Release Notes for Cisco ONS 15454 RAN Service Module for Cisco IOS Release 12.2(29)SM5

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Cisco Release 12.2(29)SM5

These release notes are for the Cisco ONS 15454 RAN Service Module for Cisco IOS Release 12.2(29)SM5. These release notes are updated as needed to describe new features, memory requirements, hardware support, software platform deferrals, and changes to the microcode and related documents.

For a list of the software caveats that apply to Cisco IOS Release 12.2(29)SM5, see the "Caveats in Cisco IOS Release 12.2(29)SM5" section on page 6.

To review Cisco ONS 15400 Series release notes, including *Release Notes for Cisco ONS 15454 RAN Service Module for Cisco IOS Release 12.2(29)SM5,* go to the following URL:

http://www.cisco.com/en/US/products/hw/optical/ps2006/prod_release_notes_list.html

To review release notes for the Cisco IOS Software Releases 12.2 Special and Early Deployments, including *Release Notes for Cisco ONS 15454 RAN Service Module for Cisco IOS Release 12.2(29)SM5,* go to the following URL:

http://www.cisco.com/en/US/products/sw/iosswrel/ps5012/prod_release_notes_list.html

Contents

This document contains the following sections:

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Introduction

Cisco IOS 12.2(29)SM introduces support for GSM and UMTS Radio Access Network (RAN) Optimization for mobile wireless service providers for the RAN Service Module (ONS-RAN-SVC) on a Cisco ONS 15454 platform. Cisco IOS 12.2(29)SM provides GSM and UMTS RAN Optimization (RAN-O) technology that can extend an IP network to every base station site in the mobile network with a shared backhaul transport, plus optimization to reduce bandwidth requirements.

In RAN Optimization (RAN-O), the Cisco MWR 1941-DC-A router extends IP connectivity to the cell site and the BTS/Node B. The router provides bandwidth-efficient IP transport of GSM and UMTS voice and data bearer traffic, as well as maintenance, control, and signaling traffic, over the leased line backhaul network between the BTS/Node B and leased line termination and the Cisco ONS 15454 aggregation node via compression (cRTP/cUDP) and packet multiplexing (Multilink PPP).

Residing in a Cisco ONS 15454, the Cisco RAN Service Module provides aggregation for traffic originating from multiple MWR cell site routers. The RAN Service Module transmits and receives short haul DS0 level data steams (for GSM applications) and shorthaul VC-4 level data streams (for UMTS applications) through ONS 15454 cross-connect cards. DS0 level channel cards connect both the long haul to the remote cell site and the short haul to GSM BSC. Clear channel VC-4 level interface cards are used on the Cisco ONS 15454 to provide the interface from the UMTS RNC to the ONS RAN Service Module.

The Cisco RAN Service Module consists of four independent IOS processors. Each Cisco RAN Service Module has four 10/100/1000 Gigabit Ethernet (RJ-45) ports with one port connected to each IOS processor. The Cisco RAN Service Module is also equipped with four VC-4 level Packet over SONET (POS) interfaces and four VC-4 level ATM interfaces and up 80 DS0 level backplane interfaces for shorthaul and up to 40 DS0 level backplane interfaces for backhaul applications. One IOS processor is dedicated as a service processor while the remaining three IOS processors are dedicated as traffic processors. The Cisco ONS RAN Service Module also includes two RJ-45 ports, one used as a DCE console (labeled Console) and the other used as a debug port (covered with a tab plate).

The Cisco ONS 15454 shelf assembly has 17 card slots that are numbered sequentially from left to right. Slots 1 – 4 and 14 – 17 are multispeed slots. Slots 5, 6, 12 and 13 are high-speed slots. Slots 7 and 11 are dedicated to TCC-I cards. Slots 8 and 10 are dedicated to cross-connect (XC10G) cards. Slot 9 is dedicated to the AIC card. The Cisco ONS RAN Service Module can be installed in Slots 1 through 6 or 12 through 17, depending on the application and line card configuration.

System Requirements

Cisco IOS 12.2(29)SM5 is a specific technology early deployment release (STED) for the Cisco ONS 15454 RAN Service Module, which runs on its own software image.

Memory Requirements

Table 1 lists the required memory for using this software.

Table 1 Memory Requirements for the Cisco ONS 15454 RAN Service Module

Platform	Software Image	Flash Memory Recommended	DRAM Memory Recommended	Runs From
Cisco ONS 15454 RAN Service Module	ransvc-ipran-mz	N/A	N/A	RAM

Determining the Software Version

To determine the version of Cisco IOS software running on your Cisco ONS 15454 RAN Service Module, log in to the Cisco ONS 15454 and enter the **show version** EXEC command:

```
Router# show version
    Cisco IOS Software, ONS RAN-Series Software (RANSVC-IPRAN-M), Version 12.2(29)SM5,
    RELEASE SOFTWARE (fc1)
    Technical Support: http://www.cisco.com/techsupport
    Copyright (c) 1986-2009 by Cisco Systems, Inc.
    Compiled Wed 02-Sep-09 14:12 by cii
    ROM: System Bootstrap, Version 0.28(20070411:062249) [usellent-skyla_nightly 202],
    DEVELOPMENT SOFTWARE
    Router uptime is 1 minute
    System returned to ROM by reload at 23:07:41 EDT Wed Sep 2 2009
    System restarted at 23:10:49 EDT Wed Sep 2 2009
    System image file is "tftp://127.0.0.100/S_I.BIN"
    Cisco RAN (RANSVC) processor (revision 31) with 221737K/32768K bytes of memory.
    Processor board ID CTR100700XH
    SB-1A CPU at 900Mhz, Implementation 1041, Rev 0.0
    Last reset from User Reload
    4 Gigabit Ethernet interfaces
    4 ATM interfaces
    57344K bytes of processor board Boot flash (Read/Write)
    8192K bytes of processor board System flash (Read/Write)
    Configuration register is 0x2102
```

To determine the ROMMON version, log in to the Cisco ONS 15454 and enter the **show rom-monitor** EXEC command:

```
ons1-rn-sm14#show rom-monitor
ReadOnly ROMMON version:

System Bootstrap, Version 0.17(20060615:061212) [m1-rn-sm_nightly 323], DEVELOPMENT
SOFTWARE Copyright (c) 1994-1999 by cisco Systems, Inc.

ReadOnly ROMMON ONS 15454 version: 0.17
Upgrade ROMMON version:

System Bootstrap, Version 0.23(20061028:061451) [m1-rn-sm_nightly 106], DEVELOPMENT
SOFTWARE Copyright (c) 1994-1999 by cisco Systems, Inc.

Upgrade ROMMON ONS 15454 version: 0.23
Currently running ROMMON from Upgrade region ROMMON from Upgrade region is selected for
next boot
```

Upgrading to a New Software Release

For general information about upgrading to a new software release, refer to Software Installation and Upgrade Procedures located at the following URL:

http://www.cisco.com/cisco/web/psa/default.html?mode=prod

New and Changed Information

The following sections list the new hardware and software features supported by the Cisco ONS 15454 RAN service module:

New Features in the Cisco IOS Release 12.2(29)SM5 Software

No new features are supported by the Cisco ONS 15454 RAN service module for Cisco IOS Release 12.2(29)SM5.

New Features in the Cisco IOS Release 12.2(29)SM4 Software

No new features are supported by the Cisco ONS 15454 RAN service module for Cisco IOS Release 12.2(29)SM4.

New Features in the Cisco IOS Release 12.2(29)SM3 Software

No new features are supported by the Cisco ONS 15454 RAN service module for Cisco IOS Release 12.2(29)SM3.

New Features in the Cisco IOS Release 12.2(29)SM2 Software

No new features are supported by the Cisco ONS 15454 RAN service module for Cisco IOS Release 12.2(29)SM2.

New Features in the Cisco IOS Release 12.2(29)SM1 Software

The following support features are provided by Cisco IOS Release 12.2(29)SM1:

- Support for 1:N protection

- Support for SNMP versions 1 and 2c
- Support for standard ONS MIBS and IOS MIBS
- Support for the CISCO-IP-RAN-Backhaul_MIb
- Support for GSM and UMTS RAN Optimization

New Features in the Cisco IOS Release 12.2(29)SM Software

No new features are supported by the Cisco ONS 15454 RAN service module for Cisco IOS Release 12.2(29)SM.

Limitations and Restrictions

Unsupported Cisco IOS Software Features

The Cisco ONS RAN Service Module requires a special version of Cisco IOS software. Not all Cisco IOS software features can be used as the core routing is handled by the network processor. The following standard Cisco IOS software features are not supported:

- MPLS
- Frame Relay (FR)

Note To manage the Cisco RAN Service Module with network management software, an IP address must be configured on the GigE port associated with the service CPU of the RAN Service Module so that this IP address can be reached by the network management server.

Caveats

This section documents the open and resolved caveats for the Cisco ONS 15454 running Cisco IOS Release 12.2(29)SM. Only severity 1 through 3 caveats are included.

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats, severity 2 caveats are less serious, and severity 3 caveats are the least serious of these three severity levels.

Caveats in Cisco IOS Software Releases 12.2 Mainline and Cisco IOS Software Releases 12.2S are also in Cisco IOS Release 12.2(29)SM.

For information on caveats in Cisco IOS Software Releases 12.2 Mainline, go to the following URL on Cisco.com:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1835/prod_release_notes_list.html

For information on caveats in Cisco IOS Software Releases 12.2S, go to the following URL on Cisco.com:

http://www.cisco.com/en/US/products/sw/iosswrel/ps1838/prod_release_notes_list.html

These documents list severity 1 and 2 caveats and can be found on the Documentation DVD as well as Cisco.com.

Note If you have an account with Cisco.com, you can use the Bug Toolkit to find caveats of any severity for any release. To reach the Bug Toolkit, log in to Cisco.com and click the **Support** tab and select **Support** from the drop-down menu. Under Frequently Used Resources, click **Bug Toolkit**. You will then need to log in. Another option is to go directly to: The following sections document the opened and resolved caveats by Cisco IOS release: http://www.cisco.com/cgi-bin/Support/Bugtool/launch_bugtool.pl.

Caveats in Cisco IOS Release 12.2(29)SM5

The following caveats are opened and resolved in Cisco IOS Release 12.2(29)SM5.

Open Caveats

There are no known open caveats in Cisco Release 12.2(29)SM5.

Resolved Caveats

This section documents the caveats that are resolved in Cisco IOS Release 12.2(29)SM5.

- CSCsx24482

  Description:CTC reports that the RAN-SVC card reloaded, but no crashinfo file is created, and IOS on the RAN SVC card reports user reload as the reason.

  Conditions: This issue usually occurs under heavy load, often (but not always) after backhaul L1 errors.

  Workaround: There is no known workaround.

- CSCsx26325

  Description: The RAN-SVC card reloads, but no crashinfo file is created, and IOS indicates that the last reload was due to user reload.

  Conditions: This issue was seen when running many GSM shorthauls to a single backhaul using a loopback IP address with the "gsm-abis local" command. It occurred when there were issues with the backhaul.

  Workaround: Use the IP address of the backhaul with the "gsm-abis local" command instead of a loopback IP address.

- CSCsx31824

  Description: After many GSM shorthaul flaps in a very short period of time caused by network issues, the RAN SVC card reloads. Traceback and crashinfo files are created.

Conditions: This issue appears to require many GSM shorthaul interfaces, and seems to occur on a traffic CPU that also contains the backhaul interface. After a network event that causes GSM peers to flap excessively in a short duration, one of the traffic CPUs crashes with a TLB (load or instruction fetch) error.

Workaround: No certain known workaround exists. Moving all shorthauls to different traffic CPUs from the backhaul may resolve this issue.

- CSCsx70889

  Cisco devices running affected versions of Cisco IOS Software are vulnerable to a denial of service (DoS) attack if configured for IP tunnels and Cisco Express Forwarding.

  Cisco has released free software updates that address this vulnerability.

  This advisory is posted at http://www.cisco.com/warp/public/707/cisco-sa-20090923-tunnels.shtml.

- CSCsy15227

  Cisco IOS Software configured with Authentication Proxy for HTTP(S), Web Authentication or the consent feature, contains a vulnerability that may allow an unauthenticated session to bypass the authentication proxy server or bypass the consent webpage.

  There are no workarounds that mitigate this vulnerability.

  This advisory is posted at the following link:
  http://www.cisco.com/warp/public/707/cisco-sa-20090923-auth-proxy.shtml

- CSCsz39222

  Description: The router reloads and the crashinfo file indicates a cache error and CPO_ECC has the following value:

  ```
  Cache error detected!
    CPO_ECC     (reg 26/0): 0xC0000000
  ```

  This is a hardware corrected cache error that should not result in a router reload.

  Conditions: This issue affects the RAN-SVC card. While rare, there is no specific trigger for this failure.

  Workaround: There is no workaround for this issue.

- CSCta03467

  Description: The RAN-SVC card resets indicating an IPC Reliable Timeout error in the console log and/or the service CPU crashinfo file. This particular error message indicates that either communication has failed from the service CPU to the traffic CPU or that the traffic CPU is over utilized and cannot process a critical management command within a defined timeout period of 25 seconds.

  Conditions: Three RAN-SVC service cards in a 1:2 protection group using POS interconnections between the two working cards. The "edge" card is supporting at least 95 GSMmux shorthauls.

  Workaround: There is no workaround.

- CSCta03487

  Description: The POS interfaces connected to a protected RAN-SVC card in active mode are in an UP/DOWN state until the working/failed card enters working/standby state.

  Conditions: Three RAN SVC service cards are in a 1:2 protection group using POS interconnections between the two working cards. The "edge" card is supporting at least 95 GSMmux shorthauls.

  Workaround: There is no workaround.

- CSCtb55737

  Description: The RAN-SVC card crashes with a TLB Modification exception.

  Conditions: An adjacent site has a power failure. The local device has redundancy with one RAN Service module. The following message is issued repeatedly before the crash.

  ```
  %SYS-2-LINKED: Bad enqueue of 625D1C40 in queue 625AA818
  ```

  Workaround: There is no workaround.

Caveats in Cisco IOS Release 12.2(29)SM4

The following caveats are opened and resolved in Cisco IOS Release 12.2(29)SM4.

Open Caveats

There are no known open caveats in Cisco Release 12.2(29)SM4.

Resolved Caveats

This section documents the caveats that are resolved in Cisco IOS Release 12.2(29)SM4.

- CSCsq89379

  Description: The bitstuff factor is not being used for the serial link bitstuff estimate.

  The computation for E1/T1 HDLC/PPP encapsulated bitstuff estimate uses a bitstuffing factor to compute the estimated number of bytes that will be added by the hardware (i.e. KETO) when transmitting the data. This estimate is used by the pmon software back pressure mechanism to prevent KETO buffer overruns in the egress path. Without the use of this estimate, the potential for overruns increases when the link utilization is above 88%.

  Code changes have been made so that the bitstuff factor is being used for the serial link bitstuff estimate, allowing for normal traffic patterns in the 93-97% range before increasing the potential for overruns.

- CSCsr18013

  Description: When **aaa new-model** command is in the router configuration, it causes the adjacency to be set to “punt next level” for all multilink interfaces. This causes all traffic destined for a multilink backhaul to be sent to the service CPU and handled at process level.

  Code changes allow for the **aaa new-model** command in the router configuration.

- CSCsr20950

  Description: The command **show ppp multilink interface multilink x** always reports zeros for the received classes when multiclass is configured.

  Code changes enable the correct reporting of received classes.

- CSCsr52220

  Description: On an RANSVC card supporting large MLPPP bundles, removal of a single member from a single bundle can cause all of the MLPPP members on the router to flap.

  Buffer exhaustion has been corrected by correcting buffer management and increasing the number of buffers. This is not configurable.

Caveats in Cisco IOS Release 12.2(29)SM3

The following caveats are opened and resolved in Cisco IOS Release 12.2(29)SM3.

Open Caveats

There are no known open caveats in Cisco Release 12.2(29)SM3.

Resolved Caveats

This section documents the caveats that are resolved in Cisco IOS Release 12.2(29)SM3.

- CSCsj82675

  Description: Applying “loopback payload” in an ATM interface configuration mode could result in a message similar to the following appearing on the router console port:

  SBFIFO-1-BAD_PAK_LEN

- CSCso67646

  Description: When 1:N Protection is used with SNMP, and the snmp-server engineID command is in the running **IOS configuration, the following line automatically gets added to the running configuration:**

  snmp mib community-map cellbus engineid nnnnnnn....

  If this is saved into the startup configuration on the toc, a memory corruption error occurs and the router reloads when a protection switch occurs. This condition does not occur upon a normal working card boot. It occurs only when a protection switch occurs. It also may cause both the working and protect to reload continuously for the same error after the first protection fail.

Caveats in Cisco IOS Release 12.2(29)SM2

The following caveats are opened or resolved in Cisco IOS Release 12.2(29)SM2.

Open Caveats

This section documents the caveats that are open in Cisco IOS Release 12.2(29)SM2.

- CSCsj82675

  Description: Applying “loopback payload” in an ATM interface configuration mode could result in a message similar to the following appearing on the router console port:

  SBFIFO-1-BAD_PAK_LEN

  Workaround: Do not use the loopback configuration on ATM interfaces.

- CSCso67646

  Description: When 1:N Protection is used with SNMP, and the snmp-server engineID command is in the running **IOS configuration, the following line automatically gets added to the running configuration:**

  snmp mib community-map cellbus engineid nnnnnnn....

If this is saved into the startup configuration on the toc, a memory corruption error occurs and the router reloads when a protection switch occurs. This condition does not occur upon a normal working card boot. It occurs only when a protection switch occurs. It also may cause both the working and protect to reload continuously for the same error after the first protection fail.

Workaround: Use CTC to save the configuration to a file. Remove the following line:

snmp mib community-map cellbus engineid nnnnnnn....

Then use CTC to store the configuration from the file.

Resolved Caveats

This section documents the caveats that are resolved in Cisco IOS Release 12.2(29)SM2.

- CSCsj59405

  Description: 802.1q is not supported on RANSVC.

Caveats in Cisco IOS Release 12.2(29)SM1

The following caveats are opened or resolved in Cisco IOS Release 12.2(29)SM1.

Open Caveats

There are no known open caveats in Cisco Release 12.2(29)SM1.

Resolved Caveats

This section documents the caveats that are resolved in Cisco IOS Release 12.2(29)SM1.

- CSCsg13738:

  Description: Need the ability to create ACLs on the service CPU that get applied to the traffic CPUs.

  Workaround: Added ACL support to SKYLA traffic CPUs.

- CSCsg18342:

  Description: IP over ATM does not work.

  Workaround: When IP over ATM is not working on the traffic CPUs, it is still working on the service CPU. CEF is simply not punting the traffic to the service CPU.

- CSCsg43158:

  Description: PPP and LEX encapsulations were not supported for POS on the RAN-SVC card.

  Workaround: Added check to not punt LCP and IPCP packets. Also, added code to disable the hdlc_periodic function when encap is changed. This was only done during IDB init.

- CSCsg75442:

  Description: Add support for distributed Shorthauls so backhaul and shorthaul can be on different CPUs**.**

  Workaround: When queuing enabled, do not punt to service CPU.

- CSCsh22686:

Description: dGRE Tunneling Code cleanup from the initial dGRE commit.

Workaround: There is still a problem with tunnel adjacencies, so a shut/no shut of the tunnel interface is required after all cpus have booted.

Caveats in Cisco IOS Release 12.2(29)SM

The following caveats are opened or resolved in Cisco IOS Release 12.2(29)SM.

Open Caveats

There are no known open caveats in Cisco Release 12.2(29)SM.

Resolved Caveats

This section documents the caveats that are resolved in Cisco IOS Release 12.2(29)SM.

- CSCsg56935:

  Description: When mixed GSM and UMTS traffic is run on an MLPPP backhaul and the UMTS traffic utilization is over 60 percent of the total MLPPP backhaul, then GSM errors are seen and GSM packets may not arrive in a timely manner. This happens for the default value of the GSM jitter (4 milliseconds) and a UMTS backhaul MTU of 450 bytes.

  Workaround: Recommended configuration changes for such deployments are as follows:

  - Increase the GSM jitter buffer to a higher value, such as from the default value of 2 to the higher value of 8.
  - Reduce the maximum transmission unit (MTU) of the UMTS backhaul to produce a side effect of a slightly higher CPU utilization.

  Either or both of the workaround configuration changes will fix the problem. A user can choose the option that best fits the particular deployment and traffic requirements.

  Commands: The following commands are available for the above workaround:

  - Router(config-if)#**gsm-abis jitter ?**

  <4-2000> transmit jitter (in milliseconds)

  - Router(config-if)#**umts-iub backhaul-mtu ?**

  <250-4440> mtu in byte

Related Documentation

Related documents for implementing the Cisco ONS 15454 Service Module are at http://www.cisco.com/en/US/products/hw/optical/ps2006/tsd_products_support_series_home.html

Documents related to the Cisco ONS 15454 Service Module include the following guides:

- *Cisco ONS 15454-SDH Documents*
  - *Cisco ONS 15454-SDH Hardware Installation Guide*
  - Cisco ONS 15454-SDH Software Configuration *Guide*
  - *Regulatory Compliance and Safety Information for the Cisco ONS 15454-SDH*

- *Cisco Network Modules Guides*
  - *Cisco ONS 15454 RAN Service Module Software Configuration Guide*
  - *Network Modules Quick Start Guide*
  - *Cisco Network Modules Hardware Installation Guide*
- Release Notes
  - *Release Notes for Cisco ONS 15454 RAN Service Module for Cisco IOS Release 12.2(29)SM5*

Service and Support

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

Release Notes for Cisco ONS 15454 RAN Service Module for Cisco IOS Release 12.2(29)SM5