Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(4)YB

October 7, 2002

These release notes describe new features and significant software components for the Cisco 1700 series routers that support Cisco IOS Release 12.2 T, up to and including Release 12.2(4)YB. These release notes are updated as needed to describe new memory requirements, new features, new hardware support, software platform deferrals, microcode or modem code changes, related document changes, and any other important changes. Use these release notes with the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* located on CCO and the Documentation CD.

For a list of the software caveats that apply to Release 12.2(4)YB, refer to the section "Caveats" and to the online *Caveats for Cisco IOS Release 12.2 T* document. The caveats document is updated for every 12.2 T maintenance release and is located on Cisco Connection Online (CCO) and the Documentation CD.

Note For the Cisco 1750 router, Release 12.2(4)YB contains only one new feature (VPN QoS) and no new voice features.

Contents

These release notes discuss the following topics:

CISCO SYSTEMS

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System Requirements

This section describes the system requirements for Release 12.2(4)YB and includes the following sections:

Memory Requirements

This section describes the memory requirements for the Cisco IOS feature sets supported by Cisco IOS Release 12.2(4)YB on the Cisco 1700 series routers. In Table 1, the term xDSL represents both ADSL and G.SHDSL.

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Note The memory requirements listed in Table 1 are specifically for the new features introduced in Release 12.2(4)YB. These requirements might not apply if you are only using Release 12.2(4)YB for resolved caveats only and are not using the new features introduced in Release 12.2(4)YB.

Table 1   Recommended Memory for the Cisco 1700 Series Routers

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory	Runs from
Cisco 1710 Routers	Cisco 1710 IOS IP Plus IPX/AT/ IBM/FW/IDS IPSec 3DES	IP Plus IPX/AT/IBM/ FW/IDS IPSec 3DES	c1710-bk9no3r2sy-mz	16 MB	48 MB	RAM
	Cisco 1710 IOS IP Plus FW/IDS IPSec 3DES	IP Plus FW/IDS IPSec 3DES	c1710-k9o3sy-mz	8 MB	48 MB	RAM
Cisco 1720, Cisco 1721, Cisco 1750, Cisco 1751, and Cisco 1760	Cisco 1700 IOS IP Plus ADSL/IPX/AT/IBM	IP Plus xDSL/IPX/ AT/IBM	c1700-bnr2sy7-mz	16 MB	48 MB	RAM
	Cisco 1700 IOS IP/IPX/ AT/IBM	IP/IPX/AT/IBM	c1700-bnr2y-mz	8 MB	32 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/FW/IDS IPSec 56	IP Plus xDSL/FW/ IDS IPSec 56	c1700-k8o3sy7-mz	16 MB	48 MB	RAM
	Cisco 1700 IOS IP Plus ADSL IPSec 56	IP Plus xDSL IPSec 56	c1700-k8sy7-mz	16 MB	48 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/FW/IDS IPSec 3DES	IP Plus xDSL/FW/IDS IPSec 3DES	c1700-k9o3sy7-mz	16 MB	48 MB	RAM

Table 1   Recommended Memory for the Cisco 1700 Series Routers

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory	Runs from
	Cisco 1700 IOS IP Plus ADSL IPSec 3DES	IP Plus xDSL IPSec 3DES	c1700-k9sy7-mz	16 MB	48 MB	RAM
Cisco 1720, Cisco 1721, Cisco 1750, Cisco 1751, and Cisco 1760 (continued)	Cisco 1700 IOS IP Plus ADSL/IPX/FW/IDS	IP Plus xDSL/IPX/ FW/ IDS	c1700-no3sy7-mz	16 MB	48 MB	RAM
	Cisco 1700 IOS IP/IPX	IP/IPX	c1700-ny-mz	8 MB	32 MB	RAM
	Cisco 1700 IOS IP/FW/IDS	IP/FW/IDS	c1700-o3y-mz	8 MB	32 MB	RAM
	Cisco 1700 IOS IP Plus	IP Plus	c1700-sy-mz	16 MB	48 MB	RAM
	Cisco 1700 IOS IP Plus ADSL	IP Plus xDSL	c1700-sy7-mz	16 MB	48 MB	RAM
	Cisco 1700 IOS IP	IP	c1700-y-mz	8 MB	32 MB	RAM
	Cisco 1700 IOS IP/ADSL	IP/xDSL	c1700-y7-mz	8 MB	32 MB	RAM
Cisco 1721, Cisco 1751, and Cisco 1760	Cisco 1700 IOS IP Plus ADSL/IPX/AT/IBM/FW/ IDS IPSec 56	IP Plus xDSL/IPX/AT/ IBM/FW/IDS IPSec 56	c1700-bk8no3r2sy7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/ IPX/AT/IBM/FW/ IDS IPSec 3DES	IP Plus xDSL/IPX/ AT/IBM/FW/IDS IPSec 3DES	c1700-bk9no3r2sy7-mz	16 MB	64 MB	RAM
Cisco 1750 Routers	Cisco 1700 IOS IP Plus Voice	IP Plus Voice	c1700-sv3y-mz	16 MB	48 MB	RAM
Cisco 1751 and Cisco 1760	Cisco 1700 IOS IP Plus ADSL/IPX/AT/IBM/Voice/ FW/ IDS IPSec 56	IP Plus xDSL/IPX/AT/ IBM/Voice/FW/IDS IPSec 56	c1700-bk8no3r2sv3y7-mz	32 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/ IPX/AT/IBM/ VOX/FW/IDS IPSec 56	IP Plus xDSL/IPX/AT/ IBM/VOX/FW/IDS IPSec 56	c1700-bk8no3r2sv8y7-mz	32 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/IPX/AT/IBM/Voice/ FW/IDS IPSec 3DES	IP Plus xDSL/IPX/AT/ IBM/Voice/FW/IDS IPSec 3DES	c1700-bk9no3r2sv3y7-mz	32 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/IPX/AT/IBM/VOX/ FW/IDS IPSec 3DES	IP Plus xDSL/IPX/AT/ IBM/VOX/FW/IDS IPSec 3DES	c1700-bk9no3r2sv8y7-mz	32 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/Voice/FW/IDS IPSec 56	IP Plus xDSL/Voice/ FW/IDS IPSec 56	c1700-k8o3sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/ VOX/FW/IDS IPSec 56	IP Plus xDSL/VOX/ FW/IDS IPSec 56	c1700-k8o3sv8y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/Voice IPSec 56	IP Plus xDSL/Voice IPSec 56	c1700-k8sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/VOX IPSec 56	IP Plus xDSL/VOX IPSec 56	c1700-k8sv8y7-mz	16 MB	64 MB	RAM

Table 1 Recommended Memory for the Cisco 1700 Series Routers

Platform	Image Name	Feature Set	Image	Flash Memory	DRAM Memory	Runs from
Cisco 1751 and Cisco 1760 (continued)	Cisco 1700 IOS IP Plus ADSL/Voice/FW/IDS IPSec 3DES	IP Plus xDSL/Voice/ FW/IDS IPSec 3DES	c1700-k9o3sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/ VOX/FW/IDS IPSec 3DES	IP Plus xDSL/VOX/ FW/IDS IPSec 3DES	c1700-k9o3sv8y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/Voice IPSec 3DES	IP Plus xDSL/Voice IPSec 3DES	c1700-k9sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/VOX IPSec 3DES	IP Plus xDSL/VOX IPSec 3DES	c1700-k9sv8y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/IPX/Voice/FW/IDS	IP Plus xDSL/IPX/ Voice/FW/IDS	c1700-no3sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/IPX/VOX/FW/IDS	IP Plus xDSL/IPX/ VOX/FW/IDS	c1700-no3sv8y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/Voice/FW/IDS	IP Plus xDSL/Voice/ FW/IDS	c1700-o3sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/VOX/FW/IDS	IP Plus xDSL/VOX/ FW/IDS	c1700-o3sv8y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/Voice	IP Plus xDSL/Voice	c1700-sv3y7-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus VOX	IP Plus VOX	c1700-sv8y-mz	16 MB	64 MB	RAM
	Cisco 1700 IOS IP Plus ADSL/VOX	IP Plus xDSL/VOX	c1700-sv8y7-mz	16 MB	64 MB	RAM

⚠
Caution   Release 12.2(4)YB supports the images listed in Table 1 only. Images that require more than 48 MB of DRAM do not run on Cisco1750 routers, even when the Cisco 1750 router maximum of 48 MB of DRAM is installed.

Hardware Supported

Cisco IOS Release 12.2(4)YB supports the following Cisco 1700 series routers:

- Cisco 1710 Routers
- Cisco 1720 Routers
- Cisco 1721 Routers
- Cisco 1750, 1750-2V, and 1750-4V Routers
- Cisco 1751 and 1751-V Routers
- Cisco 1760 and 1760-V Routers

The Cisco 1710, 1720, and 1721 routers run data images only. The Cisco 1750, 1750-2V, and 1750-4V routers run data or data-and-voice images, providing analog voice support. Cisco 1751, 1751-V, 1760, and 1760-V routers run data or data-and-voice images, providing digital and analog voice support.

For detailed descriptions of new hardware features and which features are supported on each router, see the "New and Changed Information" section on page 17. For descriptions of existing hardware features and supported modules, see the hardware installation guides, configuration and command reference guides, and additional documents specific to Cisco 1700 series routers, which are available on Cisco.com and the Documentation CD at the following location:
http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/index.htm

This URL is subject to change without notice. If it changes, point your web browser to CCO, and click the following path:
Cisco Product Documentation: **Access Servers and Access Routers**: **Modular Access Routers**: **Cisco 1700 Series Routers**: **<platform_name>**

Determining Your Software Release

To determine the version of Cisco IOS software currently running on your Cisco 1700 series router, log in to the router and enter the **show version** EXEC command. The following sample output from the **show version** command indicates the version number on the second output line:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) C1700 Software (C1700-Y-MZ), Version 12.2(4)YB, EARLY DEPLOYMENT RELEASE SOFTWARE (fc1)
Synched to technology version 12.2(5.4)T
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, see
Technical Support for 1700 Series Access Routers.

Feature Sets

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features. Release 12.2(4)YB supports the same feature sets as Releases 12.2 and 12.2 T, but Release 12.2(4)YB includes new features supported by the Cisco 1700 series routers.

⚠ **Caution** Cisco IOS images with strong encryption (including, but not limited to 168-bit [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 can be denied or subject to delay due to United States government regulations. When applicable, the purchaser/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 2 through Table 6 list the features and feature sets supported in Cisco IOS Release 12.2(4)YB:

- Table 2—Cisco 1710 routers
- Table 3—Cisco 1721, 1751, and 1760 routers

- Table 4—Cisco 1720, 1721, 1750, 1751, and 1760 routers
- Table 5—Cisco 1750, 1751, and 1760 routers
- Table 6—Cisco 1751 and 1760 routers

The tables use the following conventions:

- xDSL—This term represents both ADSL and G.SHDSL.
- 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, "12.2(4)YB" means the feature was introduced in 12.2(4)YB. If a cell in this column is empty, the feature was included in a previous release or the initial base release.

> **Note** These feature set tables only contain a selected list of features, which are cumulative for Release 12.2(4)*nn* early deployment releases only (*nn* identifies each early deployment release). The tables do not list all features in each image—additional features are listed in the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* and Release 12.2 T Cisco IOS documentation.

Table 2   ***Feature List by Feature Set for Cisco 1710 Routers***

Feature	In	Feature Set	
		IP Plus IPX/AT/IBM/ FW/IDS IPSec 3DES	**IP Plus FW/IDS IPSec 3DES**
Multimedia & Quality of Service			
CAC for VoIP call		No	No
DiffServ for voice signaling traffic		No	No
Multiservice Applications			
Cisco IOS Telephony Service		No	No
G.728 codec support		No	No
TCL scripting for IVR		No	No
RTSP enhanced IVR		No	No
T.37 fax relay		No	No
T.38 fax relay		No	No
SIP features [1]		No	No
Survivable Remote Site Telephony (SRST)		No	No
MGCP features [2]		No	No
Modem pass through over VoIP		No	No
Quality of Service			
VPN QoS	12.2(4)YB	Yes	Yes

Table 2   Feature List by Feature Set for Cisco 1710 Routers

Feature	In	Feature Set	
		IP Plus IPX/AT/IBM/ FW/IDS IPSec 3DES	**IP Plus FW/IDS IPSec 3DES**
Security			
Easy VPN	12.2(4)YA	Yes	Yes
Voice			
1- & 2-port T1/E1 Multiflex VWIC		No	No
E1 R2 Support		No	No
T1 CAS		No	No
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol		No	No
WAN			
1- and 2-Port Analog Modem WIC		No	No
G.SHDSL WIC		No	No

1. SIP features include:

- Call transfer capabilities using the refer method
- Configurable public switched telephone network (PSTN) cause code to SIP response
- Gateway support for bind command
- ISDN progress indicator support for SIP using 183 session progress
- NAT support for SIP
- RFC2782 compliance for DNS SRV
- Session initiation protocol (SIP)
- Session initiation protocol for VoIP enhancements
- SIP diversion header implementation for redirecting number
- SIP DTMF relay using NTE
- SIP gateway support for third party call control
- SIP gateway support of RSVP and "tel" URL
- SIP intra-gateway hair-pinning
- SIP INVITE request with malformed via header
- SIP T.38 fax relay
- SIP user agent MIB

2. MGCP features include:

- MGCP 1.0
- MGCP based fax (T.38) and DTMF relay
- MGCP basic CLASS and operator services
- MGCP VoIP call admission control

Table 3 *Feature List by Feature Set for Cisco 1721, 1751, and 1760 Routers*

Feature	In	Feature Set	
		IP Plus xDSL/IPX/AT/IBM/ FW/IDS IPSec 56	IP Plus xDSL/IPX/AT/IBM/ FW/IDS IPSec 3DES
Multimedia & Quality of Service			
CAC for VoIP call		No	No
DiffServ for voice signaling traffic		No	No
Multiservice Applications			
Cisco IOS Telephony Service		No	No
G.728 codec support		No	No
TCL scripting for IVR		No	No
RTSP enhanced IVR		No	No
T.37 fax relay		No	No
T.38 fax relay		No	No
SIP features [1]		No	No
Survivable Remote Site Telephony (SRST)		No	No
MGCP features [2]		No	No
Modem pass through over VoIP		No	No
Quality of Service			
VPN QoS	12.2(4)YB	Yes	Yes
Security			
Easy VPN	12.2(4)YA	Yes	Yes
Voice			
1- & 2-port T1/E1 Multiflex VWIC		Yes	Yes
E1 R2 Support		No	No
T1 CAS		No	No
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol		No	No

Table 3   *Feature List by Feature Set for Cisco 1721, 1751, and 1760 Routers (continued)*

Feature	In	Feature Set	
		IP Plus xDSL/IPX/AT/IBM/ FW/IDS IPSec 56	IP Plus xDSL/IPX/AT/IBM/ FW/IDS IPSec 3DES
WAN			
1- and 2-Port Analog Modem WIC[3]	12.2(4)YB	Yes	Yes
G.SHDSL WIC	12.2(4)XL[4] 12.2(4)YB[5]	Yes	Yes

1. For a list of the SIP features, see Table 2, Footnote 1.
2. For a list of the MGCP features, see Table 2, Footnote 2.
3. Release 12.2(4)YB does not support the 1- and 2-Port Analog Modem WIC on the Cisco 1750 router.
4. This feature was introduced on Cisco 1720, 1750, and 1751 routers in Release 12.2(4)XL.
5. This feature was introduced on Cisco 1760 routers in Release 12.2(4)YB.

Table 4   *Feature List by Feature Set for Cisco 1720, 1721, 1750, 1751, and 1760 Routers, Part 1 of 2*

Feature	In	Feature Set					
		IP Plus xDSL/IPX/ AT/IBM	IP/IPX/ AT/IBM	IP Plus xDSL/FW/ IDS IPSec 56	IP Plus xDSL IPSec 56	IP Plus xDSL/FW/IDS IPSec 3DES	IP Plus xDSL IPSec 3DES
Multimedia & Quality of Service							
CAC for VoIP call		No	No	No	No	No	No
DiffServ for voice signaling traffic		No	No	No	No	No	No
Multiservice Applications							
Cisco IOS Telephony Service		No	No	No	No	No	No
G.728 codec support		No	No	No	No	No	No
TCL scripting for IVR		No	No	No	No	No	No
RTSP enhanced IVR		No	No	No	No	No	No
T.37 fax relay		No	No	No	No	No	No
T.38 fax relay		No	No	No	No	No	No
SIP features [1]		No	No	No	No	No	No
Survivable Remote Site Telephony (SRST)		No	No	No	No	No	No
MGCP features [2]		No	No	No	No	No	No
Modem pass through over VoIP		No	No	No	No	No	No
Quality of Service							
VPN QoS	12.2(4)YB	No	No	Yes	Yes	Yes	Yes

Table 4 Feature List by Feature Set for Cisco 1720, 1721, 1750, 1751, and 1760 Routers, Part 1 of 2 (continued)

Feature	In	Feature Set					
		IP Plus xDSL/IPX/ AT/IBM	IP/IPX/ AT/IBM	IP Plus xDSL/FW/ IDS IPSec 56	IP Plus xDSL IPSec 56	IP Plus xDSL/FW/IDS IPSec 3DES	IP Plus xDSL IPSec 3DES
Security							
Easy VPN	12.2(4)YA	No	No	Yes	Yes	Yes	Yes
Voice							
1- & 2-port T1/E1 Multiflex VWIC		Yes	No	Yes	Yes	Yes	Yes
E1 R2 Support		No	No	No	No	No	No
T1 CAS		No	No	No	No	No	No
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol		No	No	No	No	No	No
WAN							
1- and 2-Port Analog Modem WIC[3]	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL WIC	12.2(4)XL[4] 12.2(4)YB[5]	Yes	No	Yes	Yes	Yes	Yes

1. For a list of the SIP features, see Table 2, Footnote 1.

2. For a list of the MGCP features, see Table 2, Footnote 2.

3. Release 12.2(4)YB does not support the 1- and 2-Port Analog Modem WIC on the Cisco 1750 router.

4. This feature was introduced on Cisco 1720, 1750, and 1751 routers in Release 12.2(4)XL.

5. This feature was introduced on Cisco 1760 routers in Release 12.2(4)YB.

Table 4 Feature List by Feature Set for Cisco 1720, 1721, 1750, 1751, and 1760 Routers, Part 2 of 2

Feature	In	Feature Set						
		IP Plus xDSL/ IPX/FW/IDS	IP/IPX	IP FW/ IDS	IP Plus xDSL	IP Plus	IP	IP/ xDSL
Multimedia & Quality of Service								
CAC for VoIP call		No	No	No	No	No	No	No
DiffServ for voice signaling traffic		No	No	No	No	No	No	No
Multiservice Applications								
Cisco IOS Telephony Service		No	No	No	No	No	No	No
G.728 codec support		No	No	No	No	No	No	No
TCL scripting for IVR[3]		No	No	No	No	No	No	No
RTSP enhanced IVR[3]		No	No	No	No	No	No	No
T.37 fax relay[3]		No	No	No	No	No	No	No
T.38 fax relay[3]		No	No	No	No	No	No	No

Table 4   Feature List by Feature Set for Cisco 1720, 1721, 1750, 1751, and 1760 Routers, Part 2 of 2 (continued)

Feature	In	Feature Set						
		IP Plus xDSL/ IPX/FW/IDS	IP/IPX	IP FW/ IDS	IP Plus xDSL	IP Plus	IP	IP/ xDSL
SIP features [1] [3]		No	No	No	No	No	No	No
Survivable Remote Site Telephony (SRST)		No	No	No	No	No	No	No
MGCP features [2] [3]		No	No	No	No	No	No	No
Modem pass through over VoIP		No	No	No	No	No	No	No
Quality of Service								
VPN QoS	12.2(4)YB	No	No	No	No	No	No	No
Security								
Easy VPN	12.2(4)YA	No	No	No	No	No	No	No
Voice								
1- & 2-port T1/E1 Multiflex VWIC[3]	12.2(4)YB	Yes	No	No	Yes	No	No	No
E1 R2 Support[3]	12.2(4)YB	No	No	No	No	No	No	No
T1 CAS[3]	12.2(4)YB	No	No	No	No	No	No	No
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol[3]	12.2(4)YB	No	No	No	No	No	No	No
WAN								
1- and 2-Port Analog Modem WIC[3]	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL WIC	12.2(4)XL[4] 12.2(4)YB[5]	Yes	No	No	Yes	No	No	Yes

1. For a list of the SIP features, see Table 2, Footnote 1.

2. For a list of the MGCP features, see Table 2, Footnote 2.

3. Release 12.2(4)YB does not support the 1- and 2-Port Analog Modem WIC on the Cisco 1750 router.

4. This feature was introduced on Cisco 1720, 1750, and 1751 routers in Release 12.2(4)XL.

5. This feature was introduced on Cisco 1760 routers in Release 12.2(4)YB.

Table 5   Feature List by Feature Set for Cisco 1750 Routers

Feature	In	Feature Set
		IP Plus Voice
Multimedia & Quality of Service		
CAC for VoIP call	12.2(4)XM	No
DiffServ for voice signaling traffic	12.2(4)XM	Yes

Table 5   Feature List by Feature Set for Cisco 1750 Routers

Feature	In	Feature Set
		IP Plus Voice
Multiservice Applications		
Cisco IOS Telephony Service		No
G.728 codec support	12.2(4)XM	Yes
TCL scripting for IVR	12.2(4)XM	No
RTSP enhanced IVR	12.2(4)XM	No
T.37 fax relay	12.2(4)XM	No
T.38 fax relay	12.2(4)XM	No
SIP features [1]	12.2(4)XM	No
Survivable Remote Site Telephony (SRST)		No
MGCP features [2]	12.2(4)XM	No
Modem pass through over VoIP	12.2(4)XM	No
Quality of Service		
VPN QoS		No
Security		
Easy VPN		No
Voice		
1- & 2-port T1/E1 Multiflex VWIC[3]		No
E1 R2 Support[3]		No
T1 CAS[3]		No
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol[3]		No
WAN		
1- and 2-Port Analog Modem WIC[4]		No
G.SHDSL WIC	12.2(4)XL[5] 12.2(4)YB[6]	Yes

1. For a list of the SIP features, see Table 2, Footnote 1.

2. For a list of the MGCP features, see Table 2, Footnote 2.

3. Release 12.2(4)YB does not support the following features on the Cisco 1750 router: 1- & 2-port T1/E1 Multiflex VWIC, E1 R2 support, T1 CAS, and T1/E1 voice PRI Q.931 and PRI QSIG Protocol.

4. Release 12.2(4)YB does not support the 1- and 2-Port Analog Modem WIC on the Cisco 1750 router.

5. This feature was introduced on Cisco 1720, 1750, and 1751 routers in Release 12.2(4)XL.

6. This feature was introduced on Cisco 1760 routers in Release 12.2(4)YB.

⚠
Caution   Release 12.2(4)YB does not support the following features on the Cisco 1750 router: 1- and 2-Port Analog Modem WIC, Channelized and Fractional T1 and E1 WAN Interfaces, 1- & 2-port T1/E1 Multiflex VWIC, E1 R2 Support, T1 CAS, T1/E1 Voice PRI Q.931 (PRI Voice), and PRI QSIG Protocol.

Table 6   Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 1 of 3

Feature	In	Feature Set					
		IP Plus xDSL/IPX/ AT/IBM/ Voice/FW/ IDS IPSec 56	IP Plus xDSL/IPX/ AT/IBM/ VOX/FW/IDS IPSec 56	IP Plus xDSL/IPX/AT/ IBM/Voice/ FW/IDS IPSec 3DES	IP Plus xDSL/ IPX/AT/ IBM/VOX /FW/IDS IPSec 3DES	IP Plus xDSL/ Voice/ FW/IDS IPSec 56	IP Plus xDSL/ VOX/FW/ IDS IPSec 56
Multimedia & Quality of Service							
CAC for VoIP call	12.2(4)XM	No	Yes	No	Yes	No	Yes
DiffServ for voice signaling traffic	12.2(4)XM	No	Yes	No	Yes	No	Yes
Multiservice Applications							
Cisco IOS Telephony Service[1]	12.2(2)XT[2] 12.2(4)YB[3]	No	Yes	No	Yes	No	Yes
G.728 codec support	12.2(4)XM	No	Yes	No	Yes	No	Yes
TCL scripting for IVR	12.2(4)XM	No	Yes	No	Yes	No	Yes
RTSP enhanced IVR	12.2(4)XM	No	Yes	No	Yes	No	Yes
T.37 fax relay	12.2(4)XM	No	Yes	No	Yes	No	Yes
T.38 fax relay [2]	12.2(4)XM	No	Yes	No	Yes	No	Yes
SIP features [1] [3]	12.2(4)XM		Yes		Yes		Yes
Survivable Remote Site Telephony (SRST)	12.2(2)XT[2] 12.2(4)YB[3]	No	Yes	No	Yes	No	Yes
MGCP features[4]	12.2(4)XM	No	Yes	No	Yes	No	Yes
Modem pass through over VoIP	12.2(4)XM	No	Yes	No	Yes	No	Yes
Quality of Service							
VPN QoS	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes
Security							
Easy VPN	12.2(4)YA	Yes	Yes	Yes	Yes	Yes	Yes
Voice							
1- & 2-port T1/E1 Multiflex VWIC	12.2(4)YB	No	Yes	No	Yes	No	Yes
E1 R2 Support	12.2(4)YB	No	Yes	No	Yes	No	Yes
T1 CAS	12.2(4)YB	No	Yes	No	Yes	No	Yes
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol	12.2(4)YB	No	Yes	No	Yes	No	Yes

Table 6   Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 1 of 3 (continued)

Feature	In	Feature Set					
		IP Plus xDSL/IPX/ AT/IBM/ Voice/FW/ IDS IPSec 56	IP Plus xDSL/IPX/ AT/IBM/ VOX/FW/IDS IPSec 56	IP Plus xDSL/IPX/AT/ IBM/Voice/ FW/IDS IPSec 3DES	IP Plus xDSL/ IPX/AT/ IBM/VOX /FW/IDS IPSec 3DES	IP Plus xDSL/ Voice/ FW/IDS IPSec 56	IP Plus xDSL/ VOX/FW/ IDS IPSec 56
WAN							
1- and 2-Port Analog Modem WIC	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL WIC		No	No	No	No	No	No

1. In Cisco IOS Release 12.2(2)XT, the feature name "Cisco IP Keyswitch Version 2.0" changed to "Cisco IOS Telephony Service Version 2.0" and the command mode changed from "keyswitch-configuration mode" to "telephony-service configuration mode".

2. This feature is supported on Cisco 1760 routers on Release 12.2(4)YB and above only. Release 12.2(4)XM does not support this feature on Cisco 1760 routers.

3. For a list of the SIP features, see Table 2, Footnote 1.

4. For a list of the MGCP features, see Table 2, Footnote 2.

Table 6   Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 2 of 3

Feature	In	Feature Set					
		IP Plus xDSL/ Voice IPSec 56	IP Plus xDSL/ VOX IPSec 56	IP Plus xDSL/Voice/ FW/IDS IPSec 3DES	IP Plus xDSL/VOX/ FW/IDS IPSec 3DES	IP Plus xDSL/Voice IPSec 3DES	IP Plus xDSL/VOX IPSec 3DES
Multimedia & Quality of Service							
CAC for VoIP call	12.2(4)XM	No	Yes	No	Yes	No	Yes
DiffServ for voice signaling traffic	12.2(4)XM	No	Yes	No	Yes	No	Yes
Multiservice Applications							
Cisco IOS Telephony Service[1]	12.2(2)XT[2] 12.2(4)YB[3]	No	Yes	No	Yes	No	Yes
G.728 codec support	12.2(4)XM	No	Yes	No	Yes	No	Yes
TCL scripting for IVR	12.2(4)XM	No	Yes	No	Yes	No	Yes
RTSP enhanced IVR	12.2(4)XM	No	Yes	No	Yes	No	Yes
T.37 fax relay	12.2(4)XM	No	Yes	No	Yes	No	Yes
T.38 fax relay [4]	12.2(4)XM	No	Yes	No	Yes	No	Yes
SIP features [1] [5]	12.2(4)XM	No	Yes	No	Yes	No	Yes
Survivable Remote Site Telephony (SRST)	12.2(2)XT[2] 12.2(4)YB[3]	No	Yes	No	Yes	No	Yes
MGCP features [4] [6]	12.2(4)XM	No	Yes	No	Yes	No	Yes
Modem pass through over VoIP	12.2(4)XM	No	Yes	No	Yes	No	Yes

Table 6   Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 2 of 3 (continued)

Feature	In	Feature Set					
		IP Plus xDSL/ Voice IPSec 56	IP Plus xDSL/ VOX IPSec 56	IP Plus xDSL/Voice/ FW/IDS IPSec 3DES	IP Plus xDSL/VOX/ FW/IDS IPSec 3DES	IP Plus xDSL/Voice IPSec 3DES	IP Plus xDSL/VOX IPSec 3DES
Quality of Service							
VPN QoS	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes
Security							
Easy VPN	12.2(4)YA	Yes	Yes	Yes	Yes	Yes	Yes
Voice							
1- & 2-port T1/E1 Multiflex VWIC	12.2(4)YB	No	Yes	No	Yes	No	Yes
E1 R2 Support	12.2(4)YB	No	Yes	No	Yes	No	Yes
T1 CAS	12.2(4)YB	No	Yes	No	Yes	No	Yes
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol	12.2(4)YB	No	Yes	No	Yes	No	Yes
WAN							
1- and 2-Port Analog Modem WIC	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL WIC		Yes	Yes	Yes	Yes	Yes	Yes

1. In Cisco IOS Release 12.2(2)XT, the feature name "Cisco IP Keyswitch Version 2.0" changed to "Cisco IOS Telephony Service Version 2.0" and the command mode changed from "keyswitch-configuration mode" to "telephony-service configuration mode".

2. This feature was introduced on Cisco 1751 routers in Release 12.2(2)XT.

3. This feature was introduced on Cisco 1760 routers in Release 12.2(4)YB.

4. This feature is supported on Cisco 1760 routers on Release 12.2(4)YB and above only. Release 12.2(4)XM does not support this feature on Cisco 1760 routers.

5. For a list of the SIP features, see Table 2, Footnote 1.

6. For a list of the MGCP features, see Table 2, Footnote 2.

Table 6   Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 3 of 3

Feature	In	Feature Set						
		IP Plus xDSL/ IPX/ Voice/FW/ IDS	IP Plus xDSL/ IPX/VOX/ FW/IDS	IP Plus xDSL/ Voice/ FW/IDS	IP Plus xDSL/ VOX/FW/ IDS	IP Plus xDSL/ VOX	IP Plus xDSL/ Voice	IP Plus VOX
Multimedia & Quality of Service								
CAC for VoIP call	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
DiffServ for voice signaling traffic	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes

Table 6　　*Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 3 of 3 (continued)*

Feature	In	Feature Set						
		IP Plus xDSL/ IPX/ Voice/FW/ IDS	IP Plus xDSL/ IPX/VOX/ FW/IDS	IP Plus xDSL/ Voice/ FW/IDS	IP Plus xDSL/ VOX/FW/ IDS	IP Plus xDSL/ VOX	IP Plus xDSL/ Voice	IP Plus VOX
Multiservice Applications								
Cisco IOS Telephony Service[1]	12.2(2)XT[2] 12.2(4)YB[3]	No	Yes	No	Yes	Yes	No	Yes
G.728 codec support	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
TCL scripting for IVR	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
RTSP enhanced IVR	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
T.37 fax relay	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
T.38 fax relay [4]	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
SIP features [4] [5]	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
Survivable Remote Site Telephony (SRST)	12.2(2)XT[2] 12.2(4)YB[3]	No	Yes	No	Yes	Yes	No	Yes
MGCP features [4] [6]	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
Modem pass through over VoIP [4]	12.2(4)XM	No	Yes	No	Yes	Yes	No	Yes
Quality of Service								
VPN QoS	12.2(4)YB	No	No	No	No	No	No	No
Security								
Easy VPN	12.2(4)YA	No	No	No	No	No	No	No
Voice								
1- & 2-port T1/E1 Multiflex VWIC	12.2(4)YB	No	Yes	No	Yes	Yes	No	Yes
E1 R2 Support	12.2(4)YB	No	Yes	No	Yes	Yes	No	Yes
T1 CAS	12.2(4)YB	No	Yes	No	Yes	Yes	No	Yes
T1/E1 Voice PRI Q.931 and PRI QSIG Protocol	12.2(4)YB	No	Yes	No	Yes	Yes	No	Yes

Table 6   Feature List by Feature Set for Cisco 1751 and 1760 Routers, Part 3 of 3 (continued)

Feature	In	Feature Set						
		IP Plus xDSL/ IPX/ Voice/FW/ IDS	IP Plus xDSL/ IPX/VOX/ FW/IDS	IP Plus xDSL/ Voice/ FW/IDS	IP Plus xDSL/ VOX/FW/ IDS	IP Plus xDSL/ VOX	IP Plus xDSL/ Voice	IP Plus VOX
WAN								
1- and 2-Port Analog Modem WIC	12.2(4)YB	Yes	Yes	Yes	Yes	Yes	Yes	Yes
G.SHDSL WIC	12.2(4)XL[7] 12.2(4)YB[3]	Yes	Yes	Yes	Yes	Yes	Yes	No

1. In Cisco IOS Release 12.2(2)XT, the feature name "Cisco IP Keyswitch Version 2.0" changed to "Cisco IOS Telephony Service Version 2.0" and the command mode changed from "keyswitch-configuration mode" to "telephony-service configuration mode".

2. This feature was introduced on Cisco 1751 routers in Release 12.2(2)XT.

3. This feature was introduced on Cisco 1760 routers in Release 12.2(4)YB.

4. This feature is supported on Cisco 1760 routers on Release 12.2(4)YB and above only. Release 12.2(4)XM does not support this feature on Cisco 1760 routers.

5. For a list of the SIP features, see Table 2, Footnote 1.

6. For a list of the MGCP features, see Table 2, Footnote 2.

7. This feature was introduced on Cisco 1720, 1750, and 1751 routers in Release 12.2(4)XL.

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco 1700 series routers for Release 12.2(4)YB.

New Hardware Features in Release 12.2(4)YB

The following sections describe the new hardware features supported by the Cisco 1700 series routers for Release 12.2(4)YB.

1- and 2-Port Analog Modem WIC

Release 12.2(4)YB supports 1- and 2-port analog modem WAN Interface Cards (with part numbers WIC-1AM and WIC-2AM, respectively) on Cisco 1720, 1721, 1751, and 1760 routers. The interface cards provide basic telephone service connectivity for remote router management; asynchronous Dial-on-Demand Routing (DDR) and dial backup; dial- and fax-out modem access; and low-density remote access server (RAS) services.

This feature supports the following functionality:

- Internal analog modem dialup capability
- Support for speeds up to 56K (V.90 specification)

- Support for MLPPP, which allows for bonding of two or more calls for increased connection speeds
- Fax-out capability at speeds up to 14.4K

1- and 2-Port T1/E1 Multiflex Voice/WAN Interface Card

Release 12.2(4)YB introduces 1- and 2-port T1/E1 Multiflex Voice/WAN interface cards (VWICs) to provide basic structured and unstructured service for T1 or E1 networks on the Cisco 1700 series routers. These VWIC interface cards (voice interface card [VIC] + WAN interface card [WIC]) combine the accessibility of a WIC and the functionality of a VIC, to deliver a multi-service solution that integrates voice and data over a single circuit.

The following T1/E1 VWICS are available for the Cisco 1751 and Cisco 1760 routers:

- VWIC-1MFT-E1
- VWIC-2MFT-E1
- VWIC-1MFT-T1
- VWIC-2MFT-T1
- VWIC-1MFT-G703
- VWIC-2MFT-G703
- VWIC-2MFT-T1-DI
- VWIC-2MFT-E1-DI

Note   Prior to Release 12.2(4)YB, these cards were supported on the Cisco 2600 and Cisco 3600 routers only.

The T1 and E1 VWICs provide individual DS0s or channels of a DS1 circuit to be grouped together to create channel groups. For example, the first 12kb to 64kb channels of a T1 circuit could form a channel group for signals sent to a frame relay network.

Drop and Insert (DI) VWICs have two T1/E1 ports. In addition to the functionality described above, the DI VWICs enable specified DS0 channels from one port to be directly cross-connected to another port. For example, the first three DS0s of one port can be directly cross-connected to the first three DS0s of a second port. The remaining DS0s can support signals to or from other interfaces on the router. DI VWICs provide easy multiplexing of voice and data over a single circuit, within two locals ports of a T1/E1 DI VWIC.

The G.703 VWICs support unframed and framed E1 circuits. Other E1 WICs support only framed E1 circuits.

With these Multiflex VWICs, Cisco 1751 and Cisco 1760 routers support fractional and full T1/E1 services and channelized T1/E1 voice services; that is: support for channel associated signaling on the T1 interface, E1 R2, T1/E1 Voice PRI Q.931, and PRI QSIG protocol. For additional information, see the section "Channelized Voice, Fractional, and Full T1 and E1 Services."

G.SHDSL WAN Interface

Release 12.2(4)YB supports the G-standard Symmetrical High bit-rate Digital Subscriber Loop (G.SHDSL) WAN interface card on Cisco 1760 series routers.

Note The G.SHDSL WAN interface card was introduced in Release 12.2(4)XL on the Cisco 1720, 1750, and 1751 routers. Release 12.2(4)YB additionally supports the card on the Cisco 1760 router.

New Software Features in Release 12.2(4)YB

The following sections describe the new software features supported by the Cisco 1700 series routers for Release 12.2(4)YB.

Cisco IOS Telephony Service

Release 12.2(4)YB supports the Cisco IOS Telephony Service (ITS) feature on Cisco 1760 routers. The Cisco IOS Telephony Service feature, a part of IP Telephony Services, provides basic Cisco IP phone call-handling capabilities in a LAN environment on the Cisco routers.

Note A previous software version, Release 12.2(4)XT, introduced Cisco ITS on select Cisco 1700 series routers, but Release 12.2(4)XT does not support Cisco ITS on Cisco 1760 routers.

This feature enables the Cisco multiservice routers to provide Cisco IOS Telephony Service for the Cisco IP Phone 7960, Cisco IP Phone 7940, Cisco IP Phone 7910, and Cisco IP Conference Station 7935. Cisco IOS Telephony Service also helps download phone software images and configures and manages the Cisco IP phones in a LAN, to accommodate the telephony system of a small office with a small number of extensions.

Note You need to purchase a feature license to turn this new feature on. You also need an account on Cisco.com to access the Cisco IP phone firmware versions.

For more information, see the document *Cisco IOS Telephony Service*:
http://www.cisco.com/univercd/cc/td/doc/product/access/ip_ph/srs/index.htm

Channelized Voice, Fractional, and Full T1 and E1 Services

Release 12.2(4)YB includes the following software features to support the 1- and 2-port T1/E1 Multiflex VWICs, as described in the section "New Hardware Features in Release 12.2(4)YB":

- Channel Associated Signaling on the T1 interface (T1 CAS)

  CAS is a form of signaling used on a T1 line. With CAS, a signaling element is dedicated to each channel in the T1 frame. This type of signaling is sometimes called Robbed Bit signaling (RBS) because a bit is taken out (or robbed) from the user data stream to provide signaling information to and from the switch. The T1 CAS feature enables T1 VWICs to receive and transmit incoming and outgoing call signaling (such as on-hook and off-hook) through each T1 controller that is configured for a channelized T1 line.

- E1 R2 support for Cisco 1700 series routers

  Release 12.2(4)YB supports R2 signaling, which provides gateway functionality between the real-time circuit-switched world (PSTN) and the packet-switched-data networks. The R2 signaling is an international signaling standard that is common to channelized E1 networks. There is no single standard for R2 signaling. The ITU-T Q.400-Q.490 recommendation defines R2, but a number of countries implement R2 in entirely different ways. Cisco 1751 and Cisco 1760 routers use E1 R2 signaling to communicate with central office trunks that also use E1 R2 signaling.

  Release 12.2(4)YB supports the following implementations of R2 signaling:

Argentina	Greece	Paraguay
Australia	Guatemala	Peru
Bolivia	Hong Kong (China variant)	Philippines
Brazil	India	Saudi Arabia
Bulgaria	Indonesia	Singapore
China	Israel	South Africa Panaftel
Colombia	ITU	Telmex
Costa Rica	Korea	Telnor
Croatia	LAOS Network (Thailand variant)	Thailand
East Europe	Malaysia	Uruguay
Ecuador ITU	Malta	Venezuela
Ecuador LME	New Zealand	Vietnam

- T1/E1 Voice PRI Q.931 and PRI QSIG protocol

  The QSIG protocol provides signaling for Private Integrated services Network Exchange (PINX) devices. It is based on the ISDN Q.931 standard. By supporting PRI QSIG voice signaling, Cisco 1751 and Cisco 1760 routers can connect with digital PBXs that use the QSIG form of Common Channel Signaling (CCS). PRI QSIG signaling provides transparent support for supplementary PBX services so that proprietary PBX features are not lost when connecting PBXs to Cisco 1751 and Cisco 1760 networks.

Quality of Service for Virtual Private Networks

When packets are encapsulated by tunnel or encryption headers, Quality of Service (QoS) features are unable to examine the original packet headers and correctly classify the packets. Packets traveling across the same tunnel have the same tunnel headers, so the packets are treated identically if the physical interface is congested.

With the growing popularity of Virtual Private Networks (VPNs), the need to classify traffic within a traffic tunnel is gaining importance. QoS features have historically been unable to classify traffic within a tunnel. With the introduction of the Quality of Service for Virtual Private Networks (QoS for VPNs) feature, packets can now be classified before tunneling and encryption occur. The process of classifying features before tunneling and encryption is called preclassification.

The QoS for VPNs feature is designed for tunnel interfaces. When the new feature is enabled, the QoS features on the output interface classify packets before encryption, allowing traffic flows to be adjusted in congested environments. The end result is more effective packet tunneling.

The QoS for VPNs feature provides a solution for making Cisco IOS Quality of Service services operate in conjunction with tunneling and encryption on an interface. Cisco IOS software can classify packets and apply the appropriate QoS service before the data is encrypted and tunneled. In addition, when

packets are marked using the IP Type of Service byte or differentiated services code point (DSCP) values, the markings are copied to the new, encrypted packet. This allows the service provider to treat mission critical or multi-service traffic with higher priority across their network.

New Software Features Supported on Cisco 1760 Routers

Release 12.2(4)YB supports the following software features on Cisco 1760 routers:

- T.38 fax relay
- CAC for VoIP call
- DiffServ for voice signaling traffic
- G.728 codec support
- Modem pass through over VoIP
- MGCP features
  - MGCP 1.0
  - MGCP based fax (T.38) and DTMF relay
  - MGCP basic CLASS and operator services
  - MGCP VoIP call admission control
- RTSP enhanced IVR
- SIP features
  - Call transfer capabilities using the refer method
  - Configurable PSTN cause code to SIP response
  - Gateway support for bind command
  - ISDN progress indicator support for SIP using 183 session progress
  - NAT support for SIP
  - RFC2782 compliance for DNS SRV
  - SIP
  - SIP diversion header implementation for redirecting number
  - SIP DTMF relay using NTE
  - SIP for VoIP enhancements
  - SIP gateway support for third party call control
  - SIP gateway support of RSVP and "tel" URL
  - SIP intra-gateway hairpinning
  - SIP INVITE request with malformed via header
  - SIP T.38 fax relay
  - SIP user agent MIB
- T.37 fax relay
- TCL scripting for IVR
- Survivable Remote Site Telephony Version 2.0
- Cisco IOS Telephony Service

> **Note** A previous software version, Release 12.2(4)XM, introduced these features on select Cisco 1700 series routers, but Release 12.2(4)XM does not support the features on Cisco 1760 routers.

For SRST configuration information, see the *Survivable Remote Site Telephony* publication on Cisco.com and the Documentation CD at the following location:
http://www.cisco.com/univercd/cc/td/doc/product/access/ip_ph/srs/

This URL is subject to change without notice. If it changes, point your web browser to CCO, and click the following path:
Cisco Product Documentation: **Access Servers and Access Routers**: **IP Phone Features**:

For Cisco IOS telephony service configuration information, see the *Cisco IOS Telephony Service* publication on Cisco.com and the Documentation CD at the following location:
http://www.cisco.com/univercd/cc/td/doc/product/access/ip_ph/ip_ks/ipkey2.htm

These URLs are subject to change without notice. If they change, point your web browser to CCO, and click the following path:
Cisco Product Documentation: **Access Servers and Access Routers**: **IP Phone Features**:
[**Cisco IOS Telephony Service** or **Survivable Remote Site Telephony**]

Network Timing Recovery

Release 12.2(4)YB supports Network Timing Recovery (NTR) for configuring the clock source and associated dependencies on Cisco 1751 and Cisco 1760 routers. For configuration information, see the publication *TDM Clock Configuration for Cisco 1700 Series Routers*. This document is available on CCO and on the Cisco Documentation CD.

New Software Features in Release 12.2(4)T

For information regarding the features supported in Cisco IOS Release 12.2 T, refer to the Cross-Platform Release Notes and New Feature Documentation links at the following location on CCO:

http://www.cisco.com/univercd/cc/td/doc/product/software/ios122/122relnt/xprn122t/index.htm

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

Service & Support: **Technical Documents**: **Cisco IOS Software**: **Release 12.2**: **Release Notes**: **Cross-Platform Release Notes** (Cisco IOS Release 12.2T)

Limitations

The following restrictions in Release 12.2(4)YB apply to channelized voice, fractional, and full T1 and E1 services:

- PRI is supported in the VWIC slot only. The signal channel of PRI is handled the same way as the data channel, which is only supported in the VWIC slot.

- PRI-NFAS is not supported.

- Drop and Insert for E1 voice with R2 signaling is not supported.

Important Notes

The following sections contain important notes about Cisco IOS Release 12.2(4)YB that can apply to the Cisco 1700 series routers. (Also, see the .)

1- and 2-Port Analog Modem WIC

The following issues apply to the 1- and 2-Port Analog Modem WIC:

- When a Cisco 1700 series router boots up, the default configuration is **flowcontrol hardware**. You can change this configuration if needed.
- The 1- and 2-Port Analog Modem WIC is not supported on Cisco 1710 and Cisco 1750 routers.

Fan Operation in Cisco 1700 Series Routers

Cisco 1760 and 1760-V router fans are always on and Cisco 1710 routers do not contain a fan. However, the fans in Cisco 1720, 1721, 1750, and 1751 routers stay off until thermally activated.

Flash defaults to Flash:1 on Multipartition Flash

When using a multipartition flash card, the various flash partitions are referred to as "flash:1:", "flash:2:", etc. If you specify only "flash" in a multipartition flash, the parser assumes "flash:1:." For example, if you enter **show flash all** the parser defaults to "show flash:1: all" and only the flash information for the first partition displays. To see information for all flash partitions, enter **show flash ?**. This will list all of the valid partitions. Then enter **show flash:xx: all** on each valid partition.

Peak Cell Rate and Sustainable Cell Rate Values

On Cisco 1700 routers, specify the Peak Cell Rate (PCR) and Sustainable Cell Rate (SCR) as multiples of 32 Kbps. Other rates are treated as the next lower value of a multiple of 32. For example, an entered PCR value of 150 is considered 128.

Using the "boot flash" and "boot system tftp" Commands

Booting a Cisco 1700 series router with the commands **boot flash** or **boot system flash** results in unpredictable behavior. To work around this problem, be sure to enter a colon (:) following both commands (for example, **boot flash:** or **boot system flash:**.)

Booting a Cisco 1700 series router using the command **boot system tftp** might not work due to insufficient memory. To work around this problem, use the command **tftpdnld** from the ROM monitor. This error is caveat number CSCdv87983.

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 12.2(4)YB. For information on caveats in Cisco IOS Release 12.2 T, refer to the *Caveats for Cisco IOS Release 12.2 T* document. For information on caveats in Cisco IOS Release 12.2, refer to the *Caveats for Cisco IOS Release 12.2* document. These documents list severity 1 and 2 caveats, and are located on CCO and the Documentation CD.

✎

Note   If you have an account with Cisco.com, you can also use the Bug Toolkit to find select caveats of any severity. To reach the Bug Toolkit, log in toCisco.com and click **Service & Support**: **Technical Assistance Center**: **Tool Index**: **Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Resolved Caveats - Release 12.2(4)YB

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

Management

CSCdw65903

An error can occur with management protocol processing. Please use the following URL for further information:

http://www.cisco.com/cgi-bin/bugtool/onebug.pl?bugid=CSCdw65903

Unresolved Caveats - Release 12.2(4)YB

This section describes unexpected behavior in Release 12.2(4)YB.

Miscellaneous

CSCdv87983

Booting a Cisco 1700 series router using the command **boot system tftp** might not work due to insufficient memory. To work around this problem, use the command **tftpdnld** from the ROM monitor.

Multiservice Applications

CSCdw86539

To properly shutdown MGCP, first shut the voice port associated with MGCPAPP and then issue the command **no mgcp**. If the voice port is not shut, issuing the command **no mgcp** causes MGCP processes to shut down incorrectly. This has been observed when RQNT with embedded notifications is issued by the call agent.

CSCdw84683

A failure occurs if you attempt to make fax calls (T.38 or passthrough) through MGCP. Although some fax calls might be sent through the speed-up mechanism successfully, subsequent fax calls might fail. A workaround is to use G.711 as the codec with fax passthrough.

Voice

CSCdv25550

Excessive CRC errors might occur if traffic passes over a T1/E1 interface before the router is completely booted up. To work around this problem, clear the counters.

CSCdw73302

The default IVR applies to the configured translation rule multiple times. In other words, when using a TCL IVR 2.0 application on a Cisco voice gateway for two-stage calls, the configured translation rule might be applied for each received digit instead of for the initial digit only.

CSCdw85359

When the **station-id** on an FXO port is not set, the Caller-ID displays "From Private...." instead of the actual number for a local transfer call. To display the correct output, configure the **station-id** on the FXO port of the ITS router.

CSCdw86971

The call-forward-no-answer of an inbound VoIP call—via a **loopback-dn** to a local IP phone that is forwarded on no-answer to a remote VoIP target to create a VoIP hairpin on the loopback—results in no voice path when the forwarded call is answered.

WAN

CSCdv33932

When using the ATM-MIB on a Cisco 1700 series router with a G.SHDSL WAN interface card, the object table **aal5VccTable** does not become populated. Performing an SNMP query returns no response.

Related Documentation

The documentation available for the Cisco 1700 series routers typically consists 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. Use these release notes with the related documents listed in the sections: "Release-Specific Documents" and "Platform-Specific Documents."

Additionally, the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* contains the latest descriptions and locations of the following types of documents. See the section "Release-Specific Documents," for the location of the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T*.

- Feature Modules—Feature modules describe new features supported by Release 12.2 and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, configuration tasks, and a command reference.

- 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.

- 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.

Release-Specific Documents

The following documents are specific to Release 12.2 and apply to Release 12.2(4)YB. They are located on Cisco.com and the Documentation CD (under the heading **Service & Support**):

- To reach the *Release Notes for the Cisco 1700 Series Routers for Cisco IOS Release 12.2(4)YB*, click this path:

  Technical Documents: **Cisco IOS Software**: **Release 12.2**: **Release Notes**: **Cisco 1700 Series Routers**: **Cisco 1700 Series - Release Notes for Release 12.2(4)YB**

- To reach the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T*, click this path:

  Technical Documents: **Cisco IOS Software**: **Release 12.2**: **Release Notes**: **Cisco IOS Release 12.2 T**

- To reach product bulletins, field notices, and other release-specific documents, click this path:

  Technical Documents: **Product Bulletins**

- To reach the *Caveats for Cisco IOS Release 12.2* and *Caveats for Cisco IOS Release 12.2 T* documents, which contain caveats applicable to all platforms for all maintenance releases of Release 12.2, click this path:

  Technical Documents: **Cisco IOS Software**: **Release 12.2**: **Caveats**

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  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 toCisco.com and click **Service & Support**: **Technical Assistance Center**: **Tool Index**: **Bug Toolkit**. Another option is to go to http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Platform-Specific Documents

Hardware installation guides, configuration and command reference guides, and additional documents specific to Cisco 1700 series routers are available on Cisco.com and the Documentation CD at the following location:

http://www.cisco.com/univercd/cc/td/doc/product/access/acs_mod/1700/index.htm

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

Cisco Product Documentation: **Access Servers and Access Routers**: **Modular Access Routers**: **Cisco 1700 Series Routers**: **<platform_name>**

Obtaining Documentation and Technical Assistance

The *Cross-Platform Release Notes for Cisco IOS Release 12.2 T* contains the latest descriptions and locations of the following sources for obtaining documentation and technical assistance from Cisco Systems. See the section "Release-Specific Documents" for the location of the *Cross-Platform Release Notes for Cisco IOS Release 12.2 T*.

- World Wide Web, Cisco.com—Cisco Systems website: http://www.cisco.com.

- Documentation CD—Cisco documentation and additional literature are available in a CD package, which ships with your product.

- Ordering documentation—Methods for ordering documentation include Networking Products MarketPlace, the online Subscription Store, and calling a local account representative using the Cisco corporate headquarters or North America phone numbers.

- Documentation feedback—When using the World Wide Web, you can submit technical comments electronically. You can also send e-mail, mail in the response card that is behind the front cover of many documents, or send correspondence to Cisco Systems. We appreciate your comments.

- Technical Assistance Center (TAC)—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. You can contact the TAC using Cisco.com or by phone. Toll-free numbers are available for many countries.

This document is to be used in conjunction with the documents listed in the "Related Documentation" section.