



Doc. No. 78-4166-01 Rev. B0

Release Notes for Cisco IOS Release 11.2(4)XA1 and 11.2(4)XA2

February 24, 2002

These release notes describe the features and caveats for Cisco Internetwork Operating System (Cisco IOS) Release 11.2(4)XA1 for the Cisco 3600 series and Cisco 1600 series routers.

Prior to Cisco IOS Release 11.2, maintenance releases of major Cisco IOS software releases were used to deliver additional new features. Beginning with Cisco IOS Release 11.2, Cisco Systems provides software release “trains” based on a single version of Cisco IOS software. Maintenance releases of the Major train software deliver fixes to software defects only, thus providing the most stable software for your network, for the features you need. In addition to the Major train, there are Early Deployment (ED) trains, which primarily deliver new features.

The ED train that these release notes refer to—Release 11.2 XA1—delivers both fixes to software defects and support for the Cisco 3600 series and Cisco 1600 series routers only. The Release 11.2 P ED train also delivers both fixes to software defects and support for new platforms but for a broader range of hardware devices. The other ED train—Release 11.2 F—delivers fixes to software defects, new platform support, and new cross-platform functionality.

Use these release notes in conjunction with the *Release Notes for Cisco IOS Release 11.2*, because the software caveats that apply to Release 11.2 also apply to Release 11.2(4)XA1.

Note For additional documentation and literature, refer to the “Documentation CD-ROM” section at the end of this document.

Corporate Headquarters

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

Copyright © 1996 to 2002
Cisco Systems, Inc.
All rights reserved.

Introduction

These release notes discuss the following topics:

- Documentation, page 2
- Platform Support, page 2
- Features Supported by Release 11.2(4)XA1, page 5
- Cisco IOS Feature Sets, page 5
- Release 11.2(4)XA Caveats, page 13
- Upgrading to a New Software Release, page 13
- Memory Requirements, page 13
- Cisco Connection Online, page 15
- Documentation CD-ROM, page 15

Documentation

For Cisco IOS Release 11.2(4)XA1, the Cisco IOS documentation consists of the *Feature Guide for Cisco IOS Release 11.2(4)XA1*. This feature guide supplements the Cisco IOS Release 11.2 configuration guide and command reference publications.

In the *Feature Guide for Cisco IOS Release 11.2(4)XA1*, each new feature is documented in its own section, which includes configuration tasks as well as new and changed command reference pages. The *Feature Guide for Cisco IOS Release 11.2(4)XA1* contains documentation for the new features described in these release notes. See the “Features Supported by Release 11.2(4)XA1” section.

These release notes do not describe features that are available in Release 11.2, Release 11.2 P, or Release 11.2 F. For information about features in Release 11.2, refer to the *Release Notes for Cisco IOS Release 11.2*. For information about features in Release 11.2 P, refer to the *Release Notes for Cisco IOS Release 11.2 P*. For information about features in Release 11.2 F, refer to the *Release Notes for Cisco IOS Release 11.2 F*.

All the documents mentioned are available as printed manuals or electronic documents.

For electronic documentation of Release 11.2 router and access server software features, available on the Documentation CD-ROM, refer to the Cisco IOS Release 11.2 configuration guides and command references, which are located in the Cisco IOS Release 11.2 database.

You can also access Cisco technical documentation on the World Wide Web at <http://www.cisco.com>.

Platform Support

Cisco IOS Release 11.2(4)XA1 is supported on the following platforms:

- Cisco 3600 series routers—Cisco 3640 and Cisco 3620
- Cisco 1600 series routers—Cisco 1601, Cisco 1602, Cisco 1603, and Cisco 1604

Table 1 summarizes the LAN interfaces supported on each platform series.

Table 2 summarizes the WAN data rates and interfaces supported on each platform series.

Table 3 and Table 4 list the WAN interface cards and network modules supported on each platform series.

Table 1 LAN Interfaces Supported by the Cisco 3600 Series and Cisco 1600 Series

Interface	Cisco 1600 Series	Cisco 3600 Series
Ethernet (AUI)	Yes	Yes
Ethernet (10BaseT)	Yes	Yes
4-Mbps Token Ring	No	Yes
16-Mbps Token Ring	No	Yes

Table 2 WAN Data Rates and Interfaces Supported by the Cisco 3600 Series and Cisco 1600 Series

	Cisco 1600 Series	Cisco 3600 Series
Data Rate		
48/56/64 kbps	Yes	Yes
1.544/2.048 Mbps	Yes	Yes
Interface		
EIA/TIA-232	Yes	Yes
X.21	Yes	Yes
V.35	Yes	Yes
EIA/TIA-449	Yes	Yes
EIA-530	Yes	Yes
Serial, synchronous and asynchronous	Yes	Yes
4-wire 56K DSU/CSU	Yes ¹	No
ISDN BRI S/T ISDN BRI U	Yes	Yes
ISDN PRI	No	Yes
Channelized T1 (with and without CSU)	No	Yes
Channelized E1 (balanced and unbalanced)	No	Yes

1. This interface is supported on the Cisco 1602 router.

Table 3 Cisco 1600 Series WAN Interface Cards Supported by Cisco IOS Release 11.2(4)XA1

1-port serial
1-port ISDN BRI with S/T interface
1-port ISDN BRI with NT1 and U interface

Table 4 Cisco 3600 Series WAN Interface Cards and Network Modules Supported by Cisco IOS 11.2(4)XA1

Combination WAN/LAN Interface Cards
1 Ethernet and 2 WAN interface card slots
2 Ethernet and 2 WAN interface card slots
1 Ethernet, 1 Token Ring, and 2 WAN interface card slots
Standard WAN Interface Cards¹
1-port serial WAN interface card
1-port ISDN BRI WAN interface card
1-port ISDN BRI with NT1 WAN interface card
1-port ISDN BRI with NT1 and U interface card slots
Channelized T1 and E1 ISDN PRI Network Modules
1-port channelized T1/ISDN PRI network module
1-port channelized T1/ISDN PRI with CSU network module
2-port channelized T1/ISDN PRI network module
2-port channelized T1/ISDN PRI with CSU network module
1-port channelized E1/ISDN PRI balanced network module
1-port channelized E1/ISDN PRI unbalanced network module
2-port channelized E1/ISDN PRI balanced network module
2-port channelized E1/ISDN PRI unbalanced network module
Blank network module panel
ISDN BRI Network Modules
4-port ISDN BRI network module with an S/T interface ²
4-port ISDN BRI with NT1 network module ²
8-port ISDN BRI network module with an S/T interface
8-port ISDN BRI with NT1 network module
Asynchronous/Synchronous Network Modules
4-port asynchronous/synchronous serial network module ²
8-port asynchronous/synchronous serial network module
Additional Network Module
1-port Ethernet network module

1. These interface cards are compatible with the Cisco 1600 series routers. However, the ISDN BRI cards will not be compatible until after March 1997.
2. The 4-port module is not upgradable to the 8-port module.

Features Supported by Release 11.2(4)XA1

The following hardware platforms are supported by Cisco IOS Release 11.2(4)XA1.

Cisco 1600 Series Routers

The Cisco 1600 series of access routers delivers the next-generation set of features and benefits for small-office Internet and intranet access: WAN flexibility, end-to-end security, end-to-end quality of service, ease of use, deployment, and management. The Cisco 1600 series routers connect small offices with Ethernet LANs to the public Internet and to a company's internal intranet or corporate LAN through several WAN connections such as ISDN, asynchronous serial, and synchronous serial. The Cisco 1600 series routers include the following models: the Cisco 1601, Cisco 1602, Cisco 1603, and Cisco 1604.

All Cisco 1600 series models include one Ethernet port, one built-in WAN port, and one WAN interface card expansion slot for additional connectivity and flexibility. The Cisco 1601 includes a built-in serial WAN port; the Cisco 1602 has an onboard 56-kbps four-wire Channel Service Unit/Data Service Unit (CSU/DSU); the Cisco 1603 has an ISDN BRI S/T port; and the Cisco 1604 includes an ISDN BRI U interface with a built-in NT1 device.

Cisco 3600 Series Routers

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

The Cisco 3640 has four network module slots; the Cisco 3620 has two slots. Each network module slot accepts a variety of network module interface cards, including LAN and WAN mixed media cards supporting Ethernet, Token Ring, and a variety of WAN technologies. These cards provide the foundation of LAN and WAN connectivity on a single modular network module. Additional applications are supported with a series of network module cards offering asynchronous and synchronous serial, ISDN PRI, and ISDN BRI interfaces.

Cisco IOS Feature Sets

The Cisco IOS software is packaged into feature sets, which are also called software images. There are many different feature sets available, and each feature set contains a specific subset of Cisco IOS features. Not all feature sets are available for all platforms. Also, some features sets support different features when run of different platforms.

This section lists the Cisco IOS software feature sets available for the Cisco 3600 series and Cisco 1600 series routers.

Table 5 through Table 7 use the following conventions to identify features:

Feature Set Matrix Symbol	Description
⊕	The feature is offered in the basic feature set.
—	The feature is not offered in the feature set.
Plus	The feature is offered only in the Plus feature sets, not in the basic feature set.

Feature Set Matrix Symbol	Description
Encrypt	The addition of 40-bit (Plus 40) or 56-bit (Plus 56) data encryption feature sets. Encryption feature sets for the Cisco 3600 series will be available in Release 11.2 P not in Release 11.2(4)XA1.

Cisco IOS images with 40-bit Data Encryption Standard (DES) support may legally be distributed to any party eligible to receive Cisco IOS software. 40-bit DES is not a cryptographically strong solution and should not be used to protect sensitive data.

Cisco IOS images with 56-bit DES are subject to International Traffic in Arms Regulations (ITAR) controls and have a limited distribution. Images to be installed outside the U.S. require an export license. Customer orders may be denied or subject to delay because of U.S. government regulations. Contact your sales representative or distributor for more information, or send e-mail to export@cisco.com.

Table 5 shows the standard feature sets supported in Release 11.2(4)XA1.

Table 5 Cisco IOS Release 11.2(4)XA1 Feature Set Matrix

Feature Sets	Cisco 3600 Series	Cisco 1600 Series
IP routing	Ð and Plus	Ð, Plus, Encrypt
IP/IPX routing	—	Ð, Plus, Encrypt
IP/AppleTalk routing	—	Ð, Plus, Encrypt
IP/IPX/AppleTalk routing	—	Ð, Plus, Encrypt
IP/IPX/IBM/APPN ¹	Ð and Plus	—
Desktop (IP/IPX/AppleTalk/DEC)	Ð and Plus	—
Enterprise	Ð and Plus	—

1. IP/IPX/IBM/APPN has no additional options. It offers a low-end APPN solution for the Cisco 3600 series routers.

Table 6 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 3600 Series

Features	IP Routing	IP/IPX/IBM/APPN ¹	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise
LAN Support				
Apollo Domain	—	—	—	Ð
AppleTalk 1 and 2	—	—	Ð	Ð
Banyan VINES	—	—	—	Ð
Concurrent routing and bridging	Ð	Ð	Ð	Ð

Table 6 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 3600 Series (Continued)

Features	IP Routing	IP/IPX/IBM/APPN ¹	Desktop	
			(IP/IPX/AppleTalk/DEC)	Enterprise
DECnet IV	—	—	Ⓜ	Ⓜ
DECnet V	—	—	—	Ⓜ
GRE	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Integrated routing and bridging (RB)	Ⓜ	Ⓜ	Ⓜ	Ⓜ
IP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
LAN extension host	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Multiring	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Novell IPX	—	Ⓜ	Ⓜ	Ⓜ
OSI	—	—	—	Ⓜ
Source-route bridging	—	—	—	—
Transparent and translational bridging	Ⓜ	Ⓜ	Ⓜ	Ⓜ
XNS	—	—	—	Ⓜ
WAN Services				
Combinet packet protocol	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Dialer profiles	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Frame Relay	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Frame Relay SVC support (DTE)	—	—	—	Ⓜ
Frame Relay traffic shaping ²	—	—	—	—
Half bridge/half router for CPP and PPP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Multichassis Multilink PPP (MMP)	Plus	—	Plus	Plus
Virtual Private Dial-up Network (VPDN)	—	—	Ⓜ	Ⓜ
HDLC	Ⓜ	Ⓜ	Ⓜ	Ⓜ
IPXWAN 2.0	—	Ⓜ	Ⓜ	Ⓜ
ISDN ³	Ⓜ	Ⓜ	Ⓜ	Ⓜ
PPP ⁴	Ⓜ	Ⓜ	Ⓜ	Ⓜ
SMDS	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Switched 56	Ⓜ	Ⓜ	Ⓜ	Ⓜ
X.25 ⁵	Ⓜ	Ⓜ	Ⓜ	Ⓜ
WAN Optimization				
Bandwidth-on-demand	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Custom and priority queuing	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Dial backup	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Dial-on-demand	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Header ⁶ , link and payload compression ⁷	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Snapshot routing	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Weighted fair queuing	Ⓜ	Ⓜ	Ⓜ	Ⓜ

Table 6 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 3600 Series (Continued)

Features	IP Routing	IP/IPX/IBM/APPN ¹	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise
IP Routing				
BGP	ⓓ	ⓓ	ⓓ	ⓓ
BGP4	ⓓ	ⓓ	ⓓ	ⓓ
EGP	ⓓ	ⓓ	ⓓ	ⓓ
Enhanced IGRP	ⓓ	ⓓ	ⓓ	ⓓ
Enhanced IGRP optimizations	ⓓ	ⓓ	ⓓ	ⓓ
ES-IS	—	—	—	ⓓ
IGRP	ⓓ	ⓓ	ⓓ	ⓓ
IS-IS	—	—	—	ⓓ
Named IP access control list	ⓓ	ⓓ	ⓓ	ⓓ
Network Address Translation (NAT)	Plus	—	Plus	Plus
NHRP	ⓓ	ⓓ	ⓓ	ⓓ
OSPF	ⓓ	ⓓ	ⓓ	ⓓ
OSPF Not-So-Stubby-Areas (NSSA)	ⓓ	ⓓ	ⓓ	ⓓ
OSPF On Demand Circuit (RFC 1793)	ⓓ	ⓓ	ⓓ	ⓓ
PIM	ⓓ	ⓓ	ⓓ	ⓓ
Policy-based routing	ⓓ	ⓓ	ⓓ	ⓓ
RIP	ⓓ	ⓓ	ⓓ	ⓓ
RIP Version 2	ⓓ	ⓓ	ⓓ	ⓓ
Other Routing				
AURP	—	—	ⓓ	ⓓ
IPX RIP	—	ⓓ	ⓓ	ⓓ
NLSP	—	ⓓ	ⓓ	ⓓ
RTMP	—	—	ⓓ	ⓓ
SMRP	—	—	ⓓ	ⓓ
SRTP	—	—	—	ⓓ
Multimedia and Quality of Service				
Generic traffic shaping	ⓓ	ⓓ	ⓓ	ⓓ
Random Early Detection (RED)	ⓓ	ⓓ	ⓓ	ⓓ
Resource Reservation Protocol (RSVP)	ⓓ	ⓓ	ⓓ	ⓓ
Management				
AutoInstall	ⓓ	ⓓ	ⓓ	ⓓ
Automatic modem configuration ⁸	ⓓ	ⓓ	ⓓ	ⓓ
HTTP server	ⓓ	ⓓ	ⓓ	ⓓ
RMON events and alarms ⁹	ⓓ	ⓓ	ⓓ	ⓓ
SNMP	ⓓ	ⓓ	ⓓ	ⓓ
Telnet	ⓓ	ⓓ	ⓓ	ⓓ

Table 6 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 3600 Series (Continued)

Features	IP Routing	IP/IPX/IBM/APPN ¹	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise
Security				
Access lists	⊘	⊘	⊘	⊘
Access security	⊘	⊘	⊘	⊘
Extended access lists	⊘	⊘	⊘	⊘
Kerberized login	—	—	—	⊘
Kerberos V client support	—	—	—	⊘
Lock and key	—	—	—	⊘
MAC security for hubs	⊘	⊘	⊘	⊘
MD5 routing authentication	⊘	⊘	⊘	⊘
Network layer encryption (40-bit or export controlled 56-bit DES)	—	—	—	—
RADIUS	⊘	⊘	⊘	⊘
Router authentication	—	—	—	—
TACACS+	⊘	⊘	⊘	⊘
IBM Support (Optional)¹⁰				
APPN	—	⊘	—	⊘
BAN for SNA Frame Relay support	Plus	⊘	⊘	⊘
Bisync ¹¹	Plus	⊘	⊘	⊘
Caching and filtering	Plus	⊘	⊘	⊘
DLSw+	Plus	⊘	⊘	⊘
Downstream PU concentration (DSPU)	Plus	⊘	—	⊘
Frame Relay SNA Support (RFC 1490)	Plus	⊘	⊘	⊘
NetView Native Service Point	Plus	⊘	⊘	⊘
QLLC ¹¹	Plus	⊘	⊘	⊘
SDLC integration	Plus	⊘	⊘	⊘
SDLC transport (STUN)	Plus	⊘	⊘	⊘
SDLC-to-LAN conversion (SDLIC)	Plus	⊘	⊘	⊘
SNA and NetBIOS WAN optimization via local acknowledgment	Plus	⊘	⊘	⊘
SRB/RSRB	Plus	⊘	⊘	⊘
SRT	Plus	⊘	⊘	⊘
TG/COS	—	—	—	⊘
Protocol Translation				
LAT	—	—	—	⊘
Rlogin	—	—	—	⊘
Remote Node				
ARAP 1.0/2.0 ¹²	—	—	⊘	⊘

Table 6 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 3600 Series (Continued)

Features	IP Routing	IP/IPX/IBM/APPN ¹	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise
Asynchronous master interfaces	Ⓜ	Ⓜ	Ⓜ	Ⓜ
ATCP	—	—	Ⓜ	Ⓜ
CPPP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
CSLIP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
DHCP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
IP pooling	Ⓜ	Ⓜ	Ⓜ	Ⓜ
IPX and ARAP on virtual asynch interfaces	—	—	—	Ⓜ
IPXCP	—	Ⓜ	Ⓜ	Ⓜ
MacIP	—	—	Ⓜ	Ⓜ
NASI ¹³	—	Ⓜ	Ⓜ	Ⓜ
NetBEUI over PPP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
PPP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
SLIP	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Terminal Services				
LAT ¹⁴	—	—	—	Ⓜ
Rlogin	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Telnet	Ⓜ	Ⓜ	Ⓜ	Ⓜ
TN3270	—	—	—	Ⓜ
X.25 PAD	Ⓜ	Ⓜ	Ⓜ	Ⓜ
Xremote	—	—	—	Ⓜ

- IP/IPX/IBM/APPN has no additional options. It offers a low-end APPN solution for the Cisco 3600 series routers.
- Frame Relay traffic shaping will be available in a future 11.2 P release.
- ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features.
- PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, and PPP compression. Multilink PPP is available in Cisco IOS Release 11.0(4) and later releases.
- Includes X.25 switching.
- IPX header compression (RFC 1553) is available in the feature sets that support IPX in Cisco IOS Release 11.1(1) and later releases.
- X.25 and Frame Relay payload compression are supported in Cisco IOS Release 11.0(4) and later releases.
- Automatic modem configuration is available for all features sets in Cisco IOS Release 11.1(2) and later releases. For the Enterprise feature set, automatic modem configuration is available in Cisco IOS 11.1(1) and later releases.
- The RMON events and alarms groups are supported on all interfaces in Cisco IOS Release 11.1 and later releases. Enhanced RMON feature sets are also available.
- “Optional” means a separate Cisco IOS feature set with the IBM base option: IP/IBM base, IP/IPX/IBM/APPN base, Desktop/IBM base, Enterprise/IBM base.
- QLLC and Bisync are available in IP/IBM in Cisco IOS Release 11.0(3) and later releases, and in IP/IPX/IBM and Desktop/IBM base in Cisco IOS Release 11.0(2) and later releases.
- ARAP will be supported in a future 11.2 P release, not in Release 11.2(4)XA1.
- NASI is supported in Cisco IOS Release 11.1(2) and later releases.
- Use of LAT requires terminal license (FR-L8-10.X= for an 8-user license or FR-L16-10.X= for a 16-user license).

Table 7 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 1600 Series

Feature Sets	IP Routing	IP/IPX Routing	IP/AppleTalk Routing	IP/IPX/AppleTalk Routing
LAN Support				
AppleTalk 1 and 2 ¹	—	—	ⓓ	ⓓ
Integrated routing and bridging (IRB) ²	ⓓ	ⓓ	ⓓ	ⓓ
IP	ⓓ	ⓓ	ⓓ	ⓓ
Novell IPX ³	—	ⓓ	—	ⓓ
Transparent bridging	ⓓ	ⓓ	ⓓ	ⓓ
WAN Services				
Asynchronous	ⓓ	ⓓ	ⓓ	ⓓ
Frame Relay	ⓓ	ⓓ	ⓓ	ⓓ
Frame Relay SVC support (DTE)	Plus	Plus	Plus	Plus
Frame Relay traffic shaping ⁴	—	—	—	—
HDLC	ⓓ	ⓓ	ⓓ	ⓓ
ISDN ⁵	ⓓ	ⓓ	ⓓ	ⓓ
PPP ⁶	ⓓ	ⓓ	ⓓ	ⓓ
SMDS	ⓓ	ⓓ	ⓓ	ⓓ
Switched 56	ⓓ	ⓓ	ⓓ	ⓓ
X.25	ⓓ	ⓓ	ⓓ	ⓓ
SLIP asynchronous only	ⓓ	ⓓ	ⓓ	ⓓ
WAN Optimization				
Bandwidth-on-demand ⁷	ⓓ	ⓓ	ⓓ	ⓓ
Custom and priority queuing	ⓓ	ⓓ	ⓓ	ⓓ
Dial backup	ⓓ	ⓓ	ⓓ	ⓓ
Dial-on-demand	ⓓ	ⓓ	ⓓ	ⓓ
Header, link, and payload compression	ⓓ	ⓓ	ⓓ	ⓓ
Header and link compression	ⓓ	ⓓ	ⓓ	ⓓ
Snapshot routing	ⓓ	ⓓ	ⓓ	ⓓ
Weighted fair queuing	ⓓ	ⓓ	ⓓ	ⓓ
IPX and SPX spoofing	—	ⓓ	—	ⓓ
IP Routing				
AppleTalk SMRP Multicast	—	—	ⓓ	ⓓ
Enhanced IGRP	ⓓ	ⓓ	ⓓ	ⓓ
IGRP	ⓓ	ⓓ	ⓓ	ⓓ
IP Multicast (PIM)	ⓓ	ⓓ	ⓓ	ⓓ
Network Address Translation (NAT)	Plus	Plus	Plus	Plus
On Demand Routing (ODR)	ⓓ	ⓓ	ⓓ	ⓓ
OSPF	Plus	Plus	Plus	Plus

Table 7 Cisco IOS Release 11.2(4)XA1 Feature Sets for the Cisco 1600 Series (Continued)

Feature Sets	IP Routing	IP/IPX Routing	IP/AppleTalk Routing	IP/IPX/AppleTalk Routing
OSPF On Demand Circuit (RFC 1793)	Plus	Plus	Plus	Plus
PIM	Plus	Plus	Plus	Plus
RIP	⊘	⊘	⊘	⊘
RIP Version 2	⊘	⊘	⊘	⊘
Other Routing				
IPX RIP	—	⊘	—	⊘
RTMP	—	—	⊘	⊘
NLSP	—	Plus	—	Plus
Multimedia and Quality of Service				
Generic traffic shaping	Plus	Plus	Plus	Plus
Random Early Detection (RED)	Plus	Plus	Plus	Plus
Resource Reservation Protocol (RSVP)	Plus	Plus	Plus	Plus
Management				
SNMP	⊘	⊘	⊘	⊘
Telnet	⊘	⊘	⊘	⊘
Console port	⊘	⊘	⊘	⊘
Access lists	⊘	⊘	⊘	⊘
Access security	⊘	⊘	⊘	⊘
Extended access lists	⊘	⊘	⊘	⊘
GRE tunneling	⊘	⊘	⊘	⊘
Lock and key	⊘	⊘	⊘	⊘
Network layer encryption, 40-bit (Plus 40) and 56-bit (Plus 56)	Encrypt	Encrypt	Encrypt	Encrypt
Access lists	⊘	⊘	⊘	⊘

- AppleTalk load balancing is available in Cisco IOS Release 11.2.
- IRB supports IP, IPX, and AppleTalk; it is supported for transparent bridging, but not for SRB; it is supported on all media-type interfaces except X.25 and ISDN bridged interfaces; and IRB and concurrent routing and bridging (CRB) cannot operate at the same time.
- In Cisco IOS Release 11.2, the Novell IPX feature includes Display SAP by Name, IPX Access Control List violation logging, and plain-English IPX access lists.
- Frame Relay traffic shaping will be available in a future 11.2 P release.
- ISDN support includes calling line identification (CLI/ANI), ISDN subaddressing, and applicable WAN optimization features.
- PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, and PPP compression. Multilink PPP is included with Cisco IOS Release 11.0(4) and later releases.
- Bandwidth-on-demand means two B channel calls to the same destination.

Release 11.2(4)XA1 Caveats

This section describes possible unexpected behavior by Release 11.2(4)XA2 for the Cisco 1600 and Cisco 3600.

- CSCdw78210

Related to fixes in CSCdw65903 and outlined in:

<http://www.cisco.com/warp/public/707/cisco-malformed-snmp-msgs-pub.shtml>.

This defect may be seen when “debug snmp packets” is turned on and can result in tracebacks.

Release 11.2(4)XA1 Caveats

This section describes possible unexpected behavior by Release 11.2(4)XA1 for the Cisco 1600 and Cisco 3600.

- 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>

Release 11.2(4)XA Caveats

This section describes possible unexpected behavior by Release 11.2(4)XA for the Cisco 1603 router only.

A router reload is known to occur on a Cisco 1603 under the following conditions:

- 1 A BRI interface is initially configured with a wrong dial string and the BRI interface is already active on Layers 1 and 2.
- 2 A second correct dial string is configured.
- 3 While pinging through the correct dial string, the wrong dial string unconfigured.

[CSCdi81928]

Upgrading to a New Software Release

If you are upgrading to Cisco IOS Release 11.2(4)XA1 from an earlier Cisco IOS software release, you should save your current configuration file before configuring your access server with the Cisco IOS Release 11.2(4)XA1 software in the event that an unrecoverable error occurs during download or configuration. If you need help, see the “Cisco Connection Online” section.

Memory Requirements

Table 8 and Table 9 describe the memory requirements for each platform’s feature set supported by Cisco IOS Release 11.2(4)XA1.

Note Encryption feature sets for the Cisco 3600 series will be supported in a future release of Cisco IOS Release 11.2 P.

Table 8 Cisco 3600 Series Minimum Memory Requirements for Release 11.2(4)XA1

Feature Set	Cisco 3600 Series Router	Required Flash Memory	Required DRAM Memory
IP only	Cisco 3640	4 MB	16 MB
	Cisco 3620	4 MB	16 MB
IP Plus	Cisco 3640	4 MB	16 MB
	Cisco 3620	4 MB	16 MB
Desktop (IP/IPX/AppleTalk/DEC)	Cisco 3640	4 MB	16 MB
	Cisco 3620	4 MB	16 MB
Desktop plus	Cisco 3640	4 MB	24 MB
	Cisco 3620	4 MB	24 MB
Enterprise	Cisco 3640	8 MB	24 MB
	Cisco 3620	8 MB	24 MB
Enterprise plus	Cisco 3640	8 MB	24 MB
	Cisco 3620	8 MB	24 MB
Enterprise and APPN plus	Cisco 3640	8 MB	32 MB
	Cisco 3620	8 MB	32 MB
IP/IPX/IBM/APPN	Cisco 3640	8 MB	32 MB
	Cisco 3620	8 MB	32 MB

Table 9 Cisco 1600 Series Minimum Memory Requirements for Release 11.2(4)XA1

Feature Set	Required DRAM	Required Flash
IP	2 MB	4 MB
IP Plus	4 MB	6 MB
IP Plus 40	4 MB	6 MB
IP Plus 56	4 MB	6 MB
IP/IPX	2 MB	4 MB
IP/IPX Plus	4 MB	6 MB
IP/IPX Plus 40	4 MB	6 MB
IP/IPX Plus 56	4 MB	6 MB
IP/AT	2 MB	4 MB
IP/AT Plus	4 MB	6 MB
IP/AT Plus 40	4 MB	6 MB
IP/AT Plus 56	4 MB	6 MB
IP/IPX/AT	4 MB	6 MB
IP/IPX/AT Plus	4 MB	6 MB
IP/IPX/AT Plus 40	4 MB	6 MB
IP/IPX/AT Plus 56	4 MB	6 MB

Cisco Connection Online

Cisco Connection Online (CCO) is Cisco Systems' primary, real-time support channel. Maintenance customers and partners can self-register on CCO to obtain additional information and services.

Available 24 hours a day, 7 days a week, CCO provides a wealth of standard and value-added services to Cisco's customers and business partners. CCO services include product information, product documentation, software updates, release notes, technical tips, the Bug Navigator, configuration notes, brochures, descriptions of service offerings, and download access to public and authorized files.

CCO serves a wide variety of users through two interfaces that are updated and enhanced simultaneously: a character-based version and a multimedia version that resides on the World Wide Web (WWW). The character-based CCO supports Zmodem, Kermit, Xmodem, FTP, and Internet e-mail, and it is excellent for quick access to information over lower bandwidths. The WWW version of CCO provides richly formatted documents with photographs, figures, graphics, and video, as well as hyperlinks to related information.

You can access CCO in the following ways:

- WWW: <http://www.cisco.com>
- WWW: <http://www-europe.cisco.com>
- WWW: <http://www-china.cisco.com>
- Telnet: [cco.cisco.com](telnet://cco.cisco.com)
- Modem: From North America, 408 526-8070; from Europe, 33 1 64 46 40 82. Use the following terminal settings: VT100 emulation; databits: 8; parity: none; stop bits: 1; and connection rates up to 28.8 kbps.

For a copy of CCO's Frequently Asked Questions (FAQ), contact cco-help@cisco.com. For additional information, contact cco-team@cisco.com.

Note If you are a network administrator and need personal technical assistance with a Cisco product that is under warranty or covered by a maintenance contract, contact Cisco's Technical Assistance Center (TAC) at 800 553-2447, 408 526-7209, or tac@cisco.com. To obtain general information about Cisco Systems, Cisco products, or upgrades, contact 800 553-6387, 408 526-7208, or cs-rep@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, a member of the Cisco Connection Family, is updated monthly. Therefore, it might be more up to date than printed documentation. To order additional copies of the Documentation CD-ROM, contact your local sales representative or call customer

service. The CD-ROM package is available as a single package or as an annual subscription. You can also access Cisco documentation on the World Wide Web at <http://www.cisco.com>, <http://www-china.cisco.com>, or <http://www-europe.cisco.com>.

This document is to be used in conjunction with the *Release Notes for Cisco IOS Release 11.2* and *Feature Guide for Cisco IOS Release 11.2(4)XA*.

CCIP, the Cisco *Powered* Network mark, the Cisco Systems Verified logo, Cisco Unity, Fast Step, Follow Me Browsing, FormShare, Internet Quotient, iQ Breakthrough, iQ Expertise, iQ FastTrack, the iQ Logo, iQ Net Readiness Scorecard, Networking Academy, ScriptShare, SMARTnet, TransPath, and Voice LAN are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn, Discover All That's Possible, The Fastest Way to Increase Your Internet Quotient, and iQuick Study are service marks of Cisco Systems, Inc.; and Aironet, ASIST, BPX, Catalyst, CCDA, CCDP, CCIE, CCNA, CCNP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, the Cisco IOS logo, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Empowering the Internet Generation, Enterprise/Solver, EtherChannel, EtherSwitch, GigaStack, IOS, IP/TV, LightStream, MGX, MICA, the Networkers logo, Network Registrar, *Packet*, PIX, Post-Routing, Pre-Routing, RateMUX, Registrar, SlideCast, StrataView Plus, Stratm, SwitchProbe, TeleRouter, and VCO are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and certain other countries.

All other trademarks mentioned in this document or Web site are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0201R)

Copyright © 1996–2002 Cisco Systems, Inc.
All rights reserved.