



# Release Notes for the Cisco PDSN Feature in Cisco IOS Release 12.4(15)XN

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**11 December 2007**

Cisco IOS Release 12.4(15)XN is a special release that is based on Cisco IOS Release 12.4, with the addition of enhancements to the Cisco Packet Data Serving Node (Cisco PDSN) feature. The Cisco IOS Release 12.4(15)XN is a release optimized for the Cisco PDSN feature on the Cisco 7609 Internet Router, and Cisco 6500 Catalyst Switch platform.

## Contents

These release notes include important information and caveats for the Cisco PDSN software feature provided in Cisco IOS 12.4(15)XN for the Cisco 7609 Internet Router and Cisco 6500 Catalyst Switch platforms.

Caveats for Cisco IOS Release 12.4 can be found on CCO at:

[http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/tsd_products_support_series_home.html)

Release notes for Cisco 7000 Family for Release 12.4T can be found on CCO at:

[http://www.cisco.com/en/US/products/sw/iosswrel/ps5207/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/sw/iosswrel/ps5207/prod_release_notes_list.html)

Release notes for the Cisco 6000 Family for 12.4T can be found on CCO at:

[http://www.cisco.com/en/US/products/sw/iosswrel/ps5207/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/sw/iosswrel/ps5207/prod_release_notes_list.html)

This release note includes the following topics:

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- [Upgrading to a New Software Release, page 4](#)



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## Introduction

Cisco PDSN is an IOS software feature that enables a Multi-Processor WAN Application Module (MWAM) on a Catalyst 6500 Switch or 7600 Internet router to function as a gateway between the wireless Radio Access Network (RAN) and the Internet. With Cisco PDSN enabled on a router, a stationary or roaming mobile user can access the Internet, a corporate network intranet, or Wireless Application Protocol (WAP) services. Cisco PDSN supports both Simple IP operation and Mobile IP operation.

## System Requirements

This section describes the system requirements for Cisco IOS Release 12.4(15)XN:

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## Memory Requirements

[Table 1](#) shows the memory requirements for the PDSN Software Feature Set that supports the MWAM card on the Cisco 6500 Catalyst Switch platform and 7600 Internet router platform. The table also lists the memory requirements for the IP Standard Feature Set (for the Home Agent [HA]).

**Table 1** *Memory Requirements for the MWAM on the Cisco 6500 Catalyst Switch and 7600 Router*

Platform	Software Feature Set	Image Name	Flash Memory Required	DRAM Memory Required	Runs From
Cisco 6500 Catalyst Switch	PDSN Software Feature Set	12.4(15)XN- c6svc5fmwam-c6is-mz.xn (This is a bundled image)	40MB	512MB	RAM
Cisco 7600 Internet Router	PDSN Software Feature Set	12.4(15)XN- c6svc5fmwam-c6is-mz.xn (This is a bundled image)	40MB	512MB	RAM

## Hardware Supported

Cisco IOS Release 12.4(15)XN is optimized for the MWAM card on the Cisco 6500 Catalyst Switch platform, and 7600 Internet router platform.

A Hardware-Software Compatibility Matrix is available on CCO for users with CCO login accounts. This matrix allows users to search for supported hardware components by entering a Cisco platform and IOS Release. The Hardware-Software Compatibility Matrix tool is available at the following URL:

<http://www.cisco.com/cgi-bin/front.x/Support/HWSWmatrix/hwswwmatrix.cgi>

## Software Compatibility

Cisco IOS Release 12.4(15)XN is a special release that is developed on Cisco IOS Release 12.4.

Cisco IOS Release 12.4(15)XN supports the same features that are in Cisco IOS Release 12.4, with the addition of the Cisco PDSN feature.

## Determining the Software Version

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

```
Router#show version
Cisco IOS Software, MWAM Software (MWAM-C6IS-M), Version 12.4(15)XN , RELEASE SOFTWARE
Copyright (c) 1986-2007 by Cisco Systems, Inc.
Compiled Tue 11-Dec-07 15:44 by jsomiram

ROM: System Bootstrap, Version 12.2(11)YS2 RELEASE SOFTWARE

PDSN-S2000-BAL uptime is 4 minutes
System returned to ROM by bus error at PC 0x2033D804, address 0x283 at 06:56:44 PDT Mon
Dec 3 2007
System restarted at 03:29:24 PDT Tue Dec 11 2007
System image file is "svcmwam-c6is-mz.xn"

Cisco MWAM (MWAM) processor with 997376K/32768K bytes of memory.
SB-1 CPU at 700MHz, Implementation 1025, Rev 0.2

Last reset from power-on
1 Gigabit Ethernet interface
511K bytes of non-volatile configuration memory.

Configuration register is 0x4

Router#
```

## Upgrading to a New Software Release

The following sections contain details on how to upgrade your Cisco PDSN:

- [Upgrading the Supervisor Image](#)
- [Upgrading the PDSN Image on MWAM](#)
- [Upgrading the Member PDSN on MWAM](#)
- [Changing Configuration on the PDSN in a Live Network](#)

### Upgrading the Supervisor Image

To upgrade the Supervisor image, perform the following procedure:

- 
- Step 1** Copy the SUP image to the disks (disk0: / slavedisk0:).
- Step 2** Add the following command to the running config boot system disk0: *SUP image name*. Here is an example:

```
boot system disk0:s72033-advipservicesk9_wan-mz.122-18.SXE3.bin
```



---

**Note** This step may require you to unconfigure previously configured instances of this CLI in order to enable the image to properly reload.

---

- Step 3** Perform a “write memory” so that running configuration is saved on both active and standby SUP.
- Step 4** Issue **reload** command on the active SUP.

Both active and standby SUP will reload simultaneously and come up with the SXE3-based image.



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**Note** Issuing the **reload** command on the active SUP will cause both the active and standby Supervisors to reload simultaneously, thus causing some downtime during the upgrade process.

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## Upgrading the PDSN Image on MWAM

To upgrade an image on the Cisco MWAM, you will need a compact flash card that has the MP partition from the current image or later, and a recent supervisor image. To locate the images, please go to the Software Center at Cisco.com (<http://www.cisco.com/public/sw-center/>)

### Upgrading the Controller PDSN on MWAM:

To upgrade to an IOS 12.4(15)XN image on the PDSN controller, perform the following procedure:

- Step 1** Bring down the Standby PDSN Controller Loaded with a YX-based image, by issuing the **hw-module module slot # reset cf:1** command on Supervisor. The active PDSN Controller will continue to service the incoming requests.

Log onto the supervisor and boot the MP partition on the PC.

```
SUP-PDSN#hw-module module 8 reset cf:1
Device BOOT variable for reset = <cf:1>
Warning: Device list is not verified.

Proceed with reload of module?[confirm]
% reset issued for module 8
SUP-HA#
SUP-HA#
Nov 10 18:01:29.624: %SNMP-5-MODULETRAP: Module 8 [Down] Trap
Nov 10 18:01:29.624: SP: The PC in slot 8 is shutting down. Please wait ...
Nov 10 18:01:55.252: SP: PC shutdown completed for module 8
Nov 10 18:01:55.256: %C6KPWR-SP-4-DISABLED: power to module in slot 8 set off (Reset)
Nov 10 18:04:00.195: SP: OS_BOOT_STATUS(8) MP OS Boot Status: finished booting
Nov 10 18:04:42.299: %SNMP-5-MODULETRAP: Module 8 [Up] Trap
Nov 10 18:04:42.271: %DIAG-SP-6-BYPASS: Module 8: Diagnostics is passed
Nov 10 18:04:43.143: %OIR-SP-6-INSCARD: Card inserted in slot 8, interfaces are now online
SUP-PDSN#
```

- Step 2** Once the module is online, copy the 12.4(15)XN image to **pcl#** slot file system by issuing the following command:

**copy tftp: tftp file location pcl# linecard #-fs:**

The upgrade file uses a special format that makes this process slow. The following example illustrates the upgrade process output:

```
SUP-PDSN#$/10.77.155.10/pdsn/images/c6svc5fmwam-hlis-mz.R30_11092005 pcl#8-fs:
Destination filename [c6svc5fmwam-hlis-mz.R30_11092005]?
Accessing tftp://10.77.155.10/pdsn/images/c6svc5fmwam-hlis-mz.R30_11092005...
Loading pdsn/images/c6svc5fmwam-hlis-mz.R30_11092005 from 10.77.155.10 (via Vlan10):
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!!!!
[OK - 24168088 bytes]
```

```

24168088 bytes copied in 192.376 secs (125629 bytes/sec)
SUP-PDSN#
Nov 10 18:09:03.903: %SVCLC-SP-5-STRRECVD: mod 8: <Application upgrade has started>
Nov 10 18:09:03.903: %SVCLC-SP-5-STRRECVD: mod 8: <Do not reset the module till upgrade
completes!!>
Nov 10 18:09:42.022: %SVCLC-SP-5-STRRECVD: mod 8: <Application upgrade has succeeded>
Nov 10 18:09:42.022: %SVCLC-SP-5-STRRECVD: mod 8: <You can now reset the module>
SUP-PDSN#

```

- Step 3** Now boot the MWAM card back to partition 4, the processor comes back as standby unit, and you have an upgraded image on standby PDSN controller.

```

SUP-PDSN#hw-module module 8 reset cf:4
Device BOOT variable for reset = <cf:4>
Warning: Device list is not verified.

Proceed with reload of module?[confirm]
% reset issued for module 8
SUP-PDSN#
Nov 10 18:10:34.831: %SNMP-5-MODULETRAP: Module 8 [Down] Trap
Nov 10 18:10:34.831: SP: The PC in slot 8 is shutting down. Please wait ...
Nov 10 18:10:57.387: SP: PC shutdown completed for module 8
Nov 10 18:10:57.391: %C6KPWR-SP-4-DISABLED: power to module in slot 8 set off (Reset)
Nov 10 18:12:13.370: SP: OS_BOOT_STATUS(8) MWAM
Nov 10 18:14:30.447: %SNMP-5-MODULETRAP: Module 8 [Up] Trap
Nov 10 18:14:30.434: %DIAG-SP-6-BYPASS: Module 8: Diagnostics is passed
Nov 10 18:14:31.293: %OIR-SP-6-INSCARD: Card inserted in slot 8, interfaces are now online

```

- Step 4** Verify that all the bindings serviced by the active PDSN controller running the XN image have been synched with the newly enabled standby PDSN controller running the 12.4(15)XN PDSN image. The same can be verified by issuing the following show command on Active and Standby PDSN controller.

```
7600a-cont2# show cdma pdsn cluster controller member load
```

Secs until (past) seek	Seq seeks no reply	Member IPv4 Addr	State	Load	Sessions
2	0	20.20.10.2	ready	0	15
8	0	20.20.10.1	ready	0	15
Controller IPv4 Addr			20.20.101.105		

```

7600a-cont2# show cdma pdsn cluster controller session count
30 session records

```

- Step 5** Bring down the active PDSN Controller with the XN-based image. The newly upgraded standby PDSN controller (running 12.4(15)XN PDSN image) becomes the active unit.
- Step 6** Perform steps 1 through 3 as described above.
- Step 7** Verify that all the bindings serviced using the active PDSN controller running the 12.4(15)XN image have been synched with the newly enabled standby PDSN controller running the 12.4(15)XN PDSN image. The same can be verified by issuing the following show command on active and standby PDSN controller.

```
7600a-cont1#show cdma pdsn cluster controller member load
```

Secs until (past) seek	Seq seeks no reply	Member IPv4 Addr	State	Load	Sessions
2	0	20.20.10.2	ready	0	15
8	0	20.20.10.1	ready	0	15

Controller IPv4 Addr 20.20.101.105

```
7600a-cont1# show cdma pdsn cluster controller session count
30 session records
```

**Note**

We recommend that you remove the “HSRP Preemption” configuration between the active and standby PDSN Controller before proceeding with the Upgrade/Downgrade Procedure.

**Note**

The downgrade process is similar to the upgrade process, where the SUP image should be downgraded first, followed by the PDSN image.

**Note**

If config-on-SUP mode (mwam config-mode supervisor) is used on MWAM, the startup configuration is written on the SUP. This will assist you in upgrading/downgrading the images without losing the PDSN configuration between the YX and 12.4(15)XN images.

## Upgrading the Member PDSN on MWAM

To upgrade to the 12.4(15)XN image on the PDSN, perform the following procedure:

- Step 1** In PDSN cluster environment you can segregate a member PDSN out of the cluster by configuring the following command on the member PDSN, so that no new request from mobile node are entertained by this member:

```
7600a-pdsn1(config)# cdma pdsn cluster member prohibit administratively
```

The calls, which are already connected to the member, will be alive until the mobile node disconnects the call. Alternatively, the calls can be forcibly cleared on the prohibited member using the following command:

```
7600a-pdsn1(config)# clear cdma pdsn session all
```

- Step 2** Now bring down the PDSN Loaded with YX-based image, by issuing the **hw-module module slot # reset cf:1** command on Supervisor.

Log onto the supervisor and boot the MP partition on the PC.

```
SUP-PDSN# hw-module module 8 reset cf:1
Device BOOT variable for reset = <cf:1>
Warning: Device list is not verified.
```

```
Proceed with reload of module?[confirm]
% reset issued for module 8
SUP-HA#
```

```

SUP-HA#
Nov 10 18:01:29.624: %SNMP-5-MODULETRAP: Module 8 [Down] Trap
Nov 10 18:01:29.624: SP: The PC in slot 8 is shutting down. Please wait ...
Nov 10 18:01:55.252: SP: PC shutdown completed for module 8
Nov 10 18:01:55.256: %C6KPWR-SP-4-DISABLED: power to module in slot 8 set off (Reset)
Nov 10 18:04:00.195: SP: OS_BOOT_STATUS(8) MP OS Boot Status: finished booting
Nov 10 18:04:42.299: %SNMP-5-MODULETRAP: Module 8 [Up] Trap
Nov 10 18:04:42.271: %DIAG-SP-6-BYPASS: Module 8: Diagnostics is passed
Nov 10 18:04:43.143: %OIR-SP-6-INSCARD: Card inserted in slot 8, interfaces are now online
SUP-PDSN#

```

- Step 3** Once the module is online, copy the 12.4(15)XN image to pclk# slot file system by issuing the following command:

**copy tftp:** *tftp file location pclk# linecard #-fs:*

The upgrade file uses a special format that makes this process slow. The following example illustrates the upgrade process output:

```

SUP-PDSN#$/10.77.155.10/pdsn/images/c6svc5fmwam-hlis-mz.R30_11092005 pclk#8-fs:
Destination filename [c6svc5fmwam-hlis-mz.R30_11092005]?
Accessing tftp://10.77.155.10/pdsn/images/c6svc5fmwam-hlis-mz.R30_11092005...
Loading pdsn/images/c6svc5fmwam-hlis-mz.R30_11092005 from 10.77.155.10 (via Vlan10):
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[OK - 24168088 bytes]

24168088 bytes copied in 192.376 secs (125629 bytes/sec)
SUP-PDSN#
Nov 10 18:09:03.903: %SVCLC-SP-5-STRRECVD: mod 8: <Application upgrade has started>
Nov 10 18:09:03.903: %SVCLC-SP-5-STRRECVD: mod 8: <Do not reset the module till upgrade completes!!>
Nov 10 18:09:42.022: %SVCLC-SP-5-STRRECVD: mod 8: <Application upgrade has succeeded>
Nov 10 18:09:42.022: %SVCLC-SP-5-STRRECVD: mod 8: <You can now reset the module>
SUP-PDSN#

```

- Step 4** Now boot the MWAM card back to partition 4, the processor comes back online, and you have an upgraded image on PDSN.

```

SUP-PDSN#hw-module module 8 reset cf:4
Device BOOT variable for reset = <cf:4>
Warning: Device list is not verified.

Proceed with reload of module?[confirm]
% reset issued for module 8
SUP-PDSN#
Nov 10 18:10:34.831: %SNMP-5-MODULETRAP: Module 8 [Down] Trap
Nov 10 18:10:34.831: SP: The PC in slot 8 is shutting down. Please wait ...
Nov 10 18:10:57.387: SP: PC shutdown completed for module 8
Nov 10 18:10:57.391: %C6KPWR-SP-4-DISABLED: power to module in slot 8 set off (Reset)
Nov 10 18:12:13.370: SP: OS_BOOT_STATUS(8) MWAM
Nov 10 18:14:30.447: %SNMP-5-MODULETRAP: Module 8 [Up] Trap

```



```
Nov 10 18:14:30.434: %DIAG-SP-6-BYPASS: Module 8: Diagnostics is passed
Nov 10 18:14:31.293: %OIR-SP-6-INSCARD: Card inserted in slot 8, interfaces are now online
```

- Step 5** Join the member PDSN with the cluster environment by configuring the following command on the member PDSN, so that the controller can direct new incoming request to this member PDSN as well.

```
7600a-pdsn1(config)# no cdma pdsn cluster member prohibit administratively
```

**Note**

The downgrade process is similar to the upgrade process, where the SUP image should be downgraded first followed by the PDSN image. Additionally, ensure all session redundancy specific configuration on PDSN was removed before downgrading to the YX-based image.

**Note**

If config-on-SUP mode (mwam config-mode supervisor) is used on MWAM, the startup configuration is written on SUP. This will assist you in upgrading/downgrading the images without losing the PDSN configuration between YX and 12.4(15)XN images.

## Changing Configuration on the PDSN in a Live Network

If you need to change the working configuration on a PDSN in a live network environment, perform the following procedure:

- Step 1** Bring the standby PDSN out of service. An example would be to unconfigure the **cdma pdsn redundancy** command on the standby PDSN. This isolates the standby PDSN from the session redundancy setup.
- Step 2** Perform a “write memory” so that running configuration is saved.
- Step 3** Now make the necessary configuration changes on the standby PDSN, and save the configuration.
- Step 4** Re-configure the **cdma pdsn redundancy** command, and save the configuration.
- Step 5** Issue the **reload** command to bring the standby PDSN back into the session redundancy setup with the changed configuration. Verify the processor comes back in the SR setup using the following show commands:

```
7600a-Stdy#show standby brief
```

```

          P indicates configured to preempt.
          |
Interface  Grp Prio P State   Active           Standby           Virtual IP
Gi0/0.101  300 110   P Standby  20.20.101.10    local             20.20.101.101
```

```
7600a-Stdy# show cdma pdsn redundancy
```

```
CDMA PDSN Redundancy is enabled
```

```
CDMA PDSN Session Redundancy system status
```

```
PDSN state = STANDBY HOT
```

```
PDSN-peer state = ACTIVE
```

```
CDMA PDSN Session Redundancy Statistics
```

```
Last clearing of cumulative counters never
```

	Total	Current
	Synced from active	Connected
Sessions	15	15

```

SIP Flows          15          15
MIP Flows          0           0
PMIP Flows         0           0

```

**7600a-Stdy#show redundancy inter-device**

```

Redundancy inter-device state: RF_INTERDEV_STATE_STDBY
Scheme: Standby
  Groupname: pdsn-rp-sr1 Group State: Standby
Peer present: RF_INTERDEV_PEER_COMM
Security: Not configured

```

**7600a-Stdy#show redundancy states**

```

my state = 8  -STANDBY HOT
  peer state = 13 -ACTIVE
    Mode = Duplex
    Unit ID = 0

  Split Mode = Disabled
  Manual Swact = Enabled
  Communications = Up

  client count = 9
  client_notification_TMR = 30000 milliseconds
  RF debug mask = 0x0

```

7600a-Stdy#

**Step 6** Now make the standby PDSN to takeover as active by reloading the current active PDSN.



**Note**

Some outage might occur while performing this step concerning existing calls on the active PDSN (which is being taken out of service), when synched with newly active unit because of change in configuration.

**Step 7** Perform Step 1 to Step 5 on current standby PDSN.



**Note**

Configurations on the active and standby should be the same for PDSN SR to work properly.



**Note**

We recommend that you disable the “HSRP preemption” configuration on the active and standby PDSN before proceeding with the configuration changes.

For information on upgrading to a new software release, see the product bulletin *Cisco IOS Software Upgrade Ordering Instructions* located at:

[http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957\\_pp.htm](http://www.cisco.com/warp/public/cc/pd/iosw/prodlit/957_pp.htm)

## MIBs

Old Cisco Management Information Bases (MIBs) will be replaced in a future release. Currently, OLD-CISCO-\* MIBs are being converted into more scalable MIBs—without affecting existing Cisco IOS products or NMS applications. You can update from deprecated MIBs to the replacement MIBs as shown in [Table 2](#).

**Table 2** *Deprecated and Replacement MIBs*

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

## Cisco IOS Feature Sets

The Cisco IOS software is packaged in feature sets consisting of software images—depending on the platform. Each feature set contains a specific set of Cisco IOS features.

Cisco IOS Release 12.4(15)XN supports the same feature sets as Cisco Release 12.4, with the exception that Cisco Release 12.4(15)XN includes the PDSN feature. The PDSN feature is optimized for the Cisco MWAM card on the 6500 Catalyst Switch and 7600 Internet router.



### Caution

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

# Packet Data Serving Node Software Features in Release 12.4(15)XN

The Cisco IOS Release 12.4(15)XN supports the same feature sets as Cisco Release 12.4, with the exception that Cisco Release 12.4(15)XN includes the PDSN feature. The Cisco PDSN feature is optimized for the Cisco MWAM card on the 6500 Catalyst Switch and 7600 Internet router, and includes the following features:

- Home Area, Maximum Authorized Aggregate Bandwidth and Inter-user Priority Attributes Downloaded from AAA
- Support for Mobile Equipment Identifier (MEID)
- Simple IPv6 Access
- Session Redundancy Infrastructure
- Radius Server Load Balancing
- Closed-RP/Open-RP Integration
- Subscriber Authorization Based on Domain
- PDSN MIB Enhancement
- PPP Counters
- RP Counters
- Conditional Debugging Enhancements
- Trace Functionality
- Mobile IP Dynamic Home Address Deletes Older Sessions With Different IMSI
- Protocol Layering and RP Connections
- PPPoGRE RP Interface
- A11 Session Update
- SDB Indicator Marking
- Resource Revocation for Mobile IP
- Packet of Disconnect
- IS-835 Prepaid Support
- Prepaid Billing
- Mobile IP Call Processing Per Second Improvements
- IS-835-B Compliant Static IPSec
- Always On Feature
- NPE-G1 Platform Support
- PDSN Cluster Controller / Member Architecture
- PDSN MIB Enhancement
- Conditional Debugging Enhancements
- PDSN Cluster Controller / Member Architecture
- PDSN MIB Enhancement
- Cisco Proprietary Prepaid Billing

- 3 DES Encryption
- Mobile IP IPSec
- Hardware IPSec Acceleration Using IPSec Acceleration Module—Static IPSec
- 1xEV-DO Support
- Integrated Foreign Agent (FA)
- AAA Support
- Packet Transport for VPDN
- Proxy Mobile IP
- Multiple Mobile IP Flows

All other software features in Cisco IOS Release 12.3 are described in the documentation for Cisco IOS Release 12.3, which can be found at:

[http://www.cisco.com/en/US/products/sw/iosswrel/tsd\\_products\\_support\\_category\\_home.html](http://www.cisco.com/en/US/products/sw/iosswrel/tsd_products_support_category_home.html)

## Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious.

Caveats for Cisco IOS Releases 12.3 can be found on CCO at

[http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/prod\\_release\\_notes\\_list.html](http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/prod_release_notes_list.html)

The “[Open Caveats](#)” section lists open caveats that apply to the current release and might also apply to previous releases.

The “[Resolved Caveats](#)” section lists caveats resolved in a particular release, which may have been open in previous releases.



### Note

If you have an account with CCO, you can use Bug Navigator II to find caveats of any severity for any release. You can reach Bug Navigator II on CCO at **Software Center: Cisco IOS Software: Cisco Bug Toolkit: Cisco Bugtool Navigator II**, or at <http://www.cisco.com/support/bugtools>.

## Open Caveats

The following caveats are unresolved in Cisco IOS Release 12.4(15)XN:

- CSCsb35828—SYS-2-LINKED: Bad Enqueue for Process Per-Minute Jobs

A Cisco router running the Cisco PDSN IOS software shows the following message multiple times every two hours:

```
%SYS-2-LINKED: Bad enqueue of 0 in queue 6371EE20
-Process= "Per-minute Jobs", ipl= 4, pid= 121
-Traceback= 60743778 60721EC4 606AA8FC 6072B370 606CA998
```

This condition occurs under high stress involving multiple SIP and MIP calls with flapping and handoffs.

**Workaround:** none.

- **CSCse62315**—Closed RP Tunnel Not Getting Closed When Session is Cleared  
On a Cisco router running 12.4PIL06 image and acting as PDSN, when a Closed RP session is cleared using the **clear cdma pdsn session** *pcf ip-addr send termreq* command, the closed RP tunnel is not getting closed  
**Workaround:** none.
- **CSCsl67460**—Invalid Normal Burst and Excess Burst Calculated for Certain CIR  
On a Cisco router running the PDSN R3.5 image, invalid Normal Burst and Excess Burst are calculated for certain CIR.  
This condition occurs while downloading CIR of 2000000000 bps.  
**Workaround:** none.

## Resolved Caveats

The following caveats are resolved in Cisco IOS Release 12.4(15)XN:

- **CSCsg91306**  
Multiple vulnerabilities exist in the Session Initiation Protocol (SIP) implementation in Cisco IOS that can be exploited remotely to trigger a memory leak or to cause a reload of the Cisco IOS device.  
Cisco has released free software updates that address these vulnerabilities. Fixed Cisco IOS software listed in the Software Versions and Fixes section contains fixes for all vulnerabilities addressed in this advisory.  
There are no workarounds available to mitigate the effects of any of the vulnerabilities apart from disabling the protocol or feature itself, if administrators do not require the Cisco IOS device to provide voice over IP services.  
This advisory is posted at <http://www.cisco.com/warp/public/707/cisco-sa-20080924-sip.shtml>.
- **CSCsk73104**  
Cisco IOS contains multiple vulnerabilities in the Data-link Switching (DLSw) feature that may result in a reload or memory leaks when processing specially crafted UDP or IP Protocol 91 packets.  
Cisco has released free software updates that address these vulnerabilities. Workarounds are available to mitigate the effects of these vulnerabilities.  
This advisory is posted at <http://www.cisco.com/warp/public/707/cisco-sa-20080326-dlsw.shtml>

## Related Documentation

Except for feature modules, documentation is available as printed manuals or electronic documents. Feature modules are available online on CCO and the Documentation CD-ROM.

Use these release notes with these documents:

- [Release-Specific Documents, page 15](#)
- [Platform-Specific Documents, page 15](#)

## Release-Specific Documents

The following documents are specific to Cisco IOS Release 12.4T:

- *Packet Data Serving Node (PDSN) Release 3.5* at the following url:  
[http://www.cisco.com/en/US/products/ps6706/products\\_feature\\_guides\\_list.html](http://www.cisco.com/en/US/products/ps6706/products_feature_guides_list.html)

## Platform-Specific Documents

Documentation specific to the Cisco 7600 Router is located at the following location:

- On Cisco.com at:  
[http://www.cisco.com/en/US/products/hw/routers/ps368/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/routers/ps368/tsd_products_support_series_home.html)

Documentation specific to the Cisco Catalyst 6500 Switch is located at the following location:

- On Cisco.com at:  
[http://www.cisco.com/en/US/products/hw/switches/ps708/tsd\\_products\\_support\\_series\\_home.html](http://www.cisco.com/en/US/products/hw/switches/ps708/tsd_products_support_series_home.html)

## Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, obtaining support, providing documentation feedback, security guidelines, and also recommended aliases and general Cisco documents, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html>

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