk interface with drop and insert (VWIC-2MFT-E1-DI)	All Cisco 3600 series platforms
Voice/Fax Interfaces and Network Modules¹	1- and 2-port voice/fax network module (NM-1V and NM-2V)	All Cisco 3600 series platforms
	2-port E&M voice interface card (VIC-2E/M)	All Cisco 3600 series platforms with Voice/Fax network module
	2-port FXO voice interface card (VIC-2FXO, VIC-2FXO-M3, and VIC-2FXO-EU)	All Cisco 3600 series platforms with Voice/Fax network module
	2-port FXS voice interface card	All Cisco 3600 series platforms with Voice/Fax network module
	2-port BRI voice interface card (VIC-2BRI-S/T-TE)	Cisco 3620 and 3640 platforms with Voice/Fax network module
	2-Port analog DID Voice Interface (VIC2-DID)	All Cisco 3600 series platforms
WAN Data Rates	48/56/64 kbps	All Cisco 3600 series platforms
	1.544/2.048 Mbps	All Cisco 3600 series platforms
	Up to 8 Mbps on 4-port serial network module	All Cisco 3600 series platforms
	52 Mbps max using HSSI network module	All Cisco 3600 series platforms
	Up to 100 Mbps on ATM OC3 network modules	All Cisco 3600 series platforms
Channelized WAN Network Modules	1- and 2-port channelized T1 modules without CSUs (NM-1CT1 and NM-1CT1)	All Cisco 3600 series platforms
	1- and 2-port channelized T1 network modules with CSUs (NM-1CT1-CSU and NM-2CT1-CSU)	All Cisco 3600 series platforms
	1- and 2-port E1 network modules unbalanced mode (NM-1CE1U and NM-2CE1U)	All Cisco 3600 series platforms
	1- and 2-port E1 network modules balanced mode (NM-1CE1B and NM-2CE1B)	All Cisco 3600 series platforms

Table 2 Supported Interfaces for the Cisco 3600 Series (continued)

Interface, Network Module, or Data Rate	Platforms Supported	
ATM Network Modules	1-port ATM-25 network module (NM-1ATM-25) ¹	All Cisco 3600 series platforms
	1-port ATM T3 network module (NM-1A-T3) ³	All Cisco 3600 series platforms
ATM Network Modules (continued)	4-port T1 ATM network module with IMA (NM-4T1-IMA)	All Cisco 3600 series platforms
	4-port E1 ATM network module with IMA (NM-4E1-IMA)	All Cisco 3600 series platforms
	8-port T1 ATM network module with IMA (NM-8T1-IMA)	All Cisco 3600 series platforms
	8-port E1 ATM network module with IMA (NM-8E1-IMA)	All Cisco 3600 series platforms
	1-port ATM E3 network module (NM-1A-E3) ⁴	All Cisco 3600 series platforms
	1-port ATM OC-3 network module with multimode fiber (NM-1A-OC3MM)	All Cisco 3600 series platforms
	1-port ATM OC-3 network module with single-mode intermediate reach fiber (NM-1A-OC3SMI)	All Cisco 3600 series platforms
	1-port ATM OC-3 network module with single-mode long reach fiber (NM-1A-OC3SML)	All Cisco 3600 series platforms
	1-port ATM OC-3 multimode network module and circuit emulation service (NM-1A-OC3MM-1V) ⁵	All Cisco 3600 series platforms
	1-port ATM OC-3 single-mode, intermediate reach network module and circuit emulation service (NM-1A-OC3SMI-1V) ⁵	All Cisco 3600 series platforms
	1-port ATM OC-3 single-mode, long reach network module and circuit emulation service (NM-1A-OC3SML-1V) ⁵	All Cisco 3600 series platforms
Serial Network Modules	1-port high-speed serial interface (HSSI) network module	All Cisco 3600 series platforms
	4-port serial (NM-4T)	All Cisco 3600 series platforms
	4- or 8-port asynchronous/synchronous serial low speed (128 kbps max)	
Other Network Modules	Data compression network module (NM-COMPR)	Cisco 3620 and 3640 series platforms
	Data encryption network modules (NM-VPN-MP)	Cisco 3620 and 3640 series platforms
	Multiservice Interchange (MIX) 3660 module (MIX-3660-64)	Cisco 3660 series platforms
	Wireless network module (NM-WMDA)	All Cisco 3600 series platforms
Advanced Integration Modules (AIM)	4 E1 Data compression AIM (AIM-COMPR4)	Cisco 3660 series platforms
	Data Encryption AIM (AIM-VPM-HP)	Cisco 3660 series platforms

Table 2 Supported Interfaces for the Cisco 3600 Series (continued)

Interface, Network Module, or Data Rate		Platforms Supported
WAN Interface Cards	1-port T1/Fractional T1/DSU/CSU WAN interface card (WIC-1DSU-T1)	All Cisco 3600 series platforms
	1-port T1/Fractional T1 56/64 kbps DSU/CSU WAN interface card (WIC-1DSU-56K4)	All Cisco 3600 series platforms
	1-port ISDN with NT1 WAN interface card (WIC-1B-U)	All Cisco 3600 series platforms
	1-port ISDN WAN interface card (WIC-1B-S/T)	All Cisco 3600 series platforms
	1-port serial WAN interface card (WIC-1T)	All Cisco 3600 series platforms
	2-port serial (WIC-2T[=]) ⁶	All Cisco 3600 series platforms
	2-port asynchronous/synchronous (WIC-2A/S[=])	All Cisco 3600 series platforms

1. See T1/E1 Multiflex Voice/WAN Interface Cards in this table.
2. For Cisco 3660 series, only supported in T1/E1 digital packet voice trunk network modules and new Fast Ethernet mixed media network modules: NM-1FE2W, NM-2FE2W, NM-1FE1R2W, NM-2W. For Cisco 3620 and 3640, supported in T1/E1 digital packet voice trunk network modules or in 1- or 2-port Ethernet and Fast Ethernet network module (NM-1E2W, NM-2E2W, NM-1E1R2W, NM-1FE2W, NM-2FE2W, NM-1FE1R2W, NM-2W)
3. Requires the Cisco IOS Plus feature sets.
4. Requires the Cisco IOS Plus feature sets.
5. For the Cisco 3660 series only, online insertion and removal (OIR) is now supported in Cisco IOS Release 12.1(5)T.
6. Supported in Fast Ethernet mixed media network modules: NM-1FE2W, NM-2FE2W, NM-1FE1R2W, NM-2W.

Determining the Software Version

To determine the version of Cisco IOS software running on a Cisco 3600 series router, log in to the router and enter the **show version EXEC** command:

```
router>show version
Cisco Internetwork Operating System Software
IOS (tm) 3660 Software (c3660-js-mz), Version 12.1(5) XM7, RELEASE SOFTWARE
```

Upgrading to a New Software Release

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

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

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 12.1(5) XM7 supports the same feature sets as Cisco IOS Release 12.1(5) T, but Cisco IOS Release 12.1(5) XM7 can include new features supported by the Cisco 3600.

**Caution**

Cisco IOS images with strong encryption (including, but not limited to, 168-bit Triple Data Encryption Standard [3DES] data encryption feature sets) are subject to United States government export controls and have limited distribution. Strong encryption images to be installed outside the United States are likely to require an export license. Customer orders may be denied or subject to delay because of United States government regulations. When applicable, purchaser and user must obtain local import and use authorizations for all encryption strengths. Please contact your sales representative or distributor for more information, or send an e-mail to export@cisco.com.

Table 3, Table 4 and Table 5 list the features and feature sets supported by the Cisco 3660 in Cisco IOS Release 12.1(5) XM7 and use the following conventions:

- Yes—The feature is supported in the software image.
- No—The feature is not supported in the software image.
- In—The number in the “In” column indicates the Cisco IOS release in which the feature was introduced. For example, (5) XM2 means a feature was introduced in 12.1(5) XM2. If a cell in this column is empty, the feature was included in the initial base release.

**Note**

You can find the most current Cisco IOS documentation on Cisco.com. If you have a Cisco.com login account, you can find image and release information regarding features prior to Cisco IOS Release 12.1(5) T by using the Feature Navigator tool at <http://www.cisco.com/go/fn>.

Table 3 Feature Lists by Feature Sets for the Cisco 3661 and 3662 Routers, Part 1 of 3

Features	In	Software Images by Feature Set								
		IP/ FW/ IDS	IP/ FW/ IDS Plus IPSec 56	IP/ H.323	IP Plus	IP Plus IPSec 56	IP/FW/ IDS Plus IPSec 3DES	IP Plus IPSec 3DES	IP/ IPX/ AT/ DEC	IP/ IPX/ AT/ DEC/ FW/ IDS Plus
Analog DID for Cisco 2600 and Cisco 3600 Series Routers	(5) XM	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
High Performance Gatekeeper	(5) XM	No	No	Yes	No	No	No	No	No	No
MGCP CAS PBX and AAL2 PVC ¹	(5) XM	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
MGCP Basic CLASS and Operator Services	(5) XM	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
Multiservice Interchange (MIX) Functionality on 3600 Series Multiservice Platforms	(5) XM	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes
SIP Diversion Header Implementation for Redirecting Number	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
SIP Gateway Support for Third Party Call Control	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No

Table 3 Feature Lists by Feature Sets for the Cisco 3661 and 3662 Routers, Part 1 of 3 (continued)

Features	Software Images by Feature Set									
	In	IP/ FW/ IDS	IP/ FW/ IDS Plus IPSec 56	IP/ H.323	IP Plus	IP Plus IPSec 56	IP/FW/ IDS Plus IPSec 3DES	IP Plus IPSec 3DES	IP/ IPX/ AT/ DEC	IP/ IPX/ AT/ DEC/ FW/ IDS Plus
SIP User Agent MIB	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No
WT-2750 Multipoint Broadband Wireless System	(5) XM	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes

1. AAL2 PVC is not implemented in this release.

Table 4 Feature Lists by Feature Sets for the Cisco 3661 and 3662 Routers, Part 2 of 2

Features	Software Images by Feature Set						
	In	IP/ IPX/AT/ DEC Plus	Enterprise Plus	Enterprise/ FW/IDS Plus IPSec 56	Enterprise/ FW/ IDS Plus IPSec 3DES	Enterprise Plus IPSec 56	Enter prise Plus IPSec 3DES
Analog DID for Cisco 2600 and Cisco 3600 Series Routers	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes
High Performance Gatekeeper	(5) XM	No	Yes	No	No	No	No
MGCP CAS PBX and AAL2 PVC ¹	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes
MGCP Basic CLASS and Operator Services	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes
Multiservice Interchange (MIX) Functionality on 3600 Series Multiservice Platforms	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes
SIP Diversion Header Implementation for Redirecting Number	(5) XM	No	Yes	Yes	Yes	Yes	Yes
SIP Gateway Support for Third Party Call Control	(5) XM	No	Yes	Yes	Yes	Yes	Yes
SIP User Agent MIB	(5) XM	No	Yes	Yes	Yes	Yes	Yes
WT-2750 Multipoint Broadband Wireless System	(5) XM	Yes	Yes	Yes	Yes	Yes	Yes

1. AAL2 PVC is not implemented in this release.

Table 5 Feature Lists by Feature Sets for the Cisco 3661 and 3662 Routers, Part 3 of 3

Features	Software Images by Feature Set							
	In	Enterprise/ SNASw Plus	Enterprise/ SNASw Plus	Enterprise/ SNASw Plus IPSec 3DES	Enterprise/ SNASw Plus IPSec 56	Telco	Telco Plus	Telco Plus IPSec 3DES
Analog DID for Cisco 2600 and Cisco 3600 Series Routers	(5) XM	Yes	Yes	Yes	Yes	No	Yes	Yes
High Performance Gatekeeper	(5) XM	No	No	No	No	No	No	No
MGCP CAS PBX and AAL2 PVC ¹	(5) XM	Yes	Yes	Yes	Yes	No	Yes	Yes
MGCP Basic CLASS and Operator Services	(5) XM	Yes	Yes	Yes	Yes	No	Yes	Yes
Multiservice Interchange (MIX) Functionality on 3600 Series Multiservice Platforms	(5) XM	Yes	Yes	Yes	Yes	No	Yes	Yes
SIP Diversion Header Implementation for Redirecting Number	(5) XM	Yes	Yes	Yes	Yes	No	No	No
SIP Gateway Support for Third Party Call Control	(5) XM	Yes	Yes	Yes	Yes	No	No	No
SIP User Agent MIB	(5) XM	Yes	Yes	Yes	Yes	No	No	No
WT-2750 Multipoint Broadband Wireless System	(5) XM	Yes	Yes	Yes	Yes	No	Yes	Yes

1. AAL2 PVC is not implemented in this release.

New and Changed Information

The following is a list of the new hardware and software features supported by the Cisco 3600 series for Release 12.1(5) XM7.

New Hardware and Software Features in Cisco IOS Release 12.1(5)XM7

There are no new hardware and software features in the Cisco 3600 series for Cisco IOS Release 12.1(5) XM7.

New Hardware and Software Features in Cisco IOS Release 12.1(5)XM6

Cisco IOS Release 12.1(5) XM6 does not support the Cisco 3600 series .

New Hardware and Software Features in Cisco IOS Release 12.1(5) XM5

There are no new hardware and software features in the Cisco 3600 series for Cisco IOS Release 12.1(5) XM5.

New Hardware and Software Features in Cisco IOS Release 12.1(5) XM4

There are no new hardware and software features in the Cisco 3600 series for Cisco IOS Release 12.1(5) XM4.

New Hardware and Software Features in Cisco IOS Release 12.1(5) XM3

There are no new hardware and software features in the Cisco 3600 series for Cisco IOS Release 12.1(5) XM3.

New Hardware and Software Features in Cisco IOS Release 12.1(5) XM2

There are no new hardware and software features in the Cisco 3600 series for Cisco IOS Release 12.1(5) XM2.

New Hardware and Software Features in Cisco IOS Release 12.1(5) XM1

There are no new hardware and software features in the Cisco 3600 series for Cisco IOS Release 12.1(5) XM1.

New Hardware Features in Cisco IOS Release 12.1(5) XM

The following new hardware is supported by the Cisco 3600 series for Cisco IOS Release 12.1(5) XM.

2-Port Analog DID Voice Interface (VIC2-DID)

This Direct Inward Dial (DID) voice interface enables a Cisco 3600 series router to provide DID service to extensions on a PBX.

Wireless Network Module

The NM-WMDA wireless network module installs in the network module slot of a Cisco 2600 series router. Installing a wireless network module enables the Cisco 2600 series router to act as a subscriber unit (SU) in a point-to-multipoint wireless network. It is configured through the router's system console or via the CiscoView network management system. The network module provides the control and data interface between the Cisco 3600 series digital motherboard and the radio frequency (RF) subsystem in the wireless transverter. It also provides the up/down conversion from baseband to intermediate frequency (IF). One network module supports one or two wireless transverters (main and diversity).

Microcode software images ship in Flash memory along with the system software image. When the router starts, the system software unpacks the microcode software bundle and loads the proper software on all the interface linecards.

It is possible to use a later version of microcode software than the one shipped with the Cisco IOS software from the factory. The microcode software in Flash memory is mapped to the linecards. Unless you fully understand how Cisco IOS software uses microcode software, it is important to keep the factory configuration.

The multipoint wireless modem card requires external microcode software. Information about this microcode software is available (with a Cisco.com login) at:

<http://www.cisco.com/cgi-bin/tablebuild.pl/rsu>.

For further information regarding the network module, refer to the *Cisco Network Modules Hardware Installation Guide* (for Cisco 3600 series routers) for detailed installation instructions, and the *Software Configuration Guide* (for Cisco 3600 series routers) for an overview of network module configuration procedures and information on configuring specific network modules.

MIX 3660 Module

The Multiservice Interchange (MIX) 3660 module (MIX-3660-64) is used on the Cisco 3660 series to enable the Multiservice Interchange (MIX), which supports switching of DS0 time slots via MIX interconnects across the backplane to each network module slot. This enables the Cisco 3660 series to switch DS0 voice channels on a T1/E1 interface on one network module to and from a separate voice-processing network module.

New Software Features in Cisco IOS Release 12.1(5) XM

The following new software features are supported by the Cisco 3600 series for Cisco IOS Release 12.1(5) XM.

Analog DID for Cisco 2600 and Cisco 3600 Series Routers

Direct Inward Dialing (DID) is a service offered by telephone companies that enables callers to dial directly to an extension on a Private Branch Exchange (PBX) without the assistance of an operator or automated call attendant. This service makes use of DID trunks, which forward only the last three to five digits of a phone number to the PBX. If, for example, a company has a PBX with extensions 555-1000 to 555-1999, and a caller dials 555-1234, the local CO would forward 234 to the PBX. The PBX would then ring extension 234. This entire process is transparent to the caller.

When this feature is configured, a voice-enabled Cisco 2600 and Cisco 3600 series router can receive calls from a DID trunk and connect them to the appropriate extensions.

High Performance Gatekeeper

The High Performance Gatekeeper provides the network administrator the ability to identify H.323 traffic and apply appropriate policies.

The High Performance Gatekeeper is implemented on Cisco IOS software and enables a network manager to:

- Limit the H.323 traffic on the LAN and WAN.
- Provide user accounting for records based on the service utilization.

- Inject QoS for the H.323 traffic generated by applications such as VoIP, data conferencing, and video conferencing.
- Provides the mechanism to implement security for H.323 communications.

MGCP CAS PBX and AAL2 PVC

The MGCP CAS PBX and AAL2 PVC feature set extends the earlier Simple Gateway Control Protocol (SGCP) CAS and AAL2 support onto the merged SGCP/MGCP software base. These features enable various service provider solutions, including Integrated Access, IP PBX, Residential Cable Access, and Voice over DSL. The added AAL2 PVC features are not implemented in this release.

Multiservice Interchange (MIX) Functionality on the 3600 Series Multiservice Platforms

Multiservice Interchange (MIX) Functionality adds TDM connection capabilities to Cisco 3600 series multiservice platforms. On the Cisco 3660, MIX requires the installation of a multiservice interchange card, also called a "MIX module" (MIX-3660-64). On the Cisco 3620 and Cisco 3640, MIX features are software only. MIX features support applications that are sensitive to time delay, such as voice and video. MIX enables the combination of different types of traffic on a single T1 or E1 connection, giving customers the flexibility to manage traffic through their routers efficiently, as either traditional TDM connections or in packet-based format.

On all Cisco 3600 series multiservice platforms, MIX allows connection of TDM streams between separate voice/WAN interface cards (VWICs) on the same fast Ethernet network module (NM-xFE2W).

On the Cisco 3660, the MIX module also enables the following features:

- connection of TDM streams between separate MIX-enabled network modules. The following network modules are currently MIX-enabled: high-density voice (NM-HDV), fast Ethernet mixed media cards (NM-xFE2W), and ATM OC-3 CES (NM-1AOC3-XX-1V)
- DSP resource sharing across high-density voice network modules (NM-HDV), so that unused DSP resources on one network module can be configured to support voice traffic on other network modules
- circuit emulation of T1/E1s on fast Ethernet mixed media cards (NM-xFE2W) and high density voice network modules (NM-HDV) can now be supported by transporting them across MIX to ATM OC-3 network modules (NM-1AOC3-XX-1V)

In addition, extended availability drop and insert (EADI) capabilities have been enhanced to allow MIX connections across slots to stay up through a router reload if they have been saved in the NVRAM.

MGCP Basic CLASS and Operator Services

The MGCP Basic CLASS and Operator Services are a set of calling features, sometimes called "custom calling" features, that use MGCP to transmit voice, video, and data over the IP network. These features are usually found in circuit-based networks. MGCP BCOS brings them to the Cisco IOS gateways on packet-based networks.

The MGCP BCOS software is built on the MGCP CAS PBX and AAL2 software package, and supports MGCP 0.1 and the earlier protocol versions Simple Gateway Control Protocol (SGCP) 1.1 and 1.5.

The following MGCP BCOS features are available on Residential Gateways (RGWs):

- Distinctive Power Ring
- Visual Message Waiting Indicator

- Caller ID
- Caller ID with Call Waiting
- Call Forwarding
- Ring Splash
- Distinctive Call Waiting Tone
- Message Waiting Tone
- Stutter Dial Tone
- Off-Hook Warning Tone

The following two features can be run as RGW or trunking gateway (TGW) features:

- 911 Calls - This feature is supported in SGCP mode on Cisco uBR924, 3660, and AS5300 platforms and in MGCP mode on the 2600, 3600, MC3810, 530 and uBR924 platforms.
- Three-Way Calling -This feature is supported on the Cisco 3660 and AS5300 TGW platforms and on the Cisco MC3810, 2600, and uBR924 RGW platforms. This feature is supported on G.711 only.

SIP Diversion Header Implementation for Redirecting Number

The SIP Diversion Header Implementation for Redirecting Number feature provides support for a new Session Initiation Protocol (SIP) header field; Call Control (CC)-Diversion. The CC-Diversion header field enables the SIP gateway to pass call control redirecting information during the call setup. Call control redirection is the redirection of a call based on a subscriber service such as call forwarding, and is typically used for Unified Messaging and voice mail services to identify the recipient of a message. SIP gateway support has also been enhanced to process a SIP 3xx Redirection response after the receipt of a SIP 18x Information response. More information about this feature is available at:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121rel/sipcfs/hennigan.htm>

More information about the Session Initiation Protocol Gateway Call Flows is available at:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121rel/sipcfs/>

SIP Gateway Support for Third Party Call Control

The SIP Gateway Support for Third-Party Call Control feature enables one endpoint (for example, a call controller) to create, modify, or terminate calls between other endpoints via delayed media negotiation. A delayed media negotiation is one where the Session Description Protocol (SDP) information is not completely advertised in the initial call setup. Third-party call control is often used for operator services (creating a call connecting two parties together) and conferencing. SIP gateway support has also been enhanced to allow SIP gateways to route using a Fully Qualified Domain Name (FQDN) in addition to using an IP address. More information about this feature is available at:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121rel/sipcfs/caribou.htm>

More information about the Session Initiation Protocol Gateway Call Flows is available at:

<http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121rel/sipcfs/>

SIP User Agent MIB

The SIP User Agent MIB adds the ability to manage a Session Initiation Protocol (SIP) network via an SNMP-based network management platform.

WT-2750 Multipoint Broadband Wireless System

The Cisco broadband fixed wireless point-to-multipoint system is an integrated solution consisting of one headend and multiple subscriber units. The fixed wireless point-to-multipoint subscriber unit is designed to receive radio frequency (RF) signals from the headend. It also transmits a return signal to the headend. This return signal is a point-to-point signal, so a properly installed subscriber antenna must be correctly oriented with the headend antenna to which it is transmitting. For more information about the fixed wireless point-to-multipoint headend feature, see *Point-to-Multipoint Support for the Cisco uBR7200 Series Universal Broadband Router*.

MIBs

Current MIBs

To obtain lists of supported MIBs by platform and Cisco IOS release, and to download MIB modules, go to the Cisco MIB website on Cisco.com at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

Deprecated MIBs

Old Cisco MIBs will be replaced in a future release. Currently, OLD-CISCO-* MIBs are being converted into more scalable MIBs without affecting existing Cisco IOS products or network management system (NMS) applications. You can update from deprecated MIBs to the replacement MIBs as shown in [Table 6](#).

Table 6 *Deprecated and Replacement MIBs*

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

Table 6 *Deprecated and Replacement MIBs (continued)*

Deprecated MIB	Replacement
OLD-CISCO-VINES-MIB	CISCO-VINES-MIB
OLD-CISCO-XNS-MIB	To be determined

Important Notes

Non-Software Caveats – UNII Configuration

- CSCds89481

A shift in frequency-locked loop (FLL) control voltage causes a 24-MHz reference signal drift on the wireless multipoint network module with diversity (NM-WMDA). As a result, a large-frequency offset occurs in unlicensed national information infrastructure (UNII) outdoor unit (ODU) receive (Rx) and transmit (Tx) oscillators, which are locked on to the 24 MHz reference coming from the NM-WMDA. That causes signal-to-noise ratio (SNR) degradations for both upstream and downstream signals.

The SNR degradation is insignificant in multichannel multipoint distribution service (MMDS) links. However, in UNII links the degradation can be significant, since the local oscillator (LO) multiplication ratio is much higher for UNII frequencies.

Workaround for UNII: The shift in the 24 MHz reference must be minimized by imposing a maximum 2 ms continuous burst size. This is achieved by not using the following slow upstream modulation profiles:

- 1.5 MHz modulation profiles
- 3 MHz, 4.4 Mbps modulation profiles

In addition to eliminating slow upstream modulation profiles, it is also necessary to set the maximum packet concatenation size to 1522 bytes for all supported modulation profiles. This is done by setting sub-TLV 6 (Maximum Upstream Channel Transmit Burst Configuration Setting), which is part of TLV 4 (Class of Service Configuration Setting), to 1522, which is the maximal number of bytes that can be concatenated. Note that the “Maximum Upstream Channel Transmit Burst Configuration Setting” has to be set for the customer-premise equipment (CPE) to be operational, so the above-mentioned modification is minimal.

Product Number Change

Beginning with Cisco IOS Release 12.0(7)XK, Cisco changed the product numbers you use to order a specific Cisco IOS software image. In short, Cisco will remove the periods separating the release train, maintenance release, and build number. The following table provides some examples.

Old Product Number	New Product Number	Release	Image Description
S364AR1K2-12.1.3=	S364AR1K2-1213=	Cisco IOS Release 12.1(3)	Cisco 3640 Series IOS Enterprise/SNA SW PLUS IPSEC 3DES
S26CP-12.1.3=	S26CP-12103=	Cisco IOS Release 12.1(3)	Cisco 2600 Series IOS IP Plus

Caveats for Cisco IOS Release 12.1 XM

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. Severity 3 caveats are moderate caveats, and only select severity 3 caveats are included in the caveats document.

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

All caveats in Cisco IOS Release 12.1 and Cisco IOS Release 12.1T are also in Cisco IOS Release 12.1(5) XM7.

For information on caveats in Cisco IOS Release 12.1T, see *Caveats for Cisco IOS Release 12.1T*.

For information on caveats in Cisco IOS Release 12.1, see *Caveats for Cisco IOS Release 12.1*, which lists severity 1 and 2 caveats and select severity 3 caveats for Cisco IOS Release 12.1 and is located on Cisco.com and the Documentation CD-ROM.

Caveat numbers and brief descriptions of caveats in Cisco IOS Release 12.1(5) XM7 are listed in [Table 7](#). For details about a particular caveat, go to Bug Toolkit at:

<http://www.cisco.com/kobayashi/bugs/bugs.html>

To access this location, you must have an account on Cisco.com. For information about how to obtain an account, go to the [“Feature Navigator” section on page 27](#).



Note

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

Open Caveats — Cisco IOS Release 12.1(5) XM7

There are no open caveats specific to Cisco IOS Release 12.1(5) XM7 that require documentation in the release notes.

Resolved Caveats — Cisco IOS Release 12.1(5) XM7

All the caveats listed in [Table 7](#) are open in Cisco IOS Release 12.1(5) XM7. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 7 Resolved Caveats for Release 12.1(5) XM7

Caveat ID Number	Description
CSCdw65903	An error can occur with management protocol processing. Please use the following URL for further information: http://www.cisco.com/cgi-bin/bugtool/onebug.pl?bugid=CSCdw65903

Open and Resolved Caveats for Release 12.1(5) XM6

Cisco IOS Release 12.1(5) XM6 does not support the Cisco 3600 series .

Open Caveats—Cisco IOS Release 12.1(5) XM5

There are no open caveats specific to Cisco IOS Release 12.1(5) XM5 that require documentation in the release notes.

Resolved Caveats—Cisco IOS Release 12.1(5) XM5

All the caveats listed in [Table 8](#) are resolved in Cisco IOS Release 12.1(5) XM5. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 8 Resolved Caveats for Release 12.1(5) XM5

Caveat ID Number	Description
CSCdt09214	Spurious memory access at vp_ipfib_fixup+0x20
CSCdu17077	ALIGN-3-CORRECT Alignment corrections w/ TCP or RTP header-compress
CSCdv09228	MGCP FAX failures-No Silence detection in Term GW

Open Caveats—Cisco IOS Release 12.1(5) XM4

All the caveats listed in [Table 9](#) are open in Cisco IOS Release 12.1(5) XM4. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 9 Open Caveats for Release 12.1(5) XM4

Caveat ID Number	Description
CSCdt61467	Need a way to change the default value of VPDN parameters

Resolved Caveats—Cisco IOS Release 12.1(5) XM4

All the caveats listed in [Table 10](#) are resolved in Cisco IOS Release 12.1(5) XM4. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 10 Resolved Caveats for Release 12.1(5) XM4

Caveat ID Number	Description
CSCds14059	Support for untagged Radius tunnel attributes (attr.69 et al)
CSCds55510	Memory Leak with AAA route download
CSCds63993	H323 GW: IP calls dangling when delay TCP connection occurs
CSCds65611	All B-chan out of serv after controller no-shut then serial no-shut
CSCds71291	Spurious Accesses in mlp_timer
CSCdt11503	IOS crashes when large OID (>256 fields) is received
CSCdt41888	Add dlcx functionality as hidden command
CSCdt46181	Redzone corruption in pptp_tcp_readf()
CSCdt49428	Router crashes with no mgcp, while endpt in transient state
CSCdt63518	FIB-4-PUNTINTF msg for L2F/MP bundle member w no ip route-cache cef
CSCdt69055	B-channels IN_SERVICE after RESTART when L1 is DEACTIVATED
CSCdt89495	24th channel of T1 0 stays busied-out
CSCdt96253	CRC-32 compensation vulnerability
CSCdt96945	Resource threshold information lost on GK after element failure
CSCdu04067	Gatekeeper bus error crash at gl_rassrv_urq
CSCdu05205	Memory corruption crash
CSCdu05236	Default disabling of parser cache should not be nvgened
CSCdu07504	sh voice dsp causes reload
CSCdu08214	Calltracker MIB returns NULL for userid when DNIS/ANI is not present
CSCdu14000	Traceback at rlm_link_weight_priority_insert_compare after reload
CSCdu25007	clear spe with calls running could have negative effects
CSCdu27780	AS5300 Suspend message not sent on H323 side with fax configured
CSCdu30692	2 functions (both incomplete) for freeing tokens
CSCdu31091	ISDN Bri not working...req circuit/channel not av
CSCdu34741	Term GW doesnt disconnect call which arrives after RLM is down
CSCdu36732	Hung MGCP connection with 911 calls
CSCdu42219	Throttle 21 fails to bring up B channels after reboot w/SS7
CSCdu55005	3600 crashes @rs8234_ima_link_install after no shut in IMA phy intf; fixed by CSCdt25387(Committed to XM4)
CSCdu62721	12.1(5)XM4 candidate fails to bring up B-channels

Open Caveats—Cisco IOS Release 12.1(5) XM3

All the caveats listed in [Table 11](#) are open in Cisco IOS Release 12.1(5) XM3. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 11 Open Caveats for Release 12.1(5) XM3

Caveat ID Number	Description
CSCds52536	ISDN sync call rejected/failed caller id screening/workaround>reload
CSCds70303	SHOW ISDN STAT shows hanging CCBs (CCBs without active calls)

Resolved Caveats—Cisco IOS Release 12.1(5) XM3

All the caveats listed in [Table 12](#) are resolved in Cisco IOS Release 12.1(5) XM3. This table lists only severity 1 and 2 caveats and select severity 3 caveats.

Table 12 Resolved Caveats for Release 12.1(5) XM3

Caveat ID Number	Description
CSCds47179	Router crashes with IMA configs
CSCdt59425	Leaking H.245 listening sockets
CSCdt87000	CCS to CAS disconnect cause code issue
CSCdt88011	Not sending NTFY for RLC using E&M signaling (IMM_START)
CSCdt89273	Cisco 3660(TGW): FGD-OS doesnt hang up during ANI play out
CSCdt55258	MLP hangs router or causes stack overrun
CSCds52920	Syslog messages are not logged onto syslog server.
CSCdt01452	Lex interface forward bridge BPDUs coming from remote LAN extender
CSCdt09023	Cannot build the 7200 platform -p- images
CSCdt10151	H323 VSA attribute being sent for all platforms
CSCdt30629	Need to speed up RM to TACACS+ accounting processing
CSCdt38813	H323 GW leaks RTCP ports with signal only call
CSCdt78196	Cisco 3640 router crashes at L3_ProcessInternal

Open Caveats—Cisco IOS Release 12.1(5) XM2

This section documents possible unexpected behavior by Cisco IOS Release 12.1(5) XM2 and describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCdr62997

During brief periods of high-traffic activity on the subscriber-unit router and with the router's CPU overloaded, the radio "link-metrics" (continuous codeword error statistics) might not be collected because network-packet traffic has priority over the radio "link-metrics" on the CPU. This might cause the "link-metrics" tables to show zeros only and/or error messages to be generated. There is no workaround.

- CSCds51507

The system will accept a statistic parameter for a second antenna even though it is a single-antenna system.

Workaround: Disregard data for the second antenna.

- CSCds81187
When the PPP Password Authentication Protocol (PAP)-password validation fails—that is, when the PPP PAP password is configured incorrectly—a slow memory leak occurs. There is no workaround.
- CSCds87397
An endpoint that is controlled by the Media Gateway Control Protocol (MGCP) or the Simple Gateway Control Protocol (SGCP) might go into a state where notification request (RQNT) message receives the following response, even after retrying the RQNT message several times:

```
400 Endpt in transient state:
```


Workaround: Reboot the Cisco 3600 router to recover the endpoint.
- CSCdt39515
The mapping of the ISDN release code does not follow the documentation as stated in the *Enhancements to the Session Initiation Protocol for VoIP on Cisco Access Platforms* feature module at <http://www.cisco.com/univercd/cc/td/doc/product/software/ios121/121newft/121t/121t3/dtsipgv2.htm>. There is no workaround.
- CSCdt49349
Hairpinning a call on an HDV module when the call is hung up before being connected causes the “D” channel to go down. There is no workaround.
- CSCdt57439
A “B” channel might remain in a “busy” state for an undetermined time after a call is terminated. Eventually the “B” channel is released. There is no workaround.
- CSCdt59358
On an outgoing call, the Cisco 3600 router does not map the progress message that it receives. This causes the inband ringback not to be heard. There is no workaround.
- CSCdt62078
Using VCON clients, the T120 proxy does not work when a call is established through NetMeeting. There is no workaround.

Resolved Caveats—Cisco IOS Release 12.1(5) XM2

All the caveats listed in this section are resolved in Cisco IOS Release 12.1(5) XM2. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCds04747
Cisco IOS software contains a flaw that permits the successful prediction of TCP Initial Sequence Numbers.

This vulnerability is present in all released versions of Cisco IOS software running on Cisco routers and switches. It only affects the security of TCP connections that originate or terminate on the affected Cisco device itself; it does not apply to TCP traffic forwarded through the affected device in transit between two other hosts.

To remove the vulnerability, Cisco is offering free software upgrades for all affected platforms. The defect is described in DDTS record CSCds04747.

Workarounds are available that limit or deny successful exploitation of the vulnerability by filtering traffic containing forged IP source addresses at the perimeter of a network or directly on individual devices.

This notice will be posted at <http://www.cisco.com/warp/public/707/ios-tcp-isn-random-pub.shtml>.

This caveat is resolved in Cisco IOS Release 12.1(5) XM2.

Open Caveats—Cisco IOS Release 12.1(5) XM1

The caveats listed in this section are open in Cisco IOS Release 12.1(5) XM1.

- CSCds50077

This caveat is included because a Cisco 3600 series router can function as a Gatekeeper.

On a Cisco 7200 series router, the Gatekeeper Transaction Message Protocol (GKTMP) may not be able to re-establish connection to the backend server until five minutes after the connection was terminated.

The Gatekeeper sends all requests to the server. However, if there is a slow link or limited processor capacity, the server is unable to respond to these requests on time. When this happens, the Gatekeeper may mark the server as unreachable and terminate the connection. Once the connection is terminated, it will not be re-established for another five minutes.

Workaround: Match server capacity to process requests with the number and capacities of the gatekeepers it is serving.

- CSCds51507

The system will accept a statistic parameter for a second antenna even though it is a single-antenna system.

Workaround: Disregard data for the second antenna.

- CSCdr62997

During brief periods of high-traffic activity on the subscriber-unit router and with the router's CPU overloaded, the radio "link-metrics" (continuous codeword error statistics) might not be collected because network-packet traffic has priority over the radio "link-metrics" on the CPU. This might cause the "link-metrics" tables to show zeros only and/or error messages to be generated. There is no workaround.

- CSCds87397

An endpoint that is controlled by the Media Gateway Control Protocol (MGCP) or the Simple Gateway Control Protocol (SGCP) might go into a state where notification request (RQNT) message receives the following response, even after retrying the RQNT message several times:

```
400 Endpt in transient state:
```

Workaround: Reboot the Cisco 3600 router to recover the endpoint.

- CSCds92198

FXS VIC and DID VIC fail to recognize on-hook.

- CSCdt39515

A Cisco 3600 series router functioning as a gateway might modify the ISDN cause code, which is then passed on to the session initiation protocol (SIP) and might cause service to be unavailable. There is no workaround.

- CSCdt40207

When a Cisco 3600 series router functioning as a gateway in an SS7 configuration sets up an MGCP connection successfully, and then receives a “delete connection” (DLCX) message before the ringing tone is stopped, or receives any signal which needs a digital signal processor (DSP) resource, the VoIP call is cleared and the telephony call leg is maintained.

However, if a “notification request” (RQNT) message is sent after a DLCX message, the ringing tone stops but the telephony call leg is not cleared. This causes the endpoint to be unable to accept any more calls.

Workaround: Issue the **no mgcp** command followed by the **mgcp** command.

First alternative workaround: Make sure the call appearance (CA) sends a RQNT message before a DLCX message.

Second alternative workaround: Make sure the CA sends a DLCX message with “X:<id>”.

- CSCdt43068

On a Cisco 3600 series router functioning as a gateway, MGCP calls might cause a memory leak. There is no workaround.

Resolved Caveats—Cisco IOS Release 12.1(5) XM1

All the caveats listed in this section are resolved in Cisco IOS Release 12.1(5) XM1. This section describes only severity 1 and 2 caveats and select severity 3 caveats.

- CSCds50209

When a call is set up, a large number of lost packets might be reported during the negotiation. Once the call is connected, packets go through properly and counters do not continue to increment.

This caveat has been resolved in Cisco IOS Release 12.1(5) XM1.

- CSCds04747

Connection setup improvements.

This caveat has been resolved in Cisco IOS Release 12.1(5) XM1

Open Caveats—Cisco IOS Release 12.1(5) XM

The caveats listed in this section are open in Cisco IOS Release 12.1(5) XM.

- CSCdr62997

During brief periods of high-traffic activity on the subscriber-unit router and with the router’s CPU overloaded, the radio “link-metrics” (continuous codeword error statistics) might not be collected because network-packet traffic has priority over the radio “link-metrics” on the CPU. This might cause the “link-metrics” tables to show zeros only and/or error messages to be generated. There is no workaround.

- CSCds51507

The system will accept a statistic parameter for a second antenna even though it is a single-antenna system.

Workaround: Disregard data for the second antenna.

- CSCds87397

An endpoint that is controlled by the Media Gateway Control Protocol (MGCP) or the Simple Gateway Control Protocol (SGCP) might go into a state where notification request (RQNT) message receives the following response, even after retrying the RQNT message several times:

```
400 Endpt in transient state:
```

Workaround: Reboot the Cisco 3600 router to recover the endpoint.

Resolved Caveats—Cisco IOS Release 12.1(5) XM

There are no resolved caveats specific to Cisco IOS Release 12.1(5) XM that require documentation in the release notes.

Related Documentation

The following sections describe the documentation available for the Cisco 3600 series. 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 these documents:

- [Release-Specific Documents, page 25](#)
- [Platform-Specific Documents, page 26](#)
- [Feature Modules, page 26](#)
- [Feature Navigator, page 27](#)
- [Cisco IOS Software Documentation Set, page 27](#)

Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.1 and are located on Cisco.com and the Documentation CD-ROM:

- *Cross-Platform Release Notes for Cisco IOS Release 12.1*

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.1: Release Notes: Cross-Platform Release Notes

On the Documentation CD-ROM at:

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 on Cisco.com at:

Technical Documents

- The “[Caveats for Cisco IOS Release 12.1 XM](#)” section on page 18

As a supplement to the caveats listed in “[Caveats for Cisco IOS Release 12.1 XM](#)” in these release notes, see *Caveats for Cisco IOS Release 12.1* and *Caveats for Cisco IOS Release 12.1T*, which contains caveats applicable to all platforms for all maintenance releases of Cisco IOS Release 12.1 and Cisco IOS Release 12.1 T.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.1: Release Notes: Caveats

On the Documentation CD-ROM at:

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. To reach Bug Navigator II, log in to Cisco.com and click **Service & Support: Technical Assistance Center: Select & Download Software: Jump to a software resource: Software Bug Toolkit/Bug Watcher**. Another option is to go to <http://www.cisco.com/support/bugtools/bugtool.shtml>.

Platform-Specific Documents

The documents listed below are available for the Cisco 3600 series routers and are also available on Cisco.com and on the Documentation CD-ROM.

- Quick Start Guides for Cisco 3600 Series Routers
- Hardware Installation Documents for Cisco 3600 Series
- Software Configuration Documents for Cisco 3600 Series
- *Regulatory Compliance and Safety Info for the Cisco 3600 Series*

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

Technical Documents: Access Servers and Access Routers: Modular Access Routers: Cisco 3600 Series Routers

On the Documentation CD-ROM:

Access Servers and Access Routers: Modular Access Routers: Cisco 3600 Series Routers

Feature Modules

Feature modules describe new features supported by Cisco IOS Release 12.1(5)XM3 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.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.1: New Feature Documentation

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1: New Feature Documentation

Feature Navigator

Feature Navigator is a web-based tool that enables you to quickly determine which Cisco IOS software images support a particular set of features and which features are supported in a particular Cisco IOS image.

Feature Navigator is available 24 hours a day, 7 days a week. To access Feature Navigator, you must have an account on Cisco.com. If you have forgotten or lost your account information, e-mail the Contact Database Administration group at cdbadmin@cisco.com. If you do not have an account on Cisco.com, go to <http://www.cisco.com/register> and follow the directions to establish 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. It contains feature information about mainline-, T-, S-, and P-trains. 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. The Cisco IOS software documentation set is shipped with your order in electronic form on the Documentation CD-ROM—unless you specifically ordered the printed versions.

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. Chapters in a configuration guide describe protocols, configuration tasks, and Cisco IOS software functionality, and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Use each configuration guide with its corresponding command reference.

On Cisco.com at:

Technical Documents: Cisco IOS Software: 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

Cisco IOS Release 12.1 Documentation Set Contents

[Table 13](#) lists the contents of the Cisco IOS Release 12.1 software documentation set, which is available in electronic form and in printed form if ordered.



Note

You can find the most current Cisco IOS documentation on Cisco.com and the Documentation CD-ROM. These electronic documents may contain updates and modifications made after the hard-copy documents were printed.

On Cisco.com at:

Technical Documents: Cisco IOS Software: Cisco IOS Release 12.1

On the Documentation CD-ROM at:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.1

Table 13 Cisco IOS Release 12.1 Documentation Set

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Fundamentals Configuration Guide</i> • <i>Cisco IOS Configuration Fundamentals Command Reference</i> 	<ul style="list-style-type: none"> Cisco IOS User Interfaces Cisco IOS File Management Cisco IOS System Management
<ul style="list-style-type: none"> • <i>Cisco IOS Bridging and IBM Networking Configuration Guide</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume I</i> • <i>Cisco IOS Bridging and IBM Networking Command Reference, Volume II</i> 	<ul style="list-style-type: none"> Using Cisco IOS Software Overview of SNA Internetworking Bridging IBM Networking
<ul style="list-style-type: none"> • <i>Cisco IOS Dial Services Configuration Guide: Terminal Services</i> • <i>Cisco IOS Dial Services Configuration Guide: Network Services</i> • <i>Cisco IOS Dial Services Command Reference</i> 	<ul style="list-style-type: none"> Preparing for Dial Access Modem Configuration and Management ISDN and Signaling Configuration PPP Configuration Dial-on-Demand Routing Configuration Dial-Backup Configuration Terminal Service Configuration Large-Scale Dial Solutions Cost-Control Solutions Virtual Private Networks X.25 on ISDN Solutions Telco Solutions Dial-Related Addressing Services Interworking Dial Access Scenarios
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	<ul style="list-style-type: none"> Interface Configuration Overview Configuring LAN Interfaces Configuring Serial Interfaces Configuring Logical Interfaces
<ul style="list-style-type: none"> • <i>Cisco IOS IP and IP Routing Configuration Guide</i> • <i>Cisco IOS IP and IP Routing Command Reference</i> 	<ul style="list-style-type: none"> IP Addressing and Services IP Routing Protocols IP Multicast
<ul style="list-style-type: none"> • <i>Cisco IOS AppleTalk and Novell IPX Configuration Guide</i> • <i>Cisco IOS AppleTalk and Novell IPX Command Reference</i> 	<ul style="list-style-type: none"> AppleTalk and Novell IPX Overview Configuring AppleTalk Configuring Novell IPX

Table 13 Cisco IOS Release 12.1 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Configuration Guide</i> • <i>Cisco IOS Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Command Reference</i> 	Apollo Domain, Banyan VINES, DECnet, ISO CLNS, and XNS Overview Configuring Apollo Domain Configuring Banyan VINES Configuring DECnet Configuring ISO CLNS Configuring XNS
<ul style="list-style-type: none"> • <i>Cisco IOS Multiservice Applications Configuration Guide</i> • <i>Cisco IOS Multiservice Applications Command Reference</i> 	Multiservice Applications Overview Voice Video Broadband
<ul style="list-style-type: none"> • <i>Cisco IOS Quality of Service Solutions Configuration Guide</i> • <i>Cisco IOS Quality of Service Solutions Command Reference</i> 	Quality of Service Overview Classification Congestion Management Congestion Avoidance Policing and Shaping Signaling Link Efficiency Mechanisms Quality of Service Solutions
<ul style="list-style-type: none"> • <i>Cisco IOS Security Configuration Guide</i> • <i>Cisco IOS Security Command Reference</i> 	Security Overview Authentication, Authorization, and Accounting (AAA) Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Other Security Features
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	Cisco IOS Switching Services Overview Cisco IOS Switching Paths Cisco Express Forwarding NetFlow Switching MPLS Switching Multilayer Switching Multicast Distributed Switching Virtual LANs LAN Emulation

Table 13 Cisco IOS Release 12.1 Documentation Set (continued)

Books	Major Topics
<ul style="list-style-type: none"> • <i>Cisco IOS Wide-Area Networking Configuration Guide</i> • <i>Cisco IOS Wide-Area Networking Command Reference</i> 	Wide-Area Networking Overview Configuring ATM Configuring Frame Relay Configuring Frame Relay-ATM Interworking Configuring SMDS Configuring X.25 and LAPB
<ul style="list-style-type: none"> • <i>Cisco IOS Configuration Guide Master Index</i> • <i>Cisco IOS Command Reference Master Index</i> • <i>New Features in 12.1-Based Limited Lifetime Releases</i> • <i>New Features in Release 12.1 T</i> • <i>Cisco IOS Debug Command Reference</i> • <i>Cisco IOS Dial Services Quick Configuration Guide</i> • Release Notes (Release note and caveat documentation for 12.1-based releases and various platforms) 	

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl

- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

Documentation Feedback

If you are reading Cisco product documentation on the World Wide Web, you can submit technical comments electronically. Click **Feedback** in the toolbar and select **Documentation**. After you complete the form, click **Submit** to send it to Cisco.

You can e-mail your comments to bug-doc@cisco.com.

To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

Attn Document Resource Connection
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-9883

We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

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

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

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

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

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

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

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

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.

This document is to be used in conjunction with the documents listed in the “[Related Documentation](#)” section on page 25.

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