Doc. No. 78-5065-01

Release Notes for the Cisco AS5200 for Cisco IOS Release 11.2 P

December 24, 1997

These release notes discusses the new features and significant software components for Cisco IOS Release 11.2(10a)P1 for the Cisco AS5200 access server.

Introduction

These release notes discuss the following topics:

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USA

Determining Your Cisco IOS Software Release

To determine which version of Cisco IOS software is running on your Cisco AS5200 access server, log on to the server and enter the **show version** User EXEC command:

```
router> show version
Cisco Internetwork Operating System Software
IOS (tm) 5200 Software (C5200-I-L), 11.2(10), RELEASE SOFTWARE (fc1)
Copyright (c) 1986-1997 by cisco Systems, Inc.
Compiled Wed 11-Jun-97 19:35 by jhernand
Image text-base: 0x0000544C, data-base: 0x00418AF8

ROM: System Bootstrap, Version 11.1(474A) [jdisimon 104], INTERIM SOFTWARE
boot Flash: 5200 Software (AS5200-BOOT-L), Version 11.1(7)AA, EARLY
DEPLOYMENT R)

BRASIL_1 uptime is 3 minutes
System restarted by reload
System image file is "jhernand/c5200-i-l-112-4", booted via tftp f4

cisco AS5200 (68030) processor (revision B) with 16384K/4096K bytes of memory.
Processor board ID 04272627
Bridging software.
X.25 software, Version 2.0, NET2, BFE and GOSIP compliant.
Primary Rate ISDN software, Version 1.0.
Mother board with terminator card.
1 Ethernet/IEEE 802.3 interface(s)
50 Serial network interface(s)
48 terminal line(s)
2 Channelized T1/PRI port(s)
128K bytes of non-volatile configuration memory.
8192K bytes of processor board System flash (Read/Write)
4096K bytes of processor board Boot flash (Read/Write)

Configuration register is 0x0
```

New Features for Cisco AS5200 Access Servers

This section describes the new features for Cisco AS5200 access servers.

Flash Load Helper

The Flash load helper feature in now supported for Release 11.2(10)P and higher. This feature enables you to upgrade system software on run-from-Flash systems that have a single bank of Flash memory. It is a lower-cost software upgrade solution than dual-bank Flash, which requires two banks of Flash memory on one SIMM.

Flash load helper is an automated procedure that reloads the ROM-based image, downloads the software to Flash memory, and reboots to the system image in Flash memory. Flash load helper performs checks and validations to maximize the success of a Flash upgrade and to minimize the chance of leaving Flash memory either in an erased state or with a file that cannot boot.

Fastboot

The fastboot feature is now supported for Release 11.2(10)P and higher. This feature speeds up the boot process by using the system image directly from the system bootstrap image without accessing the boot image. To enable this feature, perform a write memory by entering the **copy running-config startup-config command** when running Release 11.2(10)P or later.

Note If you run an image earlier than 11.2(7)P or perform a write memory with version 11.2(7)P to 11.2(9)P, the feature will automatically disable itself.

Channelized E1 Signaling for the Cisco AS5200

The Cisco AS5200 access server now supports channel-associated signaling for channelized E1 lines, which are commonly deployed in networks in Latin America, Asia, and Europe.

After this feature is configured on a single E1 controller, up to 30 remote users can simultaneously dial in to the Cisco AS5200 through networks running the R2 protocol. Typically all 30 channels of a channelized E1 line are used for analog calls. However, a signal converter is still needed to perform conversions between R2 signaling and ear and mouth signaling (also known as E&M). Because the Cisco AS5200 has two physical E1 ports on its dual E1 Primary Rate Interface (PRI) board, up to 60 simultaneous connections can be made through the dual E1 PRI board.

These service adapters provide high-performance, hardware-based data compression capabilities via simultaneous stacker compression data compression algorithms with independent full-duplex compression and decompression capabilities on Point-to-Point protocol (PPP) encapsulated packets.

Robbed Bit Signaling for the Cisco AS5200

New types of signaling provided for a channelized T1 include ground start and loop start support. This new signaling is set using the **cas-group** controller configuration command.

Dual E1 PRI for the Cisco AS5200

This new E1 PRI card has two E1 controllers, which provide physical termination for two E1 PRI lines. Unlike most controller E1 configurations, the Cisco AS5200's E1 PRI controllers require a clock source, which is set with the **clock source** command.

Bundled Modem Code

For 56K modems, Cisco IOS Release 11.2(10)P includes bundled modem code version 3.1.30. The modem code filename is:

mcom-modem-code-3.1.30.bin

Interfaces Supported on Cisco AS5200 Access Servers

The following LAN and WAN interfaces are supported on Cisco AS5200 access servers:

- Ethernet (AUI)
- EIA/TIA-232
- X.21
- V.35
- EIA/TIA-449
- EIA-530
- ISDN PRI
- E1-G.703/G.704
- Channelized T1
- Channelized E1
- Synchronous serial

The following modem cards are supported:

- 56K
- V.34+ modems
- V.110 terminal adapter (TA) for Global System for Mobil Communications (GSM) Cellular Networks

Related Documentation

This section describes related Cisco IOS documentation, which you can use to configure your access server.

Feature Descriptions

For details about the features introduced in these release notes, refer to the *Feature Guide for Cisco IOS Release 11.2 P.* The printed version of the *Feature Guide for Cisco IOS Release 11.2 P* contains features up to Release 11.2(7)P. Features added after Release 11.2(7)P are available in the electronic (online) version of the feature guide only.

The electronic documentation can be found on the Documentation CD-ROM (available 12/15/97) and on Cisco Connection Online (CCO) (available 11/24/97). On the Documentation CD, the path is as follows:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2:

- Feature Guide for Cisco IOS Release 11.2 P
- Product-Specific Release Notes
- Cisco IOS Software Release 11.2 P Caveats

On CCO, http://www.cisco.com/, the path is as follows:

Cisco Connection Online: Products and Ordering: Documentation: Cisco Documentation: Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 11.2:

- Feature Guide for Cisco IOS Release 11.2 P
- Product-Specific Release Notes
- Cisco IOS Software Release 11.2 P Caveats

For more information about related documentation, refer to the "Cisco IOS Documentation" and "Cisco IOS Documentation" sections later in this document.

Cisco IOS Documentation

For Cisco IOS Release 11.2, the Cisco IOS documentation set consists of eight modules, each module consisting of a configuration guide and a command reference. The documentation set also includes six supporting documents.

Note The most up-to-date Cisco IOS documentation can be found on the latest Documentation CD-ROM and on the Web. These electronic documents contain updates and modifications made after the paper documents were printed.

The books and chapter topics are as follows:

Books	Chapter Topics
• *Configuration Fundamentals Configuration Guide* • *Configuration Fundamentals Command Reference*	Access Server and Router Product Overview User Interface System Images and Configuration Files Using ClickStart, AutoInstall, and Setup Interfaces System Management
• *Security Configuration Guide* • *Security Command Reference*	Network Access Security Terminal Access Security Accounting and Billing Traffic Filters Controlling Router Access Network Data Encryption with Router Authentication

Books	Chapter Topics
• *Access Services Configuration Guide* • *Access Services Command Reference*	Terminal Lines and Modem Support Network Connections AppleTalk Remote Access SLIP and PPP XRemote LAT Telnet TN3270 Protocol Translation Configuring Modem Support and Chat Scripts X.3 PAD Regular Expressions
• *Wide-Area Networking Configuration Guide* • *Wide-Area Networking Command Reference*	ATM Dial-on-Demand Routing (DDR) Frame Relay ISDN LANE PPP for Wide-Area Networking SMDS X.25 and LAPB
• *Network Protocols Configuration Guide, Part 1* • *Network Protocols Command Reference, Part 1*	IP IP Routing
• *Network Protocols Configuration Guide, Part 2* • *Network Protocols Command Reference, Part 2*	AppleTalk Novell IPX
• *Network Protocols Configuration Guide, Part 3* • *Network Protocols Command Reference, Part 3*	Apollo Domain Banyan VINES DECnet ISO CLNS XNS

Books	Chapter Topics
• *Bridging and IBM Networking Configuration Guide* • *Bridging and IBM Networking Command Reference*	Transparent Bridging Source-Route Bridging Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point Support SNA Frame Relay Access Support APPN NCIA Client/Server Topologies IBM Channel Attach
• *Cisco IOS Software Command Summary* • *Access Services Quick Configuration Guide* • *System Error Messages* • *Debug Command Reference* • *Cisco Management Information Base (MIB) User Quick Reference* • *New and Changed IOS Commands for Cisco AS5300 Access Servers*	

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

The Cisco IOS Release 11.2 P documentation set is expanded to include the *Feature Guide for Cisco IOS Release 11.2 P.* See the "Related Documentation" section for information about where to find feature details.

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

Online Navigation

The Cisco IOS software documentation set is available as printed manuals or electronic documents.

You can access the electronic documents either on the Cisco Documentation CD-ROM or at Cisco Connection Online (CCO) on the World Wide Web.

On the Documentation CD-ROM, go to *Cisco Product Documentation*, select *Cisco IOS Software Configuration*, and then select *Cisco IOS Release 11.2*.

On CCO, go to *Software & Support,* scroll down and select *Documentation*. Next, select *Documentation*, click on *Cisco IOS Software Configuration* and then click on *Cisco IOS Release 11.2.*

Online documentation for Release 11.2 includes:

- Release Notes
- Feature Guides

- Configuration Guide and Command Reference
- Command Summary
- System Error Messages
- MIB User Guide Reference
- Debug Command Reference
- Access service Quick Reference
- Caveats

Additional information about CCO and the Documentation CD-ROM is in the sections "Cisco Connection Online" and "Documentation CD-ROM" at the beginning of these release notes.

Additional Software Features for Release 11.2 P

The following software features are included:

- Desktop Protocols
- Wide-Area Networking Features
- IBM Functionality
- Security Features
- Network Management

Detailed descriptions of these features can be found on the Documentation CD-ROM or on CCO.

On the Documentation CD-ROM, go to *Cisco Product Documentation*, select *Cisco IOS Software Configuration*, and then select *Cisco IOS Release 11.2*. From the bulleted list, select *New Features in Release 11.2*.

On CCO, go to *Software and Support* and select *Documentation*. Next, select *Documentation*, click on *Cisco IOS Software Configuration,* and then click on *Cisco IOS Release 11.2*. From the bulleted list, click on *New Features in Release 11.2*.

Cisco IOS Feature Sets for Cisco AS5200 Access Servers

This section lists Cisco IOS software feature sets available in Cisco IOS Release 11.2(10a)P1.

Table 1 uses these feature set matrix symbols to identify features:

Feature Set Matrix Symbol	Description
Basic	This feature is offered in the basic feature set, which is also a subset of the Plus feature set.
—	This feature is not offered in the feature set.
Plus	This feature is offered in the Plus feature set, not in the basic feature set.
Encrypt	This feature is offered in the encryption feature sets, which consist of 40-bit (Plus 40) or 56-bit (Plus 56) data encryption feature sets.

Cisco IOS images with 40-bit Data Encryption Standard (DES) support might legally be distributed to any party eligible to receive Cisco IOS software. The 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 United States require an export license. Customer orders might 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 1 lists the standard feature sets supported in Release 11.2 P

Table 1 Cisco AS5200 Access Server Software Feature Sets

Features Contained in Features Sets	Feature Set		
	IP Routing	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise[1]
LAN Support			
Apollo Domain	—	—	Basic
AppleTalk 1 and 2[2]	—	Basic	Basic
Banyan VINES	—	—	Basic
Concurrent routing and bridging (CRB)	Basic	Basic	Basic
DECnet IV	—	Basic	Basic
DECnet V	—	—	Basic
GRE	Basic	Basic	Basic
Integrated routing and bridging (IRB)[3]	Basic	Basic	Basic
IP	Basic	Basic	Basic
LAN extension host	Basic	Basic	Basic
Multiring	Basic	Basic	Basic

Table 1 Cisco AS5200 Access Server Software Feature Sets (Continued)

Features Contained in Features Sets	Feature Set		
	IP Routing	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise[1]
Novell IPX[4]	—	Basic	Basic
OSI	—	—	Basic
Source-route bridging (SRB)	—	—	Basic
Transparent and translational bridging	Basic	Basic	Basic
XNS	—	—	Basic
WAN Services			
Combinet Packet Protocol (CPP)	Basic	Basic	Basic
Dialer profiles	Basic	Basic	Basic
Frame Relay	Basic	Basic	Basic
Frame Relay SVC Support (DTE)	—	—	Basic
Frame Relay traffic shaping	Basic	Basic	Basic
Half bridge/half router for CPP and PPP	Basic	Basic	Basic
HDLC	Basic	Basic	Basic
IPXWAN 2.0	—	Basic	Basic
ISDN[5]	Basic	Basic	Basic
Multichassis Multilink PPP (MMP)	—	—	Basic
PPP[6]	Basic	Basic	Basic
SMDS	Basic	Basic	Basic
Switched 56	Basic	Basic	Basic
Virtual Private dialup Network (VPDN)	—	Basic	Basic
X.25[7]	Basic	Basic	Basic
WAN Optimization			
Bandwidth-on-demand	Basic	Basic	Basic
Custom and priority queuing	Basic	Basic	Basic
Dial backup	Basic	Basic	Basic
Dial-on-demand	Basic	Basic	Basic
Header[8], link and payload compression[9]	Basic	Basic	Basic
Snapshot routing	Basic	Basic	Basic
Weighted fair queuing	Basic	Basic	Basic
IP Routing			
BGP	Basic	Basic	Basic
BGP4[10]	Basic	Basic	Basic

Table 1 Cisco AS5200 Access Server Software Feature Sets (Continued)

Features Contained in Features Sets	Feature Set		
	IP Routing	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise[1]
EGP	Basic	Basic	Basic
Enhanced IGRP	Basic	Basic	Basic
Enhanced IGRP Optimizations	Basic	Basic	Basic
ES-IS	—	—	Basic
IGRP	Basic	Basic	Basic
IS-IS	—	—	Basic
Named IP Access Control List	Basic	Basic	Basic
Network Address Translation (NAT)	Plus	Plus	Plus
NHRP	Basic	Basic	Basic
On Demand Routing (ODR)	Basic	Basic	Basic
OSPF	Basic	Basic	Basic
OSPF Not-So-Stubby-Areas (NSSA)	Basic	Basic	Basic
OSPF On Demand Circuit (RFC 1793)	Basic	Basic	Basic
PIM	Basic	Basic	Basic
Policy-based routing	Basic	Basic	Basic
RIP	Basic	Basic	Basic
RIP Version 2	Basic	Basic	Basic
Other Routing			
AURP	—	Basic	Basic
IPX RIP	—	Basic	Basic
NLSP	—	Basic	Basic
RTMP	—	Basic	Basic
SMRP	—	Basic	Basic
SRTP	—	—	Basic
Multimedia and Quality of Service			
Generic traffic shaping	Basic	Basic	Basic
Random Early Detection (RED)	Basic	Basic	Basic
Resource Reservation Protocol (RSVP)	Basic	Basic	Basic
Management			
AutoInstall	Basic	Basic	Basic
Automatic modem configuration	Basic	Basic	Basic
HTTP Server	Basic	Basic	Basic
Modem Management	Plus	Plus	Plus

Table 1 Cisco AS5200 Access Server Software Feature Sets (Continued)

Features Contained in Features Sets	Feature Set		
	IP Routing	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise[1]
RMON events and alarms[11]	Basic	Basic	Basic
RMON full	Plus	Plus	Plus
SNMP	Basic	Basic	Basic
Telnet	Basic	Basic	Basic
Security			
Access lists	Basic	Basic	Basic
Access security	Basic	Basic	Basic
Extended access lists	Basic	Basic	Basic
Kerberized login	—	—	Basic
Kerberos V client support	—	—	Basic
Lock and key	Basic	Basic	Basic
MAC security for hubs	Basic	Basic	Basic
MD5 routing authentication	Basic	Basic	Basic
RADIUS	Basic	Basic	Basic
TACACS+[12]	Basic	Basic	Basic
IBM Support (Optional)			
APPN (optional)	—	—	—
BAN for SNA Frame Relay support	Plus	Plus	Basic
Bisync	Plus	Plus	Basic
Caching and filtering	Plus	Plus	Basic
DLSw+ [13]	Plus	Plus	Basic
Downstream PU concentration (DSPU)	Plus	Plus	Basic
Frame Relay SNA support (RFC 1490)	Plus	Plus	Basic
Native Client Interface Architecture (NCIA) Server	Plus	Plus	Basic
NetView Native Service Point	Plus	Plus	Basic
QLLC	Plus	Plus	Basic
Response Time Reporter (RTR)	Plus	Plus	Basic
SDLC integration	Plus	Plus	Basic
DLSw (RFC 1795)	Plus	Plus	Basic
SDLC transport (STUN)	Plus	Plus	Basic
SDLC-to-LAN conversion (SDLLC)	Plus	Plus	Basic

Table 1 Cisco AS5200 Access Server Software Feature Sets (Continued)

Features Contained in Features Sets	Feature Set		
	IP Routing	Desktop (IP/IPX/AppleTalk/DEC)	Enterprise[1]
SNA and NetBIOS WAN optimization via local acknowledgment	Plus	Plus	Basic
SRB/RSRB[14]	Plus	Plus	Basic
SRT	Plus	Plus	Basic
TG/COS	—	—	Basic
TN3270	—	—	Basic
Protocol Translation			
LAT	—	—	Basic
Rlogin	—	—	Basic
Remote Node[15]			
ARAP 1.0/2.0	—	Basic	Basic
Asynchronous master interfaces	Basic	Basic	Basic
ATCP	—	Basic	Basic
CPPP	Basic	Basic	Basic
CSLIP	Basic	Basic	Basic
DHCP	Basic	Basic	Basic
IP pooling	Basic	Basic	Basic
IPX and ARAP on virtual async interfaces	—	—	Basic
IPXCP	—	Basic	Basic
MacIP	—	Basic	Basic
NASI	—	—	—
NetBEUI over PPP	—	—	—
SLIP	Basic	Basic	Basic
Terminal Services[15]			
LAT[16]	—	—	Basic
Rlogin	Basic	Basic	Basic
Telnet	Basic	Basic	Basic
TN3270	—	—	Basic
X.25 PAD	Basic	Basic	Basic
Xremote	—	—	Basic

1. Enterprise is available with APPN in a separate feature set. APPN includes APPN Central Registration (CRR) and APPN over DLSw+.
2. Includes AppleTalk load balancing.
3. 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.
4. The Novell IPX feature includes display SAP by name, IPX Access Control List violation logging, and plain-English IPX access lists.

5. ISDN support includes calling line identification (ANI), X.25 over the B channel, ISDN subaddressing, and applicable WAN optimization features.
6. PPP includes support for LAN protocols supported by the feature set, address negotiation, PAP and CHAP authentication, and PPP compression, and Multilink PPP.
7. X.25 includes X.25 switching.
8. IPX header compression (RFC 1553) is available in the feature sets that support IPX.
9. X.25 and Frame Relay payload compression are supported.
10. BGP4 includes soft configuration, multipath support, and prefix filtering with inbound route maps.
11. The RMON events and alarms groups are supported on all interfaces. Full RMON support is available with the Plus feature sets.
12. TACACS+ Single Connection and TACACS+ SENDAUTH enhancements are supported.
13. Cisco IOS Release 11.2 introduces several DLSw+ enhancements available in the Plus, Plus 40, and Plus 56 feature sets.
14. SRB/RSRB is fast switched. This enhancement is on by default, but can be disabled.
15. Supported on access servers (with limited support on router auxiliary ports).
16. 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).

Upgrading Your Cisco IOS Software or Firmware Release

For information on upgrading to a new software release, refer to the Cisco IOS Software Release Upgrade Paths and Packaging Simplification product bulletin #703.

You can also access this product bulletin on the Web at http://www.cisco.com. For more information, refer to the "Cisco Connection Online" section later in this document.

Memory Requirements

Table 2 describes the memory requirements for the Cisco AS5200 series access server's feature sets supported by Cisco IOS Release 11.2 P.

Table 2 Cisco AS5200 Memory Requirements

Feature Set	Required Flash Memory	Required DRAM Memory	Release 11.2 Runs from[1]
IP	8 MB Flash	8 MB DRAM	Flash
IP Plus[2]	8 MB Flash	8 MB DRAM	Flash
Desktop	8 MB Flash	8 MB DRAM	Flash
Desktop Plus	8 MB Flash	8 MB DRAM	Flash
Enterprise	8 MB Flash	8 MB DRAM	Flash
Enterprise Plus	8 MB Flash	8 MB DRAM	Flash

1. When a system is running from Flash memory, you cannot update the system while it is running. You must use the Flash load helper.
2. IP Plus for the Cisco AS5200 includes protocol translation, V.120, RMON, Managed Modems, and IBM (if IBM is not already included).

Caveats for Release 11.2(10a)P1

This section describes possibly unexpected behavior by Cisco IOS Release 11.2(10a)P1. Unless otherwise noted, these caveats apply to Release 11.2 up to and including 11.2(10a)P1. The caveats listed here describe only the serious problems. For the complete list of caveats against Release 11.2, use the Documentation CD-ROM or access CCO as described in the section "Cisco Connection Online" later in this document.

AppleTalk

- When using ARAP 2.1 on routers running Cisco IOS Release 11.2, the client connects, the authentication negotiates, and then the connection drops with a message indicating that the server called is not a valid remote access server. As a workaround, use Cisco IOS Release 11.1, which works with both ARAP 2.0.1 and 2.1. [CSCdi91670]
- When using the ARAP client 2.1, the user is not able to dial in to an AS5200 with Cisco IOS Release 11.1 if the AS5200 has autoselect configured.

  To work around this problem, do one of the following:

  - Remove autoselect and use ARAP dedicated.

  - Use the ARAP 2.0.1 client instead.

  - Turn on MNP10 on the ARAP 2.1 client.

  - Modify the client CCL script to extend the pause to 3 seconds before exiting. [CSCdj09817]

Basic System Services

- The router might reload when trying to process the **show accounting** command. [CSCdi69364]
- The **show stacks** command fails to report the correct version of code running at the time of the last reload. This problem occurs when the Flash version of the Cisco IOS software does not match the running version of code. [CSCdi74380]
- Adding an RSRB peer with direct encapsulation on a Cisco 7000 router configured with CSNA causes a "%RSP-3-RESTART: cbus complex" error and takes down the CIP interface. [CSCdi82836]
- Fast switching and optimum switching counters should be broken out separately in the output of the **show interface switching** command. [CSCdi87008]
- Traffic shaping is not currently supported over tunnels of any type or switching mode. The feature is currently under development. [CSCdi88997]
- If the **map-list** command is configured, issuing the **show running** command may cause the router to crash if the "Last configuration change at..." informational string exceeds a total length of 80 characters. [CSCdj13986]
- When a router is configured with the command **ip identd** and with **aaa authentication login default tacacs+ enable** the router will reload itself under these conditions:

  - The router is resolving host names via an external DNS server.

  - The TACACS server is down.

  - The user gains access to the router via the backup "enable" method.

  - The user attempts to Telnet from the router to a host on the network.

  After the Telnet is initiated, the router will immediately reload.

  The workaround for this problem is to not configure the **ip identd** command or to disable the identd process with the global command **no ip identd** (which is the default). [CSCdj19961]
- Boot Flash devices are not recognized when formatting boot Flash type A7, A6, or AA.

  To run type A7, A6, or AA boot Flash devices and use images prior to this bug fix, format boot Flash with an image containing this bug fix. Then load an older image onto the newly formatted boot Flash SIMM. [CSCdj20651]

- An EXEC prompt does not appear until the TCP connection for accounting EXEC is sent and acknowledged. Accounting EXEC acts like wait-start, even though start-stop is configured. [CSCdj27123]
- The **tacacs-server directed-request restricted** command only applies to authentication, not to accounting or authorization. Therefore, there is no way to restrict a user's authorization or accounting to a given set of servers, which can lead to inconsistencies. For example, authentication for a directed user can be attempted only on the restricted servers, whereas authorization or accounting can be attempted on non-restricted servers as well. This inconsistency can cause authentication to pass while authorization fails for a given user. [CSCdj37496]
- When ATM traffic-shaping is enabled on an ATM interface along with priority-queueing, priority queuing does not work as desired.

  To work around this problem, turn off ATM traffic-shaping over that interface. Another workaround is to use Cisco IOS Release 11.2(2) or earlier, including Release 11.1. [CSCdj45778]
- A Cisco 1000 node may send SNTP queries to the next hop along the route, instead of to the address configured in the SNTP server statement in the configuration. [CSCdj56216]
- High CPU utilization exists on a Cisco 4000-M using IP-SNMP after upgrading to Cisco IOS Release 11.2(9). [CSCdj56722]

IBM Connectivity

- The **dlsw remote-peer frame-relay interface serial** command does not work on a point-to-point subinterface. The workaround is to use multipoint and to do LLC mapping. [CSCdi55085]
- A bus error occurred at PC0x169a46. The stack trace indicates a problem in the LNX process. This problem occurs on X.25. [CSCdi73516]
- This caveat fixed an unimplemented trap, *cipCardLinkFailure* by deprecating it and implementing a new trap *cipCardDtrBrdLinkFailure*. Use the **snmp-server enable traps channel-failures** command to enable this new trap. [CSCdj32297]
- An APPN router may crash during an SNMP access to the APPN MIB. This problem only occurs after an unused APPN node is garbage collected. The crash has the following stack trace:

  ```
  System was restarted by bus error at PC 0x8B5902, address 0x4AFC4AFC PC:
  process_snmp_trs_tg_inc

  0x8B5CAC:_process_ms_data_req_trs(0x8b5aaa)+0x202
  0x87E5FE:_xxxtos00(0x87d6b0)+0xf4e 0x180E5C:_process_hari_kari(0x180e5c)+0x0
  ```

  [CSCdj36824]
- When testing FRAS BAN for SDLC attached PU 2.1 and PU 2.0 and using RSRB backup over PSTN, the PUs failed to connect after the Frame Relay interface was brought back up after a link failure.

  The output of the **show fras** command showed ls-reset backup enabled. In order to reconnect the PUs, the **fras backup rsrb** statement had to be removed or the serial interfaces configuration had to be deleted and then readded. [CSCdj39306]
- When RSRB with TCP encapsulation is configured with priority peers and some of the priority peers are closed/dead, an explorer packet may continuously try to open the closed/dead priority peer. After several tries, the router may crash with memory corruption. [CSCdj47493]

- Normal non-extended unbind (0x3201) was extended with corrupted information which caused rejection by the host. As far as the host is concerned, the session is still active. A user cannot clean up this session without bringing down the link. [CSCdj50581]

Interfaces and Bridging

- On an RSP router, the "%CBUS-3-CTRUCHECK" error message is displayed and the Token Ring interface resets. To correct this problem, upgrade to RSP TRIP Microcode Version 20.1. [CSCdi74639]
- Under certain conditions, a memory leak may cause a router to reset if the bridge-group virtual interfaces for the new integrated routing and bridging (IRB) feature are not configured correctly.

  A workaround is to ensure that there aren't any bridge-group virtual interfaces configured for logical/physical router interfaces that do not exist. [CSCdj02283]
- Enabling custom queuing may result in an excessive increase in CPU use. [CSCdj05099]
- When adding or removing a subinterface to a Frame Relay interface, all DLCIs are brought down until the Frame Relay switch sends the PVC information again. The whole interface will be reset when a user tries to add the **ip address** command. A workaround for part of the problem is to turn off CDP globally or on individual interfaces. In this case, the user can turn off CDP on the serial interface before adding or removing subinterfaces. CSCdj02488 (integrated into Cisco IOS Release 11.1(11) and 11.2(5.1)) fixed the rest of the problem.[CSCdj07291]
- The error "%CBUS-3-CTRUCHECK: Unit 0, Microcode Check Error" occurs on Token Ring interfaces, causing the interface to reset. [CSCdj08654]
- Under certain circumstances, rebooting a Cisco 2524 may cause the router to pause indefinitely with a T1 connected to a Fractional T1 module. The workaround is to unplug the T1 prior to the reload. [CSCdj22485]
- The **pos specify-s1s0** and **pos specify-c2** POS interface specific configuration commands do not work correctly. [CSCdj25166]
- A "System restarted by bus error at PC 0x4262AA, address 0xFFFFFFFC" message may be received when the **frame-relay payload-compression packet-by-packet** command is entered under the subinterface. [CSCdj49344]
- Compression for HDLC encapsulated bridging only payload compresses Spanning Protocol packets. Actual bridged packets are forwarded with their payloads uncompressed. Prior to this release, bridged packets may have had their MAC addresses corrupted if STAC compression was enabled with HDLC encapsulation. [CSCdj50894]]
- On the Cisco AS5200 platform, a group of four ports may stop processing PPP packets on the interface. You can identify this problem by looking for a group of four contiguous ports that have a much higher volume of calls than the other ports on the AS5200. Currently, the only workaround is to reload the router. The port modems should be busied out until the router can be reloaded. [CSCdj51974]
- With IRB configured on the router, IPX clients cannot log into services on a bridged interface. Removing the IPX routing from the BVI fixes the bridged interface but you'll loose the routing. At this time, this feature is not supported. [CSCdj54050]
- If you are doing IRB with RFC1483 PVCs, you may see certain IP anomalies such as ARP resolution not working or the ARP resolutions take place yet you cannot ping the neighboring device. [CSCdj54558]

IP Routing Protocols

- If the **summary-address** statement is removed on a remote router that advertises summary-address routes on only one path, then the core router sees both equal cost paths. This problem occurs on OSPF with NSSA. [CSCdj38067]
- If two routing protocols with mutual redistribution cause a routing loop, it is possible that the loop will remain even after updates have been filtered. The problem usually occurs after a **clear ip route *** command is issued after applying the filters. If the routes are allowed to age out the normal way, the problem does not occur. If OSPF is running, the workaround is to issue the **clear ip ospf redistribution** command. [CSCdj38397]
- When attempting to set the ipNetToMediaType value with SNMP the following error is returned and the value is not set:

  `snmpset: The value given has incorrect type or length`. [CSCdj43710]
- In the presence of a large number of subnets, a CPUHOG message like the following may be generated:

  `%SYS-3-CPUHOG: Task ran for 2608 msec (73/65), Process = BGP scanner, PC = 176388`

  [CSCdj45966]
- Manual summarization with EIGRP does not work correctly. A summary route does not get advertised but one or more of the more specific routes do. [CSCdj46525]
- Under certain conditions, an LS type 5 is not generated by the ABR in response to a received LS type 7. [CSCdj55301]
- The router's internal address is advertised as a host route instead of a network in the router's LSA. A host route is represented as a Type 3 link (Stub Network) whose link ID is the host's IP address and whose link data is the mask of all ones (0xffffffff). This host route is advertised into all OSPF areas. [CSCdj56079]
- A problem will be caused by entering the **ipx router** command followed at anytime by a **no ipx router** command. The effects can be anything from to a steady memory leak, to unexpected router behavior to (as in this case) a router crash. This problem affects all routers. As a workaround, cycle power on the router after a no **ipx router** command is issued. [CSCdj51185]

ISO CLNS

- If secondary addresses are configured on an unnumbered interface, the interface routes corresponding to these addresses are not advertised in IS-IS. A workaround is to number the interface. [CSCdi60673]
- A crash was caused by an AVL node that was freed but was still accessed during tree traversing. This problem was a result of the node being deleted and freed in the middle of tree walk. This is an IS-IS (using AVL tree) specific problem. [CSCdj18685]

LAT

LAT services are not available on the router when IRB is enabled. [CSCdj52841]

Novell IPX, XNS, and Apollo Domain

- Adding XNS back into a router's configuration after it has been removed may cause a system to restart by bus error. This may only be a one-time event if it occurs at all. [CSCdj16694]

- When using IPX-EIGRP over ISDN with floating static routes, there may be a short delay (about 10 seconds) before the application is able to get through. [CSCdj38031]
- Before a floating static route is installed, a waiting period is observed when the network is down and unreachable. If IPX watchdogs or SPX keepalives arrive during this time, they will be dropped, leading to session timeouts. [CSCdj50629]

TCP/IP Host-Mode Services

- A direct broadcast with a physical-broadcast destination MAC address is not forwarded to helper address over ATM/LANE interfaces. [CSCdj51378]

TN3270

- TN3270 keymaps with three keystrokes defined for a TN3270 key will append the last character to the screen. The cursor will then move to the next cursor position on the screen. [CSCdj51702]

Wide-Area Networking

- When traffic prioritization is configured on a Frame Relay interface with the command **frame-relay priority-dlci-group**, the command **no fair-queuing** should also be configured on the serial interface to achieve effective traffic prioritization. [CSCdi52067]
- When using DLCI prioritization on a point-to-point Frame Relay subinterface and one of the DLCIs fail, the subinterface may bounce once or continually bounce during LMI full status reports, depending on whether LMI reports the DLCI as being DELETED or INACTIVE. This behavior is the same for every DLCI defined in the **priority-dlci-group**.

  During normal behavior, the point-to-point subinterface should go down when the primary DLCI fails. If a secondary DLCI fails, the subinterface stays up, but traffic destined for that DLCI only will fail. [CSCdj11056]
- Types of serial and ISDN B-channels using MPPP over dialer profiles leads to situations where serial joins and leaves bundle ad infinitum. [CSCdj18693]
- When the **dialer rotary-group** command is entered on an interface that has ongoing calls, a crash may occur.

  As a workaround bring down all ongoing calls by disconnecting or shutting down the interface and then adding the **dialer rotary-group** command. [CSCdj35360]

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This document is to be used in conjunction with the *Cisco IOS Release 11.2 Configuration Guides and Command References.*

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