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Release Notes for Cisco AS5300 for Cisco IOS Release 12.0(2)XD

December 7, 1998

These release notes describe new features for the Cisco AS5300 universal access server that support Cisco IOS Release 12.0(2)XD. Cisco IOS Release 12.0(2)XD is based on Cisco IOS Release 12.0(2)T.

Use these release notes in conjunction with the cross-platform *Release Notes for Cisco IOS Release 12.0 T* located on Cisco Connection Online (CCO) and the Documentation CD-ROM.

For a list of software caveats that apply to Release 12.0(2)XD, refer to the “Caveats” section on page 11.

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Corporate Headquarters

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

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Introduction

The Cisco AS5300 universal access server is a versatile data communications platform that provides the functions of an access server, router, and digital modems in a single modular chassis. The access server is intended for Internet service providers (ISPs), telecommunications carriers, and other service providers that offer managed Internet connections, as well as medium to large sites that provide both digital and analog access to users on an enterprise network. By terminating both analog and digital calls on the same chassis simultaneously, the access server provides a clear, simple, and easy migration path from today's analog dial access services to tomorrow's digital dial access services.

System Requirements

This section describes system requirements for Release 12.0(2)XD and includes the following sections:

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Memory Requirements

Table 1 describes the memory requirements of the Cisco IOS feature sets for the Cisco AS5300 access servers for Release 12.0(2)XD. Flash memory is optional for the Cisco AS5300 images.

Table 1 Cisco AS5300 Memory Requirements

Feature Set	Image Name	Required Flash Memory	Required DRAM Memory ¹	Runs From
IP	c5300-i-mz	8 MB Flash	64 MB DRAM	RAM
IP Plus	c5300-is-mz	8 MB Flash	64 MB DRAM	RAM
Desktop	c5300-d-mz	8 MB Flash	64 MB DRAM	RAM
Desktop Plus	c5300-ds-mz	8 MB Flash	64 MB DRAM	RAM
Enterprise	c5300-j-mz	8 MB Flash	64 MB DRAM	RAM
Enterprise Plus	c5300-js-mz	8 MB Flash	64 MB DRAM	RAM

¹ 64 MB of DRAM is required if you are using the 8 T1/E1 board, but only 32 MB if using the 4 T1/E1 board.

Hardware Supported

Table 2 lists the interface and modem cards supported by the Cisco AS5300.

Table 2 Supported Interface and Modem Cards

Interface Cards	Modem Cards
Channelized T1 (4 ports) without serial support	MICA modems
Channelized T1 (4 ports) with serial (4 ports) support	Microcom 56K modems
Channelized T1 (8 ports) with serial (4 ports) support	
Channelized E1 (4 ports) without serial support	
Channelized E1 (4 ports) with serial (4 ports) support	
Channelized E1 (8 ports) with serial (4 ports) support	
Voice over IP (VoIP)	

Determining Your Cisco IOS Software Release

To determine the version of Cisco IOS software currently running on your access server, log in to the Cisco AS5300 and enter the **show version EXEC** command:

```
router> show version
```

An output begins similar to the following. The Cisco IOS version appears in the second line.

```
Cisco Internetwork Operating System Software
IOS (tm) 5300 Software (C5300-JS-M), Version 12.0(2)XD.....
```

Additional command output includes more information, such as processor revision numbers, memory amounts, hardware IDs, and partition information.

Upgrading to a New Release

At the time of this printing, no product bulletins are available for upgrading to Cisco IOS Release 12.0 T. For generic information on upgrading to a new software release, refer to the *Cisco IOS Software Release Upgrade Paths and Packaging Simplification* product bulletin located on CCO.

- To reach it on CCO, follow this path:

Products & Ordering: More Information: Product Bulletins. Scroll to **Software**. Under **Cisco IOS 11.3**, click the **Upgrade Paths** bulletin. The *Cisco IOS Software Release Upgrade Paths and Packaging Simplification* bulletin does not contain information specific to Cisco IOS Release 12.0 T, but provides generic upgrade information that might apply to Cisco IOS Release 12.0 T.

Modem Code

Cisco IOS Release 12.0 and later includes bundled modem code, which is the firmware or portware that runs on the MICA 12-port, Microcom 12-port, or MICA 6-port modem cards. Modem code is bundled with the Cisco IOS software image to eliminate the need to store separate modem code. When the access server starts, the Cisco IOS software unpacks the modem code and loads the proper code on the modem cards. Table 3 lists bundled modem code versions.

Table 3 Modem Code and Cisco IOS 12.0 and 12.0T Software Compatibility Matrix

Modem Module	Bundled Modem Code	Cisco IOS 12.0 and 12.0 T Software
Microcom modems	Microcom version 3.3.20	12.0 and 12.0 T and higher
MICA modems	MICA portware version 2.5.0.C	12.0 and 12.0 T and higher

The **show modem mapping** command lists all versions of modem code running on the modem modules, residing in system Flash memory, and bundled with Cisco IOS software. Enter the **show modem mapping** command to determine if you need to update your modem code files.

Note The Cisco factory could have installed a later version of modem code than the one bundled with the Cisco IOS software. The factory installs modem code in Flash memory and maps that code to the modems.

To understand how Cisco IOS software uses Microcom modem code, see the section “Modem Code” in the *Installing 56K 12-Port Modem Modules in Cisco AS5300 Universal Access Servers* publication. To understand how Cisco IOS software uses Mica modem code, see the section “Modem Code” in the *Installing 6-Port Modules and Carrier Cards in Cisco AS5300 Universal Access Servers* publication.

The *Cisco IOS Software Upgrade Planner* on CCO contains information about downloading software. To reach the *Cisco IOS Software Upgrade Planner* from CCO, click **Login** on the CCO home page to reach all the information. From the CCO home page, go to the Software Support area, click **Software Center**, then **Cisco IOS Software** or **New IOS Upgrade Planner Live on CCO**.

The modem code release notes are on CCO and on the Documentation CD-ROM:

- To reach it from CCO, follow this path:
Products & Ordering: Cisco Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300: Modem Information: Firmware/Portware Release Notes
- To reach it from the Documentation CD-ROM, follow this path:
Cisco Product Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300: Modem Information: Firmware/Portware Release Notes

Feature Set Tables

The Cisco IOS software is packaged in feature sets (also called software images) depending on the platform. Each feature set contains a specific set of Cisco IOS features.

Table 4 lists the features and feature sets available for the Cisco AS5300, up to and including Cisco IOS Release 12.0(2)XD. Table 4 uses the following terms:

- Yes—The feature is supported in the feature set.
- No—The feature is not supported in the feature set.

Note This feature set table contains only a selected list of features. This table is not a cumulative or complete list of all the features in each image.

Table 4 Feature List by Feature Sets

Feature	Feature Set					
	IP	IP Plus	Desktop	Desktop Plus	Enterprise	Enterprise Plus
IBM Support						
APPN High-Performance Routing	No	No	No	No	No	No
APPN MIB Enhancements	No	No	No	No	No	No
APPN over Ethernet LAN Emulation	No	No	No	No	No	No
APPN Scalability Enhancements	No	No	No	No	No	No
Bisync Enhancements:	No	Yes	No	Yes	Yes	Yes
— Bisync 3780 Support						
— BSC Extended Addressing						
— Block Serial Tunneling (BSTUN) over Frame Relay						
Cisco MultiPath Channel (CMPC)	No	No	No	No	No	No
DLSw+ Enhancements:	No	Yes	No	Yes	Yes	Yes
— Backup Peer Extensions for Encapsulation Types						
— DLSw+ Border Peer Caching						
— DLSw+ MIB Enhancements						
— DLSw+ SNA Type of Service						
— LLC2-to-SDLC Conversion between PU4 Devices						
— NetBIOS Dial-on-Demand Routing						
— UDP Unicast Enhancement						
FRAS Enhancements:	No	Yes	No	Yes	Yes	Yes
— FRAS Boundary Network Node Enhancement						
— FRAS Dial Backup over DLSw+						
— FRAS DLCI Backup						
— FRAS Host						
— FRAS MIB						
— SRB over Frame Relay						
RIF Passthru in DLSw+	No	Yes	No	Yes	Yes	Yes
SRB over FDDI on Cisco 4000-M, 4500-M, and 4700-M Routers	No	No	No	No	No	No
TN3270 LU Nailing	No	No	No	No	No	No
TN3270 Server Enhancements	No	No	No	No	No	No

System Requirements

Table 4 Feature List by Feature Sets (continued)

Feature	Feature Set					
	IP	IP Plus	Desktop	Desktop Plus	Enterprise	Enterprise Plus
Token Ring LANE	No	No	No	No	No	No
Tunneling of Asynchronous Security Protocols	No	Yes	No	Yes	Yes	Yes
Internet						
DRP Server Agent	Yes	Yes	Yes	Yes	Yes	Yes
DRP Server Agent Enhancements	Yes	Yes	Yes	Yes	Yes	Yes
IP Routing						
Easy IP (Phase 1)	Yes	Yes	Yes	Yes	Yes	Yes
Easy IP (Phase 2) DHCP Server	Yes	Yes	Yes	Yes	Yes	Yes
Hot Standby Router Protocol (HSRP) over ISL in Virtual LAN Configurations	No	No	Yes	Yes	Yes	Yes
IP Enhanced IGRP Route Authentication	Yes	Yes	Yes	Yes	Yes	Yes
PIM Version 2	Yes	Yes	Yes	Yes	Yes	Yes
TCP Enhancements:	Yes	Yes	Yes	Yes	Yes	Yes
— TCP Selective Acknowledgment						
— TCP Timestamp						
LAN Support						
AppleTalk Access List Enhancements	No	No	Yes	Yes	Yes	Yes
DECnet Accounting	No	No	Yes	Yes	Yes	Yes
IPX Named Access Lists	No	No	Yes	Yes	Yes	Yes
IPX SAP-after-RIP	No	No	Yes	Yes	Yes	Yes
NLSP Enhancements	No	No	No	No	Yes	Yes
NLSP Multicast Support	No	No	Yes	Yes	Yes	Yes
Management						
Cisco Call History MIB Command Line Interface	Yes	Yes	Yes	Yes	Yes	Yes
Cisco IOS Internationalization	Yes	Yes	Yes	Yes	Yes	Yes
Entity MIB, Phase 1	Yes	Yes	Yes	Yes	Yes	Yes
ISDN MIB RFC 2127	Yes	Yes	Yes	Yes	Yes	Yes
SNMPv2C	Yes	Yes	Yes	Yes	Yes	Yes
SNMP Inform Requests	No	No	No	No	Yes	Yes
Time-Based Access Lists	Yes	Yes	Yes	Yes	Yes	Yes
Virtual Profiles	Yes	Yes	Yes	Yes	Yes	Yes
VPDN MIB	No	Yes	No	Yes	Yes	Yes
VPDN MIB and Syslog Facility	No	Yes	No	Yes	Yes	Yes

Table 4 Feature List by Feature Sets (continued)

Feature	Feature Set					
	IP	IP Plus	Desktop	Desktop Plus	Enterprise	Enterprise Plus
Multimedia						
IP Multicast Load Splitting across Equal-Cost Paths	Yes	Yes	Yes	Yes	Yes	Yes
IP Multicast over ATM Point-to-Multipoint Virtual Circuits	No	No	No	No	No	No
PIM Version 2	Yes	Yes	Yes	Yes	Yes	Yes
IP Multicast over Token Ring LANs	Yes	Yes	Yes	Yes	Yes	Yes
Stub IP Multicast Routing	Yes	Yes	Yes	Yes	Yes	Yes
Quality of Service						
CLI String Search	Yes	Yes	Yes	Yes	Yes	Yes
RTP Header Compression	Yes	Yes	Yes	Yes	Yes	Yes
Security						
Automated Double Authentication	Yes	Yes	Yes	Yes	Yes	Yes
Certificate Authority Interoperability	No	No	No	No	No	No
Double Authentication	Yes	Yes	Yes	Yes	Yes	Yes
Encrypted Kerberized Telnet	No	No	No	No	No	No
HTTP Security	Yes	Yes	Yes	Yes	Yes	Yes
Internet Key Exchange Security Protocol	No	No	No	No	No	No
IPSec Network Security	No	No	No	No	No	No
MS-CHAP Support	No	No	No	No	Yes	Yes
Named Method Lists for AAA Authentication and Accounting	Yes	Yes	Yes	Yes	Yes	Yes
Per-User Configuration	Yes	Yes	Yes	Yes	Yes	Yes
Reflexive Access Lists	Yes	Yes	Yes	Yes	Yes	Yes
TCP Intercept	No	No	No	No	Yes	Yes
Vendor-Proprietary RADIUS Attributes	Yes	Yes	Yes	Yes	Yes	Yes
Vendor-Proprietary RADIUS —Additional Attributes	Yes	Yes	Yes	Yes	Yes	Yes
Switching						
AppleTalk Routing over ISL and IEEE 802.10 in Virtual LANs	No	No	Yes	Yes	Yes	Yes
CLNS and DECnet Fast Switching over PPP	No	No	No	No	Yes	Yes

System Requirements

Table 4 Feature List by Feature Sets (continued)

Feature	Feature Set					
	IP	IP Plus	Desktop	Desktop Plus	Enterprise	Enterprise Plus
DECnet/VINES/XNS over ISL:	No	No	No	No	Yes	Yes
— Banyan VINES Routing over ISL Virtual LANs						
— DECnet Routing over ISL Virtual LANs						
— XNS Routing over ISL Virtual LANs						
Fast-Switched Policy Routing	Yes	Yes	Yes	Yes	Yes	Yes
IPX Routing over ISL Virtual LANs	No	No	Yes	Yes	Yes	Yes
VIP Distributed Switching Support for IP Encapsulated in ISL	No	No	No	No	No	No
Terminal Services						
Telnet Extensions for Dialout	Yes	Yes	Yes	Yes	Yes	Yes
Virtual Templates for Protocol Translation	No	No	No	No	Yes	Yes
WAN Optimization						
ATM MIB Enhancements	No	No	No	No	No	No
PAD Enhancements	No	No	No	No	Yes	Yes
PAD Subaddressing	Yes	Yes	Yes	Yes	Yes	Yes
WAN Services						
Always On/Dynamic ISDN (AO/DI)	No	No	No	No	Yes	Yes
Bandwidth Allocation Control Protocol	Yes	Yes	Yes	Yes	Yes	Yes
Dialer Watch	Yes	Yes	Yes	Yes	Yes	Yes
E1 R2 Country Support ¹	Yes	Yes	Yes	Yes	Yes	Yes
E1 R1 Support for only Taiwan ²	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced Local Management Interface (ELMI)	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay MIB Extensions	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay Router ForeSight	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Advice of Charge	Yes	Yes	Yes	Yes	Yes	Yes
ISDN Caller ID Callback	Yes	Yes	Yes	Yes	Yes	Yes
ISDN NFAS	Yes	Yes	Yes	Yes	Yes	Yes
Layer 2 Forwarding—Fast Switching	No	Yes	No	Yes	Yes	Yes
Leased-Line ISDN at 128 kbps	No	No	No	No	No	No
Microsoft Point-to-Point Compression (MPPC)	Yes	Yes	Yes	Yes	Yes	Yes
MS Callback	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 Feature List by Feature Sets (continued)

Feature	Feature Set					
	IP	IP Plus	Desktop	Desktop Plus	Enterprise	Enterprise Plus
Modem Management Enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Multiple ISDN Switch Types	Yes	Yes	Yes	Yes	Yes	Yes
National ISDN Switch Types for BRI and PRI Interfaces (NI2)	Yes	Yes	Yes	Yes	Yes	Yes
PPP over ATM	No	No	No	No	No	No
Stackable Home Gateway	No	Yes	No	Yes	Yes	Yes
Switched 56K Digital Connections	Yes	Yes	Yes	Yes	Yes	Yes
Telnet Extensions for Dialout	No	Yes	No	Yes	Yes	Yes
X.25 Enhancements	Yes	Yes	Yes	Yes	Yes	Yes
X.25 on ISDN	Yes	Yes	Yes	Yes	Yes	Yes
X.25 Switching between PVCs and SVCs	Yes	Yes	Yes	Yes	Yes	Yes
X.28 Emulation	Yes	Yes	Yes	Yes	Yes	Yes

- 1 E1 R2 country support requires specific versions of Mica portware. For details, see the Mica portware release notes, which are available on CCO in the Software Center. Note that country support varies with the portware release level, and the release notes provide a list of countries.
- 2 E1 R1 signaling support for Taiwan requires MICA portware version 2.3.1.0.

New and Changed Information

This section lists new features available for the Cisco AS5300 in Cisco IOS Release 12.0(2)XD and the Cisco IOS Release 12.0(1)T software. To locate the online documentation about these features, refer to the “Feature Modules” section on page 16.

New Features in Cisco IOS Release 12.0(2)XD

The following new features are available for the Cisco AS5300 in Cisco IOS Release 12.0(2)XD.

8 E1/T1 and 240 Modem Upgrade

This doubles the density of the AS5300 from 4 to 8 E1/T1s plus 4 T serial interfaces and 240 modems. There is a new Octal PRI card and a new Amazon II modem card with DMM modems. The software contains new drivers for the serial interfaces, E1/T1, firmware for the new Frammer chips, and general upscaling for the interfaces.

New Feature Boards Supported

The following feature boards are supported in the Cisco IOS Release 12.0(2)XD:

- Channelized T1 (4 ports) with serial (4 ports) support
- Channelized E1 (4 ports) with serial (4 ports) support
- Channelized T1 (8 ports) with serial (4 ports) support
- Channelized E1 (8 ports) with serial (4 ports) support
- Mica modems carrier card with DMMs (up to 120 modems in each card)

New Features in Cisco IOS Release 12.0(1)T

The following new features are available for the Cisco AS5300 in Cisco IOS Release 12.0(1)T. To locate the online documentation about these features, refer to the “Feature Modules” section on page 16.

CLI String Search

The Command Line Interface (CLI) String Search feature allows you to search or filter the output of any **show** or **more** command. This is useful when you need to sort through large amounts of output or if you want to exclude output that you do not need to see. CLI String Search also allows for searching and filtering at `--More--` paging prompts.

With the search function, you can begin unfiltered output at the first line that contains a regular expression you specify. You can specify a maximum of one filter per command to either include or exclude output lines that contain the specified regular expression.

A regular expression is any word, phrase, number, or other type of information that appears in **show** or **more** command output.

Easy IP Phase 2-DHCP Server

With the introduction of Easy IP Phase 2, Cisco IOS software also supports Intelligent DHCP Relay functionality. A DHCP Relay Agent is any host that forwards DHCP packets between clients and servers. A DHCP Relay Agent enables the client and server to reside on separate subnets. If the Cisco IOS DHCP server cannot satisfy a DHCP request from its own database, it can forward the DHCP request to one or more secondary DHCP servers defined by the network administrator using standard Cisco IOS IP helper-address functionality.

ISDN MIB RFC 2127

The new Integrated Services Digital Network (ISDN) Management Information Base (MIB) RFC 2127 has been designed to provide useful information in accordance with the IETF’s new standard for the management of ISDN interfaces. It controls all aspects of ISDN interfaces. RFC 2127 provides information on the physical Basic Rate Interfaces (BRIs), control and statistical information for B (bearer) and D (signaling) channels, terminal endpoints, and directory numbers.

The ISDN MIB RFC 2127 controls all aspects of ISDN interfaces. It consists of five groups:

- ISDN Physical Interface Group
- B (Bearer) Channel Group
- D (Signaling) Channel Group

- Terminal Endpoint Group
- Directory Number Group (optional)

The ISDN MIB RFC 2127 enables you to use any commercial SNMP network management application to support ISDN call processing in Cisco IOS software. You can integrate management of dial access products using ISDN with your existing network management systems.

Time-Based Access Lists

It is now possible to implement access lists based on the time of day. To do so, create a time range that defines specific times of the day and week. The time range is identified by a name, and then referenced by a function, so that those time restrictions are imposed on the function itself.

Currently, IP and IPX extended access lists are the only functions that can use time ranges. The time range allows the network administrator to define when the permit or deny statements in the access list are in effect. Prior to this feature, access list statements were continuously in effect after they had been applied. Both named or numbered access lists can reference a time range.

Caveats

This section contains the open caveats for the current Cisco IOS maintenance release only. The software caveats are also located in the Caveats for Cisco IOS Release 12.0 T document that accompanies these release notes. The caveats document is located on CCO and the Documentation CD-ROM.

Note If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. Bug Navigator II is at <http://www.cisco.com/support/bugtools>, or from CCO, select **Software & Support: Technical Tools: Bug Toolkit II**

Open Caveats – Release 12.0(2)XD

This section describes possibly unexpected behavior by Release 12.0(2)XD. Unless otherwise noted, these caveats apply to all 12.0 releases up to and including 12.0(2)XD.

Basic System Services

- CSCdk51491
Configuring the layer3 switching with access filter in and out on the hssi interface with the Frame relay ietf encap, then try to configure the smds encap will cause the router to crash.
- CSCdk66827
When configuring a mc3810 for CCS cross-connect, it's possible that calls will stop getting connected after a period of time.

DECnet

- CSCdk65997
This problem is specific to the RSM platform and for DECnet over VLANs.
The code for DECnet support over VLANs uses a cache to store VLAN-header information, and this cache is used in the fast-switch path.

When there is a routing topology change, the fast-switching code continues to look at the stale cache entry, and as a result, packets destined via the new route end up getting black-holed.

The work-around is to disable DECnet fast-switching on the relevant interface.

IBM Connectivity

- CSCdk77166

Router running DLSw with FST/Direct/LLC2(Lite) encapsulations could crash.

Workaround for this is to use DLSw with TCP encapsulation.

Interfaces and Bridging

- CSCdj43445

FDDI PA will now have a software address filter at VIP level to filter out unwanted multicast packets. This helps performance and also unnecessary entries in netflow tables.

- CSCdk66019

If “no keepalive” (or 0 keepalive) is configured on fastethernet, the line will stay up even though the MII is removed or the cable is disconnected. If the interface is then reconfigured with “keepalive” (of non-zero value) while the physical media stayed down, the link would still indicate up. The only workaround is by doing a shut/no shut, or clear interface command.

- CSCdk74431

A large packet sent over a MLP bundle of over 2 links with VPDN on a ATM PPP tunnel on a ATM-Lite interface will be corrupted sometimes. A workaround is to disable the fastswitching on the ATM-lite interface.

IP Routing Protocols

- CSCdj88650

If ospf has both an external and a summary route to the same network and a partial spf run deletes the summary route, the external route will not be installed.

The external LSA may have the routing bit set, even if it is not installed in the routing table. This is caused by a failure to reset the external’s routing bit when the summary route replaces the external route in the ip routing table. The following sequence of events illustrates the problem, given external and summary routes to network 1.0.0.0:

1. ospf installs external route to 1.0.0.0. The external LSA for 1.0.0.0 has its routing bit set
2. ospf installs summary route to 1.0.0.0, replacing the external route. The routing bit is not reset on the external LSA for 1.0.0.0.
3. ospf performs a partial spf to remove the summary route to 1.0.0.0. The external route to 1.0.0.0 is not installed. To add to the confusion, the routing bit is still set on the external LSA for 1.0.0.0.

A’clear ip route *’ will force the installation of the external route. Alternatively, a’clear ip ospf redist’ at the router that originates the external route will trigger installation of the external route.

- CSCdk30085

Guaranteed service flowspec in RSVP RESV messages must contain certain fields within a certain range (as indicated by RFC 2212). This fix puts these checks in the code

- CSCdk66969

With sync and certain topologies, some bgp routes may not get advertised after peer reset. The workaround is to configure “no sync”, or “clear ip bgp x.x.x.x”.

ISO CLNS

- CSCdk36270

On all platforms which do not use the old mci controller, fast-switching of clns traffic with non-zero N-Selector does not work.

Miscellaneous

- CSCdi72371

When running 2523 and 2524 serial ports in asynchronous mode, modem control is only supported when using DTE style 5-in-1 cables (in order to connect to DCE devices). The DCE 5-in-1 cable (in order to connect to DTE devices) will not support modem control for the asynchronous mode. In order to support DTE devices with modem control, it is required to use the DTE style cables with a null modem adapter.

- CSCdk29115

When you configure Bisync (**encapsulation bstun**) with the ASCII character set (**bsc char-set ascii**) on the first port of a serial WIC (1T, 2T, or 2A/S) in WIC slot 0 of a Cisco 2600 series router, only the first character of each frame is received, and the BSTUN tunnel is not established. This only affects Bisync mode when it is configured with the ASCII character set. Other encapsulations are not affected, and using the EBCDIC character set with Bisync works correctly.

For the first serial port in WIC slot 0, the parity detection is not configured correctly for Bisync in ASCII mode. The first character of each frame generates a parity error that causes the receiver to discard the frame after the first character received.

Workaround: Use a different serial port: either the second serial port (port 1) on a 2T or 2A/S WIC in WIC slot 0 or any serial port in WIC slot 1. If you have only one serial WIC, moving it from WIC slot 0 to WIC slot 1 fixes this problem.

- CSCdk42816

When running Tag Switching and CEF on an Ethernet interface, it is possible for the interface to get into a state where the IP packets are not forwarded properly.

The problem occurs when a CEF entry is improperly pointing at a Tag data structure. To check whether this is the problem, do

```
show adjacency detail
```

for the next hop on the failing route. In the failure case, the packet counts on the “IP” adjacency will not be increasing, but those on the “TAG” one will.

Workaround: disable Tag switching on the interface

- CSCdk46820

When enrolling certificate with Entrust VPN, you might fail to get CA certificates. So far, this problem only happened on the Cisco 2500 platform and there is no work around. Please upgrade to the next build.

- CSCdk46853

In Release 11.2P and 11.3 when Fast Ethernet subinterfaces are configured for encryption, if the crypto map is only applied to the main interface and the IP address is configured in the subinterface, the packets could be switched in the clear. In Release 12.0, enabling CEF could cause the packets to get dropped.

- CSCdk59049

When you run TRISL to a Cisco 7000 family router, some frames larger than 1535 bytes might not be forwarded. This condition occurs when you run TRISL between two VLANs that are on switches.

Workaround: Do not use TRISL. Use an external device to router or bridge between the two different VLANs. Or modify the end devices so that they do not send packets larger than 1500 bytes.

- CSCdk59879

From enclosure: Release-note

A Cisco 1600 router or Cisco 3600 series router will reload when IPSEC is configured over the ISDN link. This condition is caused by the IP route-cache that is enabled by default on all interfaces.

The workaround is to turn off fast switching with the **no ip route-cache** command on the ISDN interfaces.

From enclosure: Release-note-2

This crash has also been seen on the 3600 platform.

- CSCdk77426

If a UDP packet with an invalid length is sent to port 514 (the “syslog” port) on an IOS device, the device is likely to crash, possibly without saving a stack trace. Such packets are sent by the popular “nmap” port scanning program.

Wide-Area Networking

- CSCdk70026

StatusMsg with endpointRef is not processed in multipoint state table. This could result in releasing multipoint vc.

Resolved Caveats – Release 12.0 T

All the caveats listed in this section are resolved in release 12.0(2)T.

IP Routing Protocols

- CSCdk37843

workaround:

The workaround is to configure “router rip” on the router first, before configuring the address on the interface.

Miscellaneous

- CSCdk38476
RADIUS accounting does not work if you have separate authentication and accounting servers.
- CSCdk41902
An IP client might not be able to ping the Route Switch Module (RSM). This situation might occur during Token-Ring Virtual LAN (TR VLAN) configuration on the RSM. It is most common when the IP client sends an address resolution protocol (ARP) without a routing information field (RIF), then sends an ARP with a RIF. The situation might also occur if the concentrator relay function (CRF), to which the client is connected, is configured for source-route bridging (SRB). Workaround: Change the CRF mode from SRB to source-route transparent (SRT) bridging.

Novell IPX, XNS, and Apollo Domain

- CSCdk52372
The Internetwork Packet Exchange (IPX) input process might run out of stack, causing a system reload or reduced performance. There is no workaround.

Related Documentation

This section describes the documentation related to this IOS release and the Cisco AS5300, including

- “Release-Specific Documents” section on page 15
- “Platform Documents” section on page 16
- “Feature Modules” section on page 16
- “Cisco IOS Software Documents” section on page 16

Documentation is generally available as printed manuals or electronic documents; the feature modules that are available online only.

The most up-to-date documentation can be found on the Web via Cisco Connection Online (CCO) and on the latest Documentation CD-ROM. These electronic documents might contain updates and modifications made after the paper documents were printed. For information on CCO, refer to the “Cisco Connection Online” section on page 20. For more information on the CD-ROM, refer to the “Documentation CD-ROM” section on page 21.

Release-Specific Documents

Use these release notes with:

- The *Caveats for Cisco IOS Release 12.0 T* document, which contains a list of software caveats that apply to all maintenance releases of 12.0 T. This document accompanies these release notes in hardcopy form, and is also located on Cisco Connection Online (CCO) and the Documentation CD-ROM.
- Cross-platform *Release Notes for Cisco IOS Release 12.0* document, which contains some feature and caveat information applicable to Cisco IOS Release 12.0(1), located on CCO and the Documentation CD-ROM.

- Product bulletins; the path from Cisco Connection Online follows:
Products & Ordering: More Information: Product Bulletins. Scroll to **Software**. At the time of this printing, no product bulletins are provided for Cisco IOS Release 12.0, although this will change as this release matures.

Platform Documents

The following Cisco AS5300 documents are available:

- *Cisco AS5300 Universal Access Server Hardware Installation Guide*
- *Cisco AS5300 Universal Access Server Software Configuration Guide*
- *New and Changed Cisco IOS Commands for the Cisco AS5300*
- Modem information—firmware and portware release notes, FAQs (frequently asked questions)
- *Regulatory Compliance and Safety Information*
- Documentation for spare parts

This documentation can be found on CCO and on the Documentation CD-ROM:

- On Cisco Connection Online (CCO), the path is **Software & Support: Cisco Documentation: Access Servers and Access Routers: Access Servers: Cisco AS5300**. For more information, refer to “Documentation CD-ROM,” page 21.
- On the Documentation CD, the path is **Access Servers and Access Routers: Access Servers: Cisco AS5300**. For more information, refer to “Documentation CD-ROM,” page 21.

Feature Modules

Feature modules describe new features introduced during the Cisco IOS 12.0 T releases and are updates to the Cisco IOS documentation set. As updates, the feature modules are only available online. The feature module information will be added to the Cisco IOS documentation set before the next printing of the documentation set. Feature modules include a brief overview of the feature, benefits, configuration tasks, and command reference details.

To reach the Cisco IOS Release 12.0 T feature modules on CCO, follow this path:

Products & Ordering: Cisco Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: New Feature Documentation.

To reach the feature modules on the Documentation CD-ROM, follow this path:

Cisco Product Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: New Feature Documentation.

Cisco IOS Software Documents

The following are some of the Cisco IOS Release document types that are available in electronic form, printed form, or both forms:

- Configuration guides and command references (electronic and printed)
- Feature modules that apply to Technology (T) trains only (electronic); see the “Feature Modules” section on page 16 for more information.

- Product-specific release notes (electronic and printed); see the “Release-Specific Documents” section on page 15 for more information.
- Cisco IOS software caveats (electronic and printed); see the “Caveats” section on page 11 for more information.

Table 5 lists the Cisco IOS software documentation set that contains Cisco IOS configuration guides, command references, and several supporting documents. The document set is available in electronic form, and is also available in printed form if you special order it.

Note The most current 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.

Documentation Modules

Each module in the Cisco IOS documentation set consists of two books: a configuration guide and a corresponding command reference. Chapters in a configuration guide describe protocols, configuration tasks, and Cisco IOS software functionality and contain comprehensive configuration examples. Chapters in a command reference provide complete command syntax information. Each configuration guide can be used in conjunction with its corresponding command reference.

Master Indexes

Two master indexes provide indexing information for the Cisco IOS software documentation set: an index for the configuration guides and an index for the command references. In addition, individual books contain a book-specific index.

To reach hot-linked master indexes for configuration guide and command reference documentation, follow this path on CCO or the Documentation CD-ROM:

Software & Support: Documentation: Cisco Documentation: Cisco IOS Software Configuration: Cisco IOS Release 12.0: Configuration Guides and Command References: Configuration Guide Master Index or Command Reference Master Index

To reach documentation related to an index entry, click on the page number following the entry.

Cisco IOS Documentation Set

The Cisco IOS Software Release 12.0 documentation set consists of the following books and chapter topics.

Table 5 Cisco IOS Software Documentation Set for Release 12.0

Books	Chapter Topics
• <i>Configuration Fundamentals Configuration Guide</i>	Configuration Fundamentals Overview
• <i>Configuration Fundamentals Command Reference</i>	Cisco IOS User Interfaces
	File Management
	System Management

Table 5 Cisco IOS Software Documentation Set for Release 12.0 (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Bridging and IBM Networking Configuration Guide</i> • <i>Bridging and IBM Networking Command Reference</i> 	<ul style="list-style-type: none"> Transparent Bridging Source-Route Bridging Token Ring Inter-Switch Link Remote Source-Route Bridging DLSw+ STUN and BSTUN LLC2 and SDLC IBM Network Media Translation DSPU and SNA Service Point SNA Frame Relay Access Support APPN NCIA Client/Server Topologies Cisco Mainframe Channel Connection Airline Product Set
<ul style="list-style-type: none"> • <i>Dial Solutions Configuration Guide</i> • <i>Dial Solutions Command Reference</i> 	<ul style="list-style-type: none"> Dial-In Port Setup Dial-In Terminal Services Dial-on-Demand Routing (DDR) Dial Backup Dial-Out Modem Pooling Large-Scale Dial Solutions Cost-Control Solutions ISDN X.25 over ISDN VPDN Dial Business Solutions and Examples
<ul style="list-style-type: none"> • <i>Cisco IOS Interface Configuration Guide</i> • <i>Cisco IOS Interface Command Reference</i> 	<ul style="list-style-type: none"> Interface Configuration Overview
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 1</i> • <i>Network Protocols Command Reference, Part 1</i> 	<ul style="list-style-type: none"> IP Addressing IP Services IP Routing Protocols
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 2</i> • <i>Network Protocols Command Reference, Part 2</i> 	<ul style="list-style-type: none"> AppleTalk Novell IPX
<ul style="list-style-type: none"> • <i>Network Protocols Configuration Guide, Part 3</i> • <i>Network Protocols Command Reference, Part 3</i> 	<ul style="list-style-type: none"> Apollo Domain Banyan VINES DECnet ISO CLNS XNS
<ul style="list-style-type: none"> • <i>Security Configuration Guide</i> • <i>Security Command Reference</i> 	<ul style="list-style-type: none"> AAA Security Services Security Server Protocols Traffic Filtering and Firewalls IP Security and Encryption Passwords and Privileges Neighbor Router Authentication IP Security Options
<ul style="list-style-type: none"> • <i>Cisco IOS Switching Services Configuration Guide</i> • <i>Cisco IOS Switching Services Command Reference</i> 	<ul style="list-style-type: none"> Switching Paths for IP Networks Virtual LAN (VLAN) Switching and Routing
<ul style="list-style-type: none"> • <i>Wide-Area Networking Configuration Guide</i> • <i>Wide-Area Networking Command Reference</i> 	<ul style="list-style-type: none"> ATM Frame Relay SMDS X.25 and LAPB

Table 5 Cisco IOS Software Documentation Set for Release 12.0 (continued)

Books	Chapter Topics
<ul style="list-style-type: none"> • <i>Voice, Video, and Home Applications Configuration Guide</i> • <i>Voice, Video, and Home Applications Command Reference</i> 	Voice over IP Voice over Frame Relay Voice over ATM Voice over HDLC Video Support Universal Broadband Features
<ul style="list-style-type: none"> • <i>Quality of Service Solutions Configuration Guide</i>¹ • <i>Quality of Service Solutions Command Reference</i>¹ 	Classification Scheduling Packet Drop Traffic Shaping ATM QoS SNA QoS Line Protocols
<ul style="list-style-type: none"> • <i>Cisco IOS Software Command Summary</i> • <i>Dial Solutions Quick Configuration Guide</i> • <i>System Error Messages</i> • <i>Debug Command Reference</i> 	

¹ This book will not be available until January 1999.

Note The *Cisco Management Information Base (MIB) User Quick Reference* publication is no longer being published. For the latest list of MIBs supported by Cisco, see the *Cisco Network Management Toolkit* on Cisco Connection Online. On CCO, go to **Software & Support: Software Center: Network Management Products: Cisco Network Management Toolkit: Cisco MIBs**.

Service and Support

For service and support for a product purchased from a reseller, contact the reseller. Resellers offer a wide variety of Cisco service and support programs, which are described in the section “Service and Support” in the information packet that ships with each product.

For service and support for a product purchased directly from Cisco, use CCO.

The *Cisco IOS Software Upgrade Planner* on CCO contains information about downloading software. To reach the *Cisco IOS Software Upgrade Planner* from CCO, be sure to click on **Login** on the CCO home page to get access to all information. From the CCO home page, go to the Software Support area, click **Software Center**, then either **Cisco IOS Software** or **New IOS Upgrade Planner Live on CCO**.

Software Configuration Tips on the Cisco TAC Home Page

The following URL contains links to reach helpful tips on configuring your Cisco products:

http://www.cisco.com/kobayashi/serv_tips.shtml

This URL is subject to change without notice. If it changes, point your web browser to <http://www.cisco.com/>, and follow this path: **Software & Support, Technical Tips** (button on left margin).

“Hot Tips” are popular tips and hints gathered from the Cisco Technical Assistance Center (TAC). Most of these documents are available from the TAC fax-on-demand service. To reach fax-on-demand and receive documents at your fax machine from the USA, call 888-50-CISCO (888-502-4726). From other areas, call 415-596-4408.

The following sections are provided from the Technical Tips page:

- **Field Notices**—Designed to provide notification of any critical issues regarding Cisco products. These include problem descriptions, safety or security issues, and hardware defects.
- **Hardware**—Technical Tips related to specific hardware platforms.
- **Internetworking Features**—Tips on using and deploying Cisco IOS software features and services.
- **Sample Configurations**—Actual configuration examples complete with topology and annotations.
- **Software Products**—Such as MultiNet & Cisco Suite 100, Network Management, and Cisco IOS Software Bulletins.
- **Special Collections**—Other Helpful Documents, Frequently Asked Questions, Security Advisories, References & RFCs, and Case Studies.

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 reach 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
- **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.

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 current 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 reach Cisco documentation on the World Wide Web at <http://www.cisco.com>, <http://www-china.cisco.com>, or <http://www-europe.cisco.com>.

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

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

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