Release Notes for Cisco RF Gateway 10 in Cisco IOS Release 12.2SQ

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The Cisco RF Gateway 10 (RFGW-10) is a Universal Edge Quadrature Amplitude Modulation (UEQAM) platform in the Cisco RF Gateway series introduced in Cisco IOS Release 12.2(44)SQ. These release notes for the Cisco RF Gateway 10 describe the features and caveats for all releases in the Cisco IOS Release 12.2SQ train.

These release notes are updated with each release in the train. This update adds information for Cisco IOS Release 12.2(50)SQ5. For a list of the caveats that apply to this release, see the "Caveats" section on page 20.

To download and upgrade to the new ROMMON image for the Cisco RFGW-10, see the *ROMMON Release Notes for Cisco RF Gateway 10*.

Cisco recommends that you view the field notices for this release to see if your software or hardware platforms are affected. If you have an account on Cisco.com, you can find field notices at: http://www.cisco.com/en/US/support/tsd_products_field_notice_summary.html.

For information on new features and the Cisco IOS documentation set supported on Cisco IOS Release 12.2(50)SQ5, see the "New and Changed Information" section on page 6 and the "Related Documentation" section on page 55.

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Note Use the **service internal** command on the Cisco RFGW-10 only for system debugging and troubleshooting purposes. This command should not be used in normal operation mode.

Overview of Cisco RF Gateway 10 UEQAM Platform

The Cisco RFGW-10 is a carrier-class Universal Edge QAM (UEQAM) platform that offers concurrent support for standard and high-definition digital broadcast television, Switched Digital Video (SDV), Video on Demand (VoD), and DOCSIS/Modular CMTS services. It is a chassis-based product based on open standards with superior performance, capacity, power consumption, ease of management, and scalability. All components of the Cisco RFGW-10 are designed for high availability, including dual Supervisor and Ethernet switching line cards, 1:N Universal Edge QAM line cards, dual timing, communication and control (TCC) line cards, dual load balancing and load sharing DC PEMs and integrated RF switching modules.

The Cisco RFGW-10 is targeted to cable operators worldwide, and is optimized for operators requiring carrier-class high availability solutions and wanting to collapse video and data over cable EQAM systems into a common platform. A collapsed Universal EQAM architecture achieves the following business benefits: EQAM resource utilization gains, cost efficiencies, rack space optimization, reduced cost and complexity of management, and high availability for all services. The Cisco RFGW-10 is part of the Cisco cable ecosystem, and is fully integrated and tested as part of the Cisco Digital Broadband Delivery System (DBDS) video solution and the Cisco uBR10012 DOCSIS 3.0 and Modular CMTS solution.

The Cisco RFGW-10 is a centralized switching architecture leveraged from the Cisco Catalyst 4500 Series switches. The Cisco RFGW-10 is a 13-rack unit, modular chassis designed for providing front-to-back airflow and system-level redundancy. All chassis components are hot-swappable and redundant. The chassis supports “wire-once” cabling for RF line cards and an integrated dual-zone RF switch matrix. The Supervisor engine provides non-blocking, robust Layer 2 to Layer 4 switching with the addition of wire-speed 10-Gigabit Ethernet uplinks, 136 Gbps capacity, and 102 mpps packet throughput.

The Cisco RFGW-10 system is a UEQAM platform that supports both upstream and downstream RF line cards over a frequency range of 5 MHz to 1.2 GHz. The initial line card release is a UEQAM downstream card that supports the DOCSIS (1.0/2.0/3.0), the EURODOCIS, and J-DOCSIS specifications. Additionally, the RF line card supports high definition digital broadcast television, Switched Digital Video (SDV), and Video on Demand (VoD) video delivery.

Based on the Cisco IOS networking software, the Cisco RFGW-10 supports advanced switching and routing features. The platform supports full upgradeability, ensuring investment protection as software enhancements and industry standards continue to evolve.

System Requirements

This section describes the system requirements for Cisco IOS Release 12.2SQ series and includes the following sections:

Hardware Supported

Table 1 provides information on the hardware supported on the Cisco RFGW-10.

Table 1 Hardware Supported on the Cisco RFGW-10

Cisco RFGW Chassis	
RFGW-10	Chassis with the following slots: 2 Supervisor, 10 RF line card, two TCC, and 12 RFGW-10-RFSW (RF switch card) slots. Also includes the RFGW-10 fan tray assembly and front panel display (FPD).
Cisco RFGW Series Supervisors	
RFGW-X4516-10GE	RFGW Supervisor V-10GE, 2x10GE (X2) and 4x1GE (SFP).
RFGW-X4516-10GE=	RFGW Supervisor V-10GE, 2x10GE (X2) and 4x1GE (SFP) spare.
Cisco RFGW Series TCC Cards	
RFGW-TCC1	RFGW timing, communication, and control card v1.
RFGW-TCC1=	RFGW timing, communication, and control card v1 spare.
Cisco RFGW Series Line Cards	
RFGW-DS48	RFGW universal downstream EQAM card, 12 RF ports, 48 QAMs.
RFGW-DS48=	RFGW universal downstream EQAM card, 12 RF ports, 48 QAMs spare.
RFGW-DS48-1G	RFGW universal downstream EQAM card, 12 RF ports, 48 QAMs.
Cisco RFGW Series RF Switch Cards	
RFGW-10-RFSW1=	RFGW RF switch v1 spare.
Cisco RFGW Series PEM Options	
RFGW-10-PWR-DC	RFGW DC PEM with monitoring v1a.
RFGW-10-PWR-DC1=	RFGW DC PEM with monitoring v1 spare.
Cisco RFGW Series Supervisor Memory Options	
MEM-C4K-FLD128M	Catalyst 4500 IOS-based Supervisor, CompactFlash, 128 MB.
MEM-C4K-FLD128M=	Catalyst 4500 IOS-based Supervisor, CompactFlash, 128 MB spare.

Table 1 Hardware Supported on the Cisco RFGW-10 (continued)

Cisco RFGW Chassis	
Cisco RFGW Series Transceiver Modules	
SFP-GE-T	1000BASE-T SFP (NEBS 3 ESD) (100 m on Cat5 UTP).
SFP-GE-S	1000BASE-SX short wavelength; with DOM (550 m on MMF).
SFP-GE-L	1000BASE-LX/LH long wavelength; with DOM (10 km on SMF).
X2-10GB-SR	10GBASE-SR X2 module (26 m on MMF).
X2-10GB-LR	10GBASE-LR X2 module (10 km on SMF).

Software Compatibility

The Cisco RF Gateway 10 is supported by the 12.2(44)SQ and 12.2(50)SQ release trains. Cisco IOS Release 12.2(44)SQ is the first deployment release of the Cisco RFGW-10. It is based on Cisco IOS Release 12.2(44)SG1 for the Cisco Catalyst 4500 platform. The Cisco RFGW-10 and Catalyst 4500 share common Cisco IOS software on the Supervisor card. Therefore, there is IOS feature parity in Cisco IOS Release 12.2(44)SQ with release 12.2(44)SG1. The Cisco RFGW-10 features are supported only on Cisco IOS Release 12.2(44)SQ.

Cisco IOS Release 12.2(50)SQ is based on Cisco IOS Release 12.2(50)SG4 for the Cisco Catalyst 4500 platform. Therefore, Cisco IOS Release 12.2(50)SQ has IOS feature parity with Cisco IOS Release 12.2(50)SG4. The Cisco IOS Release 12.2(50)SQ1 and later provide Cisco RFGW-10 specific features as described in this document.

Determining the Software Version

To determine the version of Cisco IOS software running on the Cisco RFGW-10 platform, log in to the platform and enter the **show version** EXEC command.

Below is an example of the output from the **show version** command:

```
Router# show version

Cisco IOS Software, Catalyst 4500 L3 Switch Software (rfgw-ENTSERVICES-M), Version
12.2(50)SQ5, RELEASE SOFTWARE (fc1)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2013 by Cisco Systems, Inc.
Compiled Mon 07-Jan-13 11:59 by prod_rel_team
Image text-base: 0x10000000, data-base: 0x121F466C

ROM: 12.2(31r)SQ1
   Lemmy Revision 62, Force Revision 31, Tie Revision 32
```

Feature Set Tables

Table 2 provides a summary of the features supported in the Cisco IOS Release 12.2SQ release train.

Table 2 RFGW-10 Hardware and Software Features in Cisco IOS Release 12.2SQ

Release	Supported Hardware Features	Supported Software Features
12.2(44)SQ	• RFGW-10 chassis • RFGW-X4516-10GE (Supervisor card) • MEM-C4K-FLD128M (Supervisor card memory option) • RFGW-TCC1 (TCC DTI card) • RFGW-10-RFSW (RF switch card) • RFGW-10-PWR-DC1 (DC PEM) • SFP-GE-T (SFP transceiver) • SFP-GE-S (SFP transceiver) • SFP-GE-L (SFP transceiver) • X2-10GB-SR (SFP transceiver) • X2-10GB-LR (SFP transceiver) • RFGW-10-FAN-ASSY (Fan assembly) • RFGW-10-FPD-KIT= (Front panel display kit)	• Universal Edge QAM • M-CMTS DOCSIS MPEG Transport Manual Mode • M-CMTS DTI Offset • 1:1 and 1:N DS-48 Line Card Redundancy (up to 2 redundancy groups) • 1:1 Supervisor Card Redundancy • 1:1 Timing, Communication and Control Card Redundancy • Video: Table-based port mapping for Video on Demand (VOD) and Digital Video Broadcast (DVB) • SNMP MIBs • GUI Monitoring
12.2(44)SQ1	None	None
12.2(44)SQ2	None	None
12.2(50)SQ		• Supervisor Stateful Switchover (SSO) • M-CMTS DEPI Control Plane • M-CMTS DEPI Delay Latency Measurement • RFGW-10 Video Control Plane with Generic QAM Interface (GQI) • 1:1 and 1:N DS-48 Line Card Redundancy for Video and DEPI
12.2(50)SQ1	RFGW-DS48-1G	• Video Stateful Switchover • Input PID Filtering • MPTS Multiplexing for Pass-through Video Sessions • CBR Clock Recovery
12.2(50)SQ2	None	• DEPI Path Redundancy • DEPI EQAM Statistics

New and Changed Information

These sections list the new and existing hardware and software features supported by the Cisco RFGW-10.

New Hardware Features in Cisco IOS Release 12.2(50)SQ6

There are no new hardware features supported in the Cisco IOS Release 12.2(50)SQ6.

New Hardware Features in Cisco IOS Release 12.2(50)SQ5

There are no new hardware features supported in the Cisco IOS Release 12.2(50)SQ5.

New Hardware Features in Cisco IOS Release 12.2(50)SQ4

There are no new hardware features supported in the Cisco IOS Release 12.2(50)SQ4.

New Hardware Features in Cisco IOS Release 12.2(50)SQ3

There are no new hardware features supported in the Cisco IOS Release 12.2(50)SQ3.

New Hardware Features in Cisco IOS Release 12.2(50)SQ2

There are no new hardware features supported in the Cisco IOS Release 12.2(50)SQ2.

New Hardware Features in Cisco IOS Release 12.2(50)SQ1

Cisco IOS Release 12.2(50)SQ1 introduces the Cisco RFGW-DS48-1G line card. The Cisco RFGW-DS48-1G line card has similar features as the RFGW-DS48 line card, however it supports full DOCSIS DRFI compliance up to an operating frequency of 1GHz. The operating bandwidth of the Cisco RFGW-DS48-1G line card is 88 MHz to 1GHz. The Cisco RFGW-DS48-1G resolves the noise floor and spurious emission limitations of the Cisco RFGW-DS48 line card, which was not compliant with the DRFI technical specifications. For more information on the RFGW- DS-48 line card, see Cisco RFGW-10 DS-48 Universal EQAM Line Card, page 8.

New Hardware Features in Cisco IOS Release 12.2(50)SQ

There are no new hardware features supported in the Cisco IOS Release 12.2(50)SQ.

New Hardware Features in Cisco IOS Release 12.2(44)SQ2

There are no new hardware features supported in the Cisco IOS Release 12.2(44)SQ2.

New Hardware Features in Cisco IOS Release 12.2(44)SQ1

Table 3 lists the Cisco IOS Release 12.2(44)SQ1 support for a minor board revision of the Cisco RFGW-10 DS-48 line card.

Table 3 Cisco RFGW-10 DS-48 line card Board and Upconverter

Cisco IOS Release	RFGW-10 DS-48 UEQAM Card	Internal DS48 Upconverter
Cisco IOS Release 12.2(44)SQ	DS48 Board = 800-28096-01	DS48 Upconverter = 800-29408-01
Cisco IOS Release 12.2(44)SQ1	DS48 Board = 800-28096-02	DS48 Upconverter = 800-29408-02

Note Cisco IOS Release 12.2(44)SQ1 is backward compatible with the existing, released RFGW-10 DS-48 UEQAM line cards (DS48 Board = 800-28096-01) and field-replaceable units (FRUs).

New Hardware Features in Cisco IOS Release 12.2(44)SQ

Cisco IOS Release 12.2(44)SQ coincides with the introduction of the Cisco Radio Frequency (RF) Gateway 10 system. All released field-replaceable units (FRUs) are supported only by Cisco IOS Release 12.2(44)SQ and the Cisco RFGW-10 platform.

Below is a high level summary of the supported hardware features of the Cisco RFGW-10.

Cisco RF Gateway 10 Universal Edge QAM Chassis

- 13 rack unit carrier-class chassis
  - 19-inch rack-mount capability
  - 4536-watt capacity
  - Front-to-rear airflow design
  - Integrated RF switching
  - Cable-once (wire-once) coaxial connections
  - LCD front panel display
  - 240-Gbps system performance
  - System-level redundancy
- Redundancy system architecture
  - All major FRUs redundant (Supervisor card, line card, PEM)
  - Dual-zone integrated RF data path switch
  - 500-ms line card failover
  - Full software and hardware high availability support
  - External Gigabit Ethernet / 10-Gigabit Ethernet redundancy
  - DTI redundancy
  - System operation from single power supply

- Major system components
  - 2 Supervisor card slots (1:1 redundant)
  - 2 TCC/DTI card slots (1:1 redundant)
  - 10 Universal line card slots (1:N redundant)
  - 12 RF switch card slots (Dual-zone redundancy)
  - 2 DC PEM slots (1:1 redundant)
  - 1 Fan tray module

Cisco RFGW-10 DS-48 Universal EQAM Line Card

The Cisco RFGW-10 DS-48 line card is a 12-port, 48-channel UEQAM card designed to support Downstream External PHY Interface DOCSIS MPEG Transport (DEPI D-MPT), downstream data traffic, and video applications (VoD, SDV, and broadcast video). The RFGW-10 DS-48 card is similar to the traditional QAM solutions where the card receives encapsulated data, depacketizes and reformats the packets, maps them to the output QAM channel, and performs QAM modulation and frequency upconversion. From a high level, the DS-48 line card receives video and DOCSIS data encapsulated over Ethernet and outputs analog QAM data to the subscriber devices (set top box (STB) and DOCSIS modems).

As a DOCSIS engine, the DS-48 line card supports DEPI D-MPT mode. DEPI is based on the L2TPv3 protocol, which includes a data plane and a control plane. DEPI data plane traffic is terminated at the line card. The Cisco RFGW-10 Supervisor card terminates DEPI control and communicates the control to each line card in the system via the chassis IPC infrastructure. DOCSIS timing information (10.24 MHz synchronous DTI clock) is received by the line card from the system TCC cards.

As a video engine, the DS-48 terminates video data path traffic forwarded from the Supervisor card (video control plane traffic is terminated and processed by the system Supervisor card). The DS-48 processing path classifies video packets, performs inter-QAM processing, bit rate scheduling, program muxing and scheduling, program identifier (PID) remapping, program clock references (PCR) restamping, and CC restamping.

The DS-48 line card has 12 physical RF ports, which support up to four QAMs per port. The number of QAM outputs is configurable on a per-port basis (meaning an individual port can support 1, 2, or 4 QAMs as well as muting of individual QAMs within a QAM group). In stacked QAM mode, the QAMs are stacked contiguously over a 24-MHz or 32-MHz band. The line card supports a downstream channel frequency range of 88 MHz to 870 MHz.

Table 4 provides the DOCSIS and EuroDOCSIS downstream rates:

Table 4 DOCSIS and EuroDOCSIS Downstream Data Rates

Downstream Channel Width, MHz	Modulation Scheme, bit/symbol	Baud Rate, MSym/sec	Raw Bit Rate, Mb/sec	Throughput (Bit Rate - Overhead), Mb/sec
6	64 QAM (6)	5.056	30.34	27
	256 QAM (8)	5.360	42.88	38
8	64 QAM (6)	6.952	41.71	37
	256 QAM (8)	6.952	55.62	48

The front panel display includes two Gigabit Ethernet ports and a single DVB-ASI interface (covers all video output streams). The front panel connectors support both copper and fiber SFP modules. The front panel Gigabit Ethernet ports are not processed directly by the line card; these are independent of the line card and route directly to the Supervisor card switch fabric. These ports do not go out of service if the line card crashes and a failover to the redundant card occurs.

A critical feature of the DS-48 line card is redundancy and high availability support. The line cards are designed to detect and react to a wide range of faults and failures, and respond with sub-second failover to a dedicated protect card. In the Cisco RFGW-10 platform, DS-48 line cards can be configured with 1:N redundancy (up to 1:9), resulting in a fully-protected, high capacity, and highly dense EQAM solution.

Supported SFP Modules

- SFP-GE-S: 1000BASE-SX short wavelength; with DOM (550 m on MMF)
- SFP-GE-L: 1000BASE-LX/LH long wavelength; with DOM (10 km on SMF)
- SFP-GE-T: 1000BASE-T SFP (NEBS 3 ESD) (100 m on Cat5 UTP)

Cisco RF Gateway 10 Supervisor Engine V-10GE

The Cisco RFGW-10 Supervisor Engine V-10GE provides data path and data control for all network interfaces and provides 10-Gigabit Ethernet interfaces for uplink connections. The Cisco RFGW-10 Supervisor design is leveraged from the Cisco Catalyst 4500 Series switch Supervisor family.

The Supervisor Engine V-10GE has a very high performance Ethernet switching feature set. Advanced traffic management features include:

- Quality of service (QoS)
- Virtual LANs (VLANs)
- Multiple traffic queuing techniques such as IP Differentiated Service Code Points (DSCPs)
- Full-featured traffic classification, marking, and policing

The Cisco RFGW-10 Supervisor Engine V-10GE handles the management of DOCSIS and video traffic for the RF Gateway 10 system. Management of data and video traffic can be split into data plane and control plane processing. The data plane manages the aggregation and forwarding of multiple services to the edge QAM resources (for example, Ethernet switching, routing, aggregation, and filtering). Interactions with control interfaces for video and Data over Cable Service Interface Specifications (DOCSIS) are managed by the control plane (for example, setup and tear-down of video sessions, creation of VoIP calls, management of high-speed data services, and management of the distribution of packets and environmental factors in the gateway). The aggregation management utility in the Supervisor engine allows cable operators to extract detailed information from a single line card on the overall operational status of the entire gateway.

The Supervisor engine receives either DEPI (DOCSIS) data or video data (MPEG/UDP/IP) and forwards the data to the RF line cards based on either the DEPI session content (IP/L2TP) or encapsulated video session information (IP/UDP). All data path traffic is terminated at the line cards. The Supervisor engine receives data traffic, classifies the traffic, and forwards the data traffic to the line cards.

Control traffic for DOCSIS (DEPI mode), video, and HA functionality is terminated on the Supervisor engine. Local video mode (CLI, GUI, SNMP), remote video mode control plane (DNCS, GQI), and native video mode (GQI v2, object model) are implemented in the IOS and terminated at the Supervisor engine.

The following defines the LEDs, connectors, and switches on the Cisco RFGW-10 Supervisor Engine V-10GE:

- Console port
- Management port (10/100)
- Reset button
- Compact flash
- Four Ethernet Uplink interfaces
- Two 10GE interfaces

Supported SFP Modules

- SFP-GE-S: 1000BASE-SX short wavelength; with DOM (550 m on MMF)
- SFP-GE-L: 1000BASE-LX/LH long wavelength; with DOM (10 km on SMF)
- SFP-GE-T: 1000BASE-T SFP (NEBS 3 ESD) (100 m on Cat5 UTP)
- X2-10GB-SR: 10GBASE-SR X2 module (26 m on MMF)
- X2-10GB-LR: 10GBASE-LR X2 module (10 km on SMF)

RFGW-10 RF Switch Cards

The RF Switch provides RF data path redundancy at both the line card (slot) level and the RF port level for bidirectional DOCSIS traffic up to 1.2 GHz. Additionally, the RF Switch cards are the coaxial cable termination point for the Cisco RFGW-10.

Functionally the RFGW-10-RFSW1 card physically switches out a failed line card (port by port) at the RF data path level. The card is capable of supporting two simultaneous RF line card failures. It is designed to support dual 1:N redundancy groups (where N is a group of RF line cards associated with a single protect card).

There are 12 RF Switch cards per chassis, providing 120 RF ports for the system.

Note The chassis *must* include all 12 RF Switch cards for proper operation.

Each RF Switch card supports a single Cisco UCH2 connector header; the UCH2 supports 10 MCX coaxial connections per card. The RF Switch card is physically separate from the RF line card slots allowing insertion or removal of the RF line cards without disruption of the cable plant wiring.

The RF Switch card is the central hardware component for chassis-level HA features. The card can be configured and controlled via the system-level CLI functionality. The RF Switch card is a hardware and firmware-based module (no operating software) that can be field-upgraded via the chassis command line interface (CLI).

The RF Switch card faceplate includes a single LED. The LED does not indicate a line card failover.

RFGW-10 TCC Cards

The Cisco RFGW-10 UEQAM supports two Timing, Communication, and Control (TCC) slots. The TCC card acts as a secondary processor that controls the overall system clock generation and distribution, DOCSIS time-stamp synchronization, and system control of the front panel display (FPD), and the RF Switch cards.

The most critical function of the TCC card is distribution of the system clocking, in particular the DOCSIS Timing Interface (DTI). The TCC card is a DTI client interface. It supports dual DTI external input allowing DTI server redundancy. Based on the DTI input information, the TCC card generates DOCSIS 10.24-MHz clock and time-stamp information to every line card in the chassis. All clocks and DOCSIS information are redundant. When there is no external DTI clock, the TCC card provides an internal DOCSIS DTI clock and time-stamp reference.

When two TCC cards are installed, they are configured as active and backup (redundant). If the TCC card in the first slot is working at system power-up, it automatically becomes the active card and the TCC card in the second slot becomes the backup card (typically slot 13 boots as the primary TCC card and slot 14 as the secondary, but this is not mandatory).

In terms of the overall system high availability, the TCC cards work autonomously from the centralized control mechanisms. Redundant TCC cards monitor each other's priority information so that when the active card fails, the active card role is transferred to the redundant backup card without loss of data.

The following is a summary of the TCC card's functions and features:

- Generates and distributes 10.24-MHz clock references and 32-bit time-stamp references to every cable interface line card
- Drives the LCD module used to display the system configuration and status information
- Proxy control mechanism (via Supervisor cards) for the RF Switch cards
- Front panel LEDs providing status and alarm indicators
- Provides two RJ-45 ports supporting redundant DTI server sources

RFGW-10-PWR-DC1 (DC PEM)

The Cisco RFGW-10 system is powered by redundant DC PEMs. An individual PEM is capable of providing 4536 watts of total output. Redundant modules work as a 1:1 redundancy configuration supporting current sharing and online insertion and removal (OIR) (hot swapping).

Each PEM includes two 60A input lines that operate between –40 VDC and –72 VDC input voltages. Proper configuration and operation requires that both DC inputs are properly wired. The PEM also includes an earth ground connection (this is not power return) for grounding the chassis.

DC PEM features:

- Closed frame, NEBS-compliant module design
- Front-to-back airflow (exhaust air exits out of the rear of the chassis)
- Power input range: –48 VDC to –60 VDC
- 4536W power capacity
- Supports OIR (hot swap) and current sharing
- Supports 1:1 redundancy (system can run with a single PEM)
- CLI support for status and configuration
- Remote shutdown feature
- Front panel LED status and alarm indicators

RFGW-10 Fan Assembly

The Cisco RFGW-10 UEQAM system uses a modular fan assembly to dissipate heat from the system and control the temperature of the chassis system components (except the DC PEM, which contains its own internal fan). The fan assembly is a multi-fan design that pulls ambient air from the lower front of the chassis and exhausts air out of the rear top of the chassis. The fan assembly provides individual fan control and failure monitoring, multiple thermistors to monitor exhaust air and a wide range of speed control parameters based on the system and the environmental conditions. Inlet air monitoring is communicated to the fan tray via the system software from the sensors on each of the RF line cards.

The fan tray module provides the following features:

- Online insertion and removal (OIR) support
- Failure monitoring of individual fans
- Backup temperature monitoring to control individual fan RPM
- Usage counter based on hours of operation (CLI-based)
- Front panel LED for alarm status indication
- Control and power circuit failure alarms
- On-board multi-level fan speed control based on system temperature

New Software Features in Cisco IOS Release 12.2(50)SQ6

There are no new software features supported in the Cisco IOS Release 12.2(50)SQ6.

New Software Features in Cisco IOS Release 12.2(50)SQ5

There are no new software features supported in the Cisco IOS Release 12.2(50)SQ5.

New Software Features in Cisco IOS Release 12.2(50)SQ4

There are no new software features supported in the Cisco IOS Release 12.2(50)SQ4.

New Software Features in Cisco IOS Release 12.2(50)SQ3

This section describes the new and modified software features supported in Cisco IOS Release 12.2(50)SQ3.

DEPI Path Redundancy

The DEPI Path Redundancy feature is supported on the Cisco uBR-MC3GX60V cable interface line card starting with Cisco IOS Release 12.2(33)SCE1. For more information, see *Cisco uBR10012 Router Release Notes for Cisco IOS Release 12.2(33)SCE*.

New Software Features in Cisco IOS Release 12.2(50)SQ2

This section describes the new and modified software features supported in Cisco IOS Release 12.2(50)SQ2.

DEPI Path Redundancy

DEPI Path Redundancy (DPR) is used in conjunction with N+1 DEPI control plane redundancy for Cisco uBR-MC3GX60V line card. This feature allows you to configure a backup DEPI session on the protect card using the protect-tunnel command in DEPI tunnel configuration mode. In this mode, the protect line card has a fully operational secondary DEPI control connection and sessions for the QAM channels on the working line card. The primary DEPI control connection and session is established on the Gigabit Ethernet ports on the working line card. These primary and secondary DEPI sessions are paired using the common TSID, which uniquely identifies the target QAM channel.

The following commands were introduced or modified:

- **protect-tunnel**
- **show depi session**
- **show depi tunnel**

For more information, see *M-CMTS DEPI Control Plane*.

Note The DEPI Path Redundancy feature is not supported on the Cisco uBR-MC3GX60V cable interface line card in Cisco IOS Release 12.2(33)SCE. For more information, see *Cisco uBR10012 Router Release Notes for Cisco IOS Release 12.2(33)SCE*.

DEPI EQAM Statistics

The DEPI EQAM statistics feature enables the EQAM to send RF channel statistics to the M-CMTS router.

The following command was introduced:

- **depi eqam-stats**

For more information, see *M-CMTS DEPI Control Plane*.

New Software Features in Cisco IOS Release 12.2(50)SQ1

This section describes the new and modified software features supported in Cisco IOS Release 12.2(50)SQ1.

Video SSO

Video sessions on the Cisco RFGW-10 are either unicast or multicast sessions created manually or remotely using Generic QAM Interface (GQI). At run time, the video session state information is check pointed from the active Supervisor card to the standby Supervisor card.

Unicast video sessions continue to forward traffic during Supervisor card switchover with about an approximate traffic outage of one second

Multicast video sessions may experience longer traffic outage during Supervisor card switchover. For a small number of SDV sessions (for example, 1,000), the traffic outage is less than four seconds. For a large number of SDV sessions (for example, 10,000), the traffic outage time is around ten seconds. This is because, in Cisco IOS Release 12.2(50)SQ1, the underlying multicast function is not SSO-aware although the video session state is synchronized to the standby Supervisor card. The SSO performance of multicast video sessions will be improved in a later release.

For more information, see *1:1 Supervisor Card Redundancy*.

Pass-through Video Session Enhancements

The following features have been added for pass-through video sessions:

- MPTS Multiplexing of Pass-through Sessions, page 14
- Input PID Filtering, page 14
- CBR Clock Recovery, page 14

MPTS Multiplexing of Pass-through Sessions

A pass-through session can be multiplexed with other remapped sessions, pass-through sessions, or data piping sessions into the same QAM channels.

Input PID Filtering

The Input PID Filtering feature enables you to specify a list of PIDs to be dropped for a pass-through video session. PID filtering is used in scenarios where the SI table is replaced in the BDV digital broadcast feed. The incoming feed from the video session is a Multiple Program Transport Stream (MPTS) containing BDV SI tables. These SI tables are replaced with locally generated SI tables. The PID filtering capability enables the drop of SI tables from the incoming feed. The local SI tables can then be reinserted from a data piping session to be multiplexed to the QAM channel.

Up to 32 PIDs can be filtered per pass-through session.

The following commands have been modified to support input PID filtering:

- **cable video udp** *port* {**filter pid** *pid-list*}
- **asm** *label* {**filter pid** *pid-list*}
- **ssm** *label* {**filter pid** *pid-list*}

For more information, see the *Cisco RF Gateway 10 Command Reference* and *Video* guides.

CBR Clock Recovery

The CBR dejittering and clock recovery method assumes all video sessions are variable bit rate (VBR) by default. This method also works for sessions that are constant bit rate (CBR) sessions. However, in scenarios where the MPTS input stream contains programs with faulty PCRs, providing the CBR information helps isolate the faulty PCRs. Isolating the faulty PCRs prevents them from corrupting the good PCRs within the same input session. The CBR dejittering and clock recovery mode has been added in Cisco IOS Release 12.2(50)SQ1 to support this.

The following commands have been modified to support CBR dejittering and clock recovery:

- **cable video udp** *port* {**passthru** [**cbr**]}
- **ssm** *label* **source** *source-IP-address* **group** *group-IP-address* [**cbr**]
- **asm** *label* {**group** *IP-address* [**cbr**]}

For more information, see the *Cisco RF Gateway 10 Command Reference* and *Video* guides.

New Software Features in Cisco IOS Release 12.2(50)SQ

This section describes the new and modified software features supported in Cisco IOS Release 12.2(50)SQ.

Supervisor Stateful Switchover

In the Supervisor Stateful Switchover (SSO) mode, the standby Supervisor card is fully initialized and configured. This allows SSO to reduce the switchover time if the active Supervisor card fails, or if a manual switchover is performed. Both the startup and running configurations are continually synchronized from the active to the standby Supervisor cards, and the line cards are not reset during a Supervisor switchover. The interfaces remain active during the switchover, hence the neighboring routers do not detect a physical link flap (the link does not go down and back up).

The SSO feature supports both the DEPI Manual and the DEPI Protocol modes. It is unavailable for Video in Cisco IOS Release12.2(50)SQ.

For more information, see *1:1 Supervisor Card Redundancy*.

M-CMTS DEPI Control Plane

The Downstream External PHY Interface (DEPI) control plane is based upon Layer Two Tunneling Protocol-Version 3 (L2TPv3) signaling. The DEPI is the communication protocol over an IP tunnel between the Modular Cable Modem Termination Systems (M-CMTS) core and the Edge Quadrature Amplitude Modulation (EQAM). It is an IP tunnel between the MAC (M-CMTS Core) and PHY (EQAM) in an M-CMTS system, which contains both a data path for Data-Over-Cable Service Interface Specifications (DOCSIS) frames and a control path for setting up, maintaining, and tearing down data sessions.

The DEPI Latency Measurement (DLM) packet is a special type of data packet used for measuring the network latency between the M-CMTS core and the EQAM.

For more information, see *M-CMTS DEPI Control Plane*.

Video Control Plane with Generic QAM Interface (GQI)

The Generic QAM Interface (GQI) based video control plane provides video session management through a GQI signaling protocol with Digital Network Control System (DNCS) and Universal Session/Resource Manager (USRM).

The GQI supports the following:

- Session management: session creation, deletion, and queries
- SDV shell session management: shell session creation, deletion, binding, and unbinding
- Packet management: packet insertion, cancellation, and queries
- Edge device maintenance: reset control.

For more information, see *Video*.

1:1 and 1:N DS-48 Line Card Redundancy for Video and DEPI

The line card redundancy (LCRED) feature introduced in Cisco IOS Release 12.2(44)SQ supports DEPI D-MPT traffic under the DEPI Manual mode. In Cisco IOS Release 12.2(55)SQ, line card redundancy supports Video and DEPI D-MPT with DEPI Control Plane in the DEPI Protocol mode. In case of line card failure, OIR, or a forced line card switchover, the standby line card becomes active and continues to process Video or DEPI traffic.

For more information, see the *1:1 and 1:N DS-48 Line Card Redundancy*.

New Software Features in Cisco IOS Release 12.2(44)SQ2

This section describes the new and modified software features supported in Cisco IOS Release 12.2(44)SQ2.

Bundled Image upgrade enhancements

The Supervisor image is bundled with upgrades for all device images. The Supervisor card automatically checks the versions of the software and firmware on all line cards during system boot up and upgrades as necessary.

For more information, see *Bundled Image Upgrade*.

New Software Features in Cisco IOS Release 12.2(44)SQ1

There are no new software features supported in Cisco IOS Release 12.2(44)SQ1.

New Software Features in Cisco IOS Release 12.2(44)SQ

Below are the software features supported on the Cisco RFGW-10 for Cisco IOS Release 12.2(44)SQ.

Universal Edge Quadrature Amplitude Modulation

The Universal EQAM platform integrates the capabilities of an M-CMTS EQAM platform and the capabilities of a video EQAM, thereby supporting both DOCSIS and digital video services in a single UEQAM platform. The granularity of the DOCSIS and video traffic mix is per 4-channel group, that is, per RF port.

The Universal EQAM can be configured with 64 QAM or 256 QAM Downstream Modulation with 1:4 Frequency Stacking under Annex B, Annex A, or Annex C.

M-CMTS DOCSIS MPEG Transport Manual Mode

The interface between the M-CMTS core and the EQAM is defined by Downstream External PHY Interfaces (DEPI), which is an L2TP-based IP tunnel containing both a data path for DOCSIS frames and a control path for session setup, maintenance, and tear-down. This feature supports the DEPI data path with the DOCSIS MPEG Transport (D-MPT) mode with manual configuration for session setup.

D-MPT places integer number of MPEG transport packets into the L2TP payload. Only one D-MPT flow can be present in a QAM channel. The EQAM extracts the D-MPT packets within the DEPI payload and forwards them to the output QAM.

The D-MPT feature supports bonded DOCSIS through downstream channel bonding. Channel bonding is a technique of grouping multiple QAM channels into a bonding group to provide a logical downstream channel with larger aggregated bandwidth. Bonded traffic can be encapsulated in D-MPT.

D-MPT traffic from the M-CMTS core contains SYNC messages (DOCSIS time stamps). The EQAM finds all the SYNC messages in the D-MPT payload and performs the SYNC correction.

DTI Offset

The DOCSIS Timing Interface (DTI) Offset feature enables DOCSIS timing offset adjustment per channel in the RFGW-10 DS-48 line card. The operator must measure the actual timing offset adjustment required on each QAM channel first and then use the DTI Offset CLI to make the adjustment. To configure all the QAM ports to the same timing offset, use the **cable depi offset** command specifying the port range of the QAM interfaces. With this command, users can configure an entire chassis with the same timing offset.

1:1 and 1:N DS-48 Line Card Redundancy

The RFGW-10 supports both 1:1 and 1:N line card redundancy schemes. 1:1 redundancy refers to a configuration where a line card has a dedicated backup card. 1:N redundancy means one line card protecting N line cards. Therefore, a single DS-48 line card can protect as many as nine other line cards. There can be up to two line card redundancy groups in an RFGW-10 chassis with each group being 1:1 or 1:N redundancy.

The RFGW-10 performs line card switchover on such events as a user-initiated switchover command, line card insertion and removal (OIR), as well as hardware and software faults, RF upconverter failure, and DTI failure on the line card. At line card switchover, the standby line card becomes active, resuming the functions of the line card it is switched from. With the internal RF Switch card, line card switchover is transparent to the RF connections to the plant.

The line card redundancy supports M-CMTS D-MPT traffic. The line card switchover has little impact on the DOCSIS applications. This release does not provide line card redundancy support for video applications.

1:1 Supervisor Card Redundancy

The Cisco IOS Route Processor Redundancy (RPR) feature enables the RFGW-10 to use two Supervisor cards in a redundant configuration, such that if the active Supervisor card fails or becomes inactive, the system automatically performs a switchover, where the standby Supervisor card takes over and assumes full responsibility for systems operations.

The RPR mode is the simplest mode in which the standby Supervisor card completes its initialization but suspends just before parsing the startup-config. The standby monitors the active Supervisor and switches over when it detects a failure on the active Supervisor or when the user issues a switchover command. When the standby Supervisor card becomes active, all the line cards in the chassis are reset and the startup-config is parsed. There will be a traffic outage in this mode because the line cards are reset.

1:1 Timing, Communication and Control (TCC) Card Redundancy

The Timing, Communication and Control (TCC) card operates in 1:1 redundancy configuration in the RFGW-10 chassis, where each TCC card has its own peer as a dedicated backup card in case of failure (hot standby mode). Only one of the two TCC cards provides the DTI client functionality at any given time. The standby TCC is accessible from other line cards, but does not provide any DTI functionality. In the event of active TCC failure, the standby TCC becomes active and serves as the DTI client.

Video

The Cisco RFGW-10 performs MPEG-2 video processing for Video on Demand (VoD) and Digital Video Broadcast applications. The video feature involves both video control plane and video data plane functions. The control plane resides on the Supervisor card and the data plane runs on the DS-48 line card.

The video control plane provides video session configurations with table-based UDP port-to-QAM port mapping. The table-based mapping is used only for unicast video sessions. Apart from the table-based mapping, the Cisco RFGW-10 also supports the flexible port mapping method, where the users can set up video sessions by configuring the mapping dynamically. The flexible port mapping can be used for both unicast and multicast video sessions. In addition, the video control plane provides show commands for users to access run-time session information.

The video data plane processes Unicast Constant Bit Rate (CBR) Single Program Transport Stream (SPTS) for VoD sessions with Trick Mode support, which provides functionalities like fast forward, rewind, and pause for an MPEG stream. It also serves Multicast Multiple Program Transport Stream (MPTS) for DVB Pass-Through sessions.

The data plane supports the video feature with a number of video-processing functions including Program ID (PID) remapping, Program Clock Reference (PCR) restamping, Dejittering and Clock Recovery, and Program Specific Information (PSI) processing.

SNMP MIBs

The Cisco RFGW-10 provides network management with a set of standard-based MIBs. The MIBs specific to the Cisco RFGW-10 platform include:

- IF-MIB
- ENTITY-MIB
- DOCS-IF-MIB

- DOCS-IF-MCMTS-MIB
- DOCS-CABLE-DEVICE-MIB
- DTI-MIB
- SCTE-HMS-MPEG-MIB
- SCTE-HMS-QAM-MIB

In addition, the Cisco RFGW-10 supports MIBs common in Cisco IOS which can be found in the *Cisco RF Gateway 10 MIB Specifications Guide*.

GUI Monitoring

GUI Monitoring is a web-based tool that enables operators to monitor the RFGW-10 system. GUI Monitoring is comprised of two functional components: a web browser client on a computer and a Web server residing in the Cisco RFGW-10 Supervisor card. The web browser accesses the Cisco RFGW-10 via an authenticated IP connection to the RFGW-10.

The GUI includes the following monitoring pages:

- Universal EQAM Usage Summary
- Inventory
- Alarm
- Environment
- Redundancy
- QAM
- Video
- Performance
- DTI

Important Notes

Cisco IOS Behavior Changes

Behavior changes describe the minor modifications to the way a device works that are sometimes introduced in a new software release. These changes typically occur during the course of resolving a software defect and are therefore not significant enough to warrant the creation of a stand-alone document. When behavior changes are introduced, existing documentation is updated with the changes described in this section.

Cisco IOS Release 12.2(44)SQ2

This section describes the behavior changes introduced on the Cisco RFGW-10 platform in Cisco IOS Release 12.2(44)SQ2.

- **cable image-upgrade download** command modified. A new keyword **forced** is added to the output of **cable image-upgrade download** command.

  Old Behavior: The **cable image-upgrade download** command upgrades all the images on the line card. The background keyword is used so that the upgrade occurs in the background and the control is returned to the command prompt.

  New Behavior: Using the **forced** option in the **cable image-upgrade download** command forces the upgrade on all the devices on the line card.

  Additional information: For more information, see the *Cisco RF Gateway 10 Command Reference*.

Cisco IOS Release 12.2(44)SQ1

This section describes the behavior changes introduced on the Cisco RFGW-10 platform in Cisco IOS Release 12.2(44)SQ1.

- **show cable line card version** command output modified. A new field is added to the output of **show cable line card version** command.

  Old Behavior: The **show cable line card version** command displays the image version information of the line card. The application upgrade version, Rommon version, and image version are displayed.

  New Behavior: The **show cable line card version** command displays the application permanent version in addition to the application upgrade version, Rommon version, and image version fields.

  Additional information: For more information, see the *Cisco RF Gateway 10 Command Reference*.

Caveats

Caveats describe unexpected behavior in Cisco IOS software releases. Severity 1 caveats are the most serious caveats; severity 2 caveats are less serious. Severity 3 caveats are moderate caveats, and only selected severity 3 caveats are included in the caveats document.

Caveat numbers and brief descriptions for Cisco IOS Release 12.2SQ-based releases are listed in this section.

If you have an account on Cisco.com, you can use the Bug Toolkit to find Cisco RFGW-10 caveats of any severity. To reach the Bug Toolkit, use the following URL in your web browser https://tools.cisco.com/Support/BugToolKit.

Open Caveats for Cisco IOS Release 12.2(50)SQ6

Caveat	Description
CSCub95597	Symptoms: Issuing **snmpwalk** command on "ifName" MIB object results in a traceback and a spike in CPU utilization. Conditions: This issue occurs while issuing **snmpwalk** command on ifName MIB object. Workaround: There is no workaround.
CSCud02393	Symptoms: DEPI midplane pings failed count counter is incremented by 1 or n even when a DEPI route exists on the Cisco RFGW-10 router. Conditions: This issue occurs when the Cisco RFGW-10 router is left idle for a long time. The show midplane ping statistics command displays the failed counter value incremented by 1 or n. Workaround: Clear the midplane ping statistics and verify the midplane ping statistics again.
CSCud09247	Symptoms: FastEthernet1 port and VLAN interfaces go to down state after replacing the saved configuration with a running configuration on the Cisco RFGW-10 router. Conditions: This issue occurs when the Cisco RFGW-10 is reloaded and the saved configuration is replaced with the running configuration. Workaround: Use the **no shut** command to unshut the ports.
CSCud16912	Symptoms: The compact flash size is displayed incorrectly on standby Supervisor card. Conditions: This issue occurs after swapping the compact flashes between the active and standby Supervisor cards. Workaround: There is no workaround.
CSCud19522	Symptoms: The standby Supervisor card goes to Route Processor Redundancy (RPR) mode after a switchover. Conditions: This issue occurs when line cards are removed from a line card redundancy group configuration, and supervisor switchover is initiated using the **redundancy force-switchover** command on the Cisco RFGW-10 router. Workaround: There is no workaround.
CSCud38529	Symptoms: Data plane DEPI sessions status does not become active when Cisco RFGW-10 DS48 line card becomes operational after it is reset. Conditions: This issue occurs when the stand-alone TCC card reset without a standby TCC card. Workaround: Reset the Cisco RFGW-10 DS-48 line card.

Caveat	Description
CSCud65515	Symptoms: Primary DEPI session do not go to the up state for some QAM channels on the Cisco RFGW-10. Conditions: This issue occurs when invalid RF power range exists for the QAM channels causing loss of DEPI sessions on the QAM channel. Workaround: Deconfigure and configure the DEPI tunnel for the QAM channel. This should bring up the DEPI sessions.
CSCud14476	Symptoms: Modems come to the online state instead of w-online state after the primary line card is reset or switched over. Conditions: This issue occurs when the following conditions exist: • No physical connection exists between the secondary line card and the CMTS • Revertive time is set in the redundancy configuration Workaround: There is no workaround.
CSCud00035	Symptoms: Traceback and error messages are observed on the Cisco RFGW-10 router after line card revertback. Conditions: This issue occurred after a line card revertback was performed using redundancy linecard group switchover slot command. Workaround: There is no workaround.
CSCul07567	Symptom: Hike in CPU utilisation observed while verifying the midplane ping after removing a line card route. Condition: This occurs when the following steps are done: • Reset the line card and wait till it is in ready state • Remove the line card route Workaround: Add the removed line card route.
CSCul24808	Symptom: Greatwhite IU failure is observed on Cisco RF Gateway 10 (RFGW-10) DS-48 line card. Condition: This occurs when Cisco RF Gateway 10 (RFGW-10) DS-48 line card boots up, and heartbeat failure is seen. Workaround: The RFGW-10 recovers automatically and no workaround is required.

Resolved Caveats for Cisco IOS Release 12.2(50)SQ6

Caveat	Description
CSCuc34778	Symptoms: Interprocess communication (IPC) causes the Cisco RFGW-10 to reload with stack traces. Conditions: This issue was observed when there is a momentary spike in the pending IPC messages under fully loaded condition. Workaround: There is no workaround.

CSCue30369	Symptom: The following messages are seen in the logs of the RFGW-10:
	
	`RFGW-3-LINECARD_ERRMSG_ERR SLOT 12:can not get empty local session entry (qam_id 24, ss_id 0x4001018d)`
	`RFGW-3-UNEXPECTED Invalid response received for CNFG DEPI SESSION message -Traceback= 10D31900 10D3204C 108A1AF4 108A116C 10889AF8 1088624C 1091D97C 1091B4EC 10920E90 10928EA8 10916A4C 106689A8 1065FB58`
	`RFGW-3-BULK_DNLD Depi Session ID 1073807757 on Qam3/7.1 failed for Module 12`
	Conditions: This could occur under conditions that could cause a continuous teardown and creation of sessions which will result in stale sesions created.
	
	Workaround: Reload of RFGW is the only way to clear the stale sessions.
	
	Additional Information: If stale sessions are present in primary card, secondary card will reload since it will not be able to download the configs from the primary.
	
	This is most likely to occur in new implementation or configuration where some erroneous configs are applied at CMTS or RFGW which result in teardown and creation of sessions. The sessions that were tore down might remain as stale sessions.

Caveat	Description

CSCui48322	Symptom: The physical parameters in the QAM DB that are learnt from the CMTS in case of remote learn, are not defaulted or cleared.
	`!`
	`interface Qam11/8.1`
	`cable downstream rf-shutdown`
	`cable downstream frequency 483000000`
	`<<<<<<<< Cable DS frequency is learnt from CMTS.`
	`!`
	Conditions: The following configurations are required:
	• Configure **remote learn** sessions using **cable mode** command
	• Change the QAM interface settings to default settings
	Workaround: Set the interface to default twice to:
	– first clear mode, tsid and tunnel configurations, except the physical parameters configuration
	– second time, set all the physical parameters to default
	OR
	Before defaulting the QAM interface, remove the **remote learn** mode, then set the QAM interface to default.

CSCuh47212	Symptom: Unused DEPI CP protect tunnels are not deleted. The error message occurs:
	`ueq01(config)#no depi-tunnel cts01_protect1`
	`% depi-tunnel:cts01_protect1 is in use and cannot be deleted`
	Conditions: Enter depi tunnel mode and do the following:
	– Remove the existing protect tunnel
	– Configure a new protect tunnel
	– Exit.
	Workaround: Enter depi tunnel mode and do the following:
	– directly replace/configure new protect tunnel. This will delete old tunnel also
	– Exit

Caveat	Description
CSCug51573	Symptom: When the TCC active DTI port changes state, SNMP link events are generated for the other DTI port also. Conditions: One DTI port is active and the other DTI port is inactive on TCC card. Workaround: There is no known workaround.
CSCtu33213	Symptom: Supervisor card crashes during Online Insertion and Removal (OIR) with the following error message: `%RFGW-3-UNEXPECTED: ERROR, Unable to send RPC MSG(type: 1030) sent to src_slot:4, dest_slot:4 port: depi_plane due to timeout` Conditions: This occurs when line card OIR is performed. Workaround: There is no known workaround.
CSCud43963	Symptoms: Downstream channel is in down state although the DEPI session is established. Conditions: This issue occurs when changing the frequency stacking from 4 to 1, the TSID, mode in sub interface 2~4 is removed from the configuration. When changing the frequency stacking back to 4, the TSID configuration restores to the earlier state. But QAM mode does not revert back with **no cable downstream rf-shut** command. Workaround: Manually configure **no cable downstream rf-shut** command. Additional Information: When changing the frequency stacking on a single port from 4 to 1 and back to 4, the configuration under each QAM interface restores to the earlier state. However, the QAM Mode is in “off” state for each QAM interface. Therefore, the downstream channel is in down state.

Caveat	Description
CSCud51870	Symptoms: Previous configurations of the line card (prior to configuring redundancy) are still preserved after the line card is removed from the redundancy group. DEPI sessions are not cleared. Conditions: This issue occurs when the primary line card is removed from a redundancy group and configured as a secondary in a new redundancy group, and again removed from the new redundancy group and added back into the previous redundancy group as a primary line card. Workaround: Before configuring any line card as a secondary line card, default all QAM ports of the line card to be configured as secondary. Issue the default interface Qam command to default the interfaces. or Manually remove all the configuration for that line card.
CSCts77756	Symptom: Secondary sup ports are going to admin down. Conditions: During upgrade/Downgrade once after all the LCs bootsup, do "sh ip int b | inc admin" on slot 1. No ports will be in admin state and Issue the "sh ip int b | inc admin" CLi in slot 2, all ports are in admin state. When I do SSO using "red force switch", in newly active sup (slot 2) all ports still are shut. Workaround: Change the ports to up state using **no shut** command.
CSCtz57400	Symptoms: DEPI sessions are not established on the Cisco RFGW-10 when 4 sessions or its multiples are not configured on the QAM interface. Conditions: This issue occurs when less than 4 sessions are configured. Workaround: Configure DEPI sessions for all 4 channels on a QAM port.
CSCua42551	Symptoms: Front panel LEDs switch off after a TCC card switchover. Conditions: This issue occurs after the TCC card switchover is performed. Workaround: Reboot the Cisco RFGW-10 router.

Caveat	Description
CSCud39606	Symptoms: DEPI sessions are moved to idle state after upgrading to 12.2(50)SQ5 and the QAM interfaces are in down state. Conditions: This issue occurs: • During image upgrade to 12.2(50)SQ5 • Probability of hitting this issue is 0.2 • QAM interfaces were up before image upgrade Workaround: Manually unshut all the affected QAM ports to bring the sessions back to Active state.
CSCud38024	Symptoms: DEPI sessions in other QAM interfaces also get deleted when default interface range qam command is issued on a particular QAM interface. Conditions: This issue occurs when the default interface range qam command is issued on a particular QAM interface. Workaround: Do not use the **interface range qam** command for QAM channels.

Caveat	Description
CSCui40108	Symptom: Error messages seen on the RFGW-10 and Supervisor V-10GE 10GE (RFGW-X4516-10GE) line card: `C4K_HWPORTMAN-4-BLOCKEDTXQUEUE Blocked transmit queue HwTxQId3 on Switch Phyport Te1/1, count=5702344` Conditions: This occurs when Supervisor V-10GE 10GE is running for long time and TenGigabit interface, where this issue is observed, is unused and not connected. Workaround: Fail-over the SUP line card having the interface.
CSCuh55064	Symptom: The SNMP query response for "ifOperStatus" of QAM and QAM-red interfaces displays their status as "down". The **show [ip] interface** command for QAM interfaces displays line protocol status is "up". Conditions: Cable-RFGW-10 (MPC8540) running Cisco IOS Release 12.2SQ and the following **show** commands are used to display interface status: • **show ip interface brief** • **show ip interface brief** • **show interface** • **show ip interface** Workaround: There is no impact on functionality. There is no workaround.

Open Caveats for Cisco IOS Release 12.2(50)SQ5

Caveat	Description
CSCtz57400	Symptoms: DEPI sessions are not established on the Cisco RFGW-10 when 4 sessions or its multiples are not configured on the QAM interface. Conditions: This issue occurs when less than 4 sessions or non-multiples of 4 sessions are configured Workaround: Configure DEPI sessions in multiples of 4.
CSCua42551, CSCty27319	Symptoms: Front panel LEDs switch off after a TCC card switchover. Conditions: This issue occurs after the TCC card switchover is performed. Workaround: Reboot the Cisco RFGW-10 router.

Caveat	Description
CSCub95597	Symptoms: Issuing **snmpwalk** command on ifName MIB objects invokes traceback and crashes the Cisco RFGW-10 router. Conditions: This issue occurs while issuing **snmpwalk** command on ifName MIB object is performed. Workaround: There is no workaround.
CSCuc34778, CSCuc34786	Symptoms: Interprocess communication (IPC) causes the Cisco RFGW-10 to crash with stack traces. Conditions: This issue was first observed in Cisco IOS Release 12.2(50)SQ3 and Cisco IOS Release 12.2(50)SQ4. Workaround: There is no workaround.
CSCud00035	Symptoms: Traceback and error messages are observed on the Cisco RFGW-10 router after line card revertback. Conditions: This issue occurred after a line card revertback was performed using **redundancy linecard group switchover slot** command. Workaround: There is no workaround.
CSCud01957	Symptoms: Traceback and error messages are observed on the Cisco RFGW-10 router while resetting the Cisco RFGW-10 line cards (both primary & secondary) repeatedly multiple times. Conditions: This issue occurs when line card redundancy is configured on the Cisco RFGW-10 router and line card is reset repeatedly using **hw-module slot reset** command. Workaround: There is no workaround.
CSCud02393	Symptoms: DEPI midplane pings failed count counter is incremented by 1 or n even when a DEPI route exists on the Cisco RFGW-10 router. Conditions: This issue occurs when the Cisco RFGW-10 router is left idle for a long time. The **show midplane ping statistics** command displays the failed counter value incremented by 1 or n. Workaround: Clear the midplane ping statistics and verify the midplane ping statistics again.
CSCud09247	Symptoms: FastEthernet1 port and VLAN interfaces go to down state after replacing the saved configuration with a running configuration on the Cisco RFGW-10 router. Conditions: This issue occurs when the Cisco RFGW-10 is reloaded and the saved configuration is replaced with the running configuration. Workaround: There is no workaround.
CSCud14476	Symptoms: Modems come to the online state instead of w-online state after **hw-module reset** command is issued on the primary line card. Conditions: This issue occurs when line card redundancy with revertive time-on is configured on the Cisco RFGW-10 router and **hw-module reset** command is issued on the primary line card. Workaround: There is no workaround.

Caveat	Description
CSCud16912	Symptoms: The compact flash statistics display incorrectly on standby Supervisor card. Conditions: This issue occurs after swapping the compact flashes between the active and standby Supervisor cards. Workaround: There is no workaround.
CSCud19522	Symptoms: The standby Supervisor card goes to Route Processor Redundancy (RPR) mode after a switchover. Conditions: This issue occurs when line cards are removed from a redundancy group in a line card redundancy configuration, and **redundancy force switchover** command is issued on the Cisco RFGW-10 router. Workaround: There is no workaround.
CSCud25340	Symptoms: The following error message is observed on the Cisco RFGW-10 router. DEPI sessions cannot be established. `.Nov 16 17:24:58.434: %NETWORK_RF_API-6-IDB_TRANSITIONS_PENDING: Switchover terminated with 78 transitions pending after there was no transition activity for 30 seconds` Conditions: This issue occurs after a Supervisor switchover. Workaround: There is no workaround.
CSCud38024	Symptoms: DEPI sessions in other QAM interfaces also get deleted when **default interface range qam** command is issued on a particular QAM interface. Conditions: This issue occurs when the **default interface range qam** command is issued on a particular QAM interface. Workaround: Do not use the **default interface range qam** command.
CSCud38529	Symptoms: Data plane DEPI sessions go to idle state after a TCC card reset. Conditions: This issue occurs after a TCC card reset. Workaround: Reset the Cisco RFGW-10 DS-48 line card.
CSCud39606	Symptoms: DEPI sessions go to idle state after QAM interfaces are in down state. Conditions: This issue occurs after a Supervisor card switchover. Workaround: There is no workaround.
CSCud43963	Symptoms: Downstream channel is in down state although the DEPI session associated with the QAM interface is in up state, because the QAM mode for each QAM interface is OFF. Conditions: This issue occurs when remote DEPI learn mode is configured. This issue occurs when frequency stacking is changed from 4 to 1 and TSID configuration is removed. Workaround: Reconfigure the DEPI configuration (TSID and DEPI tunnel) in each QAM interface.

Caveat	Description
CSCud51870	Symptoms: Previous configurations of the line card (prior to configuring redundancy) are still preserved after the line card is removed from the redundancy group. DEPI sessions are not cleared. Conditions: This issue occurs when the primary line card is removed from a redundancy group and configured as a secondary in a new redundancy group, and again removed from the new redundancy group and added back into the previous redundancy group as a primary line card. Workaround: Before configuring any line card as a secondary line card, default all QAM ports of the line card to be configured as secondary. Issue the **default interface Qam** command to default the interfaces. or Manually remove all the configuration for that line card.
CSCud65515	Symptoms: Primary DEPI session do not go to the up state for some QAM channels on the Cisco RFGW-10. Conditions: This issue occurs when invalid RF power range exists for the QAM channels causing loss of DEPI sessions on the QAM channel. Workaround: Deconfigure and configure the DEPI tunnel for the QAM channel. This should bring up the DEPI sessions.

Resolved Caveats for Cisco IOS Release 12.2(50)SQ5

Caveat	Description
CSCsl58384	Symptoms: The Cisco RFGW-10 router crashes due to Layer2 traffic getting punted to SP (switch processor). Conditions: This issue occurs when port-security feature is enabled and rate traffic of high (more than 4k) value of scaled MAC addresses is sent. Workaround: Rate-limit the Layer2 data using **mls rate-limit layer2 port-security 5000** command.
CSCsy92331	Symptoms: Memory leaks and fragmentation are observed when exceptions are encountered. Conditions: This issue occurs when SNMP queries lead to exceptions causing memory leaks. Workaround: There is no workaround.

Caveat	Description

CSCsz18634	Symptoms: The input and output packet rate is always displayed with "0" at the interface level, even though packets are flowing on the ports normally.
	`Router# show interface gigabitEthernet 4/1`
	`GigabitEthernet4/1 is up, line protocol is up (connected)`
	`......`
	`Output queue: 0/40 (size/max)`
	`30 second input rate 0 bits/sec, 0 packets/sec <<<<<<<<<<<`
	`30 second output rate 0 bits/sec, 0 packets/sec <<<<<<<<<<<`
	`3411001 packets input, 567007874 bytes, 0 no buffer`
	`Received 818876 broadcasts (725328 multicasts)`
	Conditions: This issue was first observed in Cisco IOS Release 12.2(46)SG.
	Workaround: There is no workaround.

CSCtg47129	The Cisco IOS Software implementation of the virtual routing and forwarding (VRF) aware network address translation (NAT) feature contains a vulnerability when translating IP packets that could allow an unauthenticated, remote attacker to cause a denial of service (DoS) condition. Cisco has released free software updates that address this vulnerability. Workarounds that mitigate this vulnerability are not available. This advisory is available at the following link: http://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20130327-nat Note: The March 27, 2013, Cisco IOS Software Security Advisory bundled publication includes seven Cisco Security Advisories. All advisories address vulnerabilities in Cisco IOS Software. Each Cisco IOS Software Security Advisory lists the Cisco IOS Software releases that correct the vulnerability or vulnerabilities detailed in the advisory as well as the Cisco IOS Software releases that correct all Cisco IOS Software vulnerabilities in the March 2013 bundled publication. Individual publication links are in "Cisco Event Response: Semiannual Cisco IOS Software Security Advisory Bundled Publication" at the following link: http://www.cisco.com/web/about/security/intelligence/Cisco_ERP_mar13.html
CSCtr66271	Symptoms: Traceback observed after power off and power on of the Cisco RFGW-10 line cards. Conditions: This issue occurs after issuing the **no hw-module slot power** and **hw-module slot power** commands. Workaround: There is no workaround.
CSCtr86415	Symptoms: Telnet needs to be enabled on Cisco RFGW-10 line cards for licensing. Cisco RFGW-10 reserves IP address space 10.0.0.1 to 10.0.0.14 for accessing line cards from Supervisor card. Using these addresses for other interfaces is prohibited. Conditions: This issue occurs when RFGW does not allow configuration of IP address 10.0.0.1 to 10.0.0.14 addresses on other interfaces by default. Workaround: Use VRF while configuring 10.0.0.1 to 10.0.0.14 addresses for other interfaces.

Caveat	Description
CSCts25806	Symptoms: The output for the **show depi session verbose** command is the same when DEPI is enabled or disabled. Conditions: This issue occurs when **show depi session verbose** command is executed. Workaround: There is no workaround.
CSCts57957	Symptom: The Cisco uBR10012 router does not allow DEPI session reconfiguration on Cisco RFGW-10 QAM interface for 60 seconds after being triggered. Conditions: This issue occurs when the DEPI session configuration on the Cisco uBR10012 router is removed. Workaround: Wait for 60 seconds for the local end of the DEPI session on Cisco RFGW-10 router to get removed. Then try to reconfigure.
CSCts59691	Symptoms: Traceback observed on Cisco RFGW-10 router while changing the modulation from Annex B to Annex A on the Cisco uBR10012 router. Conditions: This issue was observed while changing modulation from Annex B to Annex A on the Cisco uBR10012 router. Workaround: There is no workaround.
CSCts61094	Symptoms: Memory leak observed on the Cisco RFGW-10 router. Conditions: This issue occurs after copying the configuration that contains manual DEPI configuration on the Cisco RFGW-10 router and is connected to Cisco uBR10-MC3GX60V line card. Workaround: There is no workaround.
CSCtt07863	Symptoms: Traceback and error messages are observed on the Cisco RFGW-10 router. `%LCRED-3-LC_CANT_SET_TXRX: Unable to set Active/Standby Tx/Rx selection for Line Card 11 (idx=11).` Conditions: This issue occurs when the secondary line card has an error condition such as SerDes failure, S2w failure etc. and is configured as a member of a line card redundancy (LCRED) group. Workaround: Replace the secondary line card with a good line card with no failure condition.
CSCtt37497	Symptoms: The secondary Supervisor card silently reloads due to parser error. Conditions: This issue occurs while configuring Video feature on the Cisco RFGW-10 router. Workaround: There is no workaround.
CSCtu16429	Symptoms: Traceback and error messages are observed on the Cisco RFGW-10 router. `*Nov  1 11:44:09.522: %RFGW-3-UNEXPECTED: Error updating state from LC` Conditions: This issue occurs when **show cable depi l2tp summary** command is executed on the Cisco RFGW-10. Workaround: There is no workaround.

Caveat	Description
CSCtu30476	Symptoms: The **show facility-alarm status** command output displays gibberish output. Conditions: This issue was observed when power supply redundancy was tested on the Cisco RFGW-10 router. Workaround: There is no workaround.
CSCtu32163	Symptoms: SSH not working after hostname and domain name change. Conditions: This issue was first observed in Cisco IOS Release 12.2(50)SQ on the Cisco RFGW-10 router. Workaround: Execute redundancy force-switchover command on a redundant Supervisor card.
CSCtw47308	Symptoms: On reloading the Cisco RFGW-10 the following message may be seen: `%C4K_TRANSCEIVERMAN-3-S2WERROR: (Suppressed 1 times)S2w bus error while looking for changed transceivers on port Gi12/13: S2wErrorNoAckDevAddress` Conditions: This issue was observed when the Cisco RFGW-10 router was reloaded. Workaround: There is no workaround.
CSCtw57111	Symptoms: Incorrect bandwidth value is displayed at port level while executing **show interface qam** command on the Cisco RFGW-10 router. Conditions: This issue is seen on Cisco RFGW-10 DS-48 line card. Workaround: There is no workaround.
CSCtw87166	Symptoms: Image upgrade errors are displayed on the Cisco RFGW-10 when image is removed from the flash. Conditions: This issue occurs while inserting the Cisco RFGW-10 DS-48 line card on the router. Workaround: There is no workaround. This is a cosmetic issue.
CSCtx54967	Symptoms: Duplicate traps are generated when a power supply unit is inserted into a Cisco RFGW-10 router. The traps ciscoEnvMonSupplyState and entConfigChange traps are duplicated. Conditions: This issue is observed when a power supply unit is inserted into a Cisco RFGW-10 router. Workaround: There is no workaround.
CSCtx80384	Symptoms: DEPI sessions exist in the data plane after executing the **no cable mode depi remote learn** command. Conditions: This issue occurs when control plane is configured on the Cisco RFGW-10 router. Workaround: There is no workaround.

Caveat	Description

CSCty74762	Symptoms: The line card log may show the following message:
	`Jul 07 06:23:48    6 10000     0 mv_hw_ctrl >> cnfg_rf_freq_pwr_mv(): set port 0 BW 6, Freq 603000000 Hz`
	`Jul 07 06:23:48    6 10000     0 ERROR mv_hw_ctrl, upx_cmd_set_freq(): UPX freq 500000000 != set freq 603000000`
	Conditions: This issue occurs randomly on line card when the Supervisor card performs a bulk configuration to the line card.
	Workaround: There is no workaround.

CSCua37072	Symptoms: An intrusive carrier is observed on the Cisco RFGW-10 router affecting cable modems and also the video channels. Conditions: This issue occurs on the Cisco uBR10-MC3GX60V line card on Cisco uBR10012 router connected to a Cisco RFGW-10 router with Cisco RFGW-10 DS48-G1 line card.This issue is not observed on the Cisco RFGW-10 DS-48 line card. Workaround: Switch to the protect card and then revert to the working card. If protect card does not exist, execute the **hw-module slot reset** command on the Cisco RFGW-10 DS48-G1 line card. Perform an OIR of the card if needed.
CSCua85399	Symptoms: The SNMP query does not get completed when executing the **getmany** command for entire MIB tree. Conditions: This issue occurs while running the **getmany** command for the entire MIB tree. Workaround: There is no workaround.
CSCua99738	Symptoms: The **show inventory** command shows incorrect values for the TCC hardware revision. Conditions: This issue occurs under normal conditions. Workaround: Use the **show idprom module** command to get the correct values.
CSCub46796, CSCud42347	Symptoms: The SNMP query does not get completed when executing the **snmpwalk** command for entire MIB tree. Conditions: This issue occurs while running the **snmpwalk** command for the entire MIB tree. Workaround: There is no workaround.
CSCuc34752	Symptoms: Tracebacks seen on the Cisco RFGW-10 router due to l2tp-class configuration. Conditions: This issue occurs when l2tp-class configuration is changed to depi-class configuration. Stateful switchover is configured on the Cisco RFGW-10 router. Workaround: Exit out of l2tp-class configuration using **exit** command before configuring depi-class configuration.

Caveat	Description
CSCud07545	Symptoms: The Gigabit Ethernet interfaces goes to admin down state after a Supervisor card switchover and powering down of the line card. Conditions: This issue occurs when line card is powered down using the **no hw-module power** command and after a Supervisor switchover. Workaround: Unshut the Gigabit Ethernet interface after powering up the line card.

CSCud28064	Symptoms: The following error message and traceback is observed on the RFGW-10 console.
	
	`.Nov 17 03:30:02.996: %SYS-2-MALLOCFAIL: Memory allocation of 10000 bytes failed from 0x11832D18, alignment 0`
	`Pool: Processor  Free: 640572  Cause: Memory fragmentation`
	`Alternate Pool: None  Free: 0  Cause: No Alternate pool`
	`-Process= "SNMP ENGINE", ipl= 0, pid= 350`
	`-Traceback= 10D32524 10D32C70 1181EED0 118213F0 11821700 11832D1C 11833958 11696644 11696844 11691144 116918FC 1094ECF8 1094C6D8 11694628 116693F0 11659D5C`
	
	Conditions: This issue occurs when **snmpwalk** command is run continuously for 9 hours causing memory leak.
	
	Workaround: There is no workaround.

CSCud32457	Symptoms: Copying files using secure copy (scp) method on the Cisco RFGW-10 generates errors.
	
	Conditions: This issue occurs while copying files.
	
	Workaround: Copy files as follows:
	
	`Router# copy slot0:redirect.out scp://haiwchen@171.70.80.70`
	`Address or name of remote host [171.70.80.70]?`
	`Destination username [haiwchen]?`
	`Destination filename [redirect.out]?`
	`Writing redirect.out`
	`Password:`
	`!!!!!`
	`1137048 bytes copied in 7.604 secs (149533 bytes/sec)`

Caveat	Description
CSCud52179	Symptoms: Line card redundancy group (LCRED) validation fails when Cisco RFGW-10 DS-48 line card is configured first. Conditions: This issue occurs with Cisco RFGW-10 DS-48 and Cisco RFGW-10 DS-48-1G line cards. This issue occurs in 1: N LCRED group with mixed line cards. The Cisco RFGW-10 DS-48 line card is configured first and the secondary member validation prevents the backup for incompatible reserve card. Workaround: Configure the Cisco RFGW-10 DS-48 line card as the secondary line card and perform a switchover from Cisco RFGW-10 DS-48-1G line card to the Cisco RFGW-10 DS-48 line card.

CSCud65986	Symptoms: Error messages are observed on the Cisco RFGW-10 router console.
	
	`RFGW-3-LINECARD_ERRMSG_ERR: SLOT 13:TCC_ERRMSG_GEN_LCD_BUSY_TIMEOUT proc/boot/tcc_front_panel`
	`%RFGW-3-LINECARD_ERRMSG_ERR: SLOT 13:TCC_ERRMSG_LCD_GEN_PRINT_FAILED`
	`%RFGW-3-LINECARD_ERRMSG_ERR: SLOT 13:TCC_ERRMSG_GEN_LCD_BUSY_TIMEOUT proc/boot/tcc_front_panel`
	`%RFGW-3-LINECARD_ERRMSG_ERR: SLOT 13:TCC_ERRMSG_LCD_GEN_COMMAND_FAILED`
	
	Conditions: This issue occurs after a Supervisor card switchover is performed using **redundancy reload shelf** command.
	
	Workaround: There is no workaround. No functional impact is observed.

Open Caveats for Cisco IOS Release 12.2(50)SQ4

Caveat	Description
CSCtr78519	Symptoms: The Cisco RFGW-10 DS-48 line cards reset due to a heartbeat failure. Conditions: This issue occurs when the TCC card is reset by the Supervisor due to heartbeat failure causing Cisco RFGW-10 DS-48 line cards to reset. Workaround: Extend the TCC heartbeat timeout value. Else, try to re-seat the TCC card.

Resolved Caveats for Cisco IOS Release 12.2(50)SQ4

Caveat	Description

CSCtn96911	Symptoms: The following DEPI related error messages and tracebacks may be displayed on the Cisco RFGW-10 when a N+ 1 line card switchover occurs on the peer Cisco uBR10012 router.
	`Mar 23 15:17:54 CDT: %RFGW-3-LINECARD_ERRMSG_ERR: SLOT 6:MV_ERRMSG_DP_MSG_RECONFIG_SES: mv_depi: 1074135170 6/3.1`
	`Mar 23 15:17:54 CDT: %RFGW-3-UNEXPECTED: Invalid response received for CNFG DEPI SESSION message`
	`-Traceback= 10D2FE20 10D3056C 108A11D0 108A29FC 1089C414 1089D9B0 106689A8 1065FB58`
	`Mar 23 15:17:56 CDT: %RFGW-3-UNEXPECTED: Error updating state from LC`
	`-Traceback= 10D2FE20 10D3056C 108A1BBC 1089F40C 1089CABC 1089D9BC 106689A8 1065FB58`
	Conditions: This issue occurs on the Cisco RFGW-10 connected to a Cisco uBR10012 router with Cisco uBR-MC3GX60V line cards. This issue was observed when DEPI Path Redundancy (DPR) feature was configured, and N+1 line card switchover occurred on the Cisco uBR10012 router.
	Workaround: The "%RFGW-3-UNEXPECTED: Error updating state from LC" traceback may be suppressed if M-CMTS statistics collection is disabled using the **no depi eqam-stats** command.
	There is no workaround for the "%RFGW-3-LINECARD_ERRMSG_ERR: SLOT 6:MV_ERRMSG_DP_MSG_RECONFIG_SES" error message and "%RFGW-3-UNEXPECTED: Invalid response received for CNFG DEPI SESSION message" traceback.

CSCto14916	Symptoms: On upgrade or reload of the Cisco RFGW-10, the Cisco RFGW-10 DS-48-1G line card in the standby slot becomes active for one of the Cisco RFGW-10 DS-48 primary line card. Conditions: This issue occurs as the Cisco RFGW-10 DS-48 line cards take longer to upgrade than the Cisco RFGW-10 DS-48-1G line cards. This might cause a silent line card failover to the secondary line card after a system reset occurs. Workaround: Make the Cisco RFGW-10 DS-48 line card the protect line card for the Cisco RFGW-10 DS-48 line card, and the make Cisco RFGW-10 DS-48-1G line card the protect line card for the Cisco RFGW-10 DS-48-1G line card to avoid a failover upon a system reset.
CSCto54434	Symptoms: DEPI sessions are not recovered after a fan tray failure occurs on a Cisco RFGW-10 Supervisor in stateful switchover (SSO) mode. Conditions: This issue is observed when fan tray failure occurs for more than 4 minutes causing a reset of the Supervisor and the line cards. Workaround: Reload the Cisco RFGW-10.
CSCto56865	Symptoms: The **debug scm audit** command is enabled across reloads and power cycles. Conditions: This issue occurs as the **debug scm audit** command is enabled by a default in the configuration. Workaround: Override the default setting by executing the **no debug cable scm audit** command. This setting will be lost after a reload or power-cycle.

Caveat	Description
CSCto72423	Symptoms: DEPI sessions in learn mode on a missing primary line card fail to get established after a system reload. Conditions: This issue occurs when the primary line card is removed during OIR, and the secondary line card becomes active. After a reload, the DEPI sessions in learn mode on this primary line card fail. Workaround: Re-insert the missing primary line card or remove learn mode and use the cable mode depi remote mode.
CSCto88995	Symptoms: The show interfaces transceivers command does not display any value even when the SFP transceiver modules are connected to the Cisco RFGW-10 Supervisor or the line card. Conditions: This issue was first observed in Cisco IOS Release 12.2(50)SQ. Workaround: There is no workaround.
CSCtq30229	Symptom: Either one of the two TCC cards in slot 13 or slot 14 does not reach the “Ready” state. Conditions: This issue occurs when the TCC cards are booted from the Supervisor in slot 2. If the cards are booted from the Supervisor in slot 1, the cards reach the “Ready” state. Workaround: There is no workaround.
CSCtq58396	Symptoms: DEPI sessions on RF port 12 are not functional. Conditions: This symptom happens only when QAM or DEPI configuration is applied after a Supervisor switchover. Workaround: Reset the primary line card, and the secondary line card, if it is protected.
CSCts08763	Symptoms: The Cisco RFGW-10 monitors both the client and server health status, instead of only monitoring the client health status. Conditions: This issue occurs when the DOCSIS Timing Interface (DTI) port on the Standby Timing, Communication and Control (TCC) card is unplugged from the server. This also occurs when the TCC card is in a race condition and, the Standby TCC card that is in a fast or holdover state becomes active. Workaround: Reset the active TCC card, and make the Standby TCC card in the normal or free-run state to become active.

Open Caveats for Cisco IOS Release 12.2(50)SQ3

Caveat	Description

CSCtn96911	Symptoms: The following DEPI related error messages and tracebacks may be displayed on the Cisco RFGW-10 when a N+ 1 line card switchover occurs on the peer Cisco uBR10012 router.
	`Mar 23 15:17:54 CDT: %RFGW-3-LINECARD_ERRMSG_ERR: SLOT 6:MV_ERRMSG_DP_MSG_RECONFIG_SES: mv_depi: 1074135170 6/3.1`
	`Mar 23 15:17:54 CDT: %RFGW-3-UNEXPECTED: Invalid response received for CNFG DEPI SESSION message`
	`-Traceback= 10D2FE20 10D3056C 108A11D0 108A29FC 1089C414 1089D9B0 106689A8 1065FB58`
	`Mar 23 15:17:56 CDT: %RFGW-3-UNEXPECTED: Error updating state from LC`
	`-Traceback= 10D2FE20 10D3056C 108A1BBC 1089F40C 1089CABC 1089D9BC 106689A8 1065FB58`
	Conditions: This issue occurs on the Cisco RFGW-10 connected to a Cisco uBR10012 router with Cisco uBR-MC3GX60V line cards. This issue was observed when DEPI Path Redundancy (DPR) feature was configured, and N+1 line card switchover occurred on the Cisco uBR10012 router.
	Workaround: The "%RFGW-3-UNEXPECTED: Error updating state from LC" traceback may be suppressed if M-CMTS statistics collection is disabled using the **no depi eqam-stats** command.
	There is no workaround for the "%RFGW-3-LINECARD_ERRMSG_ERR: SLOT 6:MV_ERRMSG_DP_MSG_RECONFIG_SES" error message and "%RFGW-3-UNEXPECTED: Invalid response received for CNFG DEPI SESSION message" traceback.

Resolved Caveats for Cisco IOS Releases 12.2(50)SQ3

Caveat	Description
CSCtk63045	Symptoms: After Supervisor switchover, "No such session" messages are seen in the newly active Supervisor. This does not affect the performance of the system. Conditions: This issue occurs when the Supervisor is configured in stateful switchover (SSO) redundancy mode, the DEPI control plane protocol is in use instead of DEPI manual, and the Supervisor switchover CLI (redundancy force switchover) is executed. Workaround: There is no workaround.
CSCtk97075	Symptoms: Traceback is observed on the new active Supervisor after Supervisor switchover. This does not affect the performance of the system. Conditions: This issue occurs when DEPI control plane is configured, the Cisco RFGW-10 is in stateful switchover (SSO) mode, and the line card high-availability is not configured on both the Cisco CMTS and Cisco RFGW-10. Workaround: There is no workaround.

Caveat	Description
CSCtl00116	Symptoms: Secondary line card member is not added. Conditions: This issue occurs when line card redundancy is configured and the line card redundancy group ID is not 0 or 1. Workaround: Use line card redundancy group ID 0 or 1.
CSCtk82886	Symptoms: The the Cisco RFGW-10 displays secondary control plane DEPI sessions instead of primary DEPI sessions. The secondary sessions are treated as primary sessions, thus disrupting the actual primary sessions causing the cable modems to go offline. Conditions: This issue occurs when DEPI Path Redundancy (DPR) is configured and Cisco RFGW-10 works in conjuction with the Cisco uBR10012 router running Cisco IOS Release 12.2(33)SCE1. The issue was triggered after a PRE switchover on the Cisco uBR10012 router. Workaround: There is no workaround.
CSCtn09101	Symptoms: Traceback and error messages are seen on the Cisco RFGW-10 when **depi eqam-stats** is executed and a line card switchover occurs on the peer CMTS. Conditions: This issue when **depi eqam-stats** is executed and protect DEPI tunnel with more than 24 channels is configured on the Cisco RFGW-10, and the peer CMTS does a DEPI Path Redundancy (DPR) line card switchover. Workaround: Execute **no depi eqam-stats** command to disable EQAM statistics information sent to the CMTS router.
CSCtn15255	Symptom: Tracebacks and error messages are observed on the Cisco RFGW0-10 when DEPI sessions are present. Conditions: This issue occurs when both primary and secondary DEPI sessions are present. Workaround: There is no workaround.
CSCtn09061	Symptom: The Supervisor crashes after configuring or deconfiguring depi-class and depi-tunnel commands on the Cisco RFGW-10. Conditions: This issue occurs when the depi-class commands are entered in a single instance, and the **exit** command was not issued to return to the global configuration mode. Workaround: Do a Manual DEPI configuration.
CSCtn44190	Symptom: The Cisco RFGW-10 DS-48 up-converter cannot output higher RF power as Cisco RFGW-DS48-1G line card. Conditions: This issue may occur in scenarios such as 53 dBmV channel power is requested through the Supervisor CLI, and the measured RF channel power on the RF switch output is lesser than 52 dBmV. This occurs because the Cisco RFGW-10 DS-48 line card limits the Cisco RFGW-10 DS-48 up-converter maximum output power. Workaround: Reduce the RF channel power setting (for example, for 4:1 stacking, set the power lower to less than 52 dBmV).

Open Caveats for Cisco IOS Release 12.2(50)SQ2

Caveat	Description
CSCtk63045	Symptoms: After Supervisor switchover, "No such session" messages are seen in the newly active Supervisor. This does not affect the performance of the system. Conditions: This issue occurs when the Supervisor is configured in stateful switchover (SSO) redundancy mode, the DEPI control plane protocol is in use instead of DEPI manual, and the Supervisor switchover CLI (redundancy force switchover) is executed. Workaround: There is no workaround.
CSCtk97075	Symptoms: Traceback is observed on the new active Supervisor after Supervisor switchover. This does not affect the performance of the system. Conditions: This issue occurs when DEPI control plane is configured, the Cisco RFGW-10 is in stateful switchover (SSO) mode, and the line card high-availability is not configured on both the Cisco CMTS and Cisco RFGW-10. Workaround: There is no workaround.
CSCtl00116	Symptoms: Secondary line card member is not added. Conditions: This issue occurs when line card redundancy is configured and the line card redundancy group ID is not 0 or 1. Workaround: Use line card redundancy group ID 0 or 1.

Resolved Caveats for Cisco IOS Releases 12.2(50)SQ2

Caveat	Description
CSCth59227	Symptoms: The Supervisor HTTP process takes more number of CPU cycles and leads to CPU utilization spikes. Conditions: This issue was observed at the 30 second interval while monitoring the GUI Summary page with DEPI sessions configured on the Cisco RFGW-10. Workaround: There is no workaround.
CSCti06671	Symptoms: The **confreg** *value* command that is used for changing the register configuration on the Cisco CMTS is not supported on the Cisco RFGW-10 Supervisor. Conditions: When you execute the **confreg** *value* command, the following message is displayed: `usage: confreg` Workaround: There is no workaround.
CSCti96877	Symptoms: Approximately 25% to 50% of the cable modems drop offline after Supervisor switchover. Conditions: This issue occurs when DEPI control plane is used between the Cisco CMTS and Cisco RF Gateway 10 with multiple DEPI tunnels in use. Workaround: Use manual DEPI.

Caveat	Description
CSCtj05272	Symptoms: A difference of 65 to 70 units is observed in the timing offset received by a modem. Conditions: This issue occurs with Cisco IOS Release 12.2(50)SQ1 when Cisco RFGW-10 is used for downstream by a modem registered on the CMTS. This difference is observed between Cisco IOS Release 12.2(50)SQ1 and Cisco IOS Release 12.2(50)SQ. Workaround: Adjust the DSYNC setting on the CMTS router to compensate for the difference in the timing offset.
CSCtj33733	Symptoms: Cable modem goes offline after the Cisco uBR10012 router, to which the Cisco RFGW-10 is connected, performs a performance routing engine (PRE) switchover. Conditions: This issue occurs with large number of DEPI sessions. This has been observed when control plane DEPI is in use and the secondary DEPI sessions are configured. Workaround: There is no workaround.
CSCtj48068	Symptoms: OIR of the active Supervisor resets the Cisco RFGW-10 DS-48 line cards and drops the cable modems making them go offline. Conditions: This issue occurs occasionally when the active Supervisor in slot 2 is removed. Workaround: There is no workaround.
CSCtj82785	Symptoms: The Cisco RFGW-10 DS-48 line card RF ports remain in admin shutdown mode and Video/DEPI sessions remain IDLE. Conditions: This issue occurs after line card image upgrade and reload. Workaround: Execute "no shutdown" at QAM port level to enable all the interfaces.
CSCtj82810	Symptoms: The standby Supervisor crashes. Conditions: This issue occurs when the system is in stateful switchover (SSO) mode and you copy commands from a running-config output to re-apply the depi-tunnel configuration commands. Workaround: Exit to the config mode before executing the depi-tunnel configuration commands.
CSCtj89608	Symptoms: Standby Supervisor crashes when the DEPI remote learn mode change is aborted. Conditions: This issue occurs when you reject deletion of sessions at the CLI confirmation prompt while changing the DEPI remote learn mode. Workaround: Ensure that there are no DEPI sessions configured before changing the remote learn mode on the QAM channel or accept the confirmation prompts.
CSCtk07058	Symptoms: Secondary DEPI sessions are not configurable with third-party Edge QAM. Conditions: This issue occurs when the CMTS and EQAM are configured for DEPI Path redundancy (DPR). Workaround: There is no workaround.

Caveat	Description
CSCtk08497	Symptoms: The secondary line card becomes active after image upgrade. Conditions: This issue occurs when the Cisco RFGW-DS48-1G is the secondary line card and the Cisco RFGW-10 DS-48 is the primary line card after image upgrade. Workaround: Manually switch over the primary and secondary line cards.
CSCtk14770	Symptoms: The qam-red interface reverts back to its start-up configuration state (shut or unshut) after Supervisor switchover. Conditions: This issue occurs when line card redundancy is configured, Supervisor is in stateful switchover (SSO) mode and the qam-red interface is unshut when in "shut" state or shut when in "unshut" state before Supervisor SSO happens. Workaround: Manually unshut the qam-red interfaces in "shut" state or vice versa.

Open Caveats for Cisco IOS Release 12.2(50)SQ1

There are no open caveats in Cisco IOS Release 12.2(50)SQ1.

Resolved Caveats for Cisco IOS Releases 12.2(50)SQ1

Caveat	Description

CSCtf46739	Symptoms: The **default service heartbeat** configuration command does not set the heartbeat timers of the warning-timeout, fatal-timeout, and alive-timeout to their respective default values of 3 sec, 5 sec, and 300 sec.
	Conditions: This issue occurs while executing the **default service heartbeat** configuration command.
	Workaround: Set the three timers individually as follows:
	`Router(config)# service heartbeat warning-timeout 3`
	`Router(config)# service heartbeat fatal-timeout 5`
	`Router(config)# service heartbeat alive-timeout 300`

CSCte87050, CSCtf91969	Symptoms: A multiple program transport stream (MPTS) pass-through session generates input overruns, and the output drops the alarms. Conditions: This issue occurs when the input MPTS session contains one or more programs with bad Program Clock References (PCRs). The set-top box is unable to lock and display the programs in the output QAM channel. Workaround: There is no workaround.
CSCtg00973	Symptoms: The Cisco RFGW-10 Supervisor card cannot boot up. Conditions: This issue occurs when the **clear config all** command is executed. This command resets the environment variables on the Supervisor card including the “SkipDiagsAlways” variable, which on power cycle triggers a boot up diagnostic. Boot up diagnostics is not supported on the Cisco RFGW-10 Supervisor card, which causes the Supervisor card to hang during boot up. Workaround: Set the “SkipDiagsAlways=1” in ROMMON mode.

Caveat	Description
CSCtg22801	Symptoms: When the SCTE-HMS-QAM-MIB object is queried, the "rfQamChannelUtilization" value is always zero for the Video QAM and the "rfQamChannelOutputBw" value is truncated. Conditions: This issue occurs when the "rfQamChannelUtilization" and "rfQamChannelOutputBw" values of the SCTE-HMS-QAM-MIB object are queried. Workaround: There is no workaround.
CSCtg63326	Symptoms: The Cisco RFGW-10 DS-48 line card generates the error message: `LC_ERRMSG_VIDEO_PSI_SECTION_ALLOC_FAILED` Conditions: This issue occurs when video streams contain private program-specific information (PSI). Workaround: Remove the private PSI.
CSCtg76204	Symptoms: The ifIndex field in the entAliasMappingTable for the QAM subinterface is not current. Conditions: This issue occurs when the Cisco RFGW-10 DS-48 line card is added or removed, or a line card switchover is performed on the Cisco RFGW-10 chassis. Workaround: There is no workaround.
CSCth00685	Symptoms: Incorrect bandwidth information is displayed in the GUI of the Cisco RFGW-10. Conditions: This issue occurs when the Cisco RFGW-10 is configured with more than one line cards and an attempt is made to view the bandwidth information of these line cards. Workaround: Click the Session radio button to view the bandwidth information for all line cards.
CSCth29058	Symptoms: The Layer 3 pings from the Cisco uBR10012 router to the cable modems in w-online state fail. The payload of NULL packets from the Cisco RFGW-10 DS-48 RF port are zeroes, instead of a Pseudo Random Bit Sequence (PRBS). Conditions: This issue occurs when the RF port on the Cisco RFGW-10 DS-48 line card is in "rf-shut" state. Workaround: Configure the RF port on the Cisco RFGW-10 DS-48 line card to "no rf-shut" state. If the RF port is not in use, then it is recommended that you do not connect the RF port to the RF plant.
CSCth41923	Symptoms: The following error messages are seen on the Cisco RFGW-10: `%RFGW-3-LINECARD_ERRMSG_ERR: SLOT 4:LC_ERRMSG_VIDEO_PSI_SECTION_ALLOC_FAILED Snoop, id -1` Conditions: This issue occurs after many video sessions transition from "ACTIVE" to "OFF". Workaround: There is no workaround.

Open Caveats for Cisco IOS Release 12.2(50)SQ

Caveat	Description
Command RF Output Power	DRFI requires support for an 8-dB range of commanded transmit power per channel below the maximum power supported for the channel (maximum power is 8 dB). The Cisco RFGW-10 is tested to a range of 10 dB of commanded power below the maximum supported channel power. **Note** The Cisco RFGW-10 CLI allows a commanded RF power range 30 dB lower than maximum supported channel power (maximum power - 30 dB). However, a commanded power range below 10 dB of maximum power supported is not calibrated and may not be accurate.

Resolved Caveats for Cisco IOS Release 12.2(50)SQ

Caveat	Description
CSCsu27160	Symptoms: The GUI: HTTP CORE process may use a large amount of Supervisor CPU at web page refresh. Conditions: This issue occurs when a GUI web browser page is refreshed. Workaround: There is no workaround.
CSCsv01988	Symptoms: The GUI “Summary” page does not display dual Supervisor interfaces correctly. The GUI does not display information on the “Summary” page in the SUP Input B/W or SUP Input Measurement sections. Conditions: This issue occurs when redundant Supervisor cards are configured. Workaround: There is no workaround.
CSCta60651	Symptoms: Burst pre-FEC errors are observed on the Cisco RFGW-10 DS-48 line card. Conditions: The issue was first observed in Cisco IOS Release 12.2(44)SQ2. Workaround: There is no workaround.

Caveat	Description
CSCta83794	Symptoms: The number of “FRURemoved” traps does not match the number of “FRUInserted traps” from the RF Switch cards. Conditions: This issue occurs when the TCC cards are switched over using the **redundancy tcc switchover** command. The RF Switch cards are part of the TCC FRU. Therefore, when the TCC cards are switched over, the RF Switch cards to generate the FRURemoved and FRUInserted traps. Workaround: There is no workaround.
CSCtb86762	Symptoms: The **default** keyword does not set the default value for some QAM CLIs. Conditions: This issue was seen in the following commands: **cable downstream annex** **cable downstream rf-shutdown** **cable downstream stacking** Workaround: Set the default values manually for the commands. **cable downstream annex B** **cable downstream rf-shutdown** **cable downstream stacking 4**

Open Caveats for Cisco IOS Release 12.2(44)SQ2

Caveat	Description
CSCsu27160	Symptoms: GUI: HTTP CORE process may take a large percent of Supervisor CPU at web page refresh. Conditions: This issue occurs when a GUI web browser page is refreshed. Workaround: There is no workaround.
CSCsv01988	Symptoms: The GUI "Summary" page does not display dual Supervisor interfaces correctly. The GUI does not display information on the "Summary" page in the SUP Input B/W or SUP Input Measurement sections. Conditions: This issue occurs when redundant Supervisor cards are configured. Workaround: There is no workaround.
Command RF Output Power	DRFI requires support for an 8-dB range of commanded transmit power per channel below the maximum power supported for the channel (maximum power is 8 dB). The Cisco RFGW-10 is tested to a range of 10 dB of commanded power below the maximum supported channel power. **Note** The Cisco RFGW-10 CLI allows a commanded RF power range 30 dB lower than maximum supported channel power (maximum power - 30 dB). However, a commanded power range below 10 dB of maximum power supported is not calibrated and may not be accurate.
RF Gateway 10 Cablelabs DRFI Compliance	The noise floor and spurious emissions of the Cisco RF Gateway 10 DS-48 line card do not meet the requirements of the Cablelabs DRFI technical specification.
12.2(44)SQ to 12.2(44)SQ2 upgrade	The image upgrade of the Supervisor card involving Timing, Communication and Control (TCC) card may take up to 40 minutes from Cisco IOS Release 12.2(44)SQ to 12.2(44)SQ2. During the upgrade of the TCC card, the DS-48 line cards are reset. The cable modems go offline till the upgrade process is complete, and line cards are ready (LED is Green). Also note that during the upgrade process, many error and alarm messages are sent to the log that are expected and will eventually clear once the upgrade is complete.
12.2(44)SQ1 to 12.2(44)SQ2 upgrade	The image upgrade involving the TCC card may take up to 10 minutes from 12.2(44)SQ1 to 12.2(44)SQ2. During the TCC upgrade, the DS-48 line cards are reset and some error and alarm messages are sent to the log that are expected and will eventually clear once the upgrade is complete.

Resolved Caveats for Cisco IOS Release 12.2(44)SQ2

Caveat	Description
CSCsx07352	Symptoms: During a system boot up, it takes about 4 minutes for AAA server to allow a console login after the first "Press RETURN to get started" message is displayed at the prompt. During this period, the box displays "% Authentication failed." message after the return key is pressed. Conditions: This issue occurs when the following conditions are configured: • AAA accounting • AAA authentication Workaround: Disable AAA accounting configuration.
CSCsx24142	Symptoms: De-configured "snmp trap link-status" reappears after chassis reloads or **hw-module reset** command is executed. Conditions: This issue occurs after de-configuring "snmp trap link-status", saving the running configuration and then reloading the chassis or using the **hw-module reset** command. Workaround: There is no workaround.
CSCsy01867	Symptoms: SNMP and system messages about internal Gigabit Ethernet interfaces or loopback interfaces are displayed. These messages should not been seen by the user. Conditions: The messages are displayed during a system boot up. Workaround: There is no workaround.
CSCsy14112	Symptoms: During a Cisco RFGW-10 DS-48 line card failover and switchback, a spike in the noise floor is seen in the RF spectrum. The noise floor lasts about half a second. Conditions: The RF noise shows up on the line card switchback after a failover. This problem also shows up if a port is configured with all parameters kept in mute state. When the port is moved from mute to unmute state, the noise is seen in the spectrum. Workaround: There is no workaround.
CSCsy33389	Symptoms: The Cisco RFGW-10 DS-48 line card switchover from a primary card to the secondary card results in high-level RF noise floor. Conditions: This issue may happen when the QAM channel power is set to a higher level (> 51 dBmV) and line card switchover is performed. It depends on the RF frequency and the slot ID of the primary line card. Workaround: Lower the RF power setting on primary line cards.
CSCsy78520	Symptoms: NULL packets in Annex B QAM 64/256 cause higher RF noise floor. Conditions: This happens when the data traffic in RF channel is idle. Workaround: There is no workaround.

Caveat	Description
CSCsy82914	Symptoms: The Cisco RFGW-10 DS-48 line card hardware control process crashes and the line card does not respond to user configuration. Conditions: This issue occurs when the user exercises the Supervisor CLI command **show cable linecard cpuload** to query the line card CPU utilization too many times (> 1000). This causes a line card IPC failure due to the memory leak by the CPU process routine. Workaround: If not necessary, do not query the line card CPU too often. For DOCSIS application, the average CPU load on lime card should be an average of around 30% ~ 40% maximum.
CSCsy85741	Symptoms: The following messages are displayed during a QAM configuration: `00:36:27: %RFGW-3-UNEXPECTED: Cold not allocate qam database rollback buffer` Conditions: This happens while configuring a large number of QAMs using a combination of the following commands: **cable downstream stacking 1** **cable depi offset** **no cable downstream rf-shutdown** Workaround: Set the stacking level on all ports to “4” while configuring the DEPI offset and executing the rf-shutdown command, and then set the stacking level to “1”.
CSCsz12116	Symptoms: Cable modems drop off line after the Cisco RFGW-10 DS-48 line card switchover or switchback. Conditions: This happens when more than 250 sessions configured across the chassis. This behavior is seen in both Cisco IOS Release 12.2(44)SQ and 12.2(44)SQ1 images. Workaround: Avoid sending DEPI data traffic from CMTS to unused QAM ports when “1” RF stacking value is confided, thus reducing the chances of cable modems dropping off line at line card switchover.

Open Caveats for Cisco IOS Release 12.2(44)SQ1

Caveat	Description
CSCsu27160	Symptoms: GUI: HTTP CORE process may take a large percent of Supervisor CPU at web page refresh. Conditions: This issue occurs when a GUI web browser page is refreshed. Workaround: There is no workaround.
CSCsv01988	Symptoms: The GUI "Summary" page does not display dual Supervisor interfaces correctly. The GUI does not display information on the "Summary" page in the SUP Input B/W or SUP Input Measurement sections. Conditions: This issue occurs when redundant Supervisor cards are configured. Workaround: There is no workaround.
CSCsx24142	Symptoms: De-configured "snmp trap link-status" reappears after chassis reloads or **hw-module reset** command is executed. Conditions: This issue occurs after de-configuring "snmp trap link-status", saving the running configuration and then reloading the chassis or using the **hw-module reset** command. Workaround: There is no workaround.
Command RF Output Power	DRFI requires support for an 8-dB range of commanded transmit power per channel below the maximum power supported for the channel (maximum power is 8 dB). The Cisco RFGW-10 is tested to a range of 10 dB of commanded power below the maximum supported channel power. **Note** The Cisco RFGW-10 CLI allows a commanded RF power range 30 dB lower than maximum supported channel power (maximum power - 30 dB). However, a commanded power range below 10 dB of maximum power supported is not calibrated and may not be accurate.
RF Gateway 10 Cablelabs DRFI Compliance	The noise floor and spurious emissions of the Cisco RF Gateway 10 DS-48 line card do not meet the requirements of the Cablelabs DRFI technical specification.
12.2(44)SQ to 12.2(44)SQ1 upgrade	The image upgrade of the Supervisor card involving Timing, Communication and Control (TCC) card may take up to 40 minutes from Cisco IOS Release 12.2(44)SQ to 12.2(44)SQ1. During the upgrade of the TCC card, the DS-48 line cards are reset. The cable modems go offline till the upgrade process is complete, and line cards are ready (LED is Green). Also note that during the upgrade process, many error and alarm messages are sent to the log that are expected and will eventually clear once the upgrade is complete.

Resolved Caveats for Release 12.2(44)SQ1

Caveat	Description
CSCsk64158	Symptoms: Several features within Cisco IOS software are affected by a crafted UDP packet vulnerability. If any of the affected features are enabled, a successful attack will result in a blocked input queue on the inbound interface. Only crafted UDP packets destined for the device could result in the interface being blocked, transit traffic will not block the interface. Cisco has released free software updates that address this vulnerability. Workarounds that mitigate this vulnerability are available in the workarounds section of the advisory. This advisory is posted at the following link: http://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20090325-udp.
CSCso04657	Symptoms: SSLVPN service stops accepting any new SSLVPN connections. Conditions: A device configured for SSLVPN may stop accepting any new SSLVPN connections, due to a vulnerability in the processing of new TCP connections for SSLVPN services. If “debug ip tcp transactions” is enabled and this vulnerability is triggered, debug messages with connection queue limit reached will be observed. This vulnerability is documented in two separate Cisco bug IDs, both of which are required for a full fix: CSCso04657 and CSCsg00102.
CSCsv04836	Multiple Cisco products are affected by denial of service (DoS) vulnerabilities that manipulate the state of Transmission Control Protocol (TCP) connections. By manipulating the state of a TCP connection, an attacker could force the TCP connection to remain in a long-lived state, possibly indefinitely. If enough TCP connections are forced into a long-lived or indefinite state, resources on a system under attack may be consumed, preventing new TCP connections from being accepted. In some cases, a system reboot may be necessary to recover normal system operation. To exploit these vulnerabilities, an attacker must be able to complete a TCP three-way handshake with a vulnerable system. In addition to these vulnerabilities, Cisco Nexus 5000 devices contain a TCP DoS vulnerability that may result in a system crash. This additional vulnerability was found as a result of testing the TCP state manipulation vulnerabilities. Cisco has released free software updates for download from the Cisco website that address these vulnerabilities. Workarounds that mitigate these vulnerabilities are available. This advisory is posted at http://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20090908-tcp24.
CSCsw23043	Symptoms: Resetting one line card causes a momentary glitch on another line card. Conditions: This issue occurs only when the **hw-module slot reset** command is issued. Workaround: Use the **cable linecard reset** command to reset a line card.

CSCsw26480	Symptoms: When un-muting an RF port, the RF power level tends to raise the noise floor around the RF channels supported momentarily (for several hundreds of milliseconds). There are no reported issues of cable modem performance, though impact is observable on a spectrum analyzer. Conditions: This issue occurs during muting the RF port output power. Workaround: There is no workaround.
CSCsw26789	Symptoms: The DocsDevEvent table does not function. Conditions: When the MIB table is accessed, there is no data returned. Workaround: There is no workaround.
CSCsx24891	Symptoms: The SNMP trap message is not displayed in the log file for line card reset. Conditions: The SNMP trap works when running **shut/no shut interface** command on the line card, but, the trap message is not logged after a line card reset. Workaround: Use **snmp-server queue-length** command to increase the size of the trap queue. During line card reset, some trap messages could be dropped because of trap queue overflow on the device. If trap messages are being dropped, the size of the trap queue may be increased (for example, to 1000) to determine if trap messages can be sent during line card reset. For the detail of **snmp-server queue-length**, please see http://www.cisco.com/en/US/docs/ios/netmgmt/command/reference/nm_20.html#wp1012887

Open Caveats for Cisco IOS Release 12.2(44)SQ

Caveat	Description
CSCsu27160	Symptoms: The GUI: HTTP CORE process may take a large percent of Supervisor CPU at web page refresh. Conditions: This issue occurs when a GUI web browser page is refreshed. Workaround: There is no workaround.
CSCsv01988	Symptoms: The GUI "Summary" page does not display dual Supervisor interfaces correctly. The GUI does not display information on the "Summary" page in the SUP Input B/W or SUP Input Measurement sections. Conditions: This issue occurs when redundant Supervisor cards are configured. Workaround: There is no workaround.
CSCsw23043	Symptoms: Resetting one line card causes a momentary glitch on another line card. Conditions: This issue occurs only when the **hw-module slot reset** command is issued. Workaround: Use the **cable linecard reset** command to reset a line card.
CSCsw26480	Symptoms: When un-muting an RF port, the RF power level tends to raises the noise floor around the RF channels supported momentarily (for several hundreds of milliseconds). There are no reported issues of cable modem performance, though the impact is observed on a spectrum analyzer. Conditions: This issue occurs during muting the RF port output power. Workaround: There is no workaround.
CSCsw26789	Symptoms: The "DocsDevEvent" table does not function. Conditions: When the MIB table is accessed, there is no data returned. Workaround: There is no workaround.
Command RF Output Power	DRFI requires support for a 8 dB range of commanded transmit power per channel below the maximum power supported for the channel (maximum power - 8 dB). The Cisco RFGW-10 is tested to a range of 10 dB of commanded power below the maximum supported channel power. **Note** The Cisco RFGW-10 CLI allows a commanded RF power range 30 dB lower than maximum supported channel power (maximum power - 30 dB). However, a commanded power range below 10 dB of maximum power supported is not calibrated and may not be accurate.
RF Gateway 10 Cablelabs DRFI Compliance	The noise floor and spurious emissions of the Cisco RF Gateway 10 DS-48 line card do not meet the requirements of the Cablelabs DRFI technical specification.

Resolved Caveats for Cisco IOS Release 12.2(44)SQ

Caveat	Description
CSCsm27071	A vulnerability in the handling of IP sockets can cause devices to be vulnerable to a denial of service attack when any of several features of Cisco IOS software are enabled. A sequence of specially crafted TCP/IP packets could cause any of the following results: The configured feature may stop accepting new connections or sessions. The memory of the device may be consumed. The device may experience prolonged high CPU utilization. The device may reload. Cisco has released free software updates that address this vulnerability. Workarounds that mitigate this vulnerability are available in the "workarounds" section of the advisory. The advisory is posted at http://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20090325-ip
CSCsr29468	Cisco IOS software contains a vulnerability in multiple features that could allow an attacker to cause a denial of service (DoS) condition on the affected device. A sequence of specially crafted TCP packets can cause the vulnerable device to reload. Cisco has released free software updates that address this vulnerability. Several mitigation strategies are outlined in the workarounds section of this advisory. This advisory is posted at http://tools.cisco.com/security/center/content/CiscoSecurityAdvisory/cisco-sa-20090325-tcp

Related Documentation

The following sections describe the documentation available for the Cisco RFGW-10 platform.

Platform-Specific Documents

These documents are available for the Cisco RF Gateway 10 platform on Cisco.com:

- *Cisco RF Gateway 10 Hardware Installation Guide*
- *Cisco RF Gateway 10 Command Reference*
- *Cisco RF Gateway 10 Software Feature and Configuration Guide*
- *Cisco RF Gateway 10 MIB Specification Guide*
- *Cisco RF Gateway 10 Quick Start Guide*
- *ROMMON Release Notes for Cisco RF Gateway 10*

Feature Modules

Feature modules describe new software enhancements, committed as features, and are updates to the Cisco IOS documentation set. A feature module consists of a brief overview of the feature, benefits, and configuration tasks, and a command reference. As updates, the feature modules are available online only. Feature module information is incorporated in the next printing of the Cisco IOS documentation set.

Cisco IOS Software: Cisco IOS Software Release 12.2SQ Family: Cisco IOS Software Releases 12.2(44)SQ: Feature Guides

Cisco IOS Software Documentation Set

The Cisco IOS software documentation set consists of the Cisco IOS configuration guides, Cisco IOS command references, and several other supporting documents.

Cisco IOS Software: Cisco IOS Software Release 12.2SQ Family: Cisco IOS Software Releases 12.2(44)SQ: Configuration Guide and Command Reference

Documentation Modules

Each module in the Cisco IOS documentation set consists of one or more configuration guides and one or more corresponding command references. 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. Use each configuration guide with its corresponding command reference.

Cisco IOS Software: Cisco IOS Software Release 12.2SQ Family: Cisco IOS Software Releases 12.2(44)SQ: Command Reference

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, 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

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service and Cisco currently supports RSS Version 2.0.

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