Cisco RF Gateway 10 Command Reference

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Commands a to cable p

access-criteria

To configure access criteria for the Entitlement Control Message Generator (ECMG), use the **access-criteria** command in tier-based configuration mode. To disable the access criteria, use the **no** form of this command.

access-criteria *ecmg-id access-criteria*

no access-criteria

Syntax Description

ecmg-id	Specifies an existing ECMG ID. The valid range is from 2 to 4.
access-criteria	Specifies the access criteria in Hexadecimal without the 0x prefix.

Command Default

Access criteria and tier-based scrambling are disabled.

Command Modes

Tier-based configuration (config-tier)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

The value of *access-criteria* is provided by the Conditional Access (CA) vendor.

Examples

The following example shows how to configure access criteria for an ECMG with ECMG ID 2 and access criteria A076B300005E:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 tier-based
Router(config-tier)# access-criteria 2 A076B300005E
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

active

To activate a QAM partition, use the **active** command in cable video server configuration mode or QAM partition configuration mode. To deactivate, use the **no** form of this command.

active

no active

Command Default

QAM partition is not active.

Command Modes

QAM partition configuration (config-qp)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated in to Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

Only one video server can be activated. Effective with Cisco IOS-XE Release 3.3.0SQ, the **active** command activates the QAM partition configuration. A reset indication message is sent to the GQI server for the GQI protocol, when the QAM partition is activated. For the Edge Resource Management Interface (ERMI) protocol, an ERMI-1 connection is established and resources are advertised to the Edge Resource Manager (ERM).

When the QAM partition is deactivated, the Session Resource Manager (SRM) is closed for the GQI protocol. For ERMI protocol, a notification message is sent and the connection is closed.

Examples

This example shows how to activate a QAM partition:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol gqi
Router(config-qp)# mgmt-ip 1.1.1.1
Router(config-qp)# mac-address
 1234.abcd.4e4e
Router(config-qp)# server 192.168.0.10
Router(config-qp)# active
```

Related Commands

Command	Description
cable qam-partition	Configures the QAM partition for a video server.

Command	Description
mgmt-ip-address mac-address	Configures the management port IP address and MAC address.
protocol	Configures the protocol used by the external server.
server	Configures the IP address of the external server.
snmp-server enable traps qp-lbg qam-change	Enables trap notifications when a QAM has been added to or deleted from a QAM Partition.
snmp-server enable traps qp-lbg qp-state-change	Enables trap notifications when a QAM partition's state has been changed.

asm

To configure an Any Source Multicast (ASM) label definition, use the **asm** command in cable video label configuration mode. To remove the ASM label, use the **no** form of this command.

asm *label* {**filter pid** *pid-list*| **group** *IP-address* [**cbr**| **GigabitEthernet**| **TenGigabitEthernet** *interface*| **bitrate** *bps*| **jitter** *ms*]}

no asm *label* [**filter pid** {**all**| *pid-list*}]

Syntax Description

label	Specifies the name of the session.
group	Indicates the multicast group.
group-ip	Specifies the destination IP address.
cbr	(Optional) Specifies that the session is supposed to be constant bitrate.
bitrate	(Optional) Sets the bitrate allocated for the session.
bps	(Optional) Specifies the bitrate value. Valid range is 1 to 52000000 bps.
GigabitEthernet	(Optional) Indicates the Gigabit Ethernet interface. Valid slot range is 1 to 12.
TenGigabitEthernet	(Optional) Indicates the 10-Gigabit Ethernet interface. Valid range for slot is 1 to 12.
interface	Specifies the interface slot and port.
jitter	(Optional) Specifies the amount of jitter allowed in a network.
ms	(Optional) Specifies the jitter value. Valid range is 10 to 200 ms. Default is 200 ms.

Command Default

This command has no default behavior or values.

Command Modes

Cable video label configuration (cfg-video-lbl)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.1SQ	This command was modified. The **bitrate** keyword was made optional.

Usage Guidelines

The Cisco RFGW-10 supports Any Source Multicast (ASM). An ASM video label is identified by the group IP address.

An ASM video session can be mapped to multiple QAM channels. All cloned sessions of the same video label share the same attributes.

Note To avoid oversubscription, ensure that the actual bitrate of the video session does not exceed the allocated bitrate.

The following example shows the ASM configuration on the Cisco RFGW-10:

```
Router# configure terminal
Router(config)# cable video labels
Router(cfg-video-lbl)# asm asm1 group 226.1.1.1 bitrate 3750000
Router(cfg-video-lbl)# exit
```

Effective with Cisco IOS-XE Release 3.3.1SQ, this example shows the ASM configuration without the **bitrate** keyword

```
Router(cfg-video-lbl)# asm asm1 group 226.1.1.1
```

Related Commands

Command	Description
cable video labels	Enters the cable video label configuration.
cable video ip multicast	Configures video multicast sessions on the QAM subinterface.
show cable video label	Displays the labels configured on the chassis.
ssm	Configures an SSM video session definition.

auto-channel-id

To configure automatic channel ID selection, use the**auto-channel-id** command in Entitlement Control Message Generator (ECMG) configuration mode. To disable the automatic channel ID selection, use the **no** form of this command.

auto-channel-id

no auto-channel-id

Syntax Description

This command has no arguments or keywords.

Command Default

Automatic channel ID selection is disabled.

Command Modes

ECMG configuration (config-ecmg)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

Automatic channel ID selection using the **auto-channel-id** command is performed only when multiple connections use the same IP address and port.

Examples

The following example shows how to configure automatic channel ID selection for ECMG with ECMG ID 2:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# auto-channel-id
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

auto-sync

To enable automatic synchronization of the configuration files in NVRAM, use the **auto-sync** command in the main CPU redundancy configuration mode. To disable automatic synchronization, use the **no** form of this command.

auto-sync {**startup-config**| **config-register**| **bootvar**| **running-config**| **standard**}

no auto-sync {**startup-config**| **config-register**| **bootvar**| **standard**}

Syntax Description

startup-config	Specifies synchronization of the startup configuration files.
config-register	Specifies synchronization of the configuration register values.
bootvar	Specifies synchronization of the following boot variables: • BOOT—Set by the **boot system** *device:filename* command. • CONFIG_FILE—Set by the **boot config** *device:filename* command. • BOOTLDR—Set by the **boot bootldr** *device:filename* command.
running-config	Specifies synchronization of the running configuration files.
standard	Specifies synchronization of all of the system files (startup configuration, boot variables, and running config configuration registers).

Command Default

At the Cisco RF Gateway 10 chassis level, all the system files are synchronized by default.

Command Modes

Main CPU redundancy configuration (config-r-mc)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

We recommend that you use the **auto-sync standard** command to ensure that all system files are synchronized between the two Supervisor modules. The **no auto-sync** command is not used in production plants.

Examples

The following example shows the synchronization of all system files on the Cisco RFGW-10 chassis:

```
Router#configure terminal
Router(config)#redundancy
Router(config-red)#main-cpu
Router(config-r-mc)#auto-sync standard
Router(config-r-mc)#end
```

Related Commands

Command	Description
main-cpu	Enters the main CPU redundancy configuration mode.
redundancy	Enters the redundancy configuration mode.

banner lcd

To configure the string on the front panel display, use the **banner lcd** command in global configuration mode. To disable the string, use the **no** form of this command.

banner lcd *text*

no banner lcd

Syntax Description

text	Specifies the information that is displayed on the front panel.

Command Default

The platform hostname is displayed by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

You can use this command to specify additional information when identifying the chassis or including extra contact information.

Examples

The following example shows the configuration of the banner on the Cisco RFGW-10:

```
Router#configure terminal
Router(config)#banner lcd This is RFGW-10
```

block

To configure the block frequency in the lane for a frequency profile on the Cisco RFGW-10 DS-384 line card, use the **block** command in frequency profile lane configuration mode.

block *block-id* **start-freq** *frequency*

Syntax Description

block_id	Block ID in the lane frequency profile. Valid range is from 1 to 4.
start-freq	Specifies the starting frequency of the block.
frequency	Downstream start frequency of a block in a lane. Valid range is from 48000000 to 999000000 Hz. **Note** The valid range of the block depends on the starting frequency of the parent lane.

Command Default

The command has no default behavior or values.

Command Modes

Frequency profile lane configuration mode (config-freq-prof-lane)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Cisco IOS Release Cisco IOS-XE Release 3.2.0SQ supports global templates or profiles on the Cisco RFGW-10 DS-384 line card. A wider range of frequency spectrum is supported on the upconverter on the line card. The Supervisor card uses two frequency schemes—static frequency scheme and user-defined frequency scheme—to configure the frequency profiles at the port level.

Note The frequency schemes are applicable to Cisco RFGW-10 DS-384 line card only.

The user-defined frequency scheme allows you to define the frequency at the chassis level, and apply the cable downstream frequency spectrum to any port on any Cisco RFGW-10 DS-384 line card.

A frequency profile has four frequency lanes in the 1 GHz spectrum. Each lane has a frequency of 216 MHz. Each lane has 4 blocks of 54 MHz, and each block has 8 carriers. The start frequency assigned to a carrier must be in the frequency range of 216 MHz.

Note The channel frequencies cannot overlap with each other. Each lane cannot exceed 32 carriers, and a block cannot exceed the frequency of 54 MHz and 8 carriers.

Note This command is applicable on the Cisco RFGW10-DS-384 line card.

Examples

The following example creates the blocks in frequency profile lane configuration mode:

```
 Router(config)# cable downstream freq-profile 1
Router(config-freq-prof)# lane 1 start-freq 48000000
Router(config-freq-prof-lane)# block 1 start-freq 48000000
Router(config-freq-prof-lane)# block 2 start-freq 96000000
Router(config-freq-prof-lane)# exit
Router(config-freq-prof)#
```

Related Commands

Command	Description
cable downstream freq-profile	Creates the frequency profile for a Cisco RFGW-10 DS-384 line card.
lane	Creates the lane frequency for the frequency profile.

cable clock auto-revert

To set the clock in auto-revert mode, use the **cable clock auto-revert** command in global configuration mode. To disable the clock auto-revert mode, use the **no** form of this command.

cable clock auto-revert prefer *slot*

no cable clock auto-revert prefer

Syntax Description

prefer	Specifies the TCC card that should be made active.
slot	TCC card slot. Valid slots are 13 and 14.

Command Default

The clock is not in auto-revert mode.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Use the **cable clock auto-revert prefer** command to choose which TCC card should active, when both the TCC cards are connected to DTI servers, and are in the same clock state.

Examples

The following example shows the auto-revert preference set to TCC card in slot 14:

```
Router(config)# cable clock auto-revert prefer 14
```

Related Commands

Command	Description
clear cable clock counters	Clears DTI client transition counters of a TCC DTI card.
show cable clock	Displays information on DTI client, and server statistic counts, and path traceability of a TCC card.

cable clock disable freerun-switchover

To disable Timing, Communication, and Control (TCC) card switchover when there is no DTI connection, use the **cable clock disable freerun-switchover** command in privileged EXEC mode.

cable clock disable freerun-switchover

no cable clock disable freerun-switchover

Command Default

no cable clock disable freerun-switchover

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.7SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is used to disable the TCC card switchover when there is no DTI server configured.

Examples

The following example shows how to disable the switchover of a TCC card when there is no DTI connection.

```
Router#configure terminal
Router(config)#cable clock disable freerun-switchover
```

cable clock dti-server-type

To set the DTI server type, use the **cable clock dti-server-type** command in global configuration mode. To reset the DTI server type to the default type, use the no form of the command.

cable clock dti-server-type {**polylink**| **symmetricom**}

no cable clock dti-server-type {**polylink**| **symmetricom**}

Syntax Description

polylink	Sets the DTI server type as Polylink.
symmetricom	Sets the DTI server type as Symmetricom.

Command Default

Symmetricom is the default DTI server type.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE 3.4.1SQ	The command was introduced.

Usage Guidelines

Effective with Cisco IOS-XE Release 3.4.1SQ, the Cisco RFGW-10 supports Symmetricom and Polylink DTI server types.

By default, the Symmetricom DTI server type is configured. Use this command to change the DTI server type to Polylink.

Note After you set the server type, you need to restart all the TCC cards to change the DTI server type. If you restart the TCC cards, all the line cards in the chassis will be reset and may result in service outage.

Examples

The following example show how to configure the DTI server type:

```
Router# enable
Router# configure terminal
Router(config)# cable clock dti-server-type polylink
Router(config)# exit
```

cable clock free-run

To set the clock in free-run mode, use the **cable clock free-run** command in global configuration mode. To disable the clock from free-run mode, use the **no** form of this command.

cable clock *slot* **free-run**

no cable clock *slot* **free-run**

Syntax Description

slot	Specifies the slot in the TCC card. Valid slots are 13 and 14.

Command Default

The clock is not in free-run mode.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

We recommend to avoid running free-run mode in a Timing, Communication and Control (TCC) card server and client setup.

Examples

The following example shows the configuration of the TCC card in slot 13 in the free-run state:

```
Router(config)# cable clock 13 free-run
```

Related Commands

Command	Description
clear cable clock counters	Clears DTI client transition counters of a TCC DTI card.
show cable clock	Displays information on DTI client, and server statistic counts, and path traceability of a TCC card.

cable depi dest-ip

To configure Downstream External PHY Interface (DEPI) sessions manually on QAM line cards, use the **cable depi dest-ip** command in the QAM subinterface configuration mode. To remove a session, use the **no** form of this command.

cable depi dest-ip *IP address*

no cable depi dest-ip *IP address*

Syntax Description

IP address	IP address of the destination network.

Command Default

This command has no default behavior or values.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.2.0SQ	This command was modified. The **session-id** keyword was removed from the command.

Usage Guidelines

This command is used to configure DEPI sessions manually instead of signalled remote sessions. When you configure a DEPI session on the QAM channel, a route is established.

Examples

The following example shows DEPI sessions created manually created on a QAM line card 7 on the Cisco RFGW-10:

```
Router(config)# interface qam-red 7/1.1
Router(config-subif)# cable mode depi local lbg 1
Router(config-subif)# cable depi dest-ip 10.1.1.1
```

Related Commands

Command	Description
cable depi offset	Sets the DOCSIS Timing Offset (DTI) value for the DEPI session.
cable mode depi	Sets the mode and usage of a QAM channel on a line card.

Command	Description
show cable depi-sessions	Displays the manual and L2TP DEPI sessions configured on the Cisco RFGW-10.

cable depi offset

To set the DOCSIS timing offset on the QAM channel for a line card in a Downstream External PHY Interface (DEPI), use the **cable depi offset** command in global configuration mode and QAM interface and subinterface configuration mode. To disable the offset, use the **no** form of this command.

cable depi offset *ticks*

no cable depi offset *ticks*

Syntax Description

ticks	Specifies the offset value. Valid range is from 0 to 32768 for 1/10.24 MHz. Default is 0.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command sets the DOCSIS timing offset (DTI) for a QAM channel in a DEPI mode. The DTI Offset enables DOCSIS timing offset adjustment per QAM channel. The actual timing offset needs to be measured on each QAM channel.

To configure all the QAM ports to the same timing offset, use the **cable depi offset** command at the port level. However, this sets the offset value on all the QAM channels on that port.

You can also configure the entire chassis with the same timing offset.

Examples

The following example shows how to configure the timing offset adjustment on slot 7 RF port 3:

```
Router(config)# interface qam 7/3
Router(config-if)# cable depi offset 950
```

The following example shows how to configure the timing offset adjustment on line card slots 3 and 5 RF port range 1 - 12. The timing offset value of line card slots 3 and 5 will be adjusted by 150 ticks.

```
Router(config)# interface range qam 3/1 - 12, qam 5/1 - 12
Router(config-if-range)# cable depi offset 150
```

The following example shows the DTI offset being set to 324 ticks on QAM channels:

```
Router(config)# interface qam-red 3/1.1
Router(config-subif)# cable mode depi local
Router(config-subif)# cable depi offset 324
```

Related Commands

Command	Description
cable depi dest-ip	Sets the destination IP address for a DEPI session.
cable mode depi	Sets the mode and usage of a QAM channel on a line card.

cable downstream 8Mhz-overlap-start-freq

To configure the starting frequency for the 8 MHz overlap fixed scheme for Annex A on a QAM port, use the cable downstream 8Mhz-overlap-start-freq command.

cable downstream 8Mhz-overlap-start-freq *frequency*

Syntax Description

frequency	Starting frequency on the QAM interface on the Cisco RFGW10 DS-384 line card. Valid range for 8MHz per Annex A is 45000000-995000000.

Command Default

This command is disabled by default.

Command Modes

QAM interface configuration (config-if)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.1SQ	Configures the starting frequency for the Annex A-8Mhz block overlap fixed scheme on this port.

Usage Guidelines

The **cable downstream 8Mhz-overlap-start-freq** command sets the starting frequency of the 8MHz block overlap for Annex A on a QAM.

Examples

This example shows how to configure the starting frequency for the 8 MHz Annex A block overlap:

```
Router# configure terminal
Router(config)# interface qam3/1
Router(config-if)# cable downstream 8MHz-overlap-start-freq 45000000

%%WARNING: This is annex A/8Mhz blocks overlap start-freq and allowed bandwidth
is 744Mhz for this port.
Continue? [Yes/No][confirm]Y
```

cable downstream annex

To set the Moving Picture Experts Group (MPEG) framing format for a downstream port on a cable interface line card to Annex A (Europe), Annex B (North America), or Annex C (Japan), use the **cable downstream annex** command in RF profile configuration, QAM interface, and subinterface configuration mode.

cable downstream annex {**A**| **B**| **C**}

Syntax Description

A	Annex A: The downstream uses the EuroDOCSIS J.112 standard.
B	Annex B: The DOCSIS-compliant cable plants that support North American channel uses ITU J.83 Annex B downstream radio frequency.
C	Annex C: A variant of DOCSIS 1.1 designed to operate in Japanese cable systems.

Command Default

Annex B is the default for all Cisco cable interface line cards.

Command Modes

RF profile configuration (config-rf-prof)

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for Cisco RF Gateway 10 was added.
Cisco IOS-XE Release 3.2.0SQ	This command was modified. The annex type can be set globally on the RFGW-10 using the RF profile configuration.

Usage Guidelines

The Cisco RFGW-10 supports Annex A, Annex B, and Annex C operation.

Note If the Annex is changed, the cable modems may go offline.

Annex is configured at the QAM interface (config-if) or QAM subinterface (config-subif) on the Cisco RFGW-10 DS-48 line card.

Note Executing port level commands such as **cable downstream annex, cable downstream modulation, cable downstream stacking, cable downstream frequency** and, **cable downstream rf-power** at the QAM channel level modifies all the QAM channels on that port. This is applicable on the Cisco RFGW-10 DS-48 line card.

Annex is a part of RF profile configuration mode for Cisco RFGW-10 DS-384 line card. You can apply Annex only after you create the RF profiles on Cisco RFGW-10 DS-384 channels.

In Cisco IOS-XE Release 3.2.0SQ, RF profiles can be created globally at the chassis level, and applied to any QAM channel on the Cisco RFGW-10 DS-384 line card. The RF profiles are used for grouping QAM channels with same modulation, Annex mode, symbol rate, and interleaver depth.

The **cable downstream rf-profile** command creates the RF profile. The modulation, annex mode, symbol-rate, and interleaver depth are configured in the RF profile configuration mode.

Note RF profiles are supported only on the Cisco RFGW-10 DS-384 line card.

The following example is a sample of a RF profile configuration:

```
Router(config)# cable downstream rf-profile 64qam-B
Router(config-rf-prof)# cable downstream annex B
Router(config-rf-prof)# cable downstream modulation 64
Router(config-rf-prof)# cable downstream interleaver-depth option1 I128-J1 option2 I32-J4
Router(config-rf-prof)# cable downstream symbol-rate 3500000
Router(config-rf-prof)# exit
Router(config)#
```

Examples

The following example shows how to set the MPEG framing format to Annex B on a Cisco RFGW-10 DS-48 line card:

```
Router# configure terminal
Router(config)# interface qam 3/1
Router(config-if)# cable downstream annex B
```

The following example shows how to set the annex mode for carriers on Cisco RFGW-10 DS-384 line card. On Cisco RFGW-10 DS-384, the annex modes are configurable only via RF profiles. Once an RF profile with the desired annex mode has been created, use the following commands to configure the QAM channel:

```
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream rf-profile 64qam-B
Router(config-subif)# exit
```

Related Commands

Command	Description
cable downstream rf-profile	Creates RF profiles on the RFGW-10.
show controllers qam	Displays cable downstream information configured on the QAM channel and port.

Command	Description
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream frequency

To set the downstream center frequency in the cable interface line card to reflect the digital carrier frequency of the downstream radio frequency carrier (the channel) for that downstream port, use the **cable downstream frequency** command in QAM interface and subinterface configuration mode. Use the **no** form of this command on the cable interfaces with an integrated upconverter to unset the downstream frequency and to disable the RF output from the integrated upconverter.

cable downstream frequency *down-freq-hz*

no cable downstream frequency

Syntax Description

down-freq-hz	The known center frequency of the downstream carrier in Hertz (the valid range is 57,000,000 to 999,000,000). The usable range depends on whether the downstream is configured for DOCSIS or EuroDOCSIS values: • DOCSIS = 88,000,000 to 855,000,000 MHz • Extended frequency range = 70,000,000 to 855,000,000 MHz • EuroDOCSIS = 112,000,000 to 858,000,000 MHz Cisco IOS supports a superset of these standards, and setting a frequency value outside these limits violates the DOCSIS or EuroDOCSIS standards. Cisco does not guarantee the conformance of the downstream and upconverter outputs when using frequencies outside the DOCSIS or EuroDOCSIS standards.

Command Default

The default frequency on the Cisco RF Gateway 10 is 501 Mhz.

Command Modes

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

You must set the downstream frequency of the RF output to match the expected input frequency of the upconverter. To do this, you enter the fixed center frequency of the downstream channel for the downstream port. (You can also select a default that does not set a specific fixed value.) The valid range for a fixed center frequency is 57,000,000 to 999,000,000 Hz. To install an IF-to-RF upconverter in the downstream path, you can use the center frequency to configure an IF-to-RF upconverter.

Note The downstream center frequency is set to 501 MHz on all first QAM channels on a port. But, if the QAM channel is in the rf-shut mode, you are required to set the frequency settings on all of the QAM channels on the Cisco RF Gateway 10 before enabling them.

The digital carrier frequency is specified to be the center of a 6.0 MHz channel. For example, EIA channel 95 spans 90.000 to 96.000 MHz. The center frequency is 93.000 MHz, which is the digital carrier frequency that should be configured as the downstream frequency. The typical range for current CATV headends is 88,000,000 to 860,000,000 Hz.

Note This command is executed at both the QAM interface as well as the QAM subinterface level. Executing at the subinterface level changes all of the frequencies on that QAM interface. The frequencies are separated by a number determined by the annex.

Note DOCSIS allows downstreams to use any center frequency from 88,000,000 to 855,000,000 MHz. However, when most cable modems are switched on, they scan the downstream frequencies in the NTSC channel plan. If a valid downstream is not found, the cable modems scan the remaining frequencies. For speedy and efficient registration times, we recommend you to configure downstreams to the frequencies specified in the NTSC channel plan.

Examples

The following example shows how to set the downstream center frequency display value on a Cisco RFGW-10:

```
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream frequency 520000000
```

Related Commands

Command	Description
cable downstream annex	Sets the MPEG framing format for a downstream port on a cable interface line card to Annex A (Europe), Annex B (North America) and Annex C (Japan).
cable downstream rf-power	Configures the specified RF output power on the integrated upconverter.
cable downstream rf-shutdown	Enables or disables the RF output from the integrated upconverter.

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream frequency (channel)

To set the center frequency on the QAM channel, use the **cable downstream frequency** command in QAM subinterface configuration mode. To disable the center frequency, use the **no** form of this command.

cable downstream frequency *qam-center-frequency* [**lane** *lane-id* **block** *block-id*]

no cable downstream frequency *qam-center-frequency*

Syntax Description

frequency	Sets the center frequency on the QAM subinterface on the Cisco RFGW10-DS-384 line card. Valid ranges in MHz per Annex type are: • Annex A: 1003-744; default is 259 • Annex B, Annex C: 1002-768; default is 234

Command Default

By default, QAM channels are not assigned with a default center frequency.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

The **cable downstream frequency** assigns the lane and block assigned at the QAM interface level to the subinterface on the Cisco RFGW-10 DS-384.

The center frequency assigned to Cisco RFGW-10 DS-384 QAM channel should be within the frequency range as specified by the freq-profile at the QAM interface (port level).

The Cisco RFGW-10 DS0-384 supports a maximum of 8 QAM channels per block. Thus, while configuring the center frequencies on the QAM channels, ensure that only a maximum of 8 carriers belong to a particular block (as defined by the freq-profile applied at the QAM interface).

Note This command is applicable on both the line cards, but **lane** and **block** parameters are only applicable on Cisco RFGW-10 DS-384 line card.

Examples

The following example shows the frequency configuration assigned to the QAM channel:

```
Router(config)# interface qam 9/1.1
Router(config-subif)# cable downstream frequency 714000000 lane 2 block 4
Router(config-if)#
```

Related Commands

Command	Description
cable downstream rf-profile	Create RF profiles at the Cisco RFGW-10 chassis level, and apply it across any QAM channel on the Cisco RFGW-10 DS-384 line card.
cable downstream freq-profile	Creates the frequency profile configuration on the Cisco RFGW10.

cable downstream freq-profile

To create the frequency profile at the Cisco RF Gateway 10 chassis level, and apply it to any RF port on the Cisco RFGW-10 DS-384 line card, use the **cable downstream freq-profile** command in global configuration mode. To disable the frequency profile applied to the RF port, use the **no** form of this command.

cable downstream freq-profile *freq-profile-id*

no cable downstream freq-profile line *freq-profile-id*

Syntax Description

freq-profile-id	Profile ID applied to the RF port. Default is 1.

Command Default

Default frequency profile (default-freq-profile) is created.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Cisco IOS-XE Release 3.2.0SQ supports global templates or profiles on the Cisco RFGW-10 DS-384 line card. Each port on the Cisco RFGW10 DS-384 line card provides a frequency range from 45 MHz to 1003 MHz. The Supervisor card uses two frequency schemes—static frequency scheme and the user-defined frequency scheme—to configure the frequency profile at port level.

The **cable downstream freq-profile** command configures the frequency spectrum in a user-defined frequency scheme on the Cisco RFGW-10 chassis. The frequency scheme is applied to any port on the Cisco RFGW10 DS-384 line card. In the frequency profile configuration mode, you can set the lane and block frequency.

Note This command is applicable only on the Cisco RFGW10-DS-384 line card.

Tip Configure the **cable downstream annex** before creating the frequency profile. If the Annex mode is not configured, the default Annex B value is set on the line card.

Examples

The following example creates a frequency profile on the Cisco RFGW-10:

```
Router(config)# cable downstream freq-profile freq-profile1
Router(config-freq-prof)# ?
```

```
Frequency Profile subcommands:
  exit  Exit from freq profile config mode
  lane  lane configurations
```

Related Commands

Command	Description
lane	Configures the lane frequency in a frequency profile.
block	Configures the block frequency in a lane in the frequency profile.
show cable freq-profile	Displays all the frequency profiles configured on the Cisco RFGW-10 DS-384 line card.

cable downstream if-output

To activate a downstream port on a cable interface and to generate a standard modulated signal or a test signal, use the **cable downstream if-output** command in QAM interface and subinterface configuration mode. To disable all signal output on the intermediate frequency (IF) carrier and to shut down the interface, use the **no** form of this command.

cable downstream if-output [continuous-wave]

no cable downstream if-output

Syntax Description

continuous-wave	Displays an unmodulated carrier signal on the downstream, disabling normal data network operations.

Command Default

The downstream interface is enabled for normal data use.

Command Modes

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

You can use the **cable downstream if-output** command to perform the following actions:

- Configure a downstream to relay a modulated signal
- Transmit data over the Hybrid Fiber Coaxial (HFC) cable network
- Test the cable plant
- Disable the interface

cable downstream if-output continuous-wave—Generates an unmodulated, continuous sine wave on the downstream interface. You can use a spectrum analyzer to verify the frequency, amplitude, and power of the wave. You can use the **cable downstream if-output** command to test the signal continuity on the downstream until you resume normal modulated operations.

no cable downstream if-output—Terminates all signal output and shuts down the downstream interface. The interface is disabled until you reactivate the downstream using the **cable downstream if-output** command.

Examples

The following example shows how to enable downstream on QAM interface 3 on the Cisco RFGW-10:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream if-output
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream interleaver-depth

To set the downstream interleave depth, use the **cable downstream interleaver-depth** command in RF profile configuration, QAM interface, and subinterface configuration mode. To restore the default setting, use the **no** form of this command.

cable downstream interleaver-depth *depth-value*

no cable downstream interleaver-depth

depth-value	Downstream interleave depth values. • I12-J17 RFGW_MB_FEC-I-12-J-17 • I128-J1 RFGW_MB_FEC-I-128-J-1 • I128-J2 RFGW_MB_FEC-I-128-J-2 • I128-J3 RFGW_MB_FEC-I-128-J-3 • I128-J4 RFGW_MB_FEC-I-128-J-4 • I128-J5 RFGW_MB_FEC-I-128-J-5 • I128-J6 RFGW_MB_FEC-I-128-J-6 • I128-J7 RFGW_MB_FEC-I-128-J-7 • I128-J8 RFGW_MB_FEC-I-128-J-8 • I16-J8 RFGW_MB_FEC-I-16-J-8 • I32-J4 RFGW_MB_FEC-I-32-J-4 • I64-J2 RFGW_MB_FEC-I-64-J-2 • I8-J16 RFGW_MB_FEC-I-8-J-16

Command Default

The default interleave depth value is 5 (I=32, J=4).

Command Modes

RF profile configuration (config-rf-profile)

QAM interface and subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was modified. The modulation format can be set globally on the Cisco RFGW-10 DS-384 line card using the RF profile configuration.

Usage Guidelines

In Cisco IOS Release 3.2.0SQ, RF profiles can be created globally at the chassis level, and applied to any QAM channel on the Cisco RFGW-10 DS-384 line card. The RF profiles are used for grouping QAM channels with same modulation, annex mode, symbol rate, and interleaver depth.

The **cable downstream rf-profile** command creates the RF profile. The modulation, annex mode, symbol-rate, and interleaver depth are configured in the RF profile configuration mode.

Note RF profiles are supported on the Cisco RFGW-10 DS-384 line card.

The syntax for the Cisco RFGW-10 DS-384 line card at the RF profile configuration level is:

cable downstream interleaver-depth option1 *depth-value* **option2** *depth-value*

no cable downstream interleaver option1

option1	Indicates the interleaver-depth FEC I/J values at the RF profile.
option2	Indicates the interleaver-depth FEC I/J values that are available at the subinterface level when the profile in assigned to the QAM subinterface.

Once the RF profile is created with the FEC I/J values, assign the RF profile to the carrier subinterface. The following example is a sample of a RF profile configuration:

```
Router(config)# cable downstream rf-profile 1
Router(config-rf-prof)# cable downstream interleaver depth option1 I12-J17 option2 I12-J17
Router(config-rf-prof)# exit
Router(config)#
```

The FEC I/J values specified in **option2** are applied to the carrier, and are available at the QAM subinterface level. The following is an example of interface 3/1.1 with the FEC I/J values on the Cisco RFGW-10 DS-384 line card:

```
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream interleave-depth I12-J17
Router(config-subif)# exit
```

This command sets the minimum latency of the system. A higher interleave depth relays the bits of each code word over a great transmission time and protects the noise bursts on the hybrid fiber coaxcial (HFC) network.

Interleave transmissions do not transmit each code word by itself, but instead relay the bits from multiple code words at the same time. This noise burst affects the minimum number of bits per code word and allows the Forward Error Correction (FEC) algorithm a greater chance of detecting and correcting any transmission errors.

A higher interleave depth transmits bits from a greater number of code words, increasing the efficacy of the FEC algorithm. However, a higher depth also increases downstream latency, which might slow TCP/IP throughput for some configurations, so you need to choose an interleave depth appropriate to the plant's noise levels and application needs.

If your cable plant is experiencing high noise levels, increase the default value of 32 to 64. For plants with exceptionally high noise levels, increase the interleave value to 128 to secure the cable network from noise bursts.

Low interleave depth values cause some packet loss on HFC networks, because burst noise lasts beyond the error correction block correctable length. However, on cable plants with exceptionally low noise levels, we recommend you to use the default value of 32, and then try an interleave of either 16 or 8 to confirm an increase in performance without increasing the number of errors that result from noise.

This table shows interleave characteristics and their relation to one another.

Table 1: DOCSIS Downstream Cable Interleave Descriptions

I (Number of Taps)	J (Increment)	Burst Protection 64-QAM/256 QAM	Latency 64-QAM/256 QAM
8	16	5.9 microseconds/4.1 milliseconds	0.22 ms/0.15 ms
16	8	12 microseconds/8.2 milliseconds	0.48 ms/0.33 ms
32	4	24 microseconds/16 milliseconds	0.98 ms/0.68 ms
64	2	47 microseconds/33 milliseconds	2.0 ms/1.4 ms
128	1	95 microseconds/66 milliseconds	4.0 ms/2.8 ms

Note The table does not apply to EuroDOCSIS cable plants because the interleave depth for EuroDOCSIS cable interfaces is fixed.

Note Executing this command at the QAM channel level (subinterface) changes the interleave level of that subinterface. However, executing the command at the QAM port level (interface), changes the interleaver levels of all QAM channels on that QAM port.

Examples

The following example shows downstream I/J values to 128/5 on QAM interface 3 on Cisco RFGW-10:

```
Router# configure terminal
```

```
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream interleave-depth I12-J17
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream interleaver-level

To set the downstream interleave level, use the cable **downstream interleaver-level** command in QAM subinterface configuration mode. To restore the default setting, use the **no** form of this command.

cable downstream interleaver-level {**1**| **2**}

no cable downstream interleaver-level

Syntax Description

The following level values are supported on Cisco RF Gateway 10:

1	Indicates the downstream interleaver level. Default is 2.
2	

Command Default

The default interleaver level is 2.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command modifies the interleaver level on the downstream radio frequency carrier on a downstream QAM channel. Interleaver level indicates modifiable FEC I/J values. Level 1 indicates non-modifiable FEC I/J values. The I/J values are set to 128/1. For level 2, there are different FEC I/J values that can be configured.

Examples

The following example shows the interleaver level value set to 2 on QAM subinterface 3:

```
Router# configure terminal
Router(config)#interface qam 3/1.1
Router(config-subif)#cable downstream interleaver-level 1
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.

Command	Description
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream lqam-group

To create logical QAM groups on the QAM channel on the Cisco RFGW-10 DS-384 line card, use the **cable downstream lqam-group** command in QAM interface and QAM subinterface configuration mode. To remove the logical QAM group configuration, use the **no** form of this command.

cable downstream lqam-group *group_ID*

no cable downstream lqam-group *group_ID*

Syntax Description

group_ID	Logical QAM group on QAM interface on the line card. Valid range is from 1 to 48.

Command Default

This command is not enabled by default.

Command Modes

QAM interface configuration (config-if)

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

A logical QAM group is a group of QAMs that share the same RF parameters in an RF profile such as Annex, Modulation format, symbol rate etc. There are 48 groups on Cisco RFGW-10 DS-384 line card.

The logical QAM ID uniquely identifies the channels on the Cisco RFGW-10 DS-384 line card. Logical QAM IDs 0 to 7 are assigned to QAM group 1, logical QAM IDs 8 to 15 are assigned to QAM group 2 and so on.

Note Logical QAM group configuration is supported only on the Cisco RFGW-10 DS-384 line card.

The **cable downstream lqam-group** command is used to configure the following:

- Configuring the Cisco RFGW-10 DS-384 Line Card

Examples

The following example creates the logical QAM group on the Cisco RFGW-10 DS-384 line card:

```
Router(config-if)# interface qam-red 4/1.2
Router(config-if)# cable downstream lqam-group 2
Router(config)#
```

The following example displays the logical QAM groups on QAM interface 4 on the Cisco RFGW-10 DS-384 line card:

```
Router# show running-config
.
.
.
Interface qam4/2.1
  cable downstream carrier-id 1
  cable downstream lqam-group 40
  cable mode depi remote learn
  cable downstream tsid 42001
  cable depi depi-tunnel tunnel-1
Interface qam4/2.2
  cable downstream carrier-id 2
  cable downstream lqam-group 25
  cable mode depi remote learn
  cable downstream tsid 42002
  cable depi depi-tunnel tunnel-1
Interface qam4/2.3
  cable downstream carrier-id 3
  cable downstream lqam-group 40
  cable mode depi remote learn
  cable downstream tsid 42003
  cable depi depi-tunnel tunnel-1
Interface qam4/5.4
  cable downstream carrier-id 13
  cable downstream lqam-group 40
  cable mode depi remote learn
  cable downstream tsid 42004
  cable depi depi-tunnel tunnel-1
```

Related Commands

Command	Description
show cable linecard logical-qamid-mapping	Displays the logical QAM group IDs and QAM carriers mapped to the RF profiles on the Cisco RFGW-10 DS-384 line card.
show controllers qam	Displays information about the downstream configuration on a line card.
show cable rf-profiles	Displays the RF profiles on the line card.
show running-config	Displays the logical QAM groups on a interface.

cable downstream lock

To lock a downstream port on the cable interface, use the **cable downstream lock** command in QAM interface and subinterface configuration mode. To unlock, use the **no** form of this command.

cable downstream lock

no cable downstream lock

Syntax Description

This command has no arguments or keywords.

Command Default

The lock is not set on QAM interfaces.

Command Modes

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is used to set the configuration lock on the downstream QAM interfaces on a Cisco RFGW-10 QAM line card. Setting this lock prohibits the user from modifying any RF parameters on that QAM channel. If the lock is set at the port level, then all the QAM Channels on that port will be locked.

Executing this command at a QAM channel level (subinterface) modifies the only the QAM channel. However, executing the command at a QAM port level (interface) modifies all QAM channels (subinterfaces) on that interface.

Examples

The following example shows how to set the downstream lock on QAM interface 3 on a Cisco RFGW-10:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream lock
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream modulation

To set the modulation format for a downstream port on a cable interface line card, use the **cable downstream modulation** command in RF profile configuration, QAM interface, and subinterface configuration mode.

cable downstream modulation {**64**| **256**}

Syntax Description

64	Modulation rate is 6 bits per downstream symbol.
256	Modulation rate is 8 bits per downstream symbol.

Command Default

The default modulation rate is 64 QAM.

Command Modes

RF profile configuration (config-rf-profile)

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.
Cisco IOS-XE Release 3.2.0SQ	This command was modified. The modulation rate can be set globally on the Cisco RFGW-10 using the RF profile configuration.

Usage Guidelines

Modulation is configured at the QAM interface (config-if) or QAM subinterface (config-subif) on the Cisco RFGW-10 DS-48 line card.

Note Executing port level commands such as **cable downstream annex, cable downstream modulation, cable downstream stacking, cable downstream frequency,** and **cable downstream rf-power** at the QAM channel level modifies all the QAM channels on that port. This is applicable on the Cisco RFGW-10 DS-48 line card.

Modulation is a part of RF profile configuration mode for Cisco RFGW-10 DS-384 line card. You can apply Annex mode only after you create the RF profiles on Cisco RFGW-10 DS-384 channels.

In Cisco IOS-XE Release 3.2.0SQ, RF profiles can be created globally at the chassis level, and applied to any QAM channel on the Cisco RFGW-10 DS-384 line card. The RF profiles are used for grouping QAM channels with same modulation, annex mode, symbol rate, and interleaver depth.

Note A group of eight logical QAM channels can be assigned to an RF profile.

The **cable downstream rf-profile** command creates the RF profile. The modulation, annex mode, symbol-rate, and interleaver depth are configured in the RF profile configuration mode.

Note RF profiles are supported on the Cisco RFGW-10 DS-384 line card.

The following example is a sample of a RF profile configuration:

```
Router(config)# cable downstream rf-profile rf-profile1
Router(config-rf-prof)# cable downstream annex B
Router(config-rf-prof)# cable downstream modulation 64
Router(config-rf-prof)# cable downstream interleaver depth option1 I128-J1 option2 I32-J4
Router(config-rf-prof)# cable downstream symbol-rate 3500000
Router(config-rf-prof)# exit
Router(config)#
```

Examples

The following example shows how to set the downstream modulation to 256 QAM on a Cisco RFGW-10 DS-48 line card:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream modulation 256
```

The following example applies the modulation that was specified in the global RF profile 1 Cisco RFGW-10 DS-384 line card:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream rf-profile 1
```

The following example shows how to set the modulation rate in the RF profile on the Cisco RFGW-10 DS-384 line card:

```
Router(config)# cable downstream rf-profile 1
Router(config-rf-prof)# cable downstream modulation 64
Router(config-rf-prof)# exit
```

Note Changing global RF profile attributes, such as modulation can affect all channels that are currently configured on that RF profile.

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

Command	Description
cable downstream rf-profile	Creates RF profiles on the RFGW-10.

cable downstream max-carriers

To create specific number of QAM carriers per RF port, use the **cable downstream max-carriers** on the Cisco RFGW-10 DS-384 command in QAM interface configuration mode. To disable the QAM carriers per port, use the **no** form of this command.

cable downstream max-carriers *carriers*

no cable downstream max-carriers *carriers*

Syntax Description

carriers	Number of carriers per port. Valid range is from 1 to 128.

Command Default

No QAM carriers are created when the line card is inserted in the RFGW-10 chassis.

Command Modes

QAM interface configuration (config-if)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

When the Cisco RFGW-10 DS-384 line card is inserted, prior to any configuration, all the physical port interfaces are automatically created in the configuration file, but they are in shutdown mode. The **cable downstream max-carriers** command creates the carriers under each QAM port interface.

Each QAM port on the Cisco RFGW-10 DS-384 line card can have up to a maximum of 128 carriers configured.

Note If the port is already configured with max-carriers or sub-interfaces, changing the density will affect the power levels and might bring down the carriers due to the licensing restrictions.

Note This command is applicable only on the Cisco RFGW-10 DS-384 line card.

For the Cisco RFGW-10 DS-48 line card, 4 carriers per port are created, and applied to all 12 ports on the line card. To disable QAM interfaces on the Cisco RFGW-10 DS-48 line card, use the **cable downstream stacking** command.

Examples

The following example configures 128 QAM carriers on QAM interface 3/1 on the Cisco RFGW-10 DS-384 line card:

```
Router(config)# interface qam 3/1
Router(config-if)# cable downstream max-carriers 128
```

Related Commands

Command	Description
cable downstream rf-shutdown	Enables or disables the RF output from the integrated upconverter.

cable downstream onid

To configure the Original Network ID (ONID) on all the QAM carriers associated with the RF port for the local sessions, use the **cable downstream onid** command in the QAM interface configuration mode. To disable the ONID for all the QAM carriers on a single port, use the **no** form of this command.

cable downstream onid *id*

no cable downstream onid *id*

Syntax Description

id	Specifies the ONID that can be configured for all the QAM carriers on the RF port. The range is from 0 to 65535. The default is 0.

Command Default

The value of the ONID is set to 0.

Command Modes

QAM interface configuration (config-if)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced on the Cisco RF Gateway 10. This command replaces the **onid** keyword in the **cable downstream tsid** command.

Examples

The following example shows how to configure the ONID:

```
Router# configure terminal
Router(config)# interface qam-red 3/1
Router(config)# cable downstream onid  6
```

Related Commands

Command	Description
cable downstream serving-area	Configures serving-area on all the QAM carriers associated with the RF-port.

cable downstream rf-power

To set the RF power output level on the Cisco RF Gateway 10, use the **cable downstream rf-power** command in QAM interface and subinterface configuration mode. To reset the RF output power level to its default value, use the **no** form of this command.

cable downstream rf-power *power-leve l*

no cable downstream rf-power *p ower-level*

Syntax Description

power-level	Desired RF output power level in dBmV.

Command Default

The default values set are as follows for the different stacking levels:

1:1 stacking—44 dBmV

2:1 stacking—47 dBmV

4:1 stacking—40 dBmV

Command Modes

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

The stacking level on Cisco RFGW-10 are as follows:

1:1 stacking—30 dBmV ~ 61 dBmV, default is 44 dBmV

2:1 stacking—30 dBmV ~ 57 dBmV, default is 47 dBmV

4:1 stacking—30 dBmV ~ 53 dBmV, default is 40 dBmV

The official range for acceptable power levels in the DOCSIS standard depends on the stacking level. The DOCSIS levels are as follows:

1:1 stacking—52 dBmV ~ 60 dBmV

2:1 stacking—48 dBmV ~ 56 dBmV

4:1 stacking—44 dBmV ~ 52 dBmV

Note Cisco cable interfaces exceed the DOCSIS standard, but power levels outside the DOCSIS standards should be used only in lab and test environments.

Note Executing port level commands such as **cable downstream annex, cable downstream modulation, cable downstream stacking, cable downstream frequency**, and **cable downstream rf-power** at the QAM channel level modifies all the QAM channels on that port.

Examples

The following example shows the integrated upconverter on a Cisco RFGW-10 configured for an RF output power level of 50 dBmV:

```
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream rf-power 50
```

Related Commands

Command	Description
cable downstream frequency	Configures the downstream center frequency on the integrated upconverter.
cable downstream rf-shutdown	Enables or disables the RF output from the integrated upconverter.
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream rf-profile

To create RF profiles at the Cisco RF Gateway 10 chassis level and apply them across any QAM channel on the Cisco RFGW-10 DS-384 line card, use the **cable downstream rf-profile** command in global configuration mode, and in QAM subinterface configuration mode. To disable the RF profile configuration, use the **no** form of this command.

cable downstream rf-profile *rf-profile-id*

no cable downstream rf-profile *rf-profile-id*

Syntax Description

rf-profile-id	RF profile ID applied to the QAM channel on the line card.

Command Default

Default RF profile (default-rf-profile) is created.

Command Modes

Global configuration (config)

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

RF profiles can be created globally at the chassis level, and applied to any QAM channel on the Cisco RFGW-10 DS-384 line card. The RF profiles are used for grouping QAM channels with same modulation, annex mode, symbol rate and interleaver depth.

Note A group of eight logical QAM channels can be assigned to an RF profile.

The **cable downstream rf-profile** command creates the RF profile and enters the RF profile configuration mode. The modulation, annex mode, symbol-rate, and interleaver depth can be configured in the RF profile configuration mode. After the RF profile is created, it can be assigned to any QAM channel on the line card.

Note RF profile configuration is supported only on the Cisco RFGW-10 DS-384 line card.

Examples

The following example creates the RF profile 1 on the Cisco RFGW-10, and enters the RF profile configuration:

```
Router(config)# cable downstream rf-profile 1
```

```
Router(config-rf-prof)# ?
RF Profile cable downstream commands:
  cable  cable keyword under rf profile config mode
  exit   Exit from the rfprof config mode
```

The following example is a sample of a RF profile configuration:

```
Router(config)# cable downstream rf-profile 1
Router(config-rf-prof)# cable downstream annex B
Router(config-rf-prof)# cable downstream modulation 64
Router(config-rf-prof)# cable downstream interleaver depth option1 I128-J1 option2 I32-J4
Router(config-rf-prof)# cable downstream symbol-rate 3500000
Router(config-rf-prof)# exit
Router(config)#
```

Related Commands

Command	Description
cable downstream annex	Sets the MPEG framing format for a downstream port on a cable interface line card to Annex A (Europe), Annex B (North America) and Annex C (Japan).
cable downstream modulation	Sets the modulation format for a downstream port on the line card
cable downstream interleaver-depth	Sets the interleaver-depth on the line card.
cable downstream symbol-rate	Sets the symbol rate on the line card.
show cable linecard logical-qamid-mapping	Displays the logical QAM group IDs and QAM carriers mapped to the RF profiles on the Cisco RFGW-10 DS-384 line card.

cable downstream rf-shutdown

To disable the RF output from an integrated upconverter on a Cisco RF Gateway 10, use the **cable downstream rf-shutdown** command in QAM interface and subinterface configuration mode. To enable the RF output on the integrated upconverter, use the **no** form of this command.

cable downstream rf-shutdown

no cable downstream rf-shutdown

Command Default

The RF output is disabled on the upconverter.

Command Modes

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

Executing this command at the port level command modifies all the QAM channels on that port. However no channel is affected if the command is executed at the channel level.

Examples

The following example enables the integrated upconverter on the Cisco RFGW-10:

```
Router(config)#configure terminal
Router(config-if)#interface qam 3/1.1
Router(config-subif)#cable downstream rf-shutdown
```

Related Commands

Command	Description
cable downstream frequency	Configures the downstream center frequency on the integrated upconverter.
cable downstream rf-power	Configures the desired RF output power on the integrated upconverter.
show controllers qam	Displays cable downstream information configured on the QAM channel and port.

cable downstream spectral-inversion

To configure channel spectrum inversion (set inverted signal output) of QAM constellation, use the **cable downstream spectral-inversion** command. To remove channel spectrum inversion (set non-inverted signal output), use the **no** form of the command.

cable downstream spectral-inversion

no cable downstream spectral-inversion

Syntax Description

This command has no arguments or keywords

Command Default

Spectrum inversion is enabled.

Command Modes

Sub interface mode (config-subif)#

Command History

Release	Modification
Cisco IOS-XE 3.4.0SQ	This command was introduced.

Usage Guidelines

This command is used to set the QAM Constellation Spectrum Inversion feature on the Cisco DS-384 line card.

The **no** command is used to set the upconverter (UPX) output signal as non-inverted signal. This command is set by default.

Examples

This example shows the running configuration when QAM cable mode is not enabled:

```
interface Qam-red3/1.1
 cable carrier-id 1
 cable downstream rf-power 38.0
 cable downstream rf-shutdown
 cable downstream interleaver-depth I32-J4
 cable downstream spectral-inversion
 no snmp trap link-status
```

Examples

This example shows the running configuration when QAM cable mode is is set to video remote:

```
interface Qam-red3/1.1
 cable carrier-id 1
 cable mode video remote
 cable downstream lqam-group 1
 cable downstream tsid 311
 cable downstream rf-profile default-rf-profile
 cable downstream rf-power 39.0
 cable downstream frequency 483000000
 no cable downstream rf-shutdown
```

```
 cable downstream interleaver-depth I32-J4
 cable downstream spectral-inversion
 cable video psi-interval 100
 cable video si-interval 200
 cable partition 3 external-channel 1
 no snmp trap link-status
```

Examples

This example shows the running configuration when QAM cable mode is set to video remote:

```
interface Qam-red3/1.1
 cable carrier-id 1
 cable mode video remote
 cable downstream lqam-group 1
 cable downstream tsid 311
 cable downstream rf-profile default-rf-profile
 cable downstream rf-power 39.0
 cable downstream frequency 483000000
 no cable downstream rf-shutdown
 cable downstream interleaver-depth I32-J4
 no cable downstream spectral-inversion
 cable video psi-interval 100
 cable video si-interval 200
 cable partition 3 external-channel 1
 no snmp trap link-status
```

cable downstream stacking

To configure frequency stacking, use the **cable downstream stacking** command in QAM interface and subinterface configuration mode.

cable downstream stacking *stacking*

Syntax Description

stacking	Specifies the stacking level in the RF port. Valid levels are 1, 2 and 4.

Command Default

The stacking level is set to 1:4 on all RF ports.

Command Modes

QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

You can configure the stacking level on the RF port and enable the appropriate QAM channels:

- QAM channel 1 is enabled on the specified RF port for stacking level 1.
- QAM channels 1 and 2 are enabled on the specified RF port for stacking level 4.
- QAM channels 1, 2, and 4 are enabled on the specified RF port for stacking level 4.

Note Executing port level commands such as **cable downstream annex, cable downstream modulation, cable downstream stacking, cable downstream frequency,** and **cable downstream rf-power** at the QAM channel level modifies all the QAM channels on that port.

Examples

The following example shows how to configure the downstream channel on the QAM interface for frequency stacking of 4.

```
Router# configure terminal
Router(config)# interface qam 3/1
Router(config-if)# cable downstream stacking 4
Router(config-if)# exit
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream start-freq

To set the starting frequency on the QAM interface, use the **cable downstream start-freq** command in QAM interface configuration mode. To disable the starting frequency, use the **no** form of this command.

cable downstream start-freq *frequency*

no cable downstream start-freq

Syntax Description

frequency	Starting frequency on the QAM interface on the Cisco RFGW10 DS-384 line card. Valid ranges in MHz per Annex type are: • Annex A: 1003-744; default is 259 • Annex B, Annex C: 1002-768; default is 234

Command Default

This command is disabled by default.

Command Modes

QAM interface configuration (config-if)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

The **cable downstream start-freq** command sets the starting frequency for a QAM port on the Cisco RFGW-10 DS-384 card in the static frequency scheme. In this scheme, the lane and block start frequencies are internally configured for the port by the Supervisor. The carrier frequency can be configured at the carrier.

Note The start-frequency configured at the port has to be such that the entire four lanes are within the valid maximum frequency range of 1003 GHz.

Note This command is applicable only on the Cisco RFGW-10 DS-384 line card.

Examples

The following example shows the starting frequency configuration for a QAM port with Annex B:

```
Router(config)# interface qam 4/1
Router(config-if)# cable downstream start-freq 234000000
```

```
Router(config-if)#
```

Related Commands

Command	Description
cable downstream annex	Sets the MPEG framing format for a downstream port on a cable interface line card to Annex A (Europe), Annex B (North America) and Annex C (Japan).
cable downstream frequency (channel)	Sets the center frequency of the QAM channel.
show cable linecard carrier-id-mapping	Displays the QAM blocks and QAM carriers mapped on a line card.

cable downstream symbol rate

To set the symbol rate on the line card, use the **cable downstream symbol rate** command in RF profile configuration mode. To disable the symbol rate, use the **no** form of this command.

cable downstream symbol rate *symbols*

no cable downstream symbol rate

Syntax Description

symbols	Symbol rate of the line card in seconds. Valid range is from 3500000 to 7000000 symbols per second.

Command Default

This command has no default behavior or values.

Command Modes

RF profile configuration (config-rf-profile)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

The **cable downstream symbol-rate** command sets the symbol rate for the Cisco RFGW-10 DS-384 line card.

Note Symbol rate is set only for Annex A mode carriers. The symbol rate specified at the RF profile configuration is ignored for Annex B carriers.

Examples

The following example shows the symbol rate configured on the Cisco RFGW-10 DS-384 line card:

```
Router(config)# cable downstream rf-profile 1
Router(config-rf-prof)# cable downstream annex A
Router(config-rf-prof)# cable downstream modulation 256
Router(config-rf-prof)# cable downstream interleaver depth option1 I12-J17 option2 I12-J17
Router(config-rf-prof)# cable downstream symbol-rate 3500000
Router(config-rf-prof)# exit
Router(config)#
```

Related Commands

Command	Description
cable downstream rf-profile	Creates the RF profile configuration at the RFGW-10 chassis level, and enters the RF profile configuration mode

cable downstream tsid

To configure the Transport Stream Identifier (TSID) value on the QAM subinterface, use the **cable downstream tsid** command in QAM subinterface configuration mode. To reset the TSID to 0, use the **no** form of this command.

Note Effective with Cisco IOS-XE Release 3.4.0SQ, the **onid** keyword is removed from the **cable downstream tsid** command and replaced with the **cable downstream onid** command.

cable downstream tsid *id* [**onid** *onid-id*]

no cable downstream tsid

Cisco IOS-XE Release 3.4.0SQ and Later

cable downstream tsid *id*

no cable downstream tsid

Syntax Description

id	TSID value for the QAM subinterface. Valid TSID values are from 0-65535.
onid	(Optional) Sets the original downstream network ID for a video transport stream.
onid-id	Specifies the downstream original network id (ONID). The valid range is from 1 to 65535. The default value is 0.

Command Default

The TSID and ONID values are set to 0 on all QAM interfaces.

Effective with Cisco IOS-XE Release 3.4.0SQ, the TSID value is set to 0xFFFFFFFF by default.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was modified to include **onid** keyword.
Cisco IOS-XE Release 3.4.0SQ	This command was modified to remove the **onid** keyword (this keyword is replaced with the **cable downstream onid** command).

Usage Guidelines

This command ensures that each downstream QAM channel has a unique ID when there are multiple Cisco Cable Modem Termination System (CMTS) routers at a headend facility. This ID uniquely defines the QAM channel in the cable headend.

For DEPI, the TSID value is overwritten with a new value if there are no sessions established on that QAM channel. However, if a session exists with the specified QAM channel, the new TSID value being configured is rejected.

For video, the TSID value is used to uniquely identify a QAM channel by the external server for remote Edge Resource Management Interface (ERMI), DEPI, and locally encrypted video sessions. The TSID value is overwritten in a QAM channel if these sessions are not present in the QAM channel, otherwise, the configuration is rejected.

Effective with Cisco IOS-XE Release 3.4.1SQ, you can configure non-unique TSIDs for the broadcast channels without configuring the serving area or ONID at the port. You can configure the same TSID for the QAM channels for the following sessions:

- DEPI QAM
- Video remote ERMI
- DVB local encrypt or remote GQI encrypt
- Video local or video remote GQI

The **no** form of the command resets the TSID value of the QAM channel to 0.

Note ONID configuration is not supported on the Cisco RFGW-10 DS-48 line card.

Examples

The following example configures the downstream channel on the QAM subinterface with a TSID value of 44:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable downstream tsid 44
```

The following example shows how to configure the ONID on the QAM interface on the Cisco RFGW-10 DS-384 line card in Cisco IOS-XE Release 3.3.0SQ:

```
Router(config)# configure terminal
Router(config)# interface qam 7/1.1
Router(config)# cable mode video local
Router(config)# cable downstream tsid 1000 onid 65000
Router(config)# cable downstream rf-profile rfprofile_video
Router(config)# cable downstream frequency 325000000
Router(config)# no cable downstream rf-shutdown
Router(config)# cable downstream interleaver-depth I128-J1
Router(config)# exit
```

The following example shows the RF profile configuration on the Cisco RFGW-10 DS-384 line card:

```
Router(config)# show running config
cable downstream rf-profile rfprofile_video
cable downstream annex B
cable downstream modulation 256
cable downstream interleaver-depth option1 I128-J1 option2 I128-J1
```

```
cable downstream symbol-rate 5360537
!
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable downstream tsid-base

To configure the Transport Stream Indentifire (TSID) value for all QAM interfaces, use the cable downstream tsid-base command in privileged EXEC mode.

cable downstream tsid-base *id*

Syntax Description

id	Specifies the TSID value for the QAM interface. Valid range is from 0 to 65535.

Command Default

The TSID value is set to 0 on all QAM interfaces.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command ensures that each downstream QAM channel has a unique ID when there are multiple Cisco CMTS routers at a headend facility. This ID uniquely defines the QAM channel in the cable headend.

A QAM channel is assigned a TSID value if it is unique. The TSID value is overwritten with a new value if there are no sessions established on that QAM channel. However, if a session exists with the specified QAM channel, the new configured TSID value is rejected.

Examples

The following example sets the TSID value of 44 on the QAM interfaces:

```
Router# cable downstream tsid-base 44
```

Related Commands

Command	Description
show controllers qam	Displays cable downstream information configured on the QAM channel and port.
show running-config interface qam	Displays the running configuration of the QAM interface.

cable image-upgrade disable

To disable the automatic image upgrade of the line card, use the **cable image-upgrade disable** command in global configuration mode. To enable the automatic image upgrade, use the **no** form of this command.

cable image-upgrade disable

no cable image-upgrade disable

Command Default

The **no** form of the command is enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
15.0(2)SQA	This command was introduced.

Usage Guidelines

Use the **cable image-upgrade disable** command to disable automatic image upgrade.

Examples

The following example disables auto image upgrade of the line card:

```
Router(config)# cable image-upgrade disable
Router(config)#
```

The **cable image-upgrade disable** command is used to configure the following features:

- Bundled Image Upgrade

Related Commands

Command	Description
show cable-image upgrade bundle	Displays the upgraded images of all the devices on the Supervisor card.
show cable-image upgrade version	Displays all the upgraded image versions on the line card.

cable image-upgrade download

To upgrade all device images on a specific line card, use the **cable image-upgrade download** command in privileged EXEC mode.

cable image-upgrade download *slot* [**forced**| **background**]

Syntax Description

slot	Specifies the slot number of the line card. Valid slot numbers are 3 to 14.
forced	(Optional) Forces an upgrade of all the images on the line card.
background	(Optional) Upgrade to line card occurs in the background and control is immediately returned to the command prompt.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

The line card must be present in the slot for an upgrade. The line card image is upgraded with the image of the Supervisor card.

The upgrade occurs in the background if the **background** keyword is specified. The control is immediately returned to the CLI prompt.

The line card resets if an image upgrade has occurred. If the latest images are present on the line card, then the line card does not reset.

Examples

The following example upgrades the image on line card in slot 7:

```
Router# cable image-upgrade download 7
```

The following example forces the upgrade of all images in line card in slot 3:

```
Router# cable image-upgrade download 3 forced
```

Related Commands

Command	Description
show cable-image upgrade bundle	Displays the upgrade bundle on the supervisor.
show cable-image upgrade status	Displays the upgrade status of an image on the specified line card.
show cable-image upgrade version	Displays all the upgraded image versions on the line card.

cable linecard encryption

To configure the line card encryption scrambling algorithm, use the **cable linecard encryption** command in global configuration mode. To disable the line card encryption, use the **no** form of this command.

cable linecard *slot* **encryption** {**pkey scrambler** [**des**| **csa**]| **clear scrambler none**| **dvb scrambler csa**| **dual-crypt scrambler csa**| **pme scrambler des**}

no cable linecard *slot* **encryption** {**pkey scrambler** [**des**| **csa**]| **dvb scrambler csa**| **dual-crypt scrambler csa**| **pme scrambler des**}

Syntax Description

slot	Line card slot number. The valid range is from 3 to 12.
pkey	Specifies the encryption type is PowerKEY.
scrambler	Specifies the encryption scrambling algorithms.
des	Indicates the scrambling algorithm is Data Encryption Standard (DES).
csa	Indicates the scrambling algorithm is DVB-Common Scrambling Algorithm (CSA).
clear	Clears the encryption type.
none	Indicates no scrambling algorithm.
dvb	Specifies the encryption type is Digital Video Broadcasting (DVB).
dual-crypt	Specifies the encryption type is Java Conditional Access System (JCAS) which enables both PowerKey and DVB encryptions.
pme	Specifies the encryption type is Privacy Mode Encryption (PME).

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.
Cisco IOS-XE Release 3.4.0SQ	This command was modified to include the **dvb** and **csa** keywords.
Cisco IOS-XE Release 3.4.1SQ	This command was modified. The optional keyword **csa** was added to the enable CSA algorithm for PowerKey encryption. The optional keyword **dual-crypt** was added to enable JCAS Encryption.
Cisco IOS-XE Release 3.5.0SQ	This command was modified. The optional keyword **pme** was added to enable PME.

Usage Guidelines

The Cisco RFGW-10 DS-384 DS-384 line card encryption capability is enforced by the software license. At line card insertion, no encryption feature license is available. The Cisco Software Licensing (CSL) and platform CSL layer validate the license present in the line card flash partitions. The line card is licensed for PowerKEY encryption scheme. For more information on Licensing, see Software License Activation for Cisco RF Gateway 10 Line Cards.

Effective with Cisco IOS-XE Release 3.4.1SQ, the **dual-crypt** keyword enables JCAS Encryption. JCAS Encryption allows you to use the PowerKey and DVB encryptions simultaneously with only the CSA encryption algorithm. JCAS Encryption does not support the DES encryption algorithm.

Use the **show licenses all** command to see the status of encryption licenses on all the line cards.

Examples

This example shows how to configure PowerKEY encryption on the line card:

```
Router# configure terminal
Router(config)# cable linecard 6 encryption pkey scrambler des
```

The following example shows how to configure DVB encryption on the line card in slot 3:

```
Router# configure terminal
Router(config)# cable linecard 3 encryption dvb scrambler csa
```

The following example shows how to clear the encryption on the line card in slot 3:

```
Router# configure terminal
Router(config)# cable linecard 3 encryption clear scrambler none
```

Effective with Cisco IOS-XE Release 3.4.1SQ, this example shows how to configure CSA algorithm in the PowerKEY encryption on the line card:

```
Router# configure terminal
Router(config)# cable linecard 6 encryption pkey scrambler csa
```

Effective with Cisco IOS-XE Release 3.4.1SQ, this example shows how to configure JCAS Encryption on the line card:

```
Router# configure terminal
Router(config)# cable linecard 6 encryption dual-crypt scrambler csa
```

Effective with Cisco IOS-XE Release 3.5.0SQ, this example shows how to configure PME on the line card:

```
Router# configure terminal
Router(config)# cable linecard 3 encryption pme scrambler des
```

Related Commands

Command	Description
show cable licenses	Displays the licenses configured on the Cisco RFGW-10 line card.

cable linecard license max-carriers

To activate the QAM carrier density on the line card, use the **cable linecard license max carriers** command in global configuration mode. To deactivate the QAM carrier density on the line card, use the **no** form of this command.

cable linecard *lc-slot* **license max-carriers** *carrier_density*

no cable linecard *lc-slot* **license max-carriers**

Syntax Description

lc_slot	Slot of the line card in the QAM interface. Line card redundancy configured interfaces appear as QAM-red. Valid range is from 3 to 12.
carrier_density	Maximum carrier density per line card. The carrier densities for the Cisco RFGW-10 DS-384 line card are 48, 96, 192, and 384. The default carrier density is 96.

Command Default

Enabled during line card bootup, provided that a valid QAM carrier license exists on the Cisco RFGW-10 DS-384 line card.

Command Modes

Global configuration (config)

Command History

Release	Modification
15.0(2)SQ	This command was introduced.

Usage Guidelines

The **cable linecard license max-carriers** command sets the QAM carrier density of the line card. Valid configurable licenses are required for the maximum carriers densities per line card. The density specifications are validated by the license on the Supervisor when the max-carriers ports are created.

This command defines the maximum carrier density for a downstream QAM line card. The maximum carriers supported on the Cisco RFGW10-DS-48 line card are 48, and the maximum carriers supported on the Cisco RFGW-10 DS-384 line card are 384.

Note This command is applicable on the Cisco RFGW-10 DS-384 line card. This command is auto-generated, and cannot be modified for the Cisco RFGW-10 DS-48 line card.

Examples

The following example sets the QAM carrier density for the line card in slot 3.

```
Router(config)# cable linecard 3 license max-carriers 96
```

Related Commands

Command	Description
cable downstream max-carriers	Creates QAM carriers per RF port on the Cisco RFGW-10.

cable linecard reset

To partially reset the line card, use the **cable linecard reset** command in privileged EXEC configuration mode.

cable linecard *slot* **reset**

Syntax Description

slot	Specifies the line card slot. Valid slot numbers are 3 to 12.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command partially resets the line card and the CPU. The front panel SFP (small form-factor pluggable) module continues to process the data.

Examples

The following example shows a partial reset of the line card in slot 3:

```
Router#cable linecard 3 reset
```

Related Commands

Command	Description
hw-module slot reset	Resets the line card on the chassis.

cable midplane ping

To enable the midplane failure detection between the line card and the Supervisor on the Cisco RFGW-10, use the **cable midplane ping** command in global configuration mode. To disable the midplane failure detection, use the **no** form of this command.

cable midplane ping interval *ping-interval* **retries** *retry_num* **wait** *wait-interval* **action** {*log*| *none*}

no cable midplane ping interval *ping-interval* **retries** *retry_num* **wait** *wait-interval* **action** {*log*| *none*}

Syntax Description

interval	Specifies the frequency of pings sent by the line card.
ping-interval	Length of ping interval, in milliseconds. The valid range is from 10000 to 600000.
retries	Specifies the number of times the line card retries before sending the error message.
retry_num	Number of midplane ping retries. The range is from 10 to 100.
wait	Specifies the time the line card should wait to restart sending the pings after a ping failure has occurred.
wait-interval	Waiting time period, in milliseconds. The range is from 10000 to 600000.
action	Specifies the action taken when ping failure occurs.
log	Messages are written to a system log on ping failure.
none	Action is not taken; pings are disabled.

Command Default

The midplane failure detection is not configured.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(50)SQ4	This command was introduced.

Usage Guidelines

Use the **cable midplane ping** command to enable midplane pings between the line card and the Supervisor. When this command is enabled, the line card periodically sends ping packets to the Supervisor, and receives responses. However, if no responses are received by the line card, an error message is sent to the Supervisor, and the pings are disabled.

The minimum ping interval is 10000 milliseconds with 10 retries. If a ping fails after the number of retries, the line card waits before restarting the pings. This delay interval is configured as the wait parameter.

Examples

The following example shows how to configure the midplane ping interval for 10000 milliseconds with 10 retry attempts, followed by a wait interval of 10000 milliseconds, and an action to log a message on failure:

```
Router(config)# cable midplane ping interval 10000 retries 10 wait 10000 action log
```

Related Commands

Command	Description
clear cable midplane ping statistics	Clears the midplane ping statistics on the Cisco RFGW-10.
show cable midplane ping statistics	Displays the midplane ping statistics between the line card and the Supervisor on the Cisco RFGW-10.

cable mode

To set the mode of the QAM channel, use the **cable mode** command in QAM interface and subinterface configuration mode. To remove this setting, use the **no** form of this command.

cable mode {**depi** {**local lbg** *lbg-interface*| **remote [learn]**}| **video** {**local**| **remote**} **encrypt**}

no cable mode {**depi**| **video**} {**local**| **remote**}

Syntax Description

depi	Specifies the DEPI mode of the QAM channel.
video	Specifies the video mode of the QAM channel.
local	Specifies that the QAM channel is manually configured.
lbg	Specifies the load balancing group. The QAM block or the Ten Gigabit Ethernet is assigned to the QAM-based local DEPI session. **Note** 192 carriers are supported on a load balancing group.
lbg-interface	Load balancing group interface. Valid values are 1 and 2.
remote	Specifies that the QAM channel is remotely configured.
learn	(Optional) Specifies that the QAM channel is in learn mode and the RFGW-10 can learn the channel configuration from the M-CMTS. All QAM channels on a single port must be in learn mode for this configuration to work.
encrypt	Sets the mode for encryption based local or remote video sessions. Maximum number of video sessions per line card is 3840. Maximum number of video sessions per chassis is 38400. Maximum number of encrypted video sessions per line card is 1920. Number of video QAM carriers per line card is 256 for Annex-B, 192 for Annex-A or mixed.

Command Default No cable mode is set on the QAM channel.

Command Modes QAM interface and subinterface configuration (config-if and config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
12.2(50)SQ	This command was modified to add remote and learn keywords.
Cisco IOS-XE Release 3.2.0SQ	This command was modified to include the **lbg** keyword for local DEPI sessions, and **24-qam-map** for local video sessions. The **cable mode depi remote learn** command is configurable at the QAM interface level.
Cisco IOS-XE Release 3.3.0SQ	This command was modified to include the **encrypt** keyword for encryption based remote video sessions and remove **24-qam-map** keyword for the Cisco DS-384 line card.
Cisco IOS-XE Release 3.4.0SQ	This command was modified to include the **encrypt** keyword for encryption based local video sessions.

Usage Guidelines QAM channels on the Cisco RFGW-10 are characterized based on their usage mode and ownership. QAM channels within a QAM port are configured in DEPI and video mode.

Note QAM channels cannot be configured within a QAM port in DEPI or Video mode on the Cisco RF Gateway-10 DS48 line card.

Note Ensure that you configure the same mode on all channels of a port.

Each QAM channel is configured locally via CLI or remotely through a signaling protocol, such as Modular Cable Modem Termination System (M-CMTS) Downstream External PHY Interface (DEPI), Data Network Control Station (DNCS), Generic QAM Interface (GQI), or Edge Resource Manager Interface (ERMI). The DNCS, GQI and ERMI protocols are used for video only. If a QAM channel is used for remote setup, it cannot be configured locally.

Note If other QAM channels on a single port are set to a different mode, the configuration of a QAM channel may fail.

Tip Before changing the existing cable mode of a channel on a port, the **no cable mode** command should be executed.

In Cisco IOS Release Cisco IOS-XE Release 3.2.0SQ, load balancing groups are assigned to QAM channels while configuring local DEPI sessions. Two load balancing groups exist per line card. The QAM channels are equally divided between the two load balancing groups on any line card. Each load balancing group supports 192 carriers or 9.1Gbps.

Effective with Cisco IOS-XE Release 3.3.0SQ, the **24-qam-map** keyword is not supported on the Cisco DS-384 line card.

Examples

The following example shows the configuration of QAM subinterface 7/1.1 using DEPI mode locally on a Cisco RFGW-10. Load balancing interface 1 is assigned to the QAM channel:

```
Router(config)# interface qam-red7/1.1
Router(config-subif)# cable mode depi local lbg 1
```

The following is an example at the QAM interface 3/1 level with DEPI in **remote** learn mode on a Cisco RFGW-10:

```
Router(config)# interface qam 3/1
Router(config-if)# cable mode depi remote learn
```

The following is an example at the QAM subinterface 6/4.1 level with DEPI in learn mode on a Cisco RFGW-10:

```
Router(config)# interface qam 6/4.1
Router(config-subif)# cable mode depi remote learn
```

The following is an example at the QAM interface 3/2 level using video mode locally on the Cisco RFGW-10 for Cisco IOS-XE Release 3.4.0SQ:

```
Router(config)# interface qam 3/2
Router(config-if)# cable mode video local encrypt
```

The following is a sample output to show the total number of video sessions:

```
Router# show cable video session slot 3

Session    QAM     Stream Sess IP              UDP   Out   Input    Input  Output PSI Ctrl
ID         Port    Type   Type Address         Port  Pgm   Bitrate  State  State  Rdy State
---------- ------- ------ ---- --------------- ----- ----- -------- ------ ------ --- -----
201459584  3/1.2   Remap  SSM  -               -     1     2500412  ACTIVE OFF    NO  -

201459585  3/1.2   Remap  SSM  -               -     2     2500415  ACTIVE OFF    NO  -

201459586  3/1.2   Remap  SSM  -               -     3     2500420  ACTIVE OFF    NO  -

201459587  3/1.2   Remap  SSM  -               -     4     2500427  ACTIVE OFF    NO  -

201459588  3/1.2   Remap  SSM  -               -     5     2500427  ACTIVE OFF    NO  -

201459589  3/1.2   Remap  SSM  -               -     6     2500427  ACTIVE OFF    NO  -

201459590  3/1.2   Remap  SSM  -               -     7     2500427  ACTIVE OFF    NO  -

201459591  3/1.2   Remap  SSM  -               -     8     2500433  ACTIVE OFF    NO  -
```

```
201459592  3/1.2   Remap  SSM  -                -     9     2500436  ACTIVE OFF    NO  -


RFGW-10#show cable video session slot 3 | inc Total
Total Sessions = 1920
```

The following example shows the output expected while trying to create the 193rd encrypted video session:

```
interface Qam-red3/4.48
 cable carrier-id 192
 cable mode video remote encrypt
 cable downstream lqam-group 27
 cable downstream rf-profile default-rf-profile
 cable downstream frequency 597000000
 no cable downstream rf-shutdown
 cable partition 2 external-channel 192
Router(config-subif)# cable mode video remote encrypt

Error: Max encrypted carriers on linecard 3 reached, limit is 192
%ERROR: Failed to enable encryption for Qam3/5.1 - max encrypted carriers reached, only 192
 allowed
```

Related Commands

Command	Description
show depi tunnel	Displays all active control connections.
show depi session	Displays established DEPI data sessions.
show cable linecard load-balancing-group	Displays the load balancing groups on the Cisco RFGW-10.
show controllers qam	Displays information about downstream configuration on a line card.
show running-config interface qam	Displays the downstream configuration of a QAM channel.

cable partition

To manage and assign QAM channels to a QAM partition, use the **cable partition** command in QAM subinterface configuration mode. To disable, use the **no** form of this command.

cable partition *partition-id* **external-channel** *channel_number*

no cable partition *partition-id* **external-channel** *channel_number*

Syntax Description

partition-id	QAM partition ID. The valid range is from 1 to 50.
external-channel	Specifies the output port number used in ERM to represent a QAM channel.
channel_number	External output port number for GQI protocol QAM partition. The valid range is from 1-2147483647.

Command Default

This command is disabled by default.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

Use the **cable partition** command to assign QAM channels to QAM partitions. Ensure that the QAM channel is configured for **cable mode video remote encrypt** and the QAM partition is created before assigning the QAM partition to the QAM channel.

Note External channel is applicable to GQI protocol configured QAM partitions.

Examples

This example shows how to assign the QAM partition 3 to the QAM channel:

```
Router# configure terminal
Router(config)# interface qam-red 3/1.1
Router(config)# cable mode video remote encrypt
Router(config-subif)# cable partition 3 external-channel 200
Router(config-subif)#
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.

cable video mpeg-compliance disable

To disable the MPEG compliance parameters of the output transport stream (TS) such as frequency offset and **drift rate**, use the **cable video mpeg-compliance disable** command in global configuration mode (**config**). To enable the MPEG compliance, use the **no** form of this command.

cable video mpeg-compliance disable

no cable video mpeg-compliance disable

Command Default

The **no** form of the command is enabled by default.

Command Modes

Global configuration (**config**).

Command History

Release	Modification
Cisco IOS-XE Release 3.5.4SQ	This command was introduced.

Usage Guidelines

Use the **cable video mpeg-compliance disable** command to disable the MPEG compliance of the output TS.

Use this command when you have a bad source clock so that the RF-Gateway 10 is in sync with the input source clock. The maximum frequency drift allowed according to the MPEG guidelines is ±30 ppm. In some cases, for example, for a 4K video, the maximum frequency drift restriction does not apply.

Examples

The following example shows how to the disable MPEG compliance on Cisco RF-GW10:

```
Router#configure terminal
Router(config)#cable video mpeg-compliance disable
```

Commands: cable q to h

cable qam-domain

To configure a QAM domain, use the **cable qam-domain** command in global configuration mode.

cable qam-domain *qam-domain*

Syntax Description

qam-domain	Indicates the QAM domain. Valid range is from 1 to 20.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

A QAM domain is a logical grouping of QAM blocks sharing the same IP addresses for their unicast sessions. Only 20 QAM domains can exist on the Cisco RFGW-10. The QAM domains are numbered from 1 to 20. A QAM domain can contain any number of QAM blocks.

Note A QAM block can be present only in one QAM domain.

A QAM domain is configured with a local and a remote IP address. All local unicast sessions in the QAM domain use the local IP address as their destination IP address. All remote unicast sessions use the remote IP address as their destination IP address. The local and the remote IP address can be the same or different. However, in a QAM domain which uses the same IP address, a QAM block cannot be designated as local and remote.

The following conditions must be followed while creating QAM domains:

- A QAM block can belong to only one QAM domain.
- Multiple QAM blocks can belong to a single QAM domain.
- An IP address cannot be configured in more than one QAM domain.
- Removing a QAM domain results in removal of its IP addresses, video routes and sessions.

The **cable qam-domain** command creates groups of QAM channels. In the Cisco RFGW-10, you can configure 20 QAM domains and assign QAM blocks to each domain.

Examples

The following example creates QAM domain 3:

```
Router#configure terminal
Router(config)#cable qam-domain 3
```

Related Commands

Command	Description
ip	Specifies the destination IP address for video or remote sessions on the QAM domain.
video route	Specifies the route for a local or video session.

cable qam-group

To configure a cable QAM group, use the **cable qam-group** command in QAM interface configuration mode. To remove the cable QAM group from the QAM interface, use the **no** form of this command.

cable qam-group *qam-group-name*

no cable qam-group *qam-group-name*

Syntax Description

qam-group-name	Cable QAM group name.

Command Default

This command is enabled by default.

Command Modes

QAM interface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

To configure a cable QAM group, the QAM subinterface must be set to **cable mode video remote** mode. You cannot change or remove a QAM group from the QAM interface when it is advertised to the ERM.

Examples

This example shows how to create a cable QAM group:

```
Router# configure terminal
Router(config)# interface qam 3/1.2
Router(config-subif)# cable mode video remote
Router(config-subif)# cable qam-group qg1
```

Related Commands

Command	Description
cable service-group	Configures the QAM service group.
show cable service-group	Displays the service groups configured on the Cisco RFGW-10.

cable qam-partition

To create a user-defined QAM partition for a video server, use the **cable qam-partition** command in global configuration mode. To remove the QAM partition, use the **no** form of this command.

cable qam-partition *partition-id*

no cable qam-partition *partition-id*

Syntax Description

partition-id	QAM partition ID. The valid range is from 1 to 50.

Command Default

This command is enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

QAM partitioning is introduced in on the Cisco RFGW-10 to support the sharing of a Cisco RFGW-10 DS-384 line card or Cisco RFGW-10 chassis among different remote servers such as Digital Network Control System (DNCS), Universal Session Resource Manager (USRM), and Edge Resource Manager (ERM). The line card is partitioned and used by the multiple remote servers. QAM partitioning is used by protocol application such as GQI and ERMI to extend the QAM partition configuration for a given protocol.

QAM partitioning configuration provides the ability to divide QAM carriers into logical groups where each partition manages the QAM carriers without interfering with QAM carriers in different groups.

Fifty user-defined QAM partitions can be created with *partition-id* 1 to 50. These are used in remote video sessions.

A default QAM partition is a hidden partition (not user-defined) that collects the QAM carriers that are not assigned to any QAM partition. By default, all QAM carriers are in the default QAM partition. Once a QAM carrier is assigned to a partition, the carrier is removed from the default partition. Default partition IDs are used in local video sessions.

Examples

This example shows how to create a QAM partition:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)#
```

Related Commands

Command	Description
active	Activates the QAM partition configuration.
mgmt-ip	Configures the management IP address of the QAM partition.
protocol	Configures the control plane protocol of QAM partition.
server	Configures the IP address of an external server.
cable partition	Associates the QAM partition to the QAM interface.
snmp-server enable traps qp-lbg qam-change	Enables trap notifications when a QAM has been added to or deleted from a QAM Partition.

cable qam-replication-group

To configure the QAM replication group, use the **cable qam-replication-group** command in global configuration mode. To remove the QAM replication group, use the **no** form of this command.

cable qam-replication-group {*group-id* | **new**}

nocable qam-replication-group {*group-id* }

Syntax Description

groupd-id	QAM replication group ID. The valid range is from 1 to 3840.
new	Creates a new group and assigns a group number automatically.

Command Default

This command is enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

Cisco IOS-XE Release 3.3.0SQ introduces the QAM replication group feature to replicate any single QAM output from one port to another port on the same Cisco RFGW-10 DS-384 line card.

A QAM Replication Group (QRG) contains information about a single source QAM and its corresponding replicated copy or copies. A QRG contains only one pilot and a minimum of one and maximum of seven replicate QAMs. Each group is numbered with an identifier and contains the *slot*, *port* and *channel number* for both the source QAM (pilot-qam) and the destination QAM or QAMs (replicate-qam).

The **cable qam-replication-group** *group-id* command does one of the following:

- When there is no **group** already configured with a matching *group-id*, it creates one and opens it for editing.
- When there is an existing **group** with a matching *group-id*, it opens it for editing.

Note QAM replication is supported only within a given line card and not from one line card to another.

Examples

This example shows how to create a user-defined QAM replication group:

```
Router# configure terminal
Router(config)# cable qam-replication-group 1
Router(config)#
```

Related Commands

Command	Description
pilot-qam	Configures the pilot QAM in the QAM replication group.
replicate-qam	Configures the replicate QAM in the QAM replication group.

cable qdepth disable

To disable RLD qdepth errors reported by Bass FPGA and to enable alert for qam oversubscription on DEPI QAM, use the **cable qdepth disable** in global configuration mode. Use the **no** form of the command to disable this feature.

Note This command has been introduced to enable a customer specific scenario.

cable qdepth disable {**slot** *slot-number*| **all**}

no cable qdepth disable {**slot** *slot-number*| **all**}

Syntax Description

slot	Disables RLD qdepth error and enables alert on qam oversubscription for DEPI QAM at slot level.
slot-number	Slot number for the Cisco DS-384 line card. The valid range is from 3 to 12.
all	Disables RLD qdepth error and enables alert on qam oversubscription for DEPI QAM at chassis level.

Command Default

This command is disabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.5SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Restriction

This command is supported only on the Cisco RFGW-10 DS-384 line card.

Examples

This example shows how to disable RLD qdepth errors at chassis level:

```
Router# configure terminal
Router(config)# cable qdepth disable all
Router(config)#
```

This example shows how to disable RLD qdepth errors on the Cisco RFGW-10 DS-384 line card at slot number 8:

```
Router# configure terminal
Router(config)# cable qdepth disable slot 8
Router(config)#
```

This example shows how to enable RLD qdepth errors on the Cisco RFGW-10 DS-384 line card at slot number 8:

```
Router# configure terminal
Router(config)# no cable qdepth disable slot 8
Router(config)#
```

Related Commands

Command	Description
show running-config	Displays the running configuration.

cable route linecard load-balance-group

To configure a video route on the cable load balancing group and to enter the load balancing group configuration mode, use the **cable route linecard load-balance-group** command in global configuration mode. To disable a video route, use the **no** form of this command.

cable route linecard *lc-slot* **load-balance-group** *group-id*

no cable route linecard *lc-slot* **load-balance-group** *group-id*

Syntax Description

lc-slot	Specifies the line card slot. The valid slot numbers are 3 to 12.
group-id	Specifies the load balancing group number. The valid group IDs are 1 and 2.

Command Default

This command is enabled on default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

A load balancing group is used to identify a group of QAM traffic that uses the mid-plane 10 Gigabit Ethernet ports to forward traffic to the QAM carriers. Only 9.1Gbps traffic is allowed on the Cisco DS-384 line card.

On the Cisco RFGW-10, the Cisco RFGW-10 DS-384 line card has internal mid-plane interfaces to forward data traffic between the Supervisor and line card. Two load balancing groups represents this mid-plane— first mid-plane is LBG1, and second mid-plane is LBG2.

Examples

This example shows how to configure a load balancing group:

```
Router# configure terminal
Router(config)# cable route linecard 3 load-balance-group 1
Router(config-lbg)#?
Cable Load balance Group Configuration Commands:
  exit           Exit from route configuration for load balance
  no             Unconfigure Load Balance Group parameters
  qam-partition  QAM Partition
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
show cable linecard load-balancing-group	Displays the load balancing groups configured on the QAM partitions.

cable service-group

To create a cable service group and enter the QAM service group configuration mode, use the **cable service-group** command in global configuration mode. To remove the service group, use the **no** form of this command.

cable service-group *group-name*

no cable service-group *group-name*

Syntax Description

group-name	Service group name.

Command Default

This command is enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

A cable service group contains one or multiple QAM groups. A QAM group contains one or more channels.

Examples

This example shows how to create a user-defined cable service group:

```
Router# configure terminal
Router(config)# cable service-group 1
Router(config-qsg)#
```

Related Commands

Command	Description
cable qam-group	Configures the cable QAM group.
qam-group	Configures the QAM group in a cable service group.
show cable service-group	Displays the service group information.

cable slot kdumper enable

When the execution of the kernel is disrupted, a kernel dumper program is invoked. Once the kernel completes collecting the dumps, the dump logs are compressed and written to the line card flash and a normal reboot is invoked. To enable kernel dumper for the RFGW-10 DS-384 line card, use the **cable slot kdumper enable** command in global configuration mode. To disable kernel dumper, use the **no** form of the command.

cable slot *slot number* **kdumper enable**

no cable slot *slot number* **kdumper enable**

Syntax Description

slot number	Slot number of the line card. The valid range is from 3 to 12.

Command Default

This command is enabled by default for all the line cards under redundancy group and is disabled by default for the standalone line cards.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.1SQ	This command was introduced.

Usage Guidelines

This command is supported only for RFGW-10 DS-384 line cards.

Examples

The following example shows how to enable kernel dumper for the RFGW-10 DS-384 line card:

```
Router# configure terminal
Router(config)# cable slot 3 kdumper enable
```

Related Commands

Command	Description
show running-config	Displays the running configuration on the router.

cable video encryption-failover-mode

To enable video encryption failover, use the c**able video encryption-failover-mode** command in QAM subinterface configuration mode. To disable video encryption failover, use the **no** form of this command.

cable video encryption-failover-mode {**blackout**| **clear**}

no cable video encryption-failover-mode {**blackout**| **clear**}

Syntax Description

blackout	Indicates a fail to black. The encryption scheduler fails to retrieve and send a valid message for the session. The encrypted session is not played.
clear	Indicates a fail to clear. When failure occurs, the encrypted session is played without being scrambled.

Command Default

This command is enabled by default. The default failover mode is blackout.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

Each encrypted session can be configured as either a **blackout** or **clear** encryption failover.

Examples

This example shows how to configure blackout encryption failover:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable video encryption-failover-mode blackout
Router(config-subif)#
```

Related Commands

Command	Description
cable linecard encryption	Configures the line card encryption scrambling algorithm.

cable video group

To create a group of unicast video sessions, use the **cable video group** command in QAM subinterface configuration mode. To remove the group, use the **no** form of this command.

cable video group *sessions* **ip** *IP-address* **udp** *port* [**increment** *increment*] {**data bitrate** *bps*| **passthru** [**bitrate** *bps*| **cbr** [**bitrate** *bps*| **jitter** *ms*]| **jitter** *ms*]| **program** *program* [**increment** *increment*] [**bitrate** *bps*| **jitter** *ms*]}

no cable video group *group* **ip** *ip-address* **udp** *port* [**increment** *increment*] {**data bitrate** *bps*| **passthru** [**bitrate** *bps*| **cbr** [**bitrate** *bps*| **jitter** *ms*]| **jitter** *ms*]| **program** *program* [**increment** *increment*] [**bitrate** *bps*| **jitter** *ms*]}

Syntax Description

sessions	Specifies the number of sessions in a group. Valid group range is 2 to 30.
ip	Specifies the destination IP address.
IP-address	IP address of the destination.
udp	Specifies UDP as the protocol.
port	Specifies the UDP port used. Valid UDP port range is 1 to 65535.
increment	(Optional) Adds the increment value to the group UDP sessions.
increment	Specifies the increment value of the UDP port. Valid range is 1 to 10000. The default value is 1.
data	Adds a data-piping session to the QAM interface.
bitrate	Sets bitrate for group sessions.
bps	Specifies the bitrate value. Valid range is 1 to 52000000 bps.
passthru	Adds a pass-through session to the QAM interface.
cbr	Sets the constant bitrate for sessions.
jitter	(Optional) Sets the jitter for group sessions.
ms	Specifies the jitter value. Valid range is between 10 to 200 ms.
program	Sets the first program.

prog-num	Specifies the program number. Valid range is 1 to 65535.

Command Default None.

Command Modes QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated in Cisco IOS-XE Release 3.3.0SQ. The keyword **ip** was added.
Cisco IOS-XE Release 3.3.1SQ	This command was modified. The **data** and **passthru** keywords were added.

Usage Guidelines This command allows you to configure a group of video unicast sessions within a QAM channel and over a range of QAM channels.

Note The QAM subinterface must be set to cable video local mode.

Note If **increment** keyword is not specified, the default increment value used is 1.

The **bitrate** keyword is mandatory for data-piping sessions and optional for **passthru** and remap sessions.

Examples The following example shows a configuration of a video group for three video sessions with an increment of one:

```
Router# configure terminal
Router(config)# interface qam 3/3.1
Router(config-subif)# cable video group 2 ip 198.162.11.254 udp 49152 program 1
```

This example shows configuration of passthru video sessions:

```
Router(config-subif)# cable video group 2 ip 198.162.11.254 udp 49156 passthru
```

This example shows configuration of unicast video sessions with data-piping:

```
Router (config-subif)# cable video group 2 ip 198.162.11.254 udp 49154 data bitrate 50000
```

This example shows the configurations in the output of the **show run interface** command

```
Router# show run interface qam 3/3.1
```

```
Current configuration : 603 bytes
!
interface Qam3/3.1
cable carrier-id 1
cable mode video local
cable downstream lqam-group 1
cable downstream tsid 331
cable downstream rf-profile rf-video
cable downstream frequency 255000000
no cable downstream rf-shutdown
cable downstream interleaver-depth I128-J1
cable video ip 192.168.11.254 udp 49152 program 1
cable video ip 192.168.11.254 udp 49153 program 2
cable video ip 192.168.11.254 udp 49154 data bitrate 50000
cable video ip 192.168.11.254 udp 49155 data bitrate 50000
cable video ip 192.168.11.254 udp 49156 passthru
cable video ip 192.168.11.254 udp 49157 passthru
end
```

Related Commands

Command	Description
show cable video session	Displays the video session on the RF Gateway 10.

cable video ip multicast

To configure the multicast video sessions on a load balancing group, use the **cable video ip multicast** command in QAM subinterface configuration mode. To disable the multicast sessions, use the **no** form of this command.

cable video ip *dest-IP-address* **multicast** *label* {**data**| **passthru** [**one-stream** [**ref-pgm** *prog-num*]]| **program** *prog-num*| **remap** *input program number outpur program number*}

nocable video ip *dest-IP-address* **multicast** *label* {**data**| **passthru** [**one-stream** [**ref-pgm** *prog-num*]]| **program** *prog-num*| **remap** *input program number outpur program number*}

Syntax Description

dest-IP-address	Destination IP address of the video route or GQI ingress port IP address.
label	Specifies the multicast session label definition created for ASM or SSM.
data	Adds a data-piping session to the QAM interface.
passthru	Adds a pass-through session to the QAM interface.
one-stream	Selects the one-stream de-jittering mode. **Note** One-stream de-jittering mode can be applied only for the MPTS pass through session.
ref-pgm *prog-num*	Sets the referenced PCR in the selected program number as the master PCR. Valid range is from 1 to 65535.
program	Adds a remap session to the QAM interface.
prog-num	Specifies the program number.
remap	Adds local multicast MPTS remap session on a QAM carrier.
input-prog-num	Specifies the input program number to be remapped. Valid range is from 1 to 65535.
outpur-prog-num	Specifies the output program for the specified input program number. Valid range is from 1 to 65535.

Command Default

The load balancing group is configured.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.
Cisco IOS-XE Release 3.4.0SQ	This command was modified. The keywords **remap**, **one-stream** were added.

Usage Guidelines

Video servers use multiple network paths to reach the Cisco RFGW-10. Traffic enters through one of the multiple ingress ports to the Cisco RFGW-10.

Multiple ports also exist on the Cisco RFGW-10 between the ingress port to the output QAM channel. Each line card receives traffic from the internal ports. Using QAM partitioning, a mapping is specified using QAM partitions input route and the internal port. For example, a QAM partition with 10Gbps of maximum throughput may use one mid-plane 10 Gigabit Ethernet port exclusively or divide the throughput using 5 Gbps to two 10 Gigabit Ethernet port.

When a QAM model has more than one input port, the server determines which input port to use for a video session. For the ERMI QAM model, the input IP address is used to signal which input port should be used for a video session. For GQI model, the input port ID is used. This input port determines the route of the QAM partition. For multicast traffic, the internal port and the ingress port are used to join the multicast traffic.

Video routes are organized according to the mid-plane ports. The load balancing group ID indicates which midplane port is used for the sessions.

The input route is configured using the **cable route linecard load-balane-group** command at the global configuration level. For multicast sessions, the input route consists of destination IP address, maximum reserved bandwidth on the mid-plane and source and group IP address of the label using the **cable video label** command.

Note The same load balancing group on the line card can configure video routes for both local and remote sessions, as long as the total bandwidth reserved for each route does not exceed 9.1 Gbps for Cisco RFGW-10 DS-384 line card.

Note The QAM subinterface must be set to **cable mode video local** mode for local video sessions and **cable mode video remote** mode for remote video sessions.

A video session contains input attributes, processing type, and output attributes.

The input attributes include:

- Input type (ASM or SSM)
- Input port information (destination port)
- Allocated bitrate
- Jitter buffer size

The output processing types are as described as follows:

- Data-piping: All the input Program Identifiers (PID)s are preserved to the output. No Program Specific Information (PSI) processing and dejittering is performed.
- Pass-through: All input program numbers and PIDs are preserved to the output. In general, only one pass-through session is present on the QAM channel.
- Remapped: The output program number and PIDs are different from the input. The output program number is configured and output PIDs are selected on the program number.

The output attributes include the output QAM channel and output program number for remapped sessions.

Note By default the de-jittering mode is unified and effective from Cisco IOS-XE Release 3.4.0SQ, the one-stream de-jittering mode can be configured for the MPTS pass through session.

Examples

This example shows how to configure local multicast video sessions:

```
Router# configure terminal
Router(config)# cable route linecard 3 load-balance-group 1
Router(config-lbg)# qam-partition default ip 192.168.10.10 udp 49201 49250 bitrate 250000

Router(config)# interface Qam3/3.48
Router(config-subif)# cable mode video local
Router(config-subif)# cable vídeo ip 192.168.10.10 multicast ssm0 program 100
Router(config-subif)#
```

This example shows how to configure remote multicast video sessions:

```
Router# configure terminal
Router(config)# cable route linecard 3 load-balance-group 2
Router(config-lbg)# qam-partition 3 ip 192.168.10.10 udp 49201 49250 bitrate 250000

Router(config)# interface Qam3/3.40
Router(config-subif)# cable mode video remote
Router(config-subif)# cable vídeo ip 192.168.10.10 udp 23 multicast ssm0 program 100
Router(config-subif)#exit
```

This example shows how to configure the pass through multicast sessions in unified de-jittering mode:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.1
Router(config-subif)# cable video ip 192.168.10.10 multicast ssm30 passthru
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows how to configure the pass through multicast sessions in one-stream de-jittering mode:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.2
Router(config-subif)# cable video ip 192.168.10.10 multicast ssm31 passthru one-stream
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows how to configure the pass through multicast sessions in one-stream de-jittering mode with the user option for reference program number:

```
Router> enable
```

```
Router# configure terminal
Router(config)# interface qam 3/2.3
Router(config-subif)# cable video ip 192.168.10.10 multicast ssm32 passthru one-stream
ref-pgm 100
Router(config-subif)# exit
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
cable route linecard load-balancing-group	Configure a video route on the cable load balancing group on the line card.
cable video labels	Enters the cable video label configuration mode.

cable video ip udp

To configure unicast video sessions, use the **cable video ip udp** command in QAM subinterface configuration mode. To remove the sessions, use the **no** form of this command.

cable video ip *ip-address* {**udp** { *port*| *port - Max port}* | [**udp** *port*] **multicast** *label* }}{{ **data bitrate** *bps*| **data** }| [**filter** {[**pid** *pid-range*]| [**program** *prog-range*]}]| {**passthru** [**bitrate** *bps*| **cbr** [**bitrate** *bps*| **jitter** *ms* | [**one-stream** [**cbr jitter** *ms* | **jitter** *ms* | **ref-pgm***prog-num*]]]| **jitter** *ms*]| **passthru**}| {{**program** *program number*| **program** *program number* [**increment** *increment*]}| [**bitrate** *bps*| **jitter** *ms*]| [**program** *program number*]| [**remap** *input-prog-num outpur-prog-num*]}}

nocable video ip *ip-address* {**udp** { *port*| *port - Max port}* | [**udp** *port*] **multicast** *label* }}{{ **data bitrate** *bps*| **data** }| [**filter** {[**pid** *pid-range*]| [**program** *prog-range*]}]| {**passthru** [**bitrate** *bps*| **cbr** [**bitrate** *bps*| **jitter** *ms* | [**one-stream** [**cbr jitter***ms* | **jitter** *ms* | **ref-pgm** *prog-num*]]]| **jitter** *ms*]| **passthru**}| {{**program** *program number*| **program** *program number* [**increment** *increment*]}| [**bitrate** *bps*| **jitter** *ms*]| [**program** *program number*]| [**remap** *input-prog-num outpur-prog-num*]}}

Syntax Description

ip-address	Destination IP address of the video route on default QAM partition.
udp	Specifies UDP as the protocol.
port	Specifies the UDP port used. Valid range is 1 to 65535.
-	(Optional)Hyphen used to set the UDP range. Used with Max port option.
Max port	(Optional) Specifies the maximum UDP port used to specify the UDP port range.
data	Adds a data-piping session to the QAM interface.
bitrate	Sets the bitrate allocated for the data session.
bps	Specifies the bitrate value. Valid range is 1 to 52000000 bps.
multicast	Adds the multicast session to the QAM subinterface.
label	Specifies the multicast session label definition created for ASM or SSM.
passthru	Adds a pass-through session to the QAM interface.

one-stream	Selects the one-stream de-jittering mode. **Note** One-stream de-jittering mode can be applied only for the MPTS pass through session.
ref-pgm *prog-num*	Sets the referenced PCR in the selected program number as the master PCR. Valid range is from 1 to 65535.
cbr	(Optional) Sets the Constant bitrate or jitter for the session
jitter	(Optional) Sets the jitter for group sessions.
ms	(Optional) Specifies the jitter value. Valid range is between 10 to 200 ms.
program	Adds a remap session to the QAM interface.
program number	Specifies the program number.
increment	(Optional) Adds the increment value to the program number.
increment	Specifies the increment value of the program number. Valid range is 1 to 200.
filter	(Optional) Adds a filter to a QAM interface.
pid	(Optional) Sets filtering of PIDs on a unicast remap or pass through session associated with the QAM interface. For filtering on the remap sessions, the input PID number should be set.
pid-range	Specifies the range of PIDs to be filtered on the associated local unicast remap or pass through sessions. Valid range is from 1 to 8190.
program	(Optional) Sets filtering of programs on a local unicast pass through session associated with the QAM interface.
prog- range	Specifies the range of programs to be filtered on the associated local unicast pass through sessions. Valid range is from 1 to 65535.
remap	Adds a local unicast MPTS remap session on a QAM carrier.
input-prog-num	Specifies the input program number to be remapped. Valid range is from 1 to 65535.

outpur-prog-num	Specifies the output program for the specified input program number. Valid range is from 1 to 65535.

Command Default None.

Command Modes QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced. This command replaces the **cable video udp** command.
Cisco IOS-XE Release 3.3.1SQ	This command was modified. The **udp** keyword is modified to specify a UDP port range to configure unicast video sessions. The **bitrate** keyword is made optional for **passthru** and remap session creation.
Cisco IOS-XE Release 3.4.0SQ	This command was modified. The keywords **filter**, **one-stream**, and **remap** were added.

Usage Guidelin

Note The QAM subinterface must be set using the **cable mode video local** command for local video sessions and **cable mode video remote** command for remote video sessions.

The video route is configured in the **cable route linecard load-balance-group** configuration mode. While configuring the video session, the destination IP adress must be the same as the one configured on the **cable route linecard load-balance-group** mode. For a unicast session, the UDP port number must be one of the UDPs defined in the UDP range.

Note To change the **bitrate** or **jitter** value of an existing video session to a higher value, remove the existing video session and reconfigure a new session. To avoid oversubscription, ensure that the actual bitrate of the video session does not exceed the allocated bitrate.

Note By default the de-jittering mode is unified and effective from Cisco IOS-XE Release 3.4.0SQ, the one-stream de-jittering mode can be configured for the MPTS pass through session.

Note Effective from Cisco IOS-XE Release 3.3.1SQ, the UDP port range with *port - Max port* range argument is introduced. The valid UDP port value range for the UDP*port* and *Max port* is 1 to 65535.

Note The default value for **increment** option is 1.

Note Individual sessions created using the **udp** keyword with the port range option, cannot be deleted using the **clear cable video session id** command or no form with specific UDP port value.

Examples

This example shows how to configure local unicast video sessions:

```
Router# configure terminal
Router(config)# cable route linecard 3 load-balancing-group 1
Router(config-lbg)# qam-partition default ip 192.168.10.10 udp 49201 49255 bitrate 250000
Router(config-lbg)# exit
Router(config)#
Router(config)# interface qam3/3.1
Router(config-subif)# cable mode video local
Router(config-subif)# cable vídeo ip 192.168.10.10 udp 49211 program 10 bitrate 3750000
Router(config-subif)# exit
```

This example shows how to configure remote unicast video sessions:

```
Router(config)# cable route linecard 3 load-balancing-group 2
Router(config-lbg)# qam-partition 2 ip 192.168.10.10 udp 49256 49356 bitrate 250000
Router(config-lbg)# exit
Router(config)#
Router(config)# interface Qam3/3.48
Router(config-subif)# cable mode video remote [encrypt]
Router(config-subif)# cable partition 2 external-channel 23
Router(config-subif)#exit
```

Effective from Cisco IOS-XE Release 3.3.1SQ, this example shows how to configure a remap session using the **udp** *port - Max port* **option**

```
Router# configure terminal
Router(config)#
Router(config)# interface qam3/3.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49253 - 49255 program 2 increment 1
Router(config-subif)#exit
```

This example shows how to configure a passthru session:

```
Router> enable
Router# configure terminal
Router(config)#
Router(config)# interface qam 3/3.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49240 - 49245 passthru
Router(config-subif)# exit
```

This example shows how to configure a Data-piping session:

```
Router> enable
Router# configure terminal
Router(config)#
Router(config)# interface qam 3/3.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49246 - 49250 data bitrate 64000
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows the program filtering on the pass-through unicast session:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49156 filter program 18
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows the PID filtering on the pass-through unicast session:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49156 filter pid 18
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows the PID filtering on the remap unicast session:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49156 filter pid 68
Router(config-subif)# exit
```

This example shows how to configure the pass through unicast sessions in unified de-jittering mode:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.1
Router(config-subif)# cable video ip 192.168.10.10 udp 49156 passthru
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows how to configure the pass through unicast sessions in one-stream de-jittering mode:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.2
Router(config-subif)# cable video ip 192.168.10.10 udp 49157 passthru one-stream
Router(config-subif)# exit
```

Effective from Cisco IOS-XE Release 3.4.0SQ, this example shows how to configure the pass through unicast sessions in one-stream de-jittering mode with the user option for a reference program number:

```
Router> enable
Router# configure terminal
Router(config)# interface qam 3/2.3
Router(config-subif)# cable video ip 192.168.10.10 udp 49158 passthru one-stream ref-pgm
100
Router(config-subif)# exit
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.

Command	Description
cable route linecard load-balance-group	Configure a video route on the cable load balancing group on the line card.
cable video labels	Enters the cable video label configuration mode.

cable video labels

To configure video session labels, use the **cable video labels** command in global configuration mode.

cable video labels

Syntax Description

This command has no arguments or keywords.

Command Default

None.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is used to set video session configuration labels. Cisco RFGW-10 supports both Any Source Multicast (ASM) and Source Specific Multicast (SSM) video sessions. An ASM session is identified by the destination IP address. An SSM session is identified by the source or group IP address pairs. You can specify a maximum of three multicast address pairs in an SSM multicast session.

Examples

The following example shows an ASM label on the Cisco RFGW-10:

```
Router#configure terminal
Router(config)#cable video label
s
Router(cfg-video-lbl)#asm asm1 group 1.2.2.2
```

The following example configures an SSM label on the Cisco RFGW-10:

```
Router# configure terminal
Router(config)#cable video labels
Router(cfg-video-lbl)#ssm ssm1 source 2.2.22.2 group 1.1.11.1 bitrate 34
```

Related Commands

Command	Description
asm	Configures the Any Source Multicast (ASM) session definition.
cable video multicast	Configures ASM or SSM video session on the QAM interface.

Command	Description
ssm	Configures the Source Specific Multicast (SSM) session definition.

cable video multicast

To configure video multicast sessions on a QAM interface, use the **cable video multicast** command in QAM subinterface configuration mode. To deconfigure the multicast session, use the **no** form of this command.

cable video multicast *label* {**data**| **filter** [**pid** *pid-num*| **program***prog-range*]| **passthru**| **program** *prog-num*}

nocable video multicast *label* {**data**| **filter** [**pid** *pid-num*| **program***prog-range*]| **passthru**| **program** *prog-num*}

Syntax Description

label	Specifies the multicast session label definition created for ASM or SSM.
data	Adds a data-piping session to the QAM interface.
passthru	Adds a pass-through session to the QAM interface.
program	Adds a VoD session to the QAM interface.
prog-num	Specifies the program number.
filter	(Optional) Adds a filter to a QAM interface.
pid	(Optional) Sets filtering of PIDs on a unicast remap or pass through session associated with the QAM interface. For filtering on the remap sessions, the input PID number should be set.
pid-range	Specifies the range of PIDs to be filtered on the associated local unicast remap or pass through sessions. Valid range is from 1 to 8190.
program	(Optional) Sets filtering of programs on a local unicast pass through session associated with the QAM interface.
prog- range	Specifies the range of programs to be filtered on the associated local unicast pass through sessions. Valid range is from 1 to 65535.

Command Default

ASM and SSM labels are configured on the chassis.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on Cisco RF Gateway 10.
Cisco IOS-XE Release 3.4.0SQ	This command was modified. The keywords **filter** was added.

Usage Guidelines

A video session contains input attributes, processing type, and output attributes.

The input attributes include:

- Input type (ASM or SSM)
- Input port information (destination UDP port or labels)
- Allocated bitrate
- Jitter buffer size

The output processing types are as described as follows:

- Data-piping: All the input Program Identifiers (PID)s are preserved to the output. No Program Specific Information (PSI) processing and dejittering is performed.
- Pass-through: All input program numbers and PIDs are preserved to the output. In general, only one pass-through session is present on the QAM channel.
- Remapped: The output program number and PIDs are different from the input. The output program number is configured and output PIDs are selected on the program number.

The output attributes include the output QAM channel and output program number for remapped sessions.

For unicast sessions, all attributes are configured at the QAM channel level. For multicast sessions, the input attributes are configured at the video session label level.

Examples

The following example shows the ASM video session configuration on a QAM interface:

```
Router# configure terminal
Router(config)#interface qam 3/1.1
Router(config-subif)#cable video multicast asm1 data
Router(config-subif)# exit
```

The following example shows the program filtering on a pass-through multicast session:

```
Router# configure terminal
Router(config)#interface qam-red 3/2.1
Router(config-subif)#cable video multicast ssm254 filter program 18
Router(config-subif)# exit
```

The following example shows the PID filtering on a pass-through multicast session:

```
Router# configure terminal
Router(config)#interface qam-red 3/2.1
Router(config-subif)#cable video multicast ssm254 filter pid 18
Router(config-subif)# exit
```

The following example shows the PID filtering on a remap multicast session:

```
Router# configure terminal
Router(config)#interface qam-red 3/2.1
```

```
Router(config-subif)#cable video multicast ssm254 filter pid 68
Router(config-subif)# exit
```

Related Commands

Command	Description
asm	Creates a label for ASM multicast video session.
cable video labels	Enters the cable video label configuration mode.
cable video udp	Configures a unicast video session on QAM interface.
show cable video label	Displays the labels configured on the chassis.
show cable video session	Displays all cable video sessions configured on the Cisco RFGW-10.
ssm	Creates a label for SSM multicast video session.

cable video multicast uplink

To set an uplink port for multicast traffic, use the **cable video multicast uplink** command in global configuration mode. To remove the configuration, use the **no** form of this command.

cable video multicast uplink {**GigabitEthernet**| **TenGigabitEthernet** *interface* / *port*} [**backup GigabitEthernet**| **TenGigabitEthernet** *interface* /*port*] [**bandwidth** *kbps*]

no cable video multicast uplink {**GigabitEthernet**| **TenGigabitEthernet** *interface*/*port*} [**backup GigabitEthernet**| **TenGigabitEthernet** *interface*/*port*] [**bandwidth** *kbps*]

Syntax Description

GigabitEthernet	Indicates the Gigabit Ethernet interface. Valid slot range is 1 to 12.
TenGigabitEthernet	Indicates the 10 Gigabit Ethernet interface. Valid slots are 1 and 2.
interface /*port*	Specifies the interface slot and port.
backup	(Optional) Specifies the backup interface.
bandwidth	(Optional) Specifies the bandwidth of the interface.
kbps	(Optional) Specifies the bandwidth in kbps. Valid range is 1 to 1000000.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated in Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

This command is used to set the Gigabit or Ten Gigabit Ethernet port for multicast routing. The backup interface takes over the primary interface in case of failure.

Note Before setting the Gigabit Ethernet or Ten Gigabit Ethernet port for multicast routing, multicast routing must be enabled on the Cisco RFGW-10. The interfaces that would receive the multicast traffic must also be set in multicast mode.

Note When OIR is performed for the primary interface card, the backup uplink configuration in running configuration is lost and the following warning the is issued on the console: *Jun 14 11:54:22.211 IST: %RFGW-4-WARNING: Slot 4 removal with primary uplink GigabitEthernet 4/13 will cause loss of backup uplink TenGigabitEthernet 3/10 in running configuration.

Examples

The following example configures video multicast on GigabitEthernet interface 1/3 and backup interface 2/3 with 20 kbps bandwidth:

```
Router# configure terminal
Router(config)# ip multicast-routing
Router(config)# cable video multicast uplink GigabitEthernet 1/3 backup GigabitEthernet 2/3
 bandwidth 20
```

Related Commands

Command	Description
ip multicast-routing	Enables multicast routing on the Cisco RFGW-10.
show cable video multicast uplink	Displays video multicast uplink interfaces.

cable video pre-encrypted-multicast

To configure pre-encrypted Switched Digital Video (SDV) multicast video sessions, use the **cable video pre-encrypted-multicast** command in QAM subinterface configuration mode. To disable, use the **no** form of this command.

cable video pre-encrypted-multicast

no cable video pre-encrypted-multicast

Syntax Description

This command has no arguments or keywords.

Command Default

Encryption must be enabled on QAM partition.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

The **cable video pre-encrypted-multicast** command is configured for the QAM carrier configured with video remote mode and assigned to a GQI QAM partition.

When this CLI is configured on the QAM carriers, all session creation requests received from GQI, which has the encrypted flag set, is ignored.

Note This mode setting is only required in a DNCS 5.0 environment and is not in the DNCS 6.0 environment and later. On a DNCS 6.0, ERMI, or local CLI, it is not mandatory to configure this session.

Examples

This example shows how to configure the **cable video pre-encrypted-multicast** command:

```
Router# configure terminal
Router(config)# interface Qam-red3/1.1
Router(config-subif)# cable carrier-id 1
Router(config-subif)# cable mode video remote encrypt
Router(config-subif)# cable downstream lqam-group 1
Router(config-subif)# cable downstream tsid 1
Router(config-subif)# cable downstream frequency 125000000
Router(config-subif)# cable downstream rf-shutdown
Router(config-subif)# cable partition 1 external-channel 1
Router(config-subif)# cable video pre-encrypted-multicast
Router(config-subif)# exit
```

Related Commands

Command	Description
cable video labels	Enters the cable video label configuration mode.
cable video ip udp	Configures a unicast video session on the QAM interface.
show cable video label	Displays the labels configured on the chassis.
show cable video session	Displays all cable video sessions configured on the Cisco RFGW-10.

cable video psi-errmsg disable

To disable the following video PSI error messages:

- LC_ERRMSG_VIDEO_UNKNOWN_PROG_NUM
- LC_ERRMSG_VIDEO_PSI_CRC_ERROR
- LC_ERRMSG_VIDEO_BAD_TABLE_IN_PAT
- LC_ERRMSG_VIDEO_TOO_MANY_SECTION_IN_PAT

Use the **cable video psi-errmsg disable** command in global configuration mode. To enable the error messages, use the **no** form of this command.

cable video psi-errmsg disable

no cable video psi-errmsg disable

Command Default

no cable video psi-errmsg disable

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.7SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Use this command when the error messages appear frequently.

Examples

The following example shows how to the disable the Video PSI error messages on the Cisco RF Gateway 10:

```
Router# configure terminal
Router(config)# cable video psi-errmsg disable
```

cable video psi-interval

To configure the Program Specific Information (PSI) interval, use the **cable video psi-interval** command in QAM subinterface configuration mode. To restore the default value, use the **no** form of this command.

cable video psi-interval *ms*

no cable video psi-interval *ms*

Syntax Description

ms	Specifies the interval time. Valid range is from 40 to 1000 ms. Default is 100 ms.

Command Default

The default PSI interval value is 100 ms.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated in Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

The PSI interval is a timer configured on the QAM subinterface.

Reconfiguring the PSI interval value reschedules all existing and new sessions in the same QAM channel with the new value.

The **no** form of this command resets the value to the default value.

Examples

The following example shows the configuration of the PSI timer:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable video psi-interval 40
Router(config-subif)# exit
```

Related Commands

Command	Description
cable video timeout	Configures the video session time-out intervals on the QAM interface.

cable video qam-oversubs-notify enable

To enable the video QAM bandwidth oversubscription monitoring feature, use the **cable video qam-oversubs-notify enable** command in global configuration mode. To disable the video QAM bandwidth oversubscription monitoring feature, use the **no** form of the command.

cable video qam-oversubs-notify enable

no video qam-oversubs-notify enable

Syntax Description

This command has no arguments or keywords.

Command Default

Video QAM bandwidth oversubscription monitoring feature is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.1SQ	This command was introduced.

Usage Guidelines

QAM oversubscription notifications help to identify the overloaded QAMs and offload them. You can use the history of oversubscription events as a first level information to rule out software issues in problematic scenarios like macro blocking or distorted feeds.

Examples

The following example shows how to enable the QAM bandwidth oversubscription monitoring feature on Cisco RFGW-10:

```
Router#configure terminal
Router(config)#cable video qam-oversubs-notify enable
```

Related Commands

Command	Description
show controllers qam	Displays information about downstream configuration on a line card.
show cable video sessions	Shows the total number of video sessions.
snmp-server enable traps qp-lbg qam-oversubscription	Enables traps to receive QAM bandwidth oversubscription notifications on an NMS (network management system).

cable video reserved-pid

To reserve the PIDs, use the **cable video reserved-pid** command in global configuration mode. To disable the PID reservation, use the **no** form of this command.

cable video reserved-pid *minimum PID range maximum PID range*

no cable video reserved-pid *minimum PID range maximum PID range*

Syntax Description

minimum PID range	Specifies the minimum PID range that can be reserved. The range is from 256 to 8159.
maximum PID range	Specifies the maximum PID range that can be reserved. The range is from 256 to 8159.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced on the Cisco RF Gateway 10
Cisco IOS-XE Release 3.4.1SQ	This command was modified. The minimum and maximum values for the reserved-pid range are changed. The valid range is 256 – 8159.

Usage Guidelines

You can configure only two PID ranges per chassis. The entire range cannot be used to reserve the PID. You can reserve only two PID ranges per chassis with a gap of 2048 PIDs between two configurations.

Examples

The following example shows how to reserve the range of PID:

```
RFGW10# configure terminal
RFGW10(config)# cable video reserved-pid 455 500
```

cable video scrambler

To configure the parameters for scrambling of the video sessions, use the **cable video scrambler** command in global configuration mode. To disable the scrambling, use the **no** form of the command.

cable video scrambler {**video-audio-only | check-scg-at-prov | strong-pairing-enforce** | **alarm-start-delay** *delay-seconds* | **eis** *eis_id eis_name tcp_port* | **linecard** *slot* {**tier-based** | **ca-interface** *ip_address subnet_mask gateway* | **arp** *dest_ip_address mac_address* | **ip-route** *dest_ip_address gateway_ip* [*subnet_mask*]| **ecmg** *ecmg_id* {**new** *name ecmg_type ca_system_id ca_subsystem_id* **| update**}}| **pme vodsid** *id* | **pme cem** *ip_address port*| **pme mgmt-ip** *ip_address*}

no cable video scrambler {**video-audio-only | check-scg-at-prov | strong-pairing-enforce** | **alarm-start-delay** *delay-seconds* | **eis** *eis_id* | **linecard** *slot* {**ca-interface** | **ecmg** *ecmg_id* | **arp** *dest_ip_address mac_address* | **ip-route** *dest_ip_address gateway_ip* [*subnet_mask*]| **tier-based**}| **pme vodsid** *id* | **pme cem** *ip_address port*| **pme mgmt-ip** *ip_address*}

Syntax Description

video-audio-only	Sets scrambling for only video and audio elementary streams for all line cards.
check-scg-at-prov	Specifies whether the Scrambling Control Group (SCG) is checked at the time of provisioning for all line cards.
strong-pairing-enforce	Sets the NDS strong pairing enforcement for all line cards.
alarm-start-delay	Configure the start delay of the scrambling alarms.
delay-seconds	Delay time. The valid range is from 4 to 300 seconds.
eis	Specifies the parameters for Event Information Scheduler (EIS).
eis_id	EIS connection ID. The valid value is from 1 to 10.
eis_name	EIS server name.
tcp_port	TCP port number. The valid range is from 1024 to 65535.
linecard	Configures scrambling for a line card.
slot	Line card slot number. The valid range is from 3 to 12.
tier-based	Configures tier-based scrambling for the line card.
ca-interface	Configures CA interface for the line card.

ip_address	IP address for the CA interface.
subnet_mask	Subnet mask for the CA interface.
gateway	Default gateway for the CA interface.
arp	Configures static Address Resolution Protocol (ARP) entry for a line card.
dest_ip_address	Destination IP address.
mac_address	MAC address.
ip-route	Configures IP route on line card. **Note** We recommend that you must configure IP route only to connect to the CA servers residing in a different network. Improper configuration of IP routes can result in flooding the CA interface in the line card, which can affect the scrambling performance.
gateway_ip	Default gateway for the IP route.
subnet_mask	(Optional) Subnet mask for the IP route.
ecmg	Specifies the parameters for the Entitlement Control Message Generator (ECMG) for the line card.
ecmg_id	ECMG ID. The valid range is from 2 to 4.
new	Adds a new ECMG proxy configuration.
name	ECMG name.
ecmg_type	Specifies the type of ECMG. The valid values are the following: • **hitachi—**Specifies that the ECMG type is Hitachi. • **irdeto—**Specifies that the ECMG type is Irdeto. • **nagra—**Specifies that the ECMG type is Nagra. • **pkey—**Specifies that the ECMG type is PowerKey. • **standard—**Specifies that the ECMG type is standard.

ca_system_id	CA system ID for the associated ECM stream in Hex. The valid values are from 0000 to FFFF. **Note** Contact your CA vendor for the CA system ID.
ca_subsystem_id	CA subsystem ID in Hex. The valid values are from 0000 to FFFF. **Note** Contact your CA vendor for the CA subsystem ID.
update	Updates an existing ECMG proxy configuration.
pme vodsid	Specify the vods id that is assigned to the customer.
id	Assigned to the customer by Combined Conditional Access Development, LLC.
pme cem	Specify the IP address and port for connecting to the Converged EdgeQAM Manager (CEM) application.
ip_address	The IP address of the system on which the CEM application is running.
port	The port on which the CEM application is listening for connection from the RFGW-10. The valid values are from 1024 to 65534.
pme mgmt-ip	Specify the user configured management IP as part of PME configuration. **Note** CEM server should be reachable from the particular interface in RFGW-10 having PME management IP as its interface IP.
ip_address	Source IP used for establishing a connection to CEM from RFGW10.

Command Default

DVB scrambling is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.
Cisco IOS-XE Release 3.5.0SQ	This command was modified. The **alarm-start-delay**, **pme vodsid** and **pme cem** keywords were introduced.

Usage Guidelines

When the **video-audio-only** keyword is configured, elementary streams other than video and audio are not scrambled.

When the **check-scg-at-prov** keyword is configured, the Simulcrypt Synchroniser (SCS) does not provision the SCG from EIS if the elementary streams or services in the incoming stream do not match the streams or services in SCG provisioning message. When the **check-scg-at-prov** keyword is disabled, the input transport stream is verified only during scrambling.

Examples

The following example shows how to enable scrambling for only video and audio elementary streams for all line cards:

```
Router# configure terminal
Router(config)# cable video scrambler video-audio-only
```

The following example shows how to enable checking of the SCG at the time of provisioning for all line cards:

```
Router# configure terminal
Router(config)#  cable video scrambler check-scg-at-prov
```

The following example shows how to enable NDS strong pairing enforcement for all line cards:

```
Router# configure terminal
Router(config)# cable video scrambler strong-pairing-enforce
```

The following example shows how to configure the start delay of the scrambling alarms:

```
Router# configure terminal
Router(config)# cable video scrambler alarm-start-delay 120
```

The following example shows how to configure EIS with EIS connection ID 1, EIS name server1, TCP port 1024:

Note Recommended configuration: Each QAM Partition (QP) should have its own dedicated EIS configuration. While configuring single EIS for multiple QP, if the EIS connection between the external EIS and RFGW-10 has issues such as IP connection flapping, or problems with SUP SSO and LCSO, some known caveats such as SCG data loss from EIS server are found.

```
Router# configure terminal
Router(config)# cable video scrambler eis 1 server1 1024
Router(config-eis)# cp-overrule 2
Router(config-eis)# overwrite-scg
Router(config-eis)# end
```

The following example shows how to configure scrambling on a CA interface on line card 3:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ca-interface 192.168.0.2 255.255.255.0
0.0.0.0
```

The following example shows how to configure scrambling for a new ECMG on line card 3:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 new ecmgname1 standard 952 0
Router(config-ecmg)# auto-channel-id
Router(config-ecmg)# connection 1 1 192.168.0.3 4001
Router(config-ecmg)# desc-rule 1 rule1 add-priv-data at-es-level A076B3 100,125
```

The following example shows how to update an existing ECMG configuration on line card 3:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# no auto-channel-id
Router(config-ecmg)# connection 1 1 192.168.0.4 4001 4
Router(config-ecmg)# overrule min-cp-duration 1200
```

The following example shows how to configure tier-based scrambling on line card 3:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 tier-based
Router (config-tier)# access-criteria 2 A076B300005E
```

The following example shows how to configure static ARP entries:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 arp 192.168.0.8 30e4.db04.8dc0
```

The following example shows how to configure IP route for the CA interface on the line card:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ip-route 192.168.0.15 192.168.0.19
255.255.255.128
```

The following example shows how to configure PME on the line card:

```
Router# configure terminal
Router(config)# cable video scrambler pme vodsid 111
Router(config)# cable video scrambler pme cem 10.10.10.10 5000
```

Related Commands

Command	Description
show cable video scrambler	Displays the scrambling information for the video sessions.
access-criteria	Configures the access criteria for the ECMG.
cp-overrule	Configures the Crypto Period (CP) overrule duration.
overwrite-scg	Sets the SCG overwrite.
fail-to-clear-duration	Sets fail to clear duration.
auto-channel-id	Configures automatic channel ID selection.
connection	Configures ECMG connection.
desc-rule	Configures descriptor rule.
overrule	Overrules the default setting for the ECMG.

cable video servers

To configure server groups for video sessions using external servers, use the **cable video servers** command in global configuration mode. To deconfigure server groups for video sessions, use the **no** form of this command.

cable video servers *server-groupname*

no cable video servers *server-groupname*

Syntax Description

server-groupname	Specifies the name of the video server group.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
12.2(50)SQ	This command was modified. The cable video server group configuration commands were modified.

Usage Guidelines

Server groups are required to set up video sessions when external servers such as the Data Network Control Station (DNCS) are used.

A server group specifies the properties of protocols used, time-out and reconnect time intervals, IP address of the server, and the management IP address for communication between the server and the Cisco RFGW-10.

Any number of server groups can be created, but only one of each type can be activated at any point of time.

Examples

The following example shows how to create a server group and lists the properties:

```
Router(config)#cable video servers servergroup1
Router(config-video-servers)#?
Cable Video Server Group Configuration Commands:
  active           Start using the server-group
  exit             Exit from the Video Server Group mode
  mgmt-ip-address  Management IP address
  no               Unconfigure Video Server Group parameters
  protocol         Configure protocols supported by servers in the group
  reset            Configure GQI Reset parameters
  server           IP address of video servers
  keepalive        Configure keepalive parameters
```

Related Commands

Command	Description
active	Activates the server.
iprpcportmapper	Establishes an RPC connection between the external server and EQAM.
keepaliveretry	Configures the keepalive retry value on the server.
mgmt-ip-address mac-address	Configures the management IP and MAC address of the server.
protocol	Configures the protocols supported by the server.
resetinterval	Configures the reset interval on the server.
server	Configures the IP address of the server.

cable video table

To configure video sessions on a QAM channel using the pre-defined UDP map, use the **cable video table** command in QAM subinterface configuration mode. To remove the configuration, use the **no** form of this command.

cable video table 24-qam-map

nocable video table 24-qam-map

Syntax Description

24-qam-map	Specifies the pre-defined port map. This is only applicable to local sessions.

Command Default

This command has no default values or behavior.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on Cisco RF Gateway 10.

Usage Guidelines

Local video sessions offer two methods of mapping UDP ports to QAM ports:

- User-specified UDP ranges: Start and end UDP ports are specified using the **cable video udp** command.
- Table-based: Referred to as **24-qam-map**. A local session is configured locally on the Cisco RFGW-10 using the **cable video table** command. The currently supported pre-defined UDP map is the 24-qam-map table.

Examples

The following example configures 30 (input sessions per QAM channel) re-mapped sessions in a QAM interface channel:

```
Router# configure terminal
Router(config)#interface qam 3/1.1
Router(config-subif)#cable video table 24-qam-map
Router(config-subif)# exit
```

Related Commands

Command	Description
cable video udp	Configures a unicast video session on QAM interface.

Command	Description
show cable video session	Displays all cable video sessions configured on the Cisco RFGW-10.

cable video timeout

To configure the video session time-out thresholds, use the **cable video timeout** command in global configuration mode. To restore the default value, use the **no** form of this command.

cable video timeout {**init-session** *ms*| **idle-session** *ms*| **off-session** *sec*| **low-bitrate-idle-session** *sec*}

no cable video timeout {**init-session** *ms*| **idle-session** *ms*| **off-session** *sec*| **low-bitrate-idle-session** *sec*}

Syntax Description

init-session	Sets the timeout interval during initialization of a video session. Valid range is from 100 ms to 60000 ms. Default is 5000 ms.
idle-session	Sets the idle video session timeout interval. Valid range for idle sessions is 10 0ms to 2000 ms. Default value is 250 ms.
off-session	Sets the timeout interval for an off video session. Valid range for off sessions is 1 second to 4294967295 seconds. Default value is 60 seconds.
low-bitrate-idle-session	Sets the idle session timeout interval. When the low bitrate value is less than or equal to 64000 bps, the default idle timeout value is 5 seconds. **Note** For video sessions with bitrate value greater than 256000 bps, the idle-session timeout value is 250msec by default or takes the user configured value.
ms	Specifies the time in milliseconds.
sec	Specifies the time in seconds

Command Default

Newly created sessions are in the init state. The default value is 5000 ms.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated and modified to include the **low-bitrate-idle-session** keyword.

Usage Guidelines

A video session is created in the init state. The session enters the idle state when no traffic flows over a time duration specified by the init timer. The state transition is used to trigger a source switchover if a backup source is provided for the session.

When traffic stops in an active video session for a time period longer than the idle timer, the session moves to the idle state.

Similar to the idle state sessions are the off state sessions. Idle video sessions enter the off state when the time period of the idle session is longer than the off timer. The default off timer value is 60 seconds.

Use the **cable video timeout low-bitrate-idle-session** command to separate low bitrate idle sessions for SDV mini-carousel with 64Kbps.

The **no** form of the command resets the timer to the default value.

Reconfiguration of the init timer, idle timer, and the off timer affects only the new video sessions. The existing video sessions remain unchanged.

Note A session always moves from the idle state before moving to the off state.

Examples

The following example shows the configuration of the idle session timer to 200 ms and the off session timer to 2 seconds:

```
Router# configure terminal
Router(config)# cable video timeout idle-session 200
Router(config)# cable video timeout off-session 2
Router(config)#exit
```

Related Commands

Command	Description
cable video psi-interval	Configures the PSI timer on a QAM interface.

cable video udp

Note Effective with Cisco IOS-XE Release 3.3.0SQ the **cable video udp** command is replaced by the **cable video ip udp** command. See the **cable video ip udp** command for more details.

To configure a unicast video session, use the **cable video udp** command in QAM subinterface configuration mode. To unconfigure the session, use the **no** form of this command.

cable video udp *port* {**data**| **filter pid** *pid-list*| **passthru [cbr]**| **program** *prog-num*} [**bitrate** *bps*| **jitter** *ms*]

no cable video udp *port* {**data**| **filter pid** {**all**| *pid-list*}| **passthru [cbr]**| **program** *prog-num*} [**bitrate** *bps*| **jitter** *ms*]

Syntax Description

port	Specifies the destination UDP port.
data	Adds a data-piping session to the QAM interface.
filter	Adds a filter to the video session.
pid	Sets filtering of PIDs for the pass-through video session.
pid-list	Specifies the PIDs or the range of PIDs or both to be dropped for the video session. The PID range is specified in "lower_pid - upper_pid" format. All PIDs must be within 1 to 8190 inclusively. PIDs and PID ranges are to be separated by commas. A space is required before and after the commas and hyphens.
all	Deletes all filtered PIDs. This keyword is applicable to the **no** form of the command.
passthru	Adds a pass through session to the QAM interface.
cbr	Specifies that the session is supposed to be constant bitrate.
program	Adds a VoD session to the QAM interface.
prog-num	Specifies the program number.
bitrate	(Optional) Sets the bitrate allocated for the session.
bps	(Optional) Specifies the bitrate value. Valid range is 1 to 52000000 bps. Default is 3.75 Mbps.

jitter	(Optional) Specifies the amount of jitter allowed in a network.
ms	(Optional) Specifies the jitter value. Valid range is 10 to 200 ms. Default is 200 ms.

Command Default

None.

Command Modes

QAM subinterface configuration (config-subif)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
12.2(50)SQ1	Added the **filter** keyword to allow filtering of PIDs for pass-through video sessions.
Cisco IOS-XE Release 3.3.0SQ	This command is replaced by the **cable video ip udp** command.

Usage Guidelines

A unicast session is identified by its destination IP address and destination UDP port number. The destination IP address of the QAM block is configured in the video route command at the global configuration level. The destination UDP port is specified per unicast session. The UDP port value should be within the specified range and the corresponding configured video policy route.

Filtering of PIDs is applicable for pass-through video sessions. It is intended for filtering of unreferenced PIDs. No PMT regeneration will be performed even if PIDs referenced in the PMT are filtered. Upto 32 PIDs can be filtered per session. Up to eight PIDs or PID ranges can be specified in one CLI line. Multiple commands lines can be used to specify the PID filter.

Note The QAM subinterface must be set to cable video local mode.

Note To change the bitrate or jitter value of an existing video session to a higher value, remove the existing video session and reconfigure a new session. To avoid oversubscription, ensure that the actual bitrate of the video session does not exceed the allocated bitrate.

Examples

The following example configures a VoD session on QAM interface 3:

```
Router# configure terminal
Router(config)# interface qam 3/1.1
Router(config-subif)# cable mode video local
```

```
Router(config-subif)# cable video udp 1000 program 2 bitrate 3750000
Router(config-subif)# exit
```

The following example shows filtering being configured for unicast sessions. PID 23, 45 and PID range between 40 to 50 are filtered:

```
Router# configure terminal
Router(config)# interface qam-red 3/1.1
Router(config-subif)# cable video udp 10000 passthru 3500000
Router(config-subif)# cable video udp 10000 filter pid 23 , 34 , 40 - 50
Router(config-subif)# exit
```

Related Commands

Command	Description
cable video multicast	Configures video multicast session on QAM interface.
show cable video session	Displays the video sessions configured on the chassis.

class

To select the redundancy class for a line card group, use the **class** command in line card redundancy configuration mode. To disable, use the **no** form of this command.

class{**1:1**| **1:n**}

no class

Syntax Description

1:1 | 1:n	Specifies the redundancy class of the line card. • **1:1—**Supports hot redundancy. • **1:n—**Supports warm redundancy.

Command Default

None.

Command Modes

Line card redundancy configuration (config-red-lc)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command configures the redundancy class for the line card. The transmission switching between an active line card and a switchover line card is done by setting the class. Classes 1:1 and 1:n imply transmission switching from the active line card to the standby line card on switchover.

1:n redundancy refers to “n” active line cards being protected by one standby line card. The standby can take over for any active that fails, but cannot protect the others until the failed unit is restored and the standby is back in standby mode. 1:1 redundancy is treated as a special case of 1:n with a dedicated standby unit for a single active line card.

Examples

The following example assigns class 1: 1 on redundancy line card group 2 on the Cisco RFGW-10:

```
Router(config-red)#linecard-group 2 internal-switch
Router(config-red-lc)#class 1:1
```

Related Commands

Command	Description
description	Adds a description to the line card group.

Command	Description
linecard-group internal-switch	Creates a line card group for the line card.
member slot	Adds a slot to the redundancy group.
redundancy	Enters redundancy configuration mode.
show redundancy linecard	Displays information about a line card or a line card group.

clear cable clock counters

To clear information about Timing, Communication and Control (TCC) DOCSIS Timing Interface (DTI) client and server counts and path traceability information, use the **clear cable clock counters** command in privileged EXEC mode.

clear cable clock *slot* **counters**

Syntax Description

slot	Identifies a TCC interface on the Cisco RF Gateway 10.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command clears the TCC DTI client and server statistic counts and path traceability information.

Examples

The following example shows the counters on the TCC 13 card on the Cisco RF Gateway 10:

```
Router#show cable clock 13 counters
TCC Card 13 DTI counters:
-------------------------
    Client Normal time             : 0x1EB6
    Client Holdover time           : 0x0000
    Client Phase Correction        : 0
    Client Freq Correction         : 63213
    Client EFC Correction          : 61039
    Client transition count t3     : 0
    Client transition count t4     : 1
    Client transition count t6     : 0
    Client transition count t7     : 0
    Client port switch count       : 1
```

The following command clears the counters on the TCC 13 card on the Cisco RF Gateway 10:

```
Router#clear cable clock 13 counters
```

The following is a sample output of the TCC 13 card counters after execution of the **clear cable clock counters** command on the Cisco RF Gateway 10:

```
Router#show cable clock 13 counters
TCC Card 13 DTI counters:
-------------------------
```

```
Client Normal time             : 0x01B5
Client Holdover time           : 0x0000
Client Phase Correction        : 65535
Client Freq Correction         : 63210
Client EFC Correction          : 60649
Client transition count t3     : 0
Client transition count t4     : 0
Client transition count t6     : 0
Client transition count t7     : 0
Client port switch count       : 0
```

Related Commands

Command	Description
cable clock free-run	Allows the clock to be in free-run mode.
show cable clock	Displays information on TCC DTI client and server statistics counts and path traceability information.

clear cable depi counters

To clear all Downstream Exernal PHY Interface (DEPI) counters, use the **clear cable depi counters** command in privileged EXEC mode.

clear cable depi counters {**all**| **session-id** *id*| **slot** *slot*}

Syntax Description

all	Clears counters of all DEPI sessions.
session-id	Clears counters of a particular session.
id	Specifies the DEPI session.
slot	Clears the counters of a session on a particular slot.
slot	Specifies the slot. Valid slot range is from 3 to 12.

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command clears all the counters on an existing DEPI sessions on the Cisco RFGW-10.

Examples

The following example shows the clearance of the counters in all the DEPI sessions:

```
Router#clear cable depi counters all
```

Related Commands

Command	Description
show cable depi-sessions	Displays DEPI session information.

clear cable ermi statistics

To clear the ERMI protocol connection stastistics information, use the **clear cable ermi statistics** command in privileged EXEC mode.

clear cable ermi {**errp**| **rtsp**} **statistics**

Syntax Description

errp	Clears the Edge Resource and Registration protocol (ERRP) connection sessions.
rtsp	Clears Real-time Streaming Protocol (RTSP) connections session.

Command Default

This command is enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

This command clears the ERMI protocol connection information of ERRP and RTSP configured on the QAM partition.

Examples

This example shows how to clear the ERRP statistics:

```
Router# clear ermi errp statistics
```

Related Commands

Command	Description
errp	Configures Edge Resource and Registration protocol (ERRP) on the QAM partition.
rtsp	Configures Real-time Streaming Protocol (RTSP) on the QAM partition.

clear cable midplane ping statistics

To clear the midplane ping statistics on the Cisco RFGW-10, use the **clear cable midplane ping statistics** command in privileged EXEC mode.

clear cable midplane ping statistics {**all**| **slot** *lc_slot*}

Syntax Description

all	Clears the midplane ping statistics of all line cards.
slot	Clears the midplane ping statistics of a line card slot.
lc_slot	Line card slot. The valid range is from 3 to 12.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ4	This command was introduced.

Usage Guidelines

This command clears the midplane ping statistics on the Cisco RFGW-10.

Examples

The following shows how to clear the midplane ping information from all line cards:

```
Router# clear cable midplane ping statistics all
```

Related Commands

Command	Description
cable midplane ping	Configures the midplane pings between the line card and the Supervisor on the Cisco RFGW-10.
showcable midplane pingstatistics	Displays the midplane ping statistics between the line cards and the Supervisor on the Cisco RFGW-10.

clear cable video gqi statistics

To clear all video GQI sessions, use the **clear cable video gqi statistics** command in privileged EXEC mode.

clear cable video gqi statistics {**all**| **qam-partition** *partition-id*}

Syntax Description

all	Clears all the QAM partitions statistics information configured for GQI on the line card.
qam-partition	Clears statistics information configured for GQI for a specific QAM partition.
partition-id	QAM partition ID. The valid range is from 1 to 50.

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

This command clears all the GQI statistics information on the Cisco RFGW-10.

Examples

The following example shows the GQI statistics information on the QAM partition 3:

```
Router# show cable video gqi statistic qam 3
Qam Partition 3 Statistics:
         Create     Delete     Create     Delete     Insert     Cancel     Switch     Bind
       Unbind     Reset      Encryption Event
         Shell      Shell      Session    Session    Packet     Packet     Source     Session
    Session    Indication Discovery  Notification
-------------------------------------------------------------------------------------------
Success: 3          4          3          2          2          2          1          1
      0          3          1          1
Error:   4          5          2          3          4          2          2          1
      2          0          2          2
Total:   7          9          5          5          6          4          3          2
      2          3          3          3
```

The following example shows how to clear GQI statistics on the QAM partition 3:

```
Router# clear cable video gqi statistics qam-partition 3
```

The following example shows the output for the GQI sessions on QAM interface 3 after executing the clear cable video gqi statistics command:

```
Router# show cable video gqi statistic qam 3
Qam Partition 3 Statistics:
         Create     Delete     Create     Delete     Insert     Cancel     Switch     Bind
       Unbind     Reset      Encryption Event
         Shell      Shell      Session    Session    Packet     Packet     Source     Session
    Session    Indication Discovery  Notification
-------------------------------------------------------------------------------------------
Success: 0          0          0          0          0          0          0      0
   0          0          0          0
Error:   0          0          0          0          0          0          0      0
   0          0          0          0
Total:   0          0          0          0          0          0          0      0
   0          0          0          0
```

Related Commands

Command	Description
show cable video packet	Displays video packet information.

clear cable video packet-insertion

To clear all video packet insertions, use the **clear cable video packet-insertion** command in privileged EXEC mode.

clear cable video packet-insertion {**qam**| **qam-red** *slot* /*port* .*channel* [**stream** *stream-id*]| **all**| *slot slot*}

Syntax Description

qam	Specifies the QAM interface on the Cisco RFGW-10.
qam-red	Specifies the QAM interface when line card redundancy is configured on the Cisco RFGW-10.
slot	Specifies the slot on the QAM interface. Valid range is from 3 to 12.
port	Specifies the port on the interface. Valid range is from 1 to12.
channel	(Optional) Specifies the channel on the port. Valid range is from 1 to 4.
stream	(Optional) Specifies packet stream insertion information.
stream-id	(Optional) Specifies the packet stream identifier. Valid range is from 1 to 4294967295.
all	Clears all the video packet insertions on the chassis.
slot	Clears the video packet insertions for a given slot.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ. The command name is changed from **clear cable video packet** to **clear cable video packet-insertion**.

Usage Guidelines

This command clears all the video packet insertions on the Cisco RFGW-10.

Examples

The following example shows the video packets on QAM interface 3:

```
Router# show cable video packets qam-red 3/1.1
Packet                          Times        Actual     Insert       Num Pkts
Stream ID  Interface  Version  Repeat       Repeated   Rate (bps)   Inserted     State
-------------------------------------------------------------------------------------
1          Qam3/1.1   1        Continuos    14460      1000         1            ON
```

The following example shows how to clear the video packet insertions on QAM interface 3:

```
Router# clear cable video packet qam-red 3/1.1 stream 1
```

The following example shows the output for the video packets on QAM interface 3 after executing the clear cable video packet command:

```
Router# show cable video packet qam-red 3/1.1
Packet                          Times        Actual     Insert       Num Pkts
Stream ID  Interface  Version  Repeat       Repeated   Rate (bps)   Inserted     State
-------------------------------------------------------------------------------------
Total Packets = 0
```

Related Commands

Command	Description
show cable video packet	Displays video packet information.

clear cable video server-group statistics

To clear all video server-group statistics, use the **clear cable video server-group statistics** command in privileged EXEC mode.

clear cable video server-group *group-name* **statistics**

Syntax Description

group-name	Name of the video server group.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command clears all the video server-group statistics on the Cisco RFGW-10.

Examples

The following example displays information on all server groups configured on the line card:

```
Router# show cable video server-group all
Server-Group :    gqi1
State :           ACTIVE
Protocol :        GQI Emulation
Emulation Type :  24-qam
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
Reset Timeout Period :  5 seconds
Number of Retry : 0
Server[0] :       1.9.87.2

        Management IP: 1.43.24.61  Port: 938  Mac-Addr: 001d.e5e8.66c0
        QAM Interfaces : 3/1.1-3/6.4
                                          Reset              Pending
        Server           State            Indication         Requests
        ------------------------------------------------------------------
        1.9.87.2         Connected        In-progress        0
```

The following example shows how to clear the video server-group statistics:

```
Router# clear cable video server-group gqi1 statistics
```

The following example displays information of the server groups configured on the line card, after executing the clear cable video server-group statistics command:

```
Router# show cable video server-group all
Server-Group :    gqi1
```

```
State :           ACTIVE
Protocol :        GQI Emulation
Emulation Type :  24-qam
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
Reset Timeout Period :  5 seconds
Number of Retry : 0
Server[0] :       1.9.87.2

        Management IP: 1.43.24.61  Port: 938  Mac-Addr: 001d.e5e8.66c0
        QAM Interfaces : 3/1.1-3/6.4

                                            Reset              Pending
        Server           State              Indication         Requests
        ---------------------------------------------------------------------
        1.9.87.2         Not Connected      Not Completed      0

        Connection Statistics:
         Create     Delete     Create     Delete     Insert     Cancel     Send
         Shell      Shell      Session    Session    Packet     Packet     Message
         ---------- ---------- ---------- ---------- ---------- ---------- ----------
Total:   0          0          0          0          0          0          26455
Success: 0          0          0          0          0          0          0
Error:   0          0          0          0          0          0          26455
        Management IP: 1.43.24.62  Port: 938  Mac-Addr: 001d.e5e8.66c1
        QAM Interfaces : 3/7.1-3/12.4

                                            Reset              Pending
        Server           State              Indication         Requests
        ---------------------------------------------------------------------
        1.9.87.2         Not Connected      Not Completed      0

        Connection Statistics:
         Create     Delete     Create     Delete     Insert     Cancel     Send
         Shell      Shell      Session    Session    Packet     Packet     Message
         ---------- ---------- ---------- ---------- ---------- ---------- ----------
Total:   0          0          0          0          0          0          26453
Success: 0          0          0          0          0          0          0
Error:   0          0          0          0          0          0          26453
```

Related Commands

Command	Description
show cable video server-group	Displays information of the server groups configured on a line card.

clear cable video session

To clear all video session information, use the **clear cable video session** command in privileged EXEC mode.

clear cable video session {**qam**| **qam-red** *slot*/*port*.*channel*| **all**| **id** *session ID*| **local**| **remote**| **slot** *slot*| **statistics slot** *slot*}

Syntax Description

qam	Specifies the QAM interface on the Cisco RFGW-10.
qam-red	Specifies the QAM interface when line card redundancy is configured on the Cisco RFGW-10.
slot	Specifies the slot on the QAM interface. Valid range is from 3 to 12.
port	Specifies the port on the interface. Valid range is from 1 to12.
channel	(Optional) Specifies the channel on the port. Valid range is from 1 to 4.
all	Clears all the video sessions on the chassis.
local	Clears all the local video sessions on the chassis.
remote	Clears all the remote video sessions on the chassis.
statistics	Clears all the video statistics information on the chassis.
slot	Clears the video statistics information for a given slot.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ. The **local**, **remote** and **statistics** keyword are added.

Usage Guidelines

This command clears all the video session information on the Cisco RFGW-10.

Examples

The following example shows the video sessions on QAM interface 3:

```
Router# show cable video sessions qam 3/1.1
Session    QAM     Stream Sess UDP   Out   Input    Input  Output PSI Ctrl
ID         Port    Type   Type Port  Pgm   Bitrate  State  State  Rdy State
---------- ------- ------ ---- ----- ----- -------- ------ ------ --- -----
1          3/1.1   Remap  UDP  500   10    0        OFF    ON     NO  -
2          3/1.1   Remap  UDP  50000 20    0        OFF    ON     NO  -
3          3/1.1   Remap  UDP  7000  30    0        OFF    ON     NO  -
Total Sessions = 3
```

The following example shows how to clear the video sessions on QAM interface 3:

```
Router# clear cable video sessions 3/1.1
```

The following example shows the output for the video sessions on QAM interface 3 after executing the clear cable video session command:

```
Router# show cable video sessions qam 3/1.1
Session    QAM     Stream Sess UDP   Out   Input    Input  Output PSI Ctrl
ID         Port    Type   Type Port  Pgm   Bitrate  State  State  Rdy State
---------- ------- ------ ---- ----- ----- -------- ------ ------ --- -----
Total Sessions = 0
```

Related Commands

Command	Description
show cable video session	Displays video session information.

cluster run

To enable clustering on the Cisco RFGW-10, use the **cluster run** command in global configuration mode. To disable clustering, use the **no** form of this command.

cluster run

no cluster run

Syntax Description

This command has no arguments and keywords.

Command Default

This command is disabled by default.

Command Modes

Global Configuration (Config)

Command History

Release	Modification
12.2(50)SQ4	This command was introduced
Cisco IOS-XE Release 3.2.0SQ	This command was integrated into Cisco IOS-XE Release 3.2.0SQ.

Usage Guidelines

The **cluster run** command must be configured to:

- Enable DEPI midplane pings between the line card and Supervisor on the Cisco RFGW-10
- Handle DEPI Latency Measurement (DLM) ingress traffic on the Cisco RFGW-10

The **cluster run** command is enabled to handle DLM traffic and DEPI midplane pings. For more information, see:

- M-CMTS DEPI

Examples

The following example shows how to enable cluster run on the Cisco RFGW-10:

```
Router# configure terminal
Router(config)# cluster run
```

Related Commands

Command	Description
cable midplane ping	Configures the midplane pings between the line card and the Supervisor on the Cisco RFGW-10.

connection

To configure an Entitlement Control Message Generator (ECMG) connection, use the **connection** command in ECMG configuration mode. To disable the ECMG connection, use the **no** form of this command.

connection *connection-id priority ip-address port* [*channel-id*]

no connection

Syntax Description

connection-id	ECMG connection ID. The valid range is from 1 to 10.
priority	Priority of the ECMG connection. The valid range is from 1 to 1000.
ip-address	IP address of the external ECMG.
port	Port number. The valid range is from 100 to 65535.
channel-id	(Optional) Channel ID that is used for the ECMG connection when the automatic channel ID selection is disabled. The valid range is from 1 to 65535.

Command Default

ECMG connection is not configured.

Command Modes

ECMG configuration (config-ecmg)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

Conditional Access (CA) interface must be configured for establishing an ECMG connection. If the CA interface is not configured, the ECMG connection is not established.

You must configure an ECMG connection to enable DVB scrambling. ECMG connections can also be used for ECMG server load balancing.

Note Specify the value for *channel-id* only when the automatic channel ID selection is disabled.

Examples

The following example shows how to configure ECMG connection 2 with priority 1 and port 100:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# auto-channel-id
Router(config-ecmg)# connection 2 1 192.168.0.2 100
```

The following example shows how to configure an ECMG connection with channel ID 4 when automatic channel ID selection is disabled:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# no auto-channel-id
Router(config-ecmg)# connection 3 2 192.168.2.250 102 4
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

cp-overrule

To configure the Crypto Period (CP) overrule duration, use the **cp-overrule** command in Event Information Scheduler (EIS) configuration mode. To disable the CP overrule, use the **no** form of this command.

cp-overrule *duration*

no cp-overrule

Syntax Description

duration	CP overrule duration in seconds. The valid range is from 1 to 99.

Command Default

CP overrule is disabled.

Command Modes

EIS Configuration (config-eis)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

CP overrule can be configured only for session-based scrambling. Tier-based scrambling does not support CP overrule. When CP overrule is enabled, the specified CP overrule duration is used instead of the CP from the EIS.

Examples

The following example shows how to configure CP overrule duration:

```
Router# configure terminal
Router(config)# cable video scrambler eis 1 server1 1024
Router(config-eis)# cp-overrule 2
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

d6

To configure the NGOD-D6 protocol on the QAM partition, use the **d6** command in global configuration mode. To disable the protocol, use the **no** form of this command.

d6 {**streaming-zone** *zone-name*| **component-name** *comp-name* | **connect-time** *connect-seconds*| **hold-time** *hold-seconds*| **port** *port-number*| **vendor-string** *string-name*| **connect-retry** *retry-interval*}

no d6 {**streaming-zone** *zone-name*| **component-name** *comp-name* | **connect-time** *connect-seconds*| **hold-time** *hold-seconds*| **port** *port-number*| **vendor-string** *string-name*| **connect-retry** *retry-interval*}

Syntax Description

streaming-zone	Specifies the NGOD-D6 streaming zone for QAM partition.
zone-name	Streaming zone name.
component-name	Specifies the NGOD-D6 component name for QAM partition.
comp-name	Component name.
connect-time	Specifies the connection time.
connect-seconds	Connection time in seconds. The valid range is from 10 to 100.
hold-time	Specifies the hold time.
hold-seconds	Wait time in seconds. The valid range is from 3 to 240 seocnds.
port	Specifies the port on which the tcp connection is established. The default port is 6069.
port-number	The valid range is from 1 to 65535.
vendor-string	Specifies the vendor string name.
string-name	Vendor string name.
connect-retry	Specifies connection retry interval.
retry-interval	Connection retry interval. The valid range is from 0 to 10.

Command Default

This command is disabled by default.

Command Modes

QAM partition configuration mode (config-qp)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

NGOD-D6 is the interface between EQAM and ERM. It is a service discovery and registration interface and the protocol used in this interface is VREP (Video Registration Protocol).

Examples

This example shows how to configure **d6** protocol on the QAM partition 1:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol ngod-d6
Router(config-qp)# mgmt-ip 10.10.10.10
Router(config-qp)# server 10.20.20.20
Router(config-qp)# d6 connect-time 10
Router(config-qp)# d6 hold-time 120
Router(config-qp)# d6 port 6060
Router(config-qp)# d6 vendor-string rfgw-10-ngod-d6
Router(config-qp)# d6 connect-retry 3
Router(config-qp)# active
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
protocol	Assigns the protocol used by the external server.

debug cable clock

To enable the DOCSIS Timing Interface (DTI) debugging, use the **debug cable clock** command in privileged EXEC mode. To disable debugging, use the **no** form of this command.

debug cable clock slot

no debug cable clock slot

Syntax Description

slot	Specifies the TCC card slot. Valid slots are 13 and 14.

Command Default

Debugging of the cable clock is not enabled.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command enables or disables debugging on the DOSCIS Timing Interface (DTI) for the Cisco RF Gateway 10.

Examples

The following example shows the sample output for debug cable clock command on TCC slot 13 on the Cisco RF Gateway 10:

```
Router# debug cable clock 13
00:05:53: rfgw_dti_process_polling_dti_state:268 -> Current active TCC slot = 13
, state = 0x220
00:05:53: rfgw_dti_get_tcc:52 -> a given slot 14 is not a TCC card type
00:05:53: rfgw_tcc_find_best_slot:191 -> TCC on slot 14 is not in service
00:05:53: rfgw_dti_process_polling_dti_state:278 -> Unable to find the state for
 slot 14
00:05:53: rfgw_dti_process_polling_dti_state:317 -> Current Slot 13, Best Clock
is on slot 13
00:05:54: DTI_MGMT Trace rfgw_dti_mgmt_process:399
00:05:54: rfgw_dti_process_polling_dti_state -> Current Slot = 13
00:05:54: DTI_MGMT Trace rfgw_dti_is_tcc_connected:685
00:05:54: rfgw_dti_is_tcc_connected:695 -> TCC state for slot 13 = 0x7
00:05:54: STATE REPLY: 18
00:05:54: 0x0000: 00 02 00 0D 00 00 00 00 00 02 00 20 02 20 00 01
00:05:54: 0x0010: 01 00
00:05:54:
```

Related Commands

Command	Description
clear cable clock	Clears DTI client transition counters of a TCC DTI client and server statistics counts.
cable clock polling-interval	Enables the user to tune the polling interval used by the DTI processes on the Supervisor.
cable clock free-run	Allows the clock to be in free-run mode.
show cable clock	Displays information about TCC DTI client.

depi eqam-stats

To enable debugging information for Downstream External PHY Interface (DEPI) EQAM statistics on the Cisco RF Gateway 10 (RFGW-10), use the depi eqam-stats command in global configuration mode. To disable debugging information, use the **no** form of this command.

depi eqam-stats

no depi eqam-stats

Syntax Description

This command has no arguments or keywords.

Command Default

The DEPI EQAM statistics configuration is enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(50)SQ2	This command was introduced.

Usage Guidelines

Cisco RFGW-10 sends EQAM statistics to the Cisco CMTS router. No other EQAM supports the EQAM statistics feature.

Examples

The following example shows how to configure DEPI EQAM statistics on a Cisco RFGW-10:

```
Router# configure terminal
Router(config)# depi eqam-stats
```

Related Commands

Command	Description
show depi session	Displays information about DEPI sessions.

depi-class

To create a template of Downstream External PHY Interface (DEPI) control plane configuration settings, which different pseudowire classes can inherit, and to enter the DEPI class configuration mode, use the depi-class command in global configuration mode. To remove a specific DEPI class configuration, use the no form of this command.

depi-class *depi-class-name*

no depi-class *depi-class-name*

Syntax Description

depi-class-name	Name of the DEPI class. The depi-class-name argument must be specified to configure multiple sets of DEPI control parameters.

Command Default

No DEPI classes are defined.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(50)SQ	This command was introduced.

Usage Guidelines

The **depi-class** *depi-class-name* command allows you to configure a DEPI class template that consists of configuration settings used by different pseudowire classes. The **depi-class** command enters DEPI class configuration mode, where DEPI control plane parameters are configured.

You must use the same DEPI class in the pseudowire configuration at both ends of a Layer 2 control channel.

Examples

The following example shows how to enter DEPI class configuration mode to create a DEPI class configuration template for the class named SPA0:

```
Router# configure terminal
Router(config)# depi-class SPA0
Router(config-depi-ctrl SPA0)#
```

Related Commands

Command	Description
l2tp-class	Creates a template of Layer 2 Tunnel Protocol (L2TP) control plane configuration settings that can be inherited by different pseudowire classes and enters the L2TP class configuration mode.
depi-tunnel	Creates a template of Downstream External PHY Interface (DEPI) tunnel configuration settings, which different pseudowire classes can inherit, and enters the DEPI data session configuration mode.
show depi tunnel	Displays all active control connections.
show depi session	Displays established DEPI data sessions.

depi-tunnel

To create a template of Downstream External PHY Interface (DEPI) tunnel configuration settings, which different pseudowire classes can inherit, and to enter the DEPI data session configuration mode, use the depi-tunnel command in the global configuration mode or subinterface configuration mode. To remove a configured DEPI tunnel, use the **no** form of this command.

depi-tunnel *depi-tunnel-name*

no depi-tunnel *depi-tunnel-name*

Syntax Description

depi-tunnel-name	Name of the DEPI tunnel.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

Subinterface configuration (config-subif)

Command History

Release	Modification
12.2(50)SQ	This command was introduced.

Usage Guidelines

The **depi-tunnel** creates a template of DEPI tunnel configuration settings. The DEPI data session inherits the control plane configuration settings of a depi-control template.

The following depi data session configuration options are available in this mode:

- l2tp-class
- depi-class
- dest-ip
- tos

Examples

The following example shows how to create a template of DEPI tunnel configuration settings in the global configuration mode and enter the DEPI data session configuration mode:

```
Router# configure terminal
Router(config)# depi-tunnel rf6
Router(config-depi-tunnel)#
```

The following example shows how to create a template of DEPI tunnel configuration settings in the subinterface configuration mode:

```
Router(config)# interface qam 6/4.1
Router(config-subif)# depi-tunnel 0
```

Related Commands

Command	Description
l2tp-class	Creates a template of Layer 2 Tunnel Protocol (L2TP) control plane configuration settings, which different pseudowire classes can inherit, and enters the L2TP class configuration mode.
depi-class	Creates a template of Downstream External PHY Interface (DEPI) control plane configuration settings, which different pseudowire classes can inherit, and enters the DEPI class configuration mode.
dest-ip	Assigns an IP address to the destination network.
show depi tunnel	Displays all active control connections.
show depi session	Displays established DEPI data sessions.

desc-rule

To configure a descriptor rule, use the **desc-rule** command in Entitlement Control Message Generator (ECMG) configuration mode. To disable the descriptor rule, use the **no** form of this command.

desc-rule *rule-id name* {**do-not-insert**| **add-priv-data** {**as-per-eis**| **at-es-level**} *data* [*ecm-id-list*]}

no desc-rule

Syntax Description

rule-id	Descriptor rule ID. The valid range is form 1 to 10.
name	Descriptor rule name.
do-not-insert	Specifies that no standard descriptor rules are inserted.
add-priv-data	Specifies that private data is inserted to the standard descriptor.
as-per-eis	Specifies that EIS determines the private data insertion level.
at-es-level	Specifies that the private data is inserted at the elementary stream level.
data	Private data in Hexadecimal without the 0x prefix. **Note** The supported characters are *0* to *9* , *a* to *f* , and *A* to *F* . The number of characters provided in the string must be even numbered.
ecm-id-list	Optional. ECM IDs to which the rules must be applied, in decimal, separated by commas.

Command Default

Private data is not inserted into the Conditional Access (CA) descriptor.

Command Modes

ECMG configuration (config-ecmg)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

ECM IDs must be unique for all descriptor rules in an ECMG. Only one descriptor rule is effective for an ECM ID. When the ECM IDs are not specified, the descriptor rule is applied to all ECMs.

Note You can configure only one descriptor rule without the ECM IDs.

The private data that needs to be inserted into the CA descriptor is CA vendor-specific.

Examples

The following example shows how to configure a descriptor rule with no standard descriptor rules inserted:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# desc-rule 1 rule1 do-not-insert
Router(config-ecmg)#
```

The following example shows how to configure a descriptor rule with private data inserted at elementary stream level:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# desc-rule 1 rule1 add-priv-data at-es-level A076B3
Router(config-ecmg)#
```

The following example shows how to configure a descriptor rule with private data insertion level determined by the EIS for ECM IDs 100 and 125:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# desc-rule 1 rule1 add-priv-data as-per-eis A076B2 100,125
Router(config-ecmg)#
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

description

To add a description to the line card group, use the **description** command in line card redundancy configuration mode. To remove the description, use the **no** form of this command.

description *string*

no description *string*

Syntax Description

string	Specifies a description for the line card group. The maximum length of the string is 127 characters.

Command Default

Default is LC-GROUP followed by the line card group ID.

Command Modes

Line card redundancy configuration (config-red-lc)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

The description string has a maximum limit of 127 characters.

Examples

The following example assigns a description to the redundancy line card group 2 on the Cisco RF Gateway 10:

```
Router(config-red)#linecard-group 2 internal-switch
Router(config-red-lc)#description line card group 2 created.
```

Related Commands

Command	Description
class	Configures redundancy class on the line card.
member slot	Adds a slot to the redundancy group.
linecard-group internal-switch	Configures a redundancy line card group.
redundancy	Configures the redundancy mode.
show redundancy linecard	Displays information about a redundancy line card or a line card group.

dest-ip

To assign an IP address to the edge quadrature amplitude modulation (EQAM), use the dest-ip command in DEPI tunnel configuration mode. To remove a specific destination IP address, use the no form of this command.

dest-ip *dest-ip-address*

no dest-ip *dest-ip-address*

Syntax Description

dest-ip-address	IP address of the EQAM.

Command Default

This command has no default behavior or values.

Command Modes

DEPI tunnel configuration

Command History

Release	Modification
12.2(50)SQ	This command was introduced.

Usage Guidelines

The **dest-ip***dest-ip-address* command allows you to configure the IP address of the EQAM.

Examples

The following example shows how to assign 1.3.4.155 as the destination IP address:

```
Router# configure terminal
Router(config)# depi-tunnel rf6
Router(config-depi-tunnel)# dest-ip 1.3.4.155
```

Related Commands

Command	Description
l2tp-class	Creates a template of Layer 2 Tunnel Protocol (L2TP) control plane configuration settings, which different pseudowire classes can inherit, and enters the L2TP class configuration mode.
depi-class	Creates a template of Downstream External PHY Interface (DEPI) control plane configuration settings, which different pseudowire classes can inherit, and enters the DEPI class configuration mode.

Command	Description
depi-tunnel	Specifies the name of the depi-tunnel and enters the DEPI tunnel configuration mode.
show depi tunnel	Displays all active control connections.
show depi session	Displays established DEPI data sessions.

dvb-conform

Use the **dvb-conform [false | true]** command to enable or disable the extended CSA control word generation for DVB-CSA scrambling.

dvb-conform [**false** | **true**]

false	Enables extended CSA control word generation for DVB-CSA scrambling.
true	Disables extended CSA control word generation for DVB-CSA scrambling.

Command Default

Disabled for DVB-CSA encryption.

Enabled for PowerKey or Clear encryption.

Command Modes

dvb-conform (config-dvb)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.1SQ	This command was introduced.

Usage Guidelines

This command is used in the DVB Conformance feature.

DVB conformance can be configured only on line cards with DVB Encryption enforced.

When the **cable linecard encryption dvb scrambler csa** command is used, the global configuration (config) mode changes to dvb-conform (config-dvb) mode. The **dvb-conform** command is configured in the dvb-conform mode.

Examples

This example shows how to enable the extended CSA control word for the DVB Conformance feature:

```
Router# configure terminal
Router(config)# cable linecard 6 encryption dvb scrambler csa
Router(config-dvb)#dvb-conform false
```

Related Commands

Command	Description
cable linecard encryption	Configures the line card encryption scrambling algorithm.

errp

To configure Edge Resource and Registration protocol (ERRP), use the **errp** command in the QAM partition configuration mode. To disable ERRP registration, use the **no** form of this command.

errp {**component-name** *conp-name*| **connect-retry** *retry-interval*| **connect-time** *connect-seconds*| **hold-time** *hold-seconds*| **streaming-zone** *zone-name*}

no errp {**component-name** *conp-name*| **connect-retry** *retry-interval*| **connect-time** *connect-seconds*| **hold-time** *hold-seconds*| **streaming-zone** *zone-name*}

Syntax Description

component-name	Specifies the ERMI component name for QAM partition.
conp-name	Component name.
connect-retry	Specifies connection retry time.
retry-interval	Connection retry interval in seconds, The valid range is from 1 to 10.
connect-time	Specifies the connection time.
connect-seconds	Connection time in seconds. The valid range is from 10 to 100
hold-time	Specifies the hold time.
hold-seconds	Wait time in seconds. The valid range is from 3 to 240 seocnds.
streaming-zone	Specifies the ERMI streaming zone for QAM partition.
zone-name	Streaming zone name.

Command Default

This command is disabled by default.

Command Modes

QAM partition configuration mode (config-qp)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

ERMI is a protocol for managing EQAM resources both for DOCSIS and video services. It provides video edge device discovery, resource provisioning and signaling protocols for setup and control of video on demand (VOD) and switched digital video (SDV) type video sessions.

Note ERMI protocol has to be configured in the QAM partition.

ERMI-1 is a discovery and registration protocol which allows edge resource manager (ERM) to discover and ascertain capacity, operation state, and signaling mechanism for Cisco RFGW-10. On the Cisco RFGW-10, ERMI-1 acts as a client to provide protocol messages.

ERMI-2 is a control protocol which uses the Supervisor card to perform video session setup and session management requested by the ERM server. On the Cisco RFGW-10, ERMI-2 acts as a server to handle the message types.

Examples

This example shows how to configure errp on the QAM partition:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol ermi
Router(config-qp)# errp component-name c1
Router(config-qp)# connect-retry 5
Router(config-qp)# connect-time 10
Router(config-qp)# hold-time 200
Router(config-qp)# streaming-zone zone1
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
clear cable ermi statistics	Clears ERMI protocol connection stastistics information.
protocol	Assigns the protocol used by the external server.
rtsp	Configures Real-time Streaming Protocol (RTSP) on the QAM partition.

fail-to-clear-duration

To indicate the duration before the encrypted session is played clear i.e., without being scrambled, when encryption fails, use the **fail-to-clear-duration** command in Event Information Scheduler (EIS) configuration mode.

fail-to-clear-duration *timeout*

Syntax Description

timeout	The valid range is from 0 to 10800.

Command Default

The duration is default to 0.

Command Modes

Event information scheduler configuration (config-eis)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.2SQ	This command was introduced.

Usage Guidelines

The value of *timeout* is set by the user based on the requirement.

Examples

The following example shows how to set the duration before the encrypted session is played clear i.e., without being scrambled, when encryption fails:

```
Router# configure terminal
Router(config)# cable video scrambler eis 1 server1 1024
Router(config-eis)# fail-to-clear-duration 60
```

hw-module module power

To manually power on a cable interface line card, use the **hw-module module power** command in global configuration mode. To power off the cable line card, use the **no** form of this command.

hw-module module *slot* **power**

no hw-module module *slot* **power**

Syntax Description

slot	Specifies the slot of the line card. Valid slot numbers range from 3 to 12.

Command Default

The cable line cards are always powered on when inserted into the chassis slot.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is applicable to one line card at a time. This command is not applicable for TCC cards.

This command is not used during normal operations, but it can be used for lab, diagnostic, and troubleshooting purposes. For example, use this command to power off and then power on a card, which is equivalent to inserting or removing a line card online.

Examples

The following example shows the line card 3 powered on:

```
Router(config)#hw-module module 3 power
```

Related Commands

Command	Description
show interface qam	Displays the configuration and hardware present on the line card.

Commands: i to show cable f

interface qam

To configure a QAM interface, use the **interface qam** command in global configuration mode.

interface {**qam**| **qam-red**} *slot*/*port*.[*channel*]

Syntax Description

slot	Specifies the QAM or QAM-red slot on the line card. If line card redundancy is configured on the QAM, the interface is QAM-red. Valid range is from 3 to 12.
port	Specifies the port on the slot. Valid range is from 1 to 12.
channel	(Optional) Specifies the channel on the port. Valid range is from 1 to 4. Enters the QAM sub interface configuration mode when executed.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Redundancy-configured interfaces (QAM-red) imply that line card redundancy (LCRED) is configured on the chassis.

All downstream commands are configured in the interface and subinterface configuration modes.

Examples

The following example shows how to configure a QAM interface:

```
Router# configure terminal
Router(config)# interface qam 3/1
```

Related Commands

Command	Description
show running-config interface qam	Displays downstream configuration on the QAM interface.

ip

To configure a destination IP address for video sessions on a QAM domain, use the **ip** command in QAM domain configuration mode. To remove the assigned IP address, use the **no** form of this command.

ip *IP address* [**local**| **remote**]

no ip *IP address* [**local**| **remote**]

Syntax Description

IP address	Specifies the destination IP address for the video sessions.
local	(Optional) Specifies the video services that are configured locally.
remote	(Optional) Specifies remotely configured video sessions.

Command Default

If local or remote destinations are not specified, then the IP address is used for both local and remote sessions.

Command Modes

QAM domain configuration (QAM-domain)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

A QAM domain has a local IP address and a remote IP address. The IP address is assigned to destination local or remote video sessions on the QAM domain. You can configure two sets of IP addresses for each session. You can also use the same IP address for both local and remote sessions.

Note If you remove an IP address, all its associated video services are also removed.

Examples

The following example shows the IP address assigned to a video session on the QAM domain in slot 3:

```
Router#configure terminal
Router(config)#cable qam-domain 3
Router(qam-domain)#ip 10.10.10.1 local
Router(qam-domain)#ip 10.10.10.1 remote
Router(qam-domain)#exit
Router(config)#exit
```

Related Commands

Command	Description
cable qam-domain	Configures the QAM domain.
video route	Specifies the route for a video session.

ip multicast-routing

To enable video multicast routing, use the **ip multicast-routing** command in global configuration mode. To disable video multicast routing, use the **no** form of this command.

ip multicast-routing

no ip multicast-routing

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command enables multicast forwarding on the chassis. To enable video multicast routing, set the interfaces in multicast mode and assign the specific bandwidth.

Examples

The following example enables video multicast routing on the Cisco RFGW-10:

```
Router#configure terminal
Router(config)#ip multicast-routing
```

Related Commands

Command	Description
cable video multicast	Enables an uplink port for multicast traffic.

ip rpc portmapper

To establish a remote procedure call (RPC) connection between an external server and an EQAM, use the **ip rpc portmapper** command in global configuration mode.

ip rpc portmapper

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on Cisco RF Gateway 10.

Usage Guidelines

The **ip rpc portmapper** command establishes an RPC connection to enable the DNCS (client) to invoke a program to be executed on the Cisco RFGW-10 EQAM (server).

Examples

The following example shows how to establish an RPC connection:

```
Router# configure terminal
Router(config)# ip rpc portmapper
```

Related Commands

Command	Description
active	Activates the server.
cable video servers	Configures the video server group for external servers.
keepalive retry	Configures the keepalive retry value on the server.
mgmt-ip-address mac-address	Configures the management IP and MAC address of the server.
protocol	Configures the protocols supported by the server.
reset interval	Configures the reset interval on the server.
server	Configures the IP address of the server.

keepalive retry

To send keepalive message to a remote client with a specified retry interval, use the keepalive retry command in QAM partition configuration mode. To remove the setting, use the **no** form of this command.

keepalive retry *seconds*

no keepalive retry *seconds*

Syntax Description

seconds	Retry interval value. A maximum of three retry attempts are allowed. The valid retry range is from 0 to 10. The default keepalive is 5 seconds.

Command Default

This command is not enabled by default.

Command Modes

QAM partition configuration (config-qp)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command is integrated into Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

Use the **keepalive retry** command in QAM partition configuration to set the keepalive retry time interval.

Examples

The following example shows how to configure a keepalive retry interval value of 4 seconds in a QAM partition configuration:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# keepalive retry 4
```

Related Commands

Command	Description
active	Activates the server.
cable qam-partition	Configures the QAM partition for a video server.
ip rpc portmapper	Establishes an RPC connection between the external server and EQAM.

Command	Description
mgmt-ip-address mac-address	Configures the management IP and MAC address of the server.
protocol	Configures the protocols supported by the server.
reset interval	Configures the reset interval on the server.
server	Configures the IP address of the server.

l2tp-class

To create a template of Layer 2 Tunnel Protocol (L2TP) control plane configuration settings, which different pseudowire classes can inherit and to enter L2TP class configuration mode, use the **l2tp-class** command in global configuration mode. To remove a specific L2TP class configuration, use the **no** form of this command.

l2tp-class *l2tp-class-name*

no l2tp-class *l2tp-class-name*

Syntax Description

l2tp-class-name	Name of the L2TP class. The *l2tp-class-name* argument must be specified if you want to configure multiple sets of L2TP control parameters.

Command Default

No L2TP classes are defined.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(50)SQ	This command was introduced.

Usage Guidelines

The **l2tp-class** *l2tp-class-name* command allows you to configure an L2TP class template that consists of configuration settings used by different pseudowire classes. An L2TP class includes the following configuration settings:

- Hostname of local router used during Layer 2 authentication
- Authentication enabled
- Time interval used for exchange of hello packets
- Password used for control channel authentication
- Packet size of receive window
- Retransmission settings for control packets
- Time allowed to set up a control channel

The **l2tp-class** command enters L2TP class configuration mode, where L2TP control plane parameters are configured.

You must use the same L2TP class in the pseudowire configuration at both ends of a Layer 2 control channel.

Examples

The following example shows how to enter L2TP class configuration mode to create an L2TP class configuration template for the class named ether-pw:

```
Router(config)# l2tp-class ether-pw
Router(config-l2tp-class)#
```

Related Commands

Command	Description
depi-class	Creates a template of Downstream External PHY Interface (DEPI) control plane configuration settings, which different pseudowire classes can inherit, and enters the DEPI class configuration mode.
depi-tunnel	Specifies the name of the depi-tunnel and enters the DEPI tunnel configuration mode.

lane

To configure the lane frequency in the frequency profile, use the **lane** command in frequency profile configuration mode.

lane *lane_id* **start-freq** *frequency*

Syntax Description

lane_id	Lane ID in the frequency profile. Valid range is from 1 to 4.
start-freq	Specifies the starting frequency of the lane.
frequency	Downstream start frequency of a lane. Valid range is from 48000000 to 999000000 Hz.

Command Default

The command is disabled by default.

Command Modes

Frequency profile configuration mode (config-freq-prof)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

The Supervisor card uses two frequency schemes—static frequency scheme and the user-defined frequency scheme—to configure the frequency profile at port level. Cisco IOS-XE Release 3.2.0SQ supports global templates or profiles on the Cisco RFGW-10 DS-384 line card. A wider range of frequency spectrum is supported on the UPX on the line card.

Note The downstream frequency layout schemes are applicable only on the Cisco RFGW-10 DS-384 line card.

In the user-defined frequency layout scheme allows you to define the frequency on a global chassis level, and apply the cable downstream frequency scheme spectrum for any port on any Cisco RFGW-10 DS-384 line card.

A frequency profile has four frequency lanes in the 1GHz spectrum. Each lane has a frequency of 216 MHz. Each lane has 4 blocks of 54 MHz, and each block has 8 carriers. The start frequency assigned to a carrier must be in the frequency range of 216 MHz.

Note The channel frequencies cannot overlap with each other. Each lane cannot exceed 32 carriers.

Note This command is applicable on the Cisco RFGW10-DS-384 line card.

Examples

The following example creates the lane in frequency profile, and enters the frequency profile lane configuration mode:

```
Router(config)# cable downstream freq-profile freq-profile-1
Router(config-freq-prof)# lane 1 start-freq 48000000
Router(config-freq-prof-lane)# exit
Router(config-freq-prof)#
```

Related Commands

Command	Description
cable downstream freq-profile	Creates the frequency profile for a Cisco RFGW-10 DS-384 line card.
block	Creates the block frequency in the lane for the frequency profile.

linecard-group internal switch

To add a group ID for a line card group and configure line card redundancy, use the **linecard-group internal switch** command in redundancy configuration mode. To remove the line card group, use the no form of this command.

linecard-group *group-id* **internal switch**

no linecard-group *group-id* **internal switch**

Syntax Description

group-id	Specifies the group ID number. Valid range is from 0 to 5.

Command Default

This command has no default behavior or values.

Command Modes

Redundancy configuration (config-red)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Before you remove the group, ensure that the configured slot members on the line card are removed.

Examples

The following example creates a redundancy line card group 2 on the Cisco RFGW-10:

```
Router(config-red)#linecard-group 2 internal-switch
```

Related Commands

Command	Description
class	Configures redundancy class on the line card.
description	Adds a description to the line card group.
member slot	Adds a slot to the line card redundancy group.
redundancy	Enters redundancy configuration mode.
show redundancy linecard	Displays information about a redundant line card or a line card group.

mac-address

To configure the MAC address for the QAM partition, use the **mac-address** command in QAM partition configuration mode. To disable the MAC address, use the **no** form of this command.

mac-address *mac_address*

no mac-address *mac_address*

Syntax Description

mac-address	MAC address of the external server.

Command Default

None.

Command Modes

QAM partition configuration (config-qp)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into the Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

The GQI protocol uses the Cisco RFGW-10 MAC address in a GQI specific QAM partition configurtion.

Examples

This example configures the MAC address on the QAM parttion:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# mac-address 192.168.20.20
Router(config-qp)#
```

Related Commands

Command	Description
cable qam-partition	Configures the QAM partition for a video server.
protocol	Configures the protocols supported by the server.

main-cpu

To configure the synchronization of the active and standby Supervisor cards, use the **main-cpu** command in redundancy configuration mode,.

main-cpu

Syntax Description

This command has no keywords or arguments.

Command Default

This command has no default behavior or values.

Command Modes

Redundancy configuration (config-red)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

When you enter the main-CPU redundancy configuration mode, the command prompt changes to:

```
Router(config-r-mc)#
```

After you enter the main-CPU redundancy configuration mode, use the **auto-sync** command to specify which files are synchronized between the active and standby Supervisor cards.

To exit main-CPU redundancy configuration mode and return to the redundancy configuration mode, use the **exit** command.

Examples

The following example shows how to enter main-CPU redundancy mode, and its associated commands:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# main-cpu
Router(config-r-mc)# ?
Main CPU redundancy configuration commands:
  auto-sync  Sync elements
  default    Set a command to its defaults
  exit       Exit from main-cpu configuration mode
  no         Negate a command or set its defaults
```

Related Commands

Command	Description
auto-sync	Configures which files are synchronized between the active and standby Supervisor cards.

Command	Description
redundancy	Enters redundancy configuration mode.

member slot

To configure the redundancy role of a line card, use the member slot command in line card redundancy configuration mode. To remove the role, use the no form of this command.

member slot *slot* {**primary**| **secondary**}

no member slot *slot* {**primary**| **secondary**}

Syntax Description

slot	Specifies the slot number of the line card. Valid range is from 3 to 12.
primary	Specifies the redundancy role of the active line card.
secondary	Specifies the redundancy role of the standby line card.

Command Default

This command has no default behavior or values.

Command Modes

Line card redundancy configuration (config-red-lc)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Ensure that the following criteria are met prior to configuring the member slots:

- The slot is not configured as a member of another line card group.
- The number of primary members must be less than or equal to the maximum number allowed in a line card group for a line card.
- A primary or secondary member is not configured in a line card group.

Examples

The following example assigns member slots 7 and 12 as the primary and secondary line cards in the redundancy line card group 2 in the Cisco RFGW-10:

```
Router(config-red)#linecard-group 2 internal-switch
Router(config-red-lc)#class 1:1
Router(config-red-lc)#member slot 7 primary
Router(config-red-lc)#member slot 12 secondary
```

Related Commands

Command	Description
class	Configures redundancy class on the line card.
description	Adds a description to the line card group.
linecard-group internal switch	Creates a line card redundancy group on the line card.
redundancy	Enters redundancy configuration mode.
show redundancy linecard	Displays information about a line card or a line card group.

mgmt-ip

To configure the IP address of the QAM partition, use the **mgmt-ip** command in QAM partition configuration mode. To disable the IP adddress on the QAM partition, use the **no** form of this command.

mgmt-ip *IP_address*

no mgmt-ip *IP_address*

Syntax Description

IP_address	Specifies the IP address of the QAM partition.

Command Default

This command is disabled by default.

Command Modes

QAM partition configuration (config-qp)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

The **mgmt-ip** command sets the IP address of QAM partition. The management IP address of the QAM partition must be unique.

Examples

This example configures the management IP address of the QAM partition:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol gqi
Router(config-qp)# mgmt-ip 1.1.1.1
Router(config-qp)# end
```

Related Commands

Command	Description
cable qam-partition	Configures the QAM partition for a video server.
protocol	Assigns the protocol used by the external server.

mgmt-ip-address mac-address

To configure the management port IP address and MAC address, use the **mgmt-ip-address mac address** command in cable video server configuration mode. To remove the configuration, use the **no** form of this command.

mgmt-ip-address *IP address* **mac-address** *MAC address*

no mgmt-ip-address *IP address* **mac-address** *MAC address*

Syntax Description

IP address	Specifies the IP address of the management port on the external server.
MAC address	Specifies the MAC address of the external server.

Command Default

This command has no default behavior or values.

Command Modes

Cable video server configuration (config-video-servers)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Ensure that you configure the protocol used by the external server prior to configuring the IP address and MAC address.

Examples

The following example shows the configuration of the management port:

```
Router#configure terminal
Router(config)#cable video servers group2
Router(config-video-servers)#protocol gqi
Router(config-video-servers)#mgmt-ip-address 172.16.22.1 mac-address 1234.abcd.4e4e
Router(config-video-servers)#exit
```

Related Commands

Command	Description
cable video servers	Configures the video server group for external servers.
protocol	Configures the protocol used by the external server.

Command	Description
server	Configures the IP address of the external server.

mode

To configure the redundancy mode of operation, use the **mode** command in redundancy configuration mode.

mode {**rpr**| **sso**}

Syntax Description

rpr	Sets Route Processor Redundancy (RPR) mode on the Supervisor card.
sso	Sets Stateful Switchover (SSO) redundancy mode on the Supervisor card.

Command Default

The default mode is SSO.

Command Modes

Redundancy configuration (config-red)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.
12.2(50)SQ	Support for SSO was added.

Usage Guidelines

The IOS software image on both the active and standby Supervisor cards must be the same.

Examples

The following example shows how to enter RPR mode on the Cisco RFGW-10:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# mode rpr
Router(config-red)# main-cpu
Router(config-red-mc)# auto-sync standard
Router(config-red-mc)# exit
Router# write memory
```

The following example shows how to enter SSO redundancy mode:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# mode sso
Router(config-red)# exit
Router# write memory
```

Related Commands

Command	Description
redundancy	Enters redundancy configuration mode.
redundancy force-failover main-cpu	Forces a manual switchover between the active and standby Supervisor cards.
redundancy force-switchover	Forces the standby Supervisor card to assume the role of the active Supervisor card.

overrule

To overrule the default settings of the Entitlement Control Message Generator (ECMG), use the **overrule** command in ECMG configuration mode. To disable the overrule, use the **no** form of this command.

overrule {**max-comp-time** *max-comp-time*| **min-cp-duration** *min-cp-duration*| **trans-start-delay** *trans-start-delay*| **trans-stop-delay** *trans-stop-delay*| **start-delay** *start-delay*| **stop-delay** *stop-delay*| **ac-start-delay** *ac-start-delay*| **ac-stop-delay** *ac-stop-delay*| **rep-period** *rep-period*| **max-streams** *max-streams*}

no overrule {**max-comp-time** *max-comp-time*| **min-cp-duration** *min-cp-duration*| **trans-start-delay** *trans-start-delay*| **trans-stop-delay** *trans-stop-delay*| **start-delay** *start-delay*| **stop-delay** *stop-delay*| **ac-start-delay** *ac-start-delay*| **ac-stop-delay** *ac-stop-delay*| **rep-period** *rep-period*| **max-streams** *max-streams*}

Syntax Description

max-comp-time *max-comp-time*	Specifies the maximum time needed by ECMG to compute an ECM in milliseconds. The valid range is from 1 to 60000. The default is 5000.
min-cp-duration*min-cp-duration*	Specifies the minimum crypto period (CP) in milliseconds. The valid range is from 1000 to 3600000. The default is 10000.
trans-start-delay*trans-start-delay*	Specifies the transition start delay in milliseconds. The valid range is from -30000 to 0. The default is -2000.
trans-stop-delay*trans-stop-delay*	Specifies the transition stop delay in milliseconds. The valid range is from 0 to 30000. The default is 2000.
start-delay start-delay	Specifies the delay between the start of CP and ECM broadcast in milliseconds. The valid range is from -30000 to 30000. The default is -2000.
stop-delay*stop-delay*	Specifies the delay between the end of CP and ECM broadcast in milliseconds. The valid range is from -30000 to 30000. The default is -2000.
ac-start-delay*ac-start-delay*	Specifies the delay between the start of first CP after a change in access criteria and ECM broadcast. The valid range is from -30000 to 30000. The default is -2000.
ac-stop-delay*ac-stop-delay*	Specifies the delay between the end of last CP preceding a change in access criteria and ECM broadcast. The valid range is from -30000 to 30000. The default is -2000.

rep-period *rep-period*	Specifies the repitition period of ECM packets in milliseconds. The valid range is from 100 to 30000. The default is 100.
max-streams*max-streams*	Specifies the maximum number of simultaneous open streams supported by the ECMG on a channel. The valid range is from 0 to 30000. The default is 512.

Command Default

Overrule is disabled.

Command Modes

ECMG configuration (config-ecmg)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

When the *max-streams* is set to 0, the scrambler does not limit the number of streams on a channel and ECMs are not requested from the ECMG backup when the ECMG reaches its maximum capacity. To ensure that an ECMG is not overloaded, specify a non-zero value for the maximum number of simultaneous open streams.

Examples

The following example shows how to overrule the default settings of the ECMG:

```
Router# configure terminal
Router(config)# cable video scrambler linecard 3 ecmg 2 update
Router(config-ecmg)# overrule max-comp-time 2
Router(config-ecmg)# overrule min-cp-duration 1200
Router(config-ecmg)# overrule trans-start-delay -3000
Router(config-ecmg)# overrule trans-stop-delay 4000
Router(config-ecmg)# overrule start-delay -2200
Router(config-ecmg)# overrule stop-delay -2400
Router(config-ecmg)# overrule ac-start-delay -2500
Router(config-ecmg)# overrule ac-stop-delay -2010
Router(config-ecmg)# overrule rep-period 200
Router(config-ecmg)# overrule max-streams 540
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

overwrite-scg

To enable Scrambling Control Group (SCG) overwrite, use the **overwrite-scg** command in Event Information Scheduler (EIS) configuration mode. To disable the SCG overwrite, use the **no** form of this command.

overwrite-scg

no overwrite-scg

Syntax Description

This command has no arguments or keywords.

Command Default

SCG overwrite is disabled.

Command Modes

EIS Configuration (config-eis)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.

Usage Guidelines

When SCG overwrite is enabled and there is another SCG with the same SCG ID and different Transport Stream ID (TSID) or Original Network ID (ONID), it overwrites the existing SCG. When SCG overwrite is disabled and there is a new SCG with the same SCG ID and different TSID or ONID, the new SCG is rejected.

Examples

The following example shows how to enable SCG overwrite:

```
Router# configure terminal
Router(config)# cable video scrambler eis 1 server1 1024
Router(config-eis)# overwrite-scg
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

pilot-qam

To configure the pilot (source) QAM, use the **pilot-qam** command in QAM replication group configuration mode. To remove the pilot QAM, use the **no** form of this command.

pilot-qam {**Qam**| **Qam-red**} *qam-interface-number*

no pilot-qam {**Qam**| **Qam-red**} *qam-interface-number*

Syntax Description

Qam	QAM interface
Qam-red	QAM red interface
qam-interface-number	Pilot QAM location

Command Default

This command is enabled by default.

Command Modes

QAM replication group configuration (config-qrg)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

Cisco IOS-XE Release 3.3.0SQ introduces the QAM replication group feature to replicate any single QAM output from one port to another port on the same Cisco RFGW-10 DS-384 line card.

A QAM replication group contains information about a single source QAM and its corresponding replicated copy or copies. Each group is numbered with a *group-id* and contains the *slot*, *port* and *channel-number* for both the source QAM (pilot-qam) and the destination QAM (replicate-qam).

Note QAM replication is supported only within a given line card and not from one line card to another.

Examples

This example shows how to create a pilot QAM:

```
Router# configure terminal
Router(config)# cable qam-replication-group 1
Router(config-qrg)# pilot-qam qam-red 3/1.1
```

Related Commands

Command	Description
cable qam-replication-group	Configures the QAM replication group.
replicate-qam	Configures the replicate QAM in the QAM replication group.

protect-tunnel

To configure a Downstream External PHY Interface (DEPI) tunnel on the Cisco RF Gateway 10 (RFGW-10), use the **protect-tunnel** command in global configuration mode. To disable this configuration, use the **no** form of this command.

protect-tunnel *protect-depi-tunnel-name*

no protect-tunnel *protect-depi-tunnel-name*

Syntax Description

protect-depi-tunnel-name	Protect DEPI tunnel with which the depi-tunnel is associated.

Command Default

The N+1 DEPI redundancy feature is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(50)SQ2	This command was introduced.

Usage Guidelines

The protect tunnel must be explicitly configured. The protect tunnel inherits L2TP class and DEPI class parameters from the working tunnel. When you configure the protect tunnel and specify the destination IP address for the protect tunnel, the protect tunnel inherits the QAM channel parameters specified for the working tunnel.

Examples

The following example shows how to configure a DEPI tunnel for the protect cable interface line card on the Cisco RFGW-10.

Destination IP address of the M-CMTS router must be specified as the endpoint for the protect tunnel:

```
Router> enable
Router# configure terminal
Router(config)# depi-tunnel protect1
Router(config-depi-tunnel)# dest-ip 192.0.2.103
Router(config-depi-tunnel)# exit
```

The protect tunnel is then configured on an existing working DEPI tunnel:

```
Router(config)# depi-tunnel working1
Router(config-depi-tunnel)# protect-tunnel protect1
Router(config-depi-tunnel)# end
```

Related Commands

Command	Description
depi-tunnel	Specifies a template for DEPI tunnel configuration settings.

protocol

To set the protocol used by the server, use the **protocol** command in **cable qam-partition** configuration mode QAM partition configuration mode. To remove the protocol configuration, use the **no** form of this command.

protocol {**ermi**| **gqi**| **ngod-d6**}

no protocol {**ermi**| **gqi**| **ngod-d6**}

Syntax Description

ermi	Supports Edge Resource Management Interface (ERMI) protocol for video sessions.
gqi	Supports Generic QAM Interface (GQI) protocol sent to the Data Network Control Station (DNCS) server.
ngod-d6	Supports Video Registration Protocol (VREP) which is used to send QAM information to the ERM (Edge Resource Manager). Ngod-d6 qam-partition only supports local video qam.

Command Default

This command has no default behavior or values.

Command Modes

QAM partition configuration (config-qp)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ.
Cisco IOS-XE Release 3.5.0SQ	This command was modified. The **ngod-d6** protocol is supported.

Usage Guidelines

Use the **protocol** command in QAM partition configuration to set the interface used between DNCS/USRM and RFGW-10.

QAM partitioning is used by protocol applications such as GQI and ERMI to extend the QAM partition configuration for a given protocol.

The GQI protocol supports the latest GQI protocol. The QAM partition must be configured before any protocol configuration.

Examples

The following example shows the GQI protocol configuration on the cable qam partition:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol gqi
Router(config-qp)# mgmt-ip 10.10.10.10
Router(config-qp)# mac-address 30e4.db04.8dc0
```

The following example sets the QAM partition with the ERMI protocol:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol ermi
Router(config-qp)# mgmt-ip 10.10.10.10
```

The following example sets the QAM partition with the NGOD-D6 protocol:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol ngod-d6
Router(config-qp)# mgmt-ip 10.10.10.10
```

Related Commands

Command	Description
mgmt-ip-address mac-address	Configures the management port IP address and MAC address.
server	Configures the IP address of the external server.
cable qam-partition	Configures the QAM partition for a video server.

qam-group

To configure a QAM group, use the **qam-group** command in the cable service group configuration mode. To remove the QAM group, use the **no** form of this command.

qam-group *qam-group-name*

no qam-group *qam-group-name*

Syntax Description

qam-group-name	QAM group name.

Command Default

This command is enabled by default.

Command Modes

Cable service group configuration (config-qsg)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

A QAM group can contain one or more QAM channels.

Examples

This example shows how to create a QAM group:

```
Router# configure terminal
Router(config)# cable service-group 1
Router(config-qsg)# qam-group group1
```

Related Commands

Command	Description
cable service-group	Configures the QAM service group.
show cable service-group	Displays the service groups configured on the Cisco RFGW-10.

qam-partition

To assign a QAM partition to the load balancing group, use the **qam-partition** command in load balancing group configuration mode. To disable the QAM partition, use the **no** form of this command.

qam-partition {*partition-id* | **default** *dest-IP-address*} **bitrate** *bit-value* **udp** *low-udp high-udp* {**bitrate** | *bit-value*}

no qam-partition {*partition-id* | **default** *dest-IP-address*} **bitrate** *bit-value* **udp** *low-udp high-udp* {**bitrate** | *bit-value*}

Generic QAM Interface (GQI)

qam-partition {*partition-id*} [**ip** *IP-address* **udp** *low-udp high-udp*] [**gqi-ingress-port** *input-port* **bitrate** *bit-value*]

no qam-partition {*partition-id*} [**ip** *IP-address* **udp** *low-udp high-udp*] [**gqi-ingress-port** *input-port* **bitrate** *bit-value*]

Syntax Description

partition-id	QAM partition ID. The valid range is from 1 to 50.
default	Configures the default QAM partition to the load balancing group.
dest-IP-address	IP address of the default QAM partition.
bitrate	Sets the reserved bandwidth to the partition.
bit-value	Specifies the bit value in Kbps. The valid range is from 1 to 9100000.
udp	Sets the UDP port range.
low-udp	Low UDP port value. The valid range is from 1 to 65535.
high-udp	High UDP port value. The valid range is from 1 to 65535.
ip	Specifies the destination IP address.
gqi-ingress-port	Specifies the input port for the GQI interface.
input-port	Input port of GQI. The valid range is from 1 to 100.

Command Default

This command is enabled by default.

Command Modes

Load balancing group configuration (config-lbg)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

Use the **qam-partition** command to assign a QAM partition to the load balancing group.

Note The IP address and UDP range in the cable route must be unique, and must be a valid IP address configured on the QAM interface.

Note The **gqi-ingress-port** command is only used in GQI QAM partitions. This identifies the physical input port for sessions in GQI model.

Examples

This example shows how to configure the QAM partition on the load balancing group:

```
Router# configure terminal
Router(config)# cable route linecard 3 load-balance-group 1
Router(config-lbg)# qam-partition default 30.0.3.10 udp 1 49260 bitrate 3300
Router(config-lbg)#
```

This example shows how to configure the GQI QAM partition on the load balancing group:

```
Router# configure terminal
Router(config)# cable route linecard 3 load-balance-group 1
Router(config-lbg)# qam-partition 3 ip  10.1.1.1 gqi 10 bitrate 21
Router(config-lbg)#
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
cable route linecard load-balancing-group	Configures a video route on the cable load balancing group's line card.
show cable linecard load-balancing-group	Displays the load balancing groups configured on the QAM partitions.
snmp-server enable traps qp-lbg route-change	Enables trap notifications when a route has been added to or deleted from a QAM partition.

redundancy

To configure redundancy configuration mode, use the **redundancy** command in global configuration mode.

redundancy

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default behavior or values.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

At the redundancy configuration mode, you can do the following:

- Set a command to its default mode using the **default** command.
- Exit from a redundancy configuration using the **exit** command.
- Enter the line card group redundancy configuration using the **linecard-group** command.
- Enter main-CPU redundancy configuration mode using the **main-cpu** command, which allows you to specify which files are synchronized between the active and standby Supervisor cards.
- Configure the redundancy mode for the chassis using the **mode** command.
- Enforce a redundancy policy using the **policy** command.

Examples

The following example shows how to enter redundancy configuration mode and its associated commands on the Cisco RFGW-10 chassis:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)#?
Redundancy configuration commands:
  default         Set a command to its defaults
  exit            Exit from redundancy configuration mode
  linecard-group  Enter linecard redundancy submode
  main-cpu        Enter main-cpu mode
  mode            redundancy mode for this chassis
  no              Negate a command or set its defaults
  policy          redundancy policy enforcement
```

Related Commands

Command	Description
auto-sync	Enables automatic synchronization of the configuration files in NVRAM.
main-cpu	Enters main-CPU redundancy configuration mode to synchronize the active and standby Supervisor cards.
mode (redundancy)	Configures the redundancy mode of operation.
redundancy force-switchover	Switches control of a router from the active RP to the standby RP.
show redundancy	Displays information about the current redundant configuration, recent changes in states, current or historical status, and planned or logged handovers.

redundancy force-failover main-cpu

To force a switchover so that a standby Supervisor card becomes an active Supervisor card, use the **redundancy force-failover main-cpu** command in privileged EXEC mode.

redundancy force-failover main-cpu

Syntax Description

This command has no keywords or arguments.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

The **redundancy force-failover main-cpu** command initiates a manual switchover so that the standby Supervisor card becomes the active Supervisor card and assumes full responsibilities for router operations. When using this command, ensure that both Supervisor cards have the Cisco IOS software image that supports the Route Processor Redundancy (RPR) feature.

Note Though the terms “failover” and “switchover” are interchangeable, “switchover” is the term used across all Cisco platforms.

A manual switchover is performed for the following reasons:

- To upgrade or replace the active Supervisor card.
- To upgrade the Cisco IOS software on the standby Supervisor card and let the standby Supervisor card use the new software image. This also allows you to upgrade the software on the former active Supervisor card without interrupting system operations.
- To test the switchover operation on the system.

A switchover can also be manually initiated by removing the active Supervisor card from the chassis, by using the **redundancy force-failover main-cpu** command to provide a more graceful switchover, without generating hardware alarms.

Tip Do not perform a switchover immediately after you change the configuration and save it to the NVRAM. Instead, wait a few minutes to allow the two Supervisor cards to synchronize with the new configuration, and then perform the switchover.

Examples

The following example shows a manually initiated switchover on a Supervisor card on a Cisco RFGW-10 chassis:

```
Router# redundancy force-failover main-cpu

Proceed with switchover to standby Supervisor? [confirm] y
```

Note Press **Enter** or enter **y** to begin the switchover. Pressing any other key aborts the switchover and returns control to the current active Supervisor card.

The following example shows a switchover attempt that has failed, because the standby Supervisor card is either not ready, not available, or not installed on a Cisco RFGW-10 chassis:

```
Switch# redundancy force-failover main-cpu

Proceed with switchover to standby Supervisor? [confirm]
Standby Supervisor not ready, switchover aborted.
```

Related Commands

Command	Description
redundancy	Enters the redundancy configuration mode so that the synchronization parameters can be configured.
redundancy reload	Resets the standby Supervisor card to reset both the active and standby Supervisor cards.

redundancy force-switchover

To force the standby Route Processor (RP) or standby Supervisor card to assume the role of an active RP or Supervisor card, use the **redundancy force-switchover** command in privileged EXEC mode.

redundancy force-switchover

Syntax Description

This command has no arguments or keywords.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

Use the **redundancy force-switchover** command to switch control of a router from the active Supervisor card to the standby Supervisor card. Install the Cisco IOS image on both the active and standby Supervisor cards to ensure high availability. Configure the Route Processor Redundancy (RPR) mode on both the Supervisor cards before the **redundancy force-switchover** command is used. This command verifies if the standby Supervisor card is ready for system switchover.

When you use the **redundancy force-switchover** command and the current running configuration is different from the startup configuration, the system prompts you to save the running configuration before the switchover is performed.

Note All line cards will reset in RPR mode on a switchover.

Examples

The following example shows how to perform a manual switchover from the active to the standby RP when the running configuration is different from the startup configuration:

```
Router# redundancy force-switchover
System configuration has been modified. Save? [yes/no]:y
Building configuration...
...
...
[OK]
Proceed with switchover to standby NSE? [confirm]y
00:07:35:%SYS-5-SWITCHOVER:Switchover requested
```

The following example shows how to perform a manual switchover from the active to the standby RP when the running configuration is the same as the startup configuration:

```
Router# redundancy force-switchover
Proceed with switchover to standby NSE? [confirm]
00:07:35:%SYS-5-SWITCHOVER:Switchover requested
```

Related Commands

Command	Description
redundancy	Enters the redundancy configuration mode.
show redundancy	Displays the current active and standby Supervisor card redundancy status.

redundancy linecard-group switchover from slot

To initiate a line card switchover, use the **redundancy linecard-group switchover from slot** command in privileged EXEC mode.

redundancy linecard-group switchover from slot *slot*

Syntax Description

slot	Specifies the line card slot on the chassis. Valid range is from 3 to 12.

Command Default

The switchover of the line card takes place.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is used for the line card switchover. Switchover occurs from the current active line card to the standby line card.

Examples

The following example shows the switchover of a line card in slot 3:

```
Router#redundancy linecard-group switchover from slot 3
```

Related Commands

Command	Description
show redundancy linecard	Displays information on a line card or line card group redundancy status.

redundancy reload

To reset the standby Supervisor card to reset both the active and standby Supervisor cards, use the **redundancy reload** command in privileged EXEC mode.

redundancy reload {**peer**| **shelf**}

Syntax Description

peer	Reloads only the standby Supervisor card.
shelf	Reloads both the active and standby r Supervisor card.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

The **redundancy reload peer** command reloads the Cisco IOS software on the standby Supervisor card which does not have an impact on router operations, assuming a switchover is not required while the standby module is resetting. The **redundancy reload shelf** command reloads the Cisco IOS software on both the active and standby Supervisor cards, which will interrupt services on the router until all the Supervisor cards and line cards initialize and come back online.

Examples

The following example shows the system response when a standby Supervisor card is not installed in the Cisco RFGW-10:

```
Switch# redundancy reload peer
System is running in SIMPLEX mode, reload anyway? [confirm] n
```

Peer reload not performed.

The following example shows how to reload both Supervisor cards on the Cisco RFGW-10:

```
Switch# redundancy reload shelf
Reload the entire shelf [confirm] y

Preparing to reload entire shelf
```

Note Pressing **Enter** or **y** confirms the action and begins the reload of both cards. Pressing any other key aborts the reload and returns control to the current active Supervisor card.

Related Commands

Command	Description
redundancy	Enters redundancy configuration mode so that the synchronization parameters can be configured.
redundancy force-failover main-cpu	Forces a switchover, so that the standby Supervisor card becomes the active Supervisor card.

redundancy tcc-group switchover from slot

To initiate a Timing, Communication and Control (TCC) card switchover, use the **redundancy tcc-group switchover from slot** command in privileged EXEC mode.

redundancy tcc-group switchover from slot *slot*

Syntax Description

slot	Specifies the TCC card slot on the chassis. Valid slots are 13 and 14.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is used for TCC card switchover. Switchover occurs from the current active card to the standby TCC card.

Examples

The following example shows the switchover of a TCC card in slot 13:

```
Router#redundancy tcc-group switchover from slot 13
```

Related Commands

Command	Description
show redundancy tcc	Displays information of the TCC card redundancy status.

replicate-qam

To configure the replicate (destination) QAM, use the **replicate-qam** command in the QAM replication group configuration mode. To remove the replicate QAM, use the **no** form of this command.

replicate-qam {**qam**| **qam-red**} *qam-interface-number*

no replicate-qam {**qam**| **qam-red**} *qam-interface-number*

Syntax Description

qam-interface-number	Replicate QAM location.

Command Default

This command is enabled by default.

Command Modes

QAM replication group configuration (config-qrg)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelin

Note Effective from Cisco IOS-XE Release 3.4.0SQ, the keywords **qam**, **Qam**, **qam-red**, or **Qam-red** must be explicitly typed. Typing q or Q and pressing the **Tab** will not autocomplete the command.

Cisco IOS-XE Release 3.3.0SQ introduces the QAM replication group feature to replicate any single QAM output from one port to another port on the same Cisco RFGW-10 DS-384 line card.

A QAM replication group contains information about a single source QAM and its corresponding replicated copy or copies. Each group is numbered with a *group-id* and contains the *slot*, *port* and *channel-number* for both the source QAM (pilot-qam) and the destination QAM (replicate-qam).

Note QAM replication is supported only within a given line card and not from one line card to another.

Examples

This example shows how to create a replicate QAM:

```
Router# configure terminal
Router(config)# cable qam-replication-group 1
Router(config-qrg)# replicate-qam qam-red3/2.1
```

Related Commands

Command	Description
cable qam replication-group	Configures the QAM replication group.
pilot-qam	Configures the pilot QAM in the QAM replication group.

reserve cardtype

To configure the reserve line card type in line card redundancy, use the **reserve cardtype** command in line card redundancy configuration mode. To disable the line card type, use the **no** form of this command.

reserve cardtype *type*

no reserve cardtype *type*

Syntax Description

type	Line card type in Hex or Decimal. Valid range is from 0-4294967295.

Command Default

This command is auto-generated when the first primary line card is configured.

Command Modes

Line card redundancy configuration (config-red-lc)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Associated Feature

The **reserve cardtype** command is used to configure the reserve cardtype in a redundancy line card configuration on the Cisco RFGW-10 router.For information on configuring line card redundancy, see

- 1:1 and 1:N Line Card Redundancy

The Cisco RFGW-10 DS-48 line card and the Cisco RFGW-10 DS-384 line card have 12 and 8 ports respectively. Thus, these cards cannot exist in the same redundancy group.

Each protection group has a reserve cardtype configuration which can be manually configured before configuring the first primary line card in the group. However, if the reserve cardtype is not configured, it is automatically generated when the first primary line card is configured.

Additional redundancy line cards in a redundancy group are configured only if the card types are compatible with the reserve cardtype. The line card will not be allowed to fully initialize, if the line card is removed from a redundancy group and replaced with a non-compatible line cardtype.

For information on the redundancy group cardtype compatibility, see 1:1 and 1:N Line Card Redundancy.

Note To determine the cardtype of an existing line card, use the **show redundancy linecard slot** [*slot*] command. Use this command even if the line card is a *not* redundant line card.

Examples

The following example shows the configuration and the output of the automatic generation of the reserve cardtype for a Cisco RFGW-10 line card:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# linecard-group 0 internal-switch
Router(config-red-lc)# class 1:n
Class set to 1:N for Redundancy group (0)
Router(config-red-lc)# member slot 3 primary
 Auto generate reserve card type command
Router(config-red-lc)# end
Router# show run | beg redundancy
...
redundancy
  linecard-group 0 internal-switch
  class 1:N
  reserve cardtype 0x6011
  member slot 3 primary
  revertive 300
  mode sso
```

The following example manually configures the reserve cardtype for a Cisco RFGW-10 DS-384 line card, and attempts to configure the Cisco RFGW-10 DS-48 line card as a primary line card.

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# linecard-group 0 internal-switch
Router(config-red-lc)# class 1:n
Class set to 1:N for Redundancy group (0)
Router(config-red-lc)# reserve cardtype ?
  <0-4294967295>  Enter reserve cardtype in Hex or Decimal
Router(config-red-lc)# reserve cardtype 0x6015
Router(config-red-lc)# member slot 3 primary
Reject: Configuration of slot 3 as Primary failed for the above reason
Router(config-red-lc)#
*Apr 20 11:36:13.690: %RFGW-3-CARDTYPE_MISMATCH: Primary card type (ElbCardTypeMossbeach)
in slot (3) is not compatible with Reserve card type (ElbCardTypeBlackbriar)
```

The following example manually configures the reserve cardtype for a Cisco RFGW-10 DS-48 line card, and configure the Cisco RFGW-10 DS-48 line card as a primary line card.

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# linecard-group 0 internal-switch
Router(config-red-lc)# class 1:n
Class set to 1:N for Redundancy group (0)
Router(config-red-lc)# reserve cardtype 0x6011
Router(config-red-lc)# member slot 3 primary
Router(config-red-lc)# end
Router#
*Apr 20 11:38:27.161: %SYS-5-CONFIG_I: Configured from console by console
Router# show run | beg redundancy
...
redundancy
  linecard-group 0 internal-switch
  class 1:N
  reserve cardtype 0x6011
  member slot 3 primary
  revertive 300
  mode sso
!
```

The following example shows an attempt to configure an invalid reserve cardtype for the Cisco RFGW-10 line card:

```
Router# configure terminal
```

```
Router(config)# redundancy
Router(config-red)# linecard-group 0 internal-switch
Router(config-red-lc)# class 1:n
Class set to 1:N for Redundancy group (0)
Router(config-red-lc)# reserve cardtype 0x6000
Router#
Cardtype is not valid, enter valid card type and try this command again
```

The following example shows an attempt to configure a different reserve cardtype that does not match the existing redundancy members.

```
Router# configure terminal
Router(config)# redundancy
Router(config-red)# linecard-group 0 internal-switch
Router(config-red-lc)# class 1:n
Class set to 1:N for Redundancy group (0)
Router(config-red-lc)# reserve cardtype 0x6011
Router(config-red-lc)# member slot 3 primary
Router(config-red-lc)# reserve cardtype 0x6015
 Reserve cardtype cannot be changed while this group
 has members. Reserved card type (0x6011  24593)
Router(config-red-lc)#
```

Related Commands

Command	Description
class	Configures redundancy class on the line card.
linecard-group internal-switch	Adds a group ID for a line card group, and enters line card redundancy configuration mode.
member slot	Adds a slot to the line card redundancy group.
redundancy	Enters the redundancy configuration mode.

reset interval

Note The **reset-interval** command is not available in the Cisco IOS-XE Release 3.3.0SQ and later releases.

To set the reset interval, use the reset interval command in video server configuration mode and QAM partition configuration mode. To remove the setting, use the **no** form of this command.

reset interval *seconds*

no reset interval *seconds*

Syntax Description

seconds	Reset interval value. The valid interval range is from 1 to 300.

Command Default

This command is not enabled by default.

Command Modes

Video server configuration (config-video-servers)QAM partition configuration (config-qp)

Command History

Release	Modification
12.2(50)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command is removed. It is not available in the Cisco IOS-XE Release 3.3.0SQ and later releases.

Usage Guidelines

Use the reset interval command in QAM partition configuration to reset the reset interval value.

Examples

The following example shows how to configure the reset interval value of 10 seconds in QAM partition configuration:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# reset interval 10
```

The following example shows how to configure the reset interval value of 1 second on a Cisco RFGW-10:

```
Router(config)# cable video servers servergroup1
Router(config-video-servers)# reset interval 1
```

Related Commands

Command	Description
active	Activates the server.
cable qam-partition	Configures the QAM partition for a video server.
cable video servers	Configures server groups for video sessions using external servers.
ip rpc portmapper	Establishes an RPC connection between the external server and EQAM.
keepalive retry	Configures the keepalive retry value on the server.
mgmt-ip-address mac-address	Configures the management IP and MAC address of the server.
protocol	Configures the protocols supported by the server.
server	Configures the IP address of the server.
show cable video server-group	Displays the video server-group information.

retry interval

To configure the retry time and interval time on the external server, use the **retry interval** command in cable video server configuration mode. To remove the configuration, use the **no** form of this command.

retry *seconds* **interval** *seconds*

no retry *seconds* **interval** *seconds*

Syntax Description

seconds	Specifies the time interval. The default retry time is 3 seconfds and the default interval time is 5 seconds.

Command Default

This command has no default behavior or values.

Command Modes

Cable video server configuration (config-video-servers)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Retry and interval time are optionally configured in the server group for communication between the Cisco RFGW-10 and the external servers.

Examples

The following example shows 10 seconds configured as the retry and interval value on the video server:

```
Router#configure terminal
Router(config)#cable video server servergroup1
Router(config-video-servers)#protocol gqi
Router(config-video-servers)#server 10.10.10.1
Router(config-video-servers)#retry 10 interval 10
Router(config-video-servers)#exit
```

Related Commands

Command	Description
cable video servers	Configures the video server group for external servers.
mgmt-ip-address mac-address	Configures the management port IP address and MAC address.
protocol	Configures the protocol used by the external server.

Command	Description
server	Configures the IP address of the external server.

rtsp

To configure the ERMI Real-time Streaming Protocol (RTSP) on the QAM partition, use the **rtsp** command in global configuration mode. To disable the protocol, use the **no** form of this command.

rtsp {**connect-retry** *retry-interval* | **connect-time** *connect-seconds* | **keepalive** *connection-timeout-interval* | **session-timeout** *session-timeout-interval*}

no rtsp {**connect-retry** *retry-interval* | **connect-time** *connect-seconds* | **keepalive** *connection-timeout-interval* | **session-timeout** *session-timeout-interval*}

Syntax Description

connect-retry	Specifies RTSP connection retry time.
retry-interval	RTSP connection retry interval, The valid range is from 1 to 10.
connect-time	Specifies the RTSP connection time
connect-seconds	RTSP connection time in seconds. The valid range is from 10 to 200.
keepalive	Specifies the keepalive time for the RTSP connection.
connection-timeout-interval	RTSP connection timeout interval. The valid range is from 1 to 300. The default value is 300.
session-timeout	Specifies the RTSP session timeout for the connection.
session-timeout-interval	RTSP session timeout interval. The valid range is from 10800 to 36000.

Command Default

This command is disabled by default.

Command Modes

QAM partition configuration mode (config-qp)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Usage Guidelines

ERMI is a protocol for managing EQAM resources both for DOCSIS and video services. It provides video edge device discovery, resource provisioning and signaling protocols for setup and control of video on demand (VOD) and switched digital video (SDV) type video sessions.

Note ERMI protocol has to be configured in the QAM partition.

RTSP protocol is designed to support the setup of multimedia sessions over IP networks. RTSP operates on TCP port and provides primitives for session setup and session management protocol. RTSP is a client server protocol that enables a client application to request streaming media services from a media server.

Examples

This example shows how to configure ERMI **rtsp** protocol on the QAM partition 1:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol ermi
Router(config-qp)# rtsp connect-retry 5
Router(config-qp)# rtsp connect-time 10
Router(config-qp)# rtsp keepalive 5
Router(config-qp)# rtsp session-timeout 10800
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
clear cable ermi statistics	Clears the ERMI protocol connection stastistics information.
errp	Configures Edge Resource and Registration protocol (ERRP) on the QAM partition.
protocol	Assigns the protocol used by the external server.

server

To configure the external server IP address, use the **server** command in cable video server configuration mode and QAM partition configuration mode. To remove the configuration, use the **no** form of this command.

server *IP address*

no server *IP address*

Syntax Description

IP address	Specifies the IP address of the external server.

Command Default

This command has no default behavior or values.

Command Modes

QAM partition configuration (config-qp)

Command History

Release	Modification
Cisco IOS Release 12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command is integrated Cisco IOS-XE Release 3.3.0SQ.

Usage Guidelines

Data Network Control Station (DNCS) servers use Generic QAM interface (GQI) protocol. The IP address of the DNCS server must be provided. SDV servers use Switched Digital Video (SDV) protocol and do not require an IP address.

Starting with Cisco IOS-XE Release 3.3.0SQ, the **server** command configures the IP address of the external server that uses the QAM partition.

Examples

The following example sets the external server IP address in a QAM partition:

```
Router# configure terminal
Router(config)# cable qam-partition 1
Router(config-qp)# protocol gqi
Router(config-qp)# mgmt-ip 1.1.1.1
Router (config-qp)# server 192.168.0.10
```

Related Commands

Command	Description
cable qam-partition	Configures the QAM partition for a video server.

Command	Description
protocol	Assigns the protocol used by the external server.

service bass-seu-interrupt

Bass SEU interrupts are single event upset (SEU) interrupts received from Bass field-programmable gate array (FPGA).

To enable Cisco RFGW-10 DS-384 line card reset when a Bass SEU interrupt is received, use the **service bass-seu-interrupt** command in the global configuration mode. To disable Cisco RFGW-10 DS-384 line card reset, use the **no** form of the command.

service bass-seu-interrupt

no service bass-seu-interrupt

Syntax Description

This command has no arguments or keywords.

Command Default

Line card reset is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.1SQ	This command was introduced.

Usage Guidelines

Use this command to enable Cisco RFGW-10 DS-384 line card reset when Bass SEU interrupt is reported.

Examples

The following example shows how to enable line card reset when a Bass SEU interrupt is received:

```
Router#configure terminal
Router(config)#service bass-seu-interrupt
```

Related Commands

Command	Description
show running-config	Displays the running configuration on the router.

service heartbeat

To enable the service heartbeat messages to the Supervisor card, use the **service heartbeat** command. To disable the service heartbeat messages, use the **no** form of the **service heartbeat** command.

service heartbeat [**warning-timeout**| **fatal-timeout**| **cslipc-timeout**| **alive-timeout**]*seconds*

no service heartbeat

Syntax Description

warning-timeout	(Optional) Specifies the timeout period that the Supervisor card waits for, before logging the event as expiry of warning timeout for heartbeat, in the Supervisor card's logs. The default time is 3 seconds.
fatal-timeout	(Optional) Specifies the timeout period that the Supervisor card waits for, before resetting the line card to recover. The default time is 5 seconds.
cslipc-timeout	(Optional) Specifies the timeout period that the Supervisor card waits for, before the expiry of which the line card needs to send its license information to the Supervisor card. The default time is 600 seconds.
alive-timeout	(Optional) Specifies the timeout period that the Supervisor card waits for, before the expiry of which the line card needs to send the first heartbeat (alive) message to the Supervisor card. The default time is 600 seconds.
seconds	Specifies the timeout in seconds.

Command Default

Enabled.

Command Modes

Command History

Release	Modification
12.2(50)SQ	This command was introduced.
Cisco IOS-XE Release 3.2.0SQ	This command was integrated.

Usage Guidelines

To enable the Service Heartbeat feature, enable the following options of the **service heartbeat** command with default values:

To avoid any errors in service heartbeat messaging to the Supervisor card, it is recommended that you configure all the options with default values only.

Examples

This example shows the configuration that enables the service heartbeat feature:

```
Router(config)# service heartbeat  warning-timeout 3
Router(config)# service heartbeat  fatal-timeout 5
Router(config)# service heartbeat  alive-timeout 600
```

This example shows the configuration of the **cslipc-timeout** option:

```
Router(config)# service heartbeat  cslipc-timeout 600
```

Related Commands

Command	Description
show running-config	Displays the running configuration on the router.

scrambling

To configure tier-based scrambling of the linecard, use the **scrambling** command in tier-based configuration mode.

scrambling{**enable**| **disable**}

Syntax Description

enable	Enable the tier-based scrambling of the linecard.
disable	Disable the tier-based scrambling of the linecard.

Command Default

Tier-based scrambling are enabled.

Command Modes

Tier-based configuration (config-tier)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Examples

The following example shows how to configure tier-based scrambling of the linecard:

```
Router# configure terminal
Router(config-tier)# scrambling disable
```

Related Commands

Command	Description
cable video scrambler	Configures scrambling for the video sessions.
show cable video scrambler	Displays the scrambling information for the video sessions.

snmp-server enable traps dti client

To enable notifications when there is change in DTI client state, use the **snmp-server enable traps dti client** command in the global configuration mode. To disable such notifications, use the **no** form of the command.

snmp-server enable traps dti client

no snmp-server enable traps dti client

Syntax Description

This command has no arguments or keywords.

Command Default

Notification traps for DTI client state change are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Use this command to enable notifications when there is change in DTI client state.

Examples

The following example shows how to enable notifications when there is change in DTI client state:

```
RFGW-10> enable
RFGW-10# configure terminal
RFGW-10(config)# snmp-server enable traps dti client
```

Related Commands

Command	Description
show cable clock	Displays information about displaying Timing, Communication and Control (TCC) card DOCSIS Timing Interface (DTI) client and server statistic counts.

snmp-server enable traps dti server

To enable notifications when there is change in DTI server state, use the **snmp-server enable traps dti server** command in the global configuration mode. To disable such notifications, use the **no** form of the command.

snmp-server enable traps dti server

no snmp-server enable traps dti server

Syntax Description

This command has no arguments or keywords.

Command Default

Notification traps for DTI server state change are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Use this command to enable notifications when there is change in DTI server state.

Examples

The following example shows how to enable notifications when there is change in DTI server state:

```
RFGW-10> enable
RFGW-10# configure terminal
RFGW-10(config)# snmp-server enable traps dti server
```

Related Commands

Command	Description
show cable clock	Displays information about displaying Timing, Communication and Control (TCC) card DOCSIS Timing Interface (DTI) client and server statistic counts.

snmp-server enable traps l2tun

To enable notification when there is change in DEPI tunnel or session state, use the **snmp-server enable traps l2tun** command in global configuration mode. To disable such notifications, use the **no** form of the command.

snmp-server enable traps l2tun {**pseudowire| session**}

no snmp-server enable traps l2tun {**pseudowire| session**}

Syntax Description

pseudowire	Enable SNMP l2tun pseudowire traps.
session	Enable SNMP l2tun session traps.

Command Default

Notification traps are disabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Use this command to enable notifications when there is change in DEPI tunnel or session state.

Examples

The following example shows how to enable kernel dumper for the RFGW-10 DS-384 line card:

```
Router> enable
Router# configure terminal
Router(config)#  snmp-server enable traps l2tun pseudowire
Router(config)#  snmp-server enable traps l2tun session
```

Related Commands

Command	Description
show depi tunnel	Displays information about Downstream External PHY Interface (DEPI) tunnels.
show depisession	Displays information about Downstream External PHY Interface (DEPI) sessions.

snmp-server enable traps qp-lbg qam-change

To enable notifications when a QAM has been added to or deleted from a QAM partition, use the **snmp-server enable traps qp-lbg qam-change** command in the global configuration mode. To disable such notifications, use the **no** form of the command.

snmp-server enable traps qp-lbg qam-change

no snmp-server enable traps qp-lbg qam-change

Syntax Description

This command has no arguments or keywords.

Command Default

Notification traps are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Ensure that you have QAM Partitions setup.

Examples

The following example shows how to enable notifications when a QAM has been added to or deleted from a QAM partition:

```
RFGW-10> enable
RFGW-10# configure terminal
RFGW-10(config)# snmp-server enable traps qp-lbg qam-change
```

Related Commands

Command	Description
cable qam-partition	Creates QAM partitions.
active	Activates a QAM partition.

snmp-server enable traps qp-lbg qam-oversubscription

To enable video QAM monitoring traps for receiving video QAM bandwidth oversubscription notifications on an NMS (network management system), use the **snmp-server enable traps qp-lbg qam-oversubscription** command in the global configuration mode. To disable video QAM monitoring traps, use the **no** form of the command.

snmp-server enable traps qp-lbg qam-oversubscription

no snmp-server enable traps qp-lbg qam-oversubscription

Syntax Description

This command has no arguments or keywords.

Command Default

Video QAM monitoring trap is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.1SQ	This command was introduced.

Usage Guidelines

Use this command to enable traps to receive video QAM bandwidth oversubscription notifications on an NMS (network management system).

Examples

The following example shows how to enable video QAM monitoring traps:

```
RFGW-10> enable
RFGW-10# configure terminal
RFGW-10(config)# snmp-server enable traps qp-lbg qam-oversubscription
```

Related Commands

Command	Description
cable video qam-oversubs-notify enable	Enables QAM bandwidth oversubscription monitoring.

snmp-server enable traps qp-lbg qp-state-change

To enable notifications when a QAM partition's state has been changed, use the **snmp-server enable traps qp-lbg qp-state-change** command in the global configuration mode. To disable such notifications, use the **no** form of the command.

snmp-server enable traps qp-lbg qp-state-change

no snmp-server enable traps qp-lbg qp-state-change

Syntax Description

This command has no arguments or keywords.

Command Default

Notifications for QAM partition's state change are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Use this command to receive notifications in case of QAM partition's state change.

Examples

The following example shows how to enable notifications when a QAM partition's state has been changed:

```
RFGW-10> enable
RFGW-10# configure terminal
RFGW-10(config)# snmp-server enable traps qp-lbg qp-state-change
```

Related Commands

Command	Description
active	Activates a QAM partition.

snmp-server enable traps qp-lbg route-change

To enable notifications when a route has been added to or deleted from a QAM partition or an LBG, use the **snmp-server enable traps qp-lbg route-change** command in the global configuration mode. To disable such notifications, use the **no** form of the command.

snmp-server enable traps qp-lbg route-change

no snmp-server enable traps qp-lbg route-change

Syntax Description

This command has no arguments or keywords.

Command Default

Route change notifications are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
Cisco IOS-XE Release 3.5.0SQ	This command was introduced.

Usage Guidelines

Use this command to receive notifications in case a route has been added to or deleted from a QAM partition or an LBG.

Examples

The following example shows how to enable notifications when a route has been added to or deleted from a QAM partition or an LBG:

```
RFGW-10> enable
RFGW-10# configure terminal
RFGW-10(config)# snmp-server enable traps qp-lbg route-change
```

Related Commands

Command	Description
qam partition	Assigns a QAM partition to the load balancing group.

show cable clock

To display information about displaying Timing, Communicaton and Control (TCC) card DOCSIS Timimg Interface (DTI) client and server statistic counts, use the **show cable clock** command in privileged EXEC mode.

show cable clock [*slot*] {**client** *port id* | **server** *port id* | **counters**}

Syntax Description

slot	(Optional) Identifies a TCC interface on the Cisco RF Gateway 10. Valid TCC slots are 13 and 14.
client *port id*	Specifies the DTI client port ID. Valid port values are 1 and 2.
server *port id*	Specifies the DTI server port ID. Valid port values are 1 and 2.
counters	Specifies the DTI client counters.

Command Default

Information on the TCC DTI client and server is displayed. Counters are not displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was modified in Cisco IOS Release 12.2(44)SQ to support the Cisco RF Gateway 10. The *slot*, **client**, **server**, and **counters** options were added.

Examples

The following example shows the TCC DTI client and server statistic counts information:

```
Router# show cable clock
DTI Client status: TCC 13
-----------------
Client status                 : normal
Client clock type             : ITU type 1
Client firmware version       : 7
Client dti version            : 0
Client timestamp              : 657519453
Client phase correction       : 65535
Client normal time            : 65535
Client holdover time          : 0
Client transition t3 count    : 0
Client transition t4 count    : 1
Client transition t6 count    : 0
```

```
Client transition t7 count     : 0
Client port switch count       : 1
Client Integral Frequency Term : 64518
Client EFC Value               : 63282
DTI Client Port 1 Status:
-------------------------
   Port Status             : Active
   Signal detected         : yes
   CRC error count         : 2
   Frame error rate        : < 2%
   Cable advance           : 2560
    -- Connected server information ---
    Server status                  : Active free-run
    Root Server clock type         : ITU type 3
    Root Server source             : none
    Server Type                    : Root
    Client Performance Stable      : yes
    Client Cable advance Valid     : yes
DTI Client Port 2 Status:
-------------------------
   Port Status             : Inactive
   Signal detected         : no
   CRC error count         : 66
   Frame error rate        : > 5%
   Cable advance           : 0
DTI Client status: TCC 14
-----------------
Client status                  : normal
Client clock type              : ITU type 1
Client firmware version        : 7
Client dti version             : 0
Client timestamp               : 672169320
Client phase correction        : 65535
Client normal time             : 65535
Client holdover time           : 0
Client transition t3 count     : 0
Client transition t4 count     : 1
Client transition t6 count     : 0
Client transition t7 count     : 0
Client port switch count       : 1
Client Integral Frequency Term : 64760
Client EFC Value               : 63832
DTI Client Port 1 Status:
-------------------------
   Port Status             : Inactive
   Signal detected         : no
   CRC error count         : 26
   Frame error rate        : > 5%
   Cable advance           : 0

DTI Client Port 2 Status:
-------------------------
   Port Status             : Active
   Signal detected         : yes
   CRC error count         : 2
   Frame error rate        : < 2%
   Cable advance           : 1792
    -- Connected server information ---
    Server status                  : Active free-run
    Root Server clock type         : ITU type 3
    Root Server source             : none
    Server Type                    : Root
    Client Performance Stable      : yes
    Client Cable advance Valid     : yes
```

The following is sample output of a TCC card in slot 13 on a Cisco RF Gateway 10:

```
Router#show cable clock 13 client 1
DTI Client Port 1 Status:
-------------------------
   Port Status             : Inactive
   Signal detected         : no
```

```
CRC error count          : 63006
Frame error rate         : > 5%
Cable advance            : 0x0000
```

Table 2: show cable clock client Field Descriptions

Field	Description
Port status	Indicates the current status of the DTI port on the TCC card.
Signal detected	Indicates whether the DTI signal was detected.
CRC error count	The number of cyclic redundancy check (CRC) errors. It can indicate intermittent upstream, laser clipping, or common-path distortion.

The following example shows the server status of the TCC card in slot 13 on a Cisco RFGW-10:

```
Router#show cable clock 13 server 2
TCC Card 13 port 2 DTI Server status:
---------------------------------------
    Server signal detected         : yes
    Server status                  : free-run
    Root Server clock type         : ITU type 3
    Root Server source             : none
    Server Type                    : Root
    Client Performance Stable      : yes
    Client Cable advance Valid     : yes
    TOD Setting Mode               : Short
    TOD gpssec                     : 902825745
    TOD leap seconds               : 14
```

Table 3: show cable clock server Field Descriptions

Field	Description
Server signal detected	Indicates whether the server was detected.
Server status	Indicates the state in which the serer is functioning. The states are warm-up, free-run state, fast mode, normal, holdover, or bridge mode.
Root server source	The server source such as internal, external, GPSor none.
Root server clock type	The clock type. The types are 1, 2, 3 or ITU Stratum 3 or DTI Min. clock.
TOD setting mode	Displays the time (user time, NTP, GPS) mode such as short or long.

The following is a sample output showing the counters on TCC card 13 on Cisco RFGW-10:

```
Router#show cable clock 13 counters
TCC Card 13 DTI counters:
-------------------------
    Client Normal time             : 0x1EB6
    Client Holdover time           : 0x0000
    Client Phase Correction        : 0
    Client Freq Correction         : 63213
    Client EFC Correction          : 61039
    Client transition count t3     : 0
    Client transition count t4     : 1
    Client transition count t6     : 0
    Client transition count t7     : 0
    Client port switch count       : 1
```

Related Commands

Command	Description
cable clock free-run	Allows the clock to be in free-run mode.
clear cable clock counters	Clears DTI client transition counters of a TCC DTI client and server.
snmp-server enable traps dti client	Enables trap notifications when there is change in DTI client state.
snmp-server enable traps dti server	Enables trap notifications when there is change in DTI server state.

show cable depi-sessions

To display Downstream External PHY Interface (DEPI) sessions configured on the line card, use the **show cable depi-sessions** command in privileged EXEC mode.

show cable depi-sessions *mode* {**session-id**| **summary**}

Syntax Description

mode	Specifies the mode of the QAM channel: • **L2TP—**Displays signalled DEPI sessions. • **Manual—**Displays manually configured DEPI sessions.
session-id	Displays detailed information on a specific DEPI session.
summary	Displays a summary of all DEPI sessions configured

Command Default

Information on configured DEPI sessions is displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following is sample output for manual DEPI session 1 on the Cisco RF Gateway 10:

```
Router#show cable depi-sessions manual 1
Detailed Info about Session with id# 1:

                Type               : MANUAL_DEPI_OVER_IP
                Name               :
                State              : IDLE
                Remote id          : 0
                DestIP addr        : 1.1.1.1
                Qam slotid         : 3
                Qam portid         : 1
                Qam ch id          : 1
                Payload type       : DEPI_PW_TYPE_D_MPT
                Sync Mode          : ENABLE
                Sync Intl          : 100
                Up time            : 01:58:34

                << Session Statistic >>
```

```
Session is off     : 0
Broken seq num     : 0
Bad depi header    : 0
Bad MPEG sync byte : 0
In packet rate     : 0 pps
In bit rate        : 0 bps
Out bit rate       : 0 bps

<< Flow Statistic >>
Total packet       : 0
Total byte         : 0
Total segment      : 0
Discards           : 0
Errors             : 0
Bad pyld size      : 0
Cmnd buf ovfw      : 0
```

Table 4: show cable depi-sessions manual Field Descriptions

Field	Indicates the
Type	Mode of the DEPI session.
Name	Name given to the session.
State	State of the session.
Remote id	Remote ID of the session.
DestIP addr	Destination IP address of the DEPI.
Qam slotid	Slot on the QAM interface.
Qam portid	Port on the QAM slot.
Qam ch id	Channel on the QAM port.

The following example shows a summary of the manual DEPI sessions configured on a Cisco RF Gateway 10:

```
Router#show cable depi-sessions manual summary
List of the Configured Depi Sessions
  ID          Type                State      Qam-info   PWtype
  x-----------x-------------------x----------x----------x--------
  1           MANUAL_DEPI_OVER_IP IDLE       Qam3/01.1  DMPT
  11012       MANUAL_DEPI_OVER_IP ACTIVE     Qam3/01.2  DMPT
  11013       MANUAL_DEPI_OVER_IP ACTIVE     Qam3/01.3  DMPT
  30011       MANUAL_DEPI_OVER_IP ACTIVE     Qam5/01.1  DMPT
  30012       MANUAL_DEPI_OVER_IP ACTIVE     Qam5/01.2  DMPT
  30013       MANUAL_DEPI_OVER_IP ACTIVE     Qam5/01.3  DMPT
```

Table 5: show cable depi-sessions manual summaryField Descriptions

Field	Indicates the
ID	ID of the sessions created.

Field	Indicates the
Type	Type of the DEPI session.
State	State of the DEPI session.
Qam-info	Slot, port and channel of a QAM interface.
PW type	Cable mode of the QAM channel.

Related Commands

Command	Description
cable mode	Specifies the mode and usage of QAM channels.

show cable depi-sessions slot count

To display the Downstream External PHY Interface (DEPI) session count on all QAMs on a line card, use the **show cable depi-sessions slot count** command in privileged EXEC mode.

show cable depi-sessions *slot slot* **count**

Syntax Description

slot	Displays DEPI sessions information for a slot.
slot	Specifies the slot on the QAM interface. Valid slot number range is from 3 to 12.
count	Displays the count of both Manual and L2tp sessions for all QAM channels on the linecard interface.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ2	This command was introduced on the Cisco RF Gateway 10.

Examples

The following is sample output for DEPI session count on the Cisco RF Gateway 10:

```
Router#show cable depi-sessions slot 3 count
       QAM Port          Sessions
      x-----------------x---------
       Channel 3/1.1     1
       Channel 3/1.2     1
       Channel 3/1.3     1
       Channel 3/1.4     1
```

Table 6: show cable depi-sessions slot count Field Descriptions

Field	Description
QAM Port	Port on the QAM slot.
Sessions	Count of the DEPI sessions on the QAM port.

Related Commands

Command	Description
cable mode	Specifies the mode and usage of QAM channels.

show cable depi-sessions offset

To display the DOCSIS Timing Interface (DTI) timing value on the QAM channels, use the **show cable depi-sessions offset** command in privileged EXEC mode.

show cable depi-sessions offset [**port** *slot*/*port*| **slot** *slot*]

Syntax Description

port	Displays the offset value at the port.
slot/port	Specifies the slot and the port of the line card. Valid slot range is 3 to 12. Valid port range is 1 to 12.
slot	Displays the offset value for the specified slot.
slot	Specifies the slot on the line card. Valid slot range is from 3 to 12.

Command Default

This command has no default behavior or values.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following is sample output for DTI offset values configured on the chassis:

```
Router# show cable depi-sessions offset
Qam-info Offset
x-----------x-------------------
Qam3/01.1 639
Qam3/01.2 640
Qam3/01.3 641
Qam3/01.4 642
Qam3/02.1 639
Qam3/02.2 640
Qam3/02.3 641
Qam3/02.4 642
```

Table 7: show cable depi-sessions offset Field Descriptions

Field	Description
Qam-info	Displays information about the QAM interface.
Offset	Displays the offset value configured.

Related Commands

Command	Description
cable depi offset	Sets the offset value on the QAM channel for a line card in DEPI mode.

show cable depi-ctrl-session teardown detail

To display the reason for and time of flapping of DEPI, use the **show cable depi-ctrl-session teardown details** command.

show cable depi-ctrl-session teardown details

Syntax Description

Command Default

None.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.1SQ	This command was introduced.

Usage Guidelines

This command provides session details like the reason for DEPI flapping and the time at which the flaps occurred.

Examples

This example shows the output format of the **show cable depi-ctrl-sessions teardown detail** command:

```
Router# show cable depi-ctrl-sessions teardown detail
Session Name Teardown-Reason Time
```

show cable ermi errp

To display information on the ERMI Edge Resource and Registration protocol (ERRP) protocol, use the **show cable ermi errp** command in privileged EXEC mode.

{**show cable ermi errp server** {*server-IP-address*| **all**}| **resources** {*res-IP-address*| **all**}| **statistics**}

Syntax Description

server	Displays information of a specific ERRP server.
server-IP-address	ERRP server IP address.
all	Displays all information about the ERRP server.
resources	Displays all resources used by the ERRP server.
res-IP-address	Displays information of a particular resource used by the ERRP server.
all	Displays informatin of all resources used by the ERRP server.
statistics	Displays the ERRP statistics information.

Command Default

This command is enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Examples

This example displays the ERRP server information:

```
Router# show cable ermi errp server all
ERRP Details:
Socket    : 1
 Local     : 10.78.179.167:22350
 Remote    : 10.78.179.170:6069
 Timers    : Hold 90, Keepalive 0, ConnectRetry 10
 FSM state : CONNECT
 QAM Parition : 1
 Number of QAMs reachable : 0
```

Table 8: show cable ermi errp Field Descriptions

Field	Description
Socket	Port connected to the ERRP server.
Local	Local IP address.
Remote	Remote IP address
FSM State	State of server.
QAM Partition	QAM Partition used by the protocol.
No of QAMs Reachable	No of QAM interfaces that use the server.

The following example displays the ERRP server statistics:

```
Router# show cable ermi errp statistics
ERRP Protocol Statistics:
Packet          Received  Received  Received  Sent      Sent      Sent
Type            Packets   Failed    Success   Packets   Failed    Success
--------------  --------  --------  --------  --------  --------  --------
OPEN             0         0         0         0         0         0
UPDATE           0         0         0         0         0         0
NOTIFICATION     0         0         0         0         0         0
KEEPALIVE        0         0         0         0         0         0
SOCKET           0         0         0         0         0         0
UNKNOWN          0         0         0         0         0         0
```

The following example displays the resources used by ERRP server:

```
Router# show cable ermi errp server resources all
ERRP Connection ID 1
QAM         Carrier
Interface   ID
-------------------------------------------------------------------Total Resource
 : 0
```

Related Commands

Command	Description
clear cable ermi statistics	Clears ERMI protocol connection stastistics information.
errp	Configures Edge Resource and Registration protocol (ERRP) on the QAM partition.

show cable ermi rtsp

To display information on the ERMI Real-time Streaming Protocol (RTSP) protocol, use the **show cable ermi rtsp** command in privileged EXEC mode.

{**show cable ermi errp server** {*server-IP-address*| **all**}| **session** {*session-id*| **all**}| **statistics**}

Syntax Description

server	Displays RTSP server information.
server-IP-address	Server IP address.
all	Displays all information about the server.
session	Displays information about an RTSP session ID.
session-id	RTSP session ID. The valid range is from 0 to 4294967295.
all	Displays information about all RTSP sessions.
statistics	Displays the RTSP statistics information.

Command Default

This command is enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Examples

This example displays all the server information:

```
Router# show cable ermi rtsp server all
Socket         Mgmt                Server          QP   RTSP   RTSP  Conn   Co
ID             Info                Info            ID  Session Req  Timeout Re
y
------ -------------------- -------------------- --- ------- ---- ------- --
-
```

Table 9: show cable ermi errp Field Descriptions

Field	Description
Socket ID	ID of the socket.
Mgmt Infol	Information about Management port.
Server Info	Information about the Server port.
QP ID	QAM partition ID.
RTSP session	Number of RTSP sessions.
RTSP Req	RTSP request.
Conn timeout	Connection timeout interval.
Conn Retry	Connection retry interval.

This example displays the RTSP server statistics:

```
Router# show cable ermi errp statistics
RTSP Protocol Statistics:
Packet          Received  Received  Received  Sent      Sent      Sent
Type            Packets   Failed    Success   Packets   Failed    Success
--------------  --------  --------  --------  --------  --------  --------
SETUP            0         0         0         0         0         0
TEARDOWN         0         0         0         0         0         0
SET PARAMETER    0         0         0         0         0         0
GET PARAMETER    0         0         0         0         0         0
ANNOUNCE         0         0         0         0         0         0
SOCKET           0         0         0         0         0         0
UNKNOWN          0         0         0         0         0         0
```

The following example displays the RTSP session information:

```
Router# show cable ermi rtsp session all
Session    Session QP  QAM     QAM   RTSP   Server          Socket Session Ses
on Client
ID         Type    ID  Port    TSID  State  Addr(Socket)    Id     Index   Gro
   Session ID
---------- ------- --- ------- ----- ------ --------------- ------ ------- ---
-- -----------
Total Sessions: 0
```

Table 10: show cable ermi rtsp Field Descriptions

Field	Descriptions
Session on Client ID	RTSP Client ID (MAC address).
Session Type	Type of session.
QAM ID	QAM partition ID assigned to server.

Field	Descriptions
QAM Port	QAM port assigned to server.
RTSP State	State of RTSP server.
Server Address (Socket)	IP address of server.
Socket ID	TCP Socket ID.
Session Index	Session Index.
Session Group	Group of sessions.
Session ID	RTSP Session ID.
Total Sessions	Total number of sessions.

Related Commands

Command	Description
clear cable ermi statistics	Clears the ERMI protocol connection statistics information.
rtsp	Configures RTSP on the QAM partition.

show cable freq-profile

To display frequency profiles created on the Cisco RFGW-10, use the **show cable freq-profile** command in privileged EXEC mode.

show cable freq-profile [**all**| *freq-profile-id*]

Syntax Description

all	Displays detailed information of all the frequency profiles on the Cisco RFGW-10.
freq-profile-id	Displays detailed information of a specific frequency profile.

Command Default

Information on configured frequency profiles are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Use the **show cable freq-profile** command find out which frequency segment is occupied by the carriers, which part are not being used, and which portions cannot be used.

Examples

The following example displays the frequency profiles configured on the Cisco RFGW-10:

```
Router# show cable freq-profile
Frequency Profile ID default-freq-profile:
        Lane 1 start-freq 88000000hz
                Block 1 start-freq 88000000hz
                Block 2 start-freq 136000000hz
                Block 3 start-freq 184000000hz
                Block 4 start-freq 232000000hz
        Lane 2 start-freq 280000000hz
                Block 1 start-freq 280000000hz
                Block 2 start-freq 328000000hz
                Block 3 start-freq 376000000hz
                Block 4 start-freq 424000000hz
        Lane 3 start-freq 472000000hz
                Block 1 start-freq 472000000hz
                Block 2 start-freq 520000000hz
                Block 3 start-freq 568000000hz
                Block 4 start-freq 616000000hz
        Lane 4 start-freq 664000000hz
                Block 1 start-freq 664000000hz
                Block 2 start-freq 712000000hz
```

```
                Block 3 start-freq 760000000hz
                Block 4 start-freq 808000000hz
Frequency Profile ID 20:
        Lane 1 start-freq 680000000hz
                Block 1 start-freq 680000000hz
                Block 2 start-freq 680000000hz
                Block 3 start-freq 680000000hz
                Block 4 start-freq 680000000hz
        Lane 2 start-freq 780000000hz
                Block 1 start-freq 780000000hz
                Block 2 start-freq 780500000hz
                Block 3 start-freq 780500000hz
                Block 4 start-freq 780099000hz
        Lane 3 start-freq 99000000hz
                Block 1 start-freq 99400000hz
                Block 2 start-freq 99300000hz
                Block 3 start-freq 99340000hz
                Block 4 start-freq 99540000hz
        Lane 4 start-freq 580000000hz
                Block 1 start-freq 679000000hz
                Block 2 start-freq 678000000hz
                Block 3 start-freq 678500000hz
                Block 4 start-freq 679500000hz
```

Table 11: show cable freq-profile Field Descriptions

Field	Description
Frequency Profile ID	Indicates the frequency profile ID.
Lane	Indicates the lane ID, and starting frequency of the lane.
Block	Indicates the block ID, and starting frequency of the block.

Related Commands

Command	Description
cable downstream freq-profile	Configures the frequency profiles on the Cisco RFGW-10.

Commands: show cable h to v

show cable heartbeat

To display the number of heartbeats received from the line cards, use the **show cable heartbeat** command in privileged EXEC mode.

show cable heartbeat

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the heartbeat of the line cards:

```
Router# show cable heartbeat
                  Heartbeat
      Heartbeat   Received    Card
Slot  Enabled     Count       State
-------------------------------------
3     enabled     6183        ready
4     enabled     733519      ready
5     enabled     562516      ready
6     enabled     1423983     ready
7     enabled     1423001     ready
8     enabled     1423984     ready
9     enabled     1424010     ready
10    enabled     1423989     ready
11    enabled     197795      ready
12    enabled     562139      ready
13    enabled     1423949     ready
14    enabled     1423900     ready
```

The table below describes the significant fields shown in the display.

Table 12: show cable hearbeat Field Descriptions

Field	Specifies the
Slot	Slot on the chassis.
Heartbeat Enabled	Heartbeat enabled status. If no heartbeat is received, it indicates that the line card is reset. Note that heartbeat state must be enabled to receive heartbeats.

Field	Specifies the
Heartbeat Received Count	Number of heartbeats.
Card State	State of the line card.

Related Commands

Command	Description
cable linecard reset	Resets the line card on the chassis.

show cable image-upgrade bundle

To display the upgraded images of all the devices on the Supervisor card, use the **show cable image-upgrade bundle** command in user EXEC or privileged EXEC mode.

show cable image-upgrade bundle

Syntax Description

This command has no arguments or keywords.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the sample output using the **show cable image-upgrade bundle** command on the Cisco RF Gateway 10:

```
Router# show cable image-upgrade bundle

Image Name                            Id  Date      Time
==================================    ==  ================
TCC_APP_00000000_20080811-00144654    00  20080811  00144654
TCC_ROM_00000001_20080317-00170141    01  20080317  00170141
TCC_GEN_00000002_20080612-00140709    02  20080612  00140709
TCC_DTI_00000003_20080428-00094708    03  20080428  00094708
TCC_RST_00000004_20080612-00140712    04  20080612  00140712
RFS_CPL_00000005_20080428-00105357    05  20080428  00105357
MV_APP_00000011_20080811-00144650     11  20080811  00144650
MV_ROM_00000012_20080605-00074654     12  20080605  00074654
MV_DIS_00000013_20080603-00151016     13  20080603  00151016
MV_COB_00000014_20080609-00205712     14  20080609  00205712
MV_YEL_00000015_20080609-00205659     15  20080609  00205659
MV_GWT_00000016_20080717-00162446     16  20080717  00162446
RFGW_GUI_00000017_20080603-00114822   17  20080603  00114822
```

The table below describes the significant fields shown in the display.

Table 13: show cable image-upgrade bundle Field Descriptions

Field	Indicates the
Image Name	Name of images of all devices on Supervisor card.
Id	ID allotted to the image.

Field	Indicates the
Date	Date when the image was created.
Time	Time when the image was created.

Related Commands

Command	Description
cable-image upgrade download	Upgrades the image on the specified line card.
show cable-image upgrade status	Displays the image upgraded status of the line card.
show cable-image upgrade version	Displays all the upgraded image versions on the line card.

show cable image-upgrade status

To display the upgrade status for a line card, use the **show cable image-upgrade status** command in user EXEC or privileged EXEC mode.

show cable image-upgrade status *slot*

Syntax Description

slot	Specifies the slot number of the line card. Valid ranges are from 3 to 12.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example displays the upgrade status for the line card:

```
Router# show cable image-upgrade status 12
No current image upgrade is occurring on slot 12
```

Related Commands

Command	Description
cable-image upgrade download	Upgrades the image on the specified line card.
show cable-image upgrade bundle	Displays the upgraded images of all the devices on the Supervisor card.
show cable-image upgrade version	Displays all the upgraded image versions on the line card.

show cable image-upgrade version

To display the upgraded images on the line card, use the **show cable image-upgrade version** command in privileged EXEC and user EXEC mode.

show cable image-upgrade version *slot*

Syntax Description

slot	Specifies the slot number of the line card. Valid slot range is from 3 to 12.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the output from the **show cable image-upgrade version** command:

```
Router# show cable image-upgrade version  3
Image Name                            Id  Date      Time
==================================    ==  ==================
MV_APP_00000011_20080811-00144650     11  20080811  00144650
MV_ROM_00000012_20080605-00074654     12  20080605  00074654
MV_DIS_00000013_20080603-00151016     13  20080603  00151016
MV_COB_00000014_20080609-00205712     14  20080609  00205712
MV_YEL_00000015_20080609-00205659     15  20080609  00205659
MV_GWT_00000016_20080717-00162446     16  20080717  00162446
```

The table below describes the significant fields shown in the display.

Table 14: show cable image-upgrade version Field Descriptions

Field	Indicates the
Image Name	Name of the image upgraded.
Id	ID allotted to the image.
Date	Date when image was upgraded.
Time	Time when image upgrade occurred.

Related Commands

Command	Description
cable-image upgrade download	Upgrades the image on the specified line card.
show cable-image upgrade bundle	Displays the upgraded images of all the devices e on the Supervisor card.
show cable-image upgrade status	Displays the image upgraded status of the line card.

show cable licenses

To view license information applied to QAM channels on the Cisco RFGW-10, use the **show cable licenses** command in the privileged EXEC mode.

show cable licenses [**all** | *lc-slot*]

Syntax Description

all	Displays detailed information of all licenses Cisco RFGW-10.
lc-slot	Displays detailed information of a specific slot on the line card. Valid line cards are from 3 to 12.

Command Default

Information on licenses are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Use the **show cable license** command to view the licenses on the line cards on the Cisco RFGW-10 DS-384 line card.

The license on the Cisco RFGW-10 DS-384 line card is a count based license for available QAM channels. The Supervisor enforces the license after ensuring the number of unshut QAM channels in the running configuration does not exceed the license. If there are more QAM channels unshut, then the system shuts down the extra QAM channels. Depending on the running configuration, the first N licensed channels remain unshut, and the rest are shutdown.

Note This command does not display the license information for the Cisco RFGW-10 DS-48 line card.

Examples

The following example displays the license information of all line cards on the Cisco RFGW-10:

```
Router# show cable licenses all
Slot 3 : License Configuration : DS384_384_CLEAR
-------------------------------------------------
Feature: Downstream Licenses
Installed: 384 Consumed: 0   Available: 384 Forced-Shut: 0
Router#
```

The table below describes the significant fields shown in the display.

Table 15: show cable licenses Field Descriptions

Field	Description
Slot	Indicates the slot on the Cisco RFGW-10.
License Configuration	Indicates the type of license.
Feature	Indicates whether the license is for downstream or upstream port.
Installed	Displays the currently active license count.
Consumed	Displays the number of un-shut channels used by the license.
Available	Displays the number of available un-shut channels allowed by the license.
Forced-Shut	Displays the number of un-shut channels not allowed by the license during a license downgrade. The channels are un-shut during a license upgrade.

show cable linecard carrier-id-mapping

To display the carrier-id mapped to the line card, use the **show cable linecard carrier-id-mapping** command in privileged EXEC mode.

show cable linecard carrier-id-mapping *slot*

Syntax Description

slot	Specifies the line card on the Cisco RF Gateway 10. Valid range is from 3 to 14.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

QAM block information, QAM carrier mapped to line card, and maximum carriers assigned to the slot are displayed.

Examples

The following example shows the carrier ID, and the QAM carriers on slot 9 on the Cisco RFGW-10 DS-48 line card:

```
Router# show cable linecard carrier-id-mapping 9

QAM Block 1      Slot: 9        Maximum Carriers per Block: 24
        ID       QAM Carrier
-------------------------------------------------------
        1        9/1.1
        2        9/1.2
        3        9/1.3
        4        9/1.4
        5        9/2.1
        6        9/2.2
        7        9/2.3
        8        9/2.4
        9        9/3.1
        10       9/3.2
        11       9/3.3
        12       9/3.4
        13       9/4.1
        14       9/4.2
        15       9/4.3
        16       9/4.4
        17       9/5.1
        18       9/5.2
        19       9/5.3
```

```
        20       9/5.4
        21       9/6.1
        22       9/6.2
        23       9/6.3
        24       9/6.4

QAM Block 2      Slot: 9        Maximum Carriers per Block: 24
        ID       QAM Carrier
-----------------------------------------------------------
        25       9/7.1
        26       9/7.2
        27       9/7.3
        28       9/7.4
        29       9/8.1
        30       9/8.2
        31       9/8.3
        32       9/8.4
        33       9/9.1
        34       9/9.2
        35       9/9.3
        36       9/9.4
        37       9/10.1
        38       9/10.2
        39       9/10.3
        40       9/10.4
        41       9/11.1
        42       9/11.2
        43       9/11.3
        44       9/11.4
        45       9/12.1
        46       9/12.2
        47       9/12.3
        48       9/12.4
```

The following example shows the carrier ID , and the QAM carriers on slot 3 on the Cisco RFGW-10 DS-384 line card:

```
Router# show cable linecard carrier-id-mapping 3

QAM Block 1      Slot: 3        Maximum Carriers per Block: 16
        ID       QAM Carrier
-----------------------------------------------------------
        1        3/1.1
        2        3/1.2
        3        3/1.3
        4        3/1.4
        5        3/1.5
        6        3/1.6
        7        3/1.7
        8        3/1.8
        9        3/1.9
        10       3/1.10
        11       3/1.11
        12       3/1.12
        13       3/1.13
        14       3/1.14
        15       3/1.15
        16       3/1.16
        17       --
        18       --
        19       --
        20       --
        21       --
        22       --
        23       --
        24       --
        25       --
        26       --
        27       --
        28       --
        29       --
        30       --
```

```
31        --
32        --
33        --
34        --
35        --
36        --
37        --
38        --
39        --
40        --
41        --
42        --
43        --
44        --
45        --
46        --
47        --
48        --
49        --
50        --
51        --
52        --
53        --
54        --
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59        --
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65        --
66        --
67        --
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69        --
70        --
71        --
72        --
73        --
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75        --
76        --
77        --
78        --
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82        --
83        --
84        --
85        --
86        --
87        --
88        --
89        --
90        --
91        --
92        --
93        --
94        --
95        --
96        --
97        --
98        --
99        --
100       --
101       --
102       --
103       --
```

```
104      --
105      --
106      --
107      --
108      --
109      --
110      --
111      --
112      --
113      --
114      --
115      --
116      --
117      --
118      --
119      --
120      --
121      --
122      --
123      --
124      --
125      --
126      --
127      --
128      --
129      --
130      --
131      --
132      --
133      --
134      --
135      --
136      --
137      --
138      --
139      --
140      --
141      --
142      --
143      --
144      --
145      --
146      --
147      --
148      --
149      --
150      --
151      --
152      --
153      --
154      --
155      --
156      --
157      --
158      --
159      --
160      --
161      --
162      --
163      --
164      --
165      --
166      --
167      --
168      --
169      --
170      --
171      --
172      --
173      --
174      --
175      --
176      --
```

```
        177     --
        178     --
        179     --
        180     --
        181     --
        182     --
        183     --
        184     --
        185     --
        186     --
        187     --
        188     --
        189     --
        190     --
        191     --
        192     --

QAM Block 2     Slot: 3        Maximum Carriers per Block: 0
        ID      QAM Carrier
-------------------------------------------------------
        193     --
        194     --
        195     --
        196     --
        197     --
        198     --
        199     --
        200     --
        201     --
        202     --
        203     --
        204     --
        205     --
        206     --
        207     --
        208     --
        209     --
        210     --
        211     --
        212     --
        213     --
        214     --
        215     --
        216     --
        217     --
        218     --
        219     --
        220     --
        221     --
        222     --
        223     --
        224     --
        225     --
        226     --
        227     --
        228     --
        229     --
        230     --
        231     --
        232     --
        233     --
        234     --
        235     --
        236     --
        237     --
        238     --
        239     --
        240     --
        241     --
        242     --
        243     --
        244     --
        245     --
```

```
246      --
247      --
248      --
249      --
250      --
251      --
252      --
253      --
254      --
255      --
256      --
257      --
258      --
259      --
260      --
261      --
262      --
```

The table below describes the significant fields shown in the display.

Table 16: show cable linecard carrier-id mapping Field Descriptions

Field	Description
QAM Block ID	Indicates the QAM block on the line card. First 24 carriers are QAM 1 for Cisco RFGW-10 DS-48 line card. First 192 carriers are QAM 1 for the Cisco RFGW-10 DS-384 line card.
Slot	Indicates the line card slot.
QAM carrier	Indicates all the carrier IDs associated to the QAM block.
Maximum carriers per block	Indicates the maximum carriers associated to the QAM block.

Related Commands

Command	Description
cable linecard license max-carriers	Creates the QAM carriers on the QAM port.
cable carrier-id	Auto-generated when the line card is inserted into to the Cisco RFGW-10 chassis. Applicable to both the Cisco RFGW-10 DS-48 and Cisco RFGW10-DS-384 line cards.

show cable linecard coreinfo

To copy the core file information from line card flash directory to the bootflash, use the **show cable linecard coreinfo** command in privileged EXEC mode.

show cable linecard coreinfo *slot*

Syntax Description

slot	Specifies the line card and TCC card slots. Valid line card range is from 3 to 12 and valid TCC card slots are 13 and 14.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command copies the core files from line card flash directories to the bootflash with the line card identifier appended as a prefix and file creation time appended as a suffix to the core file information.

Examples

The following example shows the core files from slot 3 being copied onto the bootflash:

```
Router# dir bootflash:
Directory of bootflash:/

    1  -rwx    12535060  Apr 12 2007 19:10:18 +00:00  cat4000-i9s-mz.122-25.EWA8.bin
    3  -rw-        5737  Sep 13 2007 12:54:26 +00:00  np_rfgw_run_913.cfg
    6  -rwx    26904132  Oct 23 2007 05:27:07 +00:00  cat4500-entservices-mz
    7  -rw-        6576  Mar 11 2008 02:48:36 +00:00  temp-1.cfg
    8  -rw-        8070   Oct 5 2008 04:28:25 +00:00  np-startup1.cfg
    9  -rw-      236964  Oct 21 2008 23:54:48 +00:00  slogs1

61341696 bytes total (9444684 bytes free)

Router# dir linecard-3-flash:
Directory of linecard-3-flash:/

720958  -rw-     4047732  Sep 29 2008 12:40:49 +00:00  mv_app.lc
720986  -rwx          74  Sep 29 2008 12:48:37 +00:00  update
1704275  -rw-       65536   Jan 1 1970 00:03:00 +00:00  mv_iu.core
2031738  -rw-      232833  Oct 24 2008 19:31:32 +00:00  slog_latest
1245266  -rw-      327881   Nov 3 2008 18:30:16 +00:00  AA
1573181  -rw-       77824   Nov 6 2008 01:29:35 +00:00  mv_video.core
1442197  -rw-      147603   Nov 7 2008 20:57:23 +00:00  AAA
131273  -rw-      385309  Nov 10 2008 20:54:58 +00:00  slogs1.text
1048865  -rw-       63617  Nov 10 2008 20:57:18 +00:00  slogs2.text
```

```
327848  -rw-      385309  Nov 10 2008 20:54:58 +00:00  slogs1_boot.text
458769  -rw-       63617  Nov 10 2008 20:57:18 +00:00  slogs2_boot.text
196793  -rw-       20036   Jan 1 1970 00:00:14 +00:00  slogs1_boot.txt
524465  -rw-      114208   Dec 9 2008 20:33:25 +00:00  slogs1

8126464 bytes total (1719532 bytes free)

Router# show cable linecard coreinfo 3
 Copying core file linecard-3-flash:mv_video.core to
bootflash:LC_3_mv_video.core_012935_6_Nov_2008

 Copying core file linecard-3-flash:mv_iu.core to bootflash:LC_3_mv_iu.core_000300_1_Jan_1970
Router#dir bootflash:
Directory of bootflash:/

    1  -rwx    12535060  Apr 12 2007 19:10:18 +00:00  cat4000-i9s-mz.122-25.EWA8.bin
    3  -rw-        5737  Sep 13 2007 12:54:26 +00:00  np_rfgw_run_913.cfg
    6  -rwx    26904132  Oct 23 2007 05:27:07 +00:00  cat4500-entservices-mz
    7  -rw-        6576  Mar 11 2008 02:48:36 +00:00  temp-1.cfg
    8  -rw-        8070   Oct 5 2008 04:28:25 +00:00  np-startup1.cfg
    9  -rw-      236964  Oct 21 2008 23:54:48 +00:00  slogs1
   21  -rw-       77824   Dec 9 2008 20:33:51 +00:00  LC_3_mv_video.core_012935_6_Nov_2008
   22  -rw-       65536   Dec 9 2008 20:33:51 +00:00  LC_3_mv_iu.core_000300_1_Jan_1970

61341696 bytes total (9301068 bytes free)
```

The table below describes the significant fields shown in the display.

Table 17: show cable linecard coreinfo Field Descriptions

Field	Description
Copying core file line card	Shows the copying of the files to the bootflash directory.

Related Commands

Command	Description
show cable linecard version	Displays the version information for a line card.

show cable linecard cpuload

To display the CPU utilization information of the line card, use the **show cable linecard cpuload** command in privileged EXEC mode.

show cable linecard cpuload *slot*

Syntax Description

slot	Specifies the slot number of the line card. Valid range is from 3 to 12.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the CPU information on line card 3:

```
Router# show cable linecard cpuload 3

    4444444444444444444444444444444444444444444444444444444444444444
100
 90
 80
 70
 60
 50
 40
 30
 20
 10
   0....5....1....1....2....2....3....3....4....4....5....5....
             0    5    0    5    0    5    0    5    0    5
               CPU% per second (last 60 seconds)

                                      1
                                      0
    4444444444444444444444444444444440
100                                   *
 90                                   *
 80                                   *
 70                                   *
 60                                   *
 50                                   #
 40                                   #
 30                                   #
 20                                   #
 10                                   #
   0....5....1....1....2....2....3....3....4....4....5....5....
```

```
            0    5    0    5    0    5    0    5    0    5
              CPU% per minute (last 60 minutes)
             * = maximum CPU%   # = average CPU%


100
 90
 80
 70
 60
 50
 40
 30
 20
 10
   0....5....1....1....2....2....3....3....4....4....5....5....6....6....7.
             0    5    0    5    0    5    0    5    0    5    0    5    0
                   CPU% per hour (last 72 hours)
                  * = maximum CPU%   # = average CPU%

CPU utilization for five seconds: 4%; one minute: 4%; five minutes: 4%
```

The table below describes the significant fields shown in the display.

Table 18: show cable linecard cpuload Field Descriptions

Field	Description
CPU utilization	Displays the utilization of CPU in per second, per minute and per hour.

Related Commands

Command	Description
cable linecard reset	Resets the line card on the Cisco RF Gateway 10.

show cable linecard load-balancing-group

To display the load balancing groups created on the Cisco RFGW-10, use the **show cable line card load-balancing-group** command in privileged EXEC mode.

show cable linecard *slot* **load-balancing-group**

Syntax Description

slot	Line card slot on the Cisco RFGW-10. Valid range is from 3 to14.

Command Default

This command is disabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Use the **show cable linecard load-balancing-group** command to view the load balanced groups on the Cisco RFGW-10.

Examples

The following example displays the load balancing groups on line card slot 3 on the Cisco RFGW-10:

```
Router# show cable linecard 3 load-balancing-group all

Slot : 3        Load-balancing Group : 1
Total Bandwidth      : 10000000 KBps
Available Bandwidth  : 10000000 KBps
Reserved Bandwidth for QAM Based Sessions  : 0 KBps
Reserved Bandwidth for IP Based Sessions   : 0 KBps
Slot : 3        Load-balancing Group : 2
Total Bandwidth      : 10000000 KBps
Available Bandwidth  : 10000000 KBps
Reserved Bandwidth for QAM Based Sessions  : 0 KBps
Reserved Bandwidth for IP Based Sessions   : 0 KBps
```

The table below describes the significant fields shown in the display.

Table 19: show cable linecard load-balancing-group Field Descriptions

Field	Description
Slot	Indicates the line card slot.

Field	Description
Load-balancing Group	Indicates the load balancing group.
Total Bandwidth	Indicates the total bandwidth.
Available Bandwidth	Indicates the available bandwidth.
Reserved Bandwidth for QAM Based Sessions	Indicates reserved bandwidth for QAM session.
Reserved Bandwidth for IP Based Sessions	Indicates reserved bandwidth for IP sessions.

Related Commands

Command	Description
cable downstream freq-profile	Configures the frequency profiles on the Cisco RFGW-10.

show cable linecard logical-qamid-mapping

To display the logical QAM group IDs and QAM carriers mapped to the RF profiles on the Cisco RFGW-10, use the **show cable linecard logical-qamid-mapping** command in privileged EXEC mode.

show cable linecard logical-qamid-mapping *lc-slot*

Syntax Description

lc-slot	Line card slot on the Cisco RFGW-10. Valid range is from 3 to 14.

Command Default

Information on mapped QAM group IDs and QAM carriers are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Use the **show cable linecard logical-qamid-mapping** command to view the associated logical QAM groups and QAM carrier information.

Logical QAM groups are internally associated to RF profiles when the RF profile configuration is assigned to the QAM interface.

Examples

The following example displays the logical QAM IDs and carriers assigned to QAM interface 3 on the Cisco RFGW-10:

```
Router# show cable linecard logical-qamid-mapping 4
Slot: 4, Logical QAM Group ID 1:
        RF Profile ID : Remote-RF-Profile-14
        First Port    : Qam-red4/1
        Associated Qam Carrier ids:
                offset 0 - carrier-id 1 - Qam-red4/1.1
                offset 1 - carrier-id 2 - Qam-red4/1.2
        Second Port   : Qam-red4/2
                offset 4 - carrier-id 49 - Qam-red4/2.1
                offset 5 - carrier-id 50 - Qam-red4/2.2
Slot: 4, Logical QAM Group ID 2:
        RF Profile ID : Remote-RF-Profile-14
        First Port    : Qam-red4/3
        Associated Qam Carrier ids:
                offset 0 - carrier-id 97 - Qam-red4/3.1
                offset 1 - carrier-id 98 - Qam-red4/3.2
        Second Port   : Qam-red4/4
                offset 4 - carrier-id 145 - Qam-red4/4.1
                offset 5 - carrier-id 146 - Qam-red4/4.2
Slot: 4, Logical QAM Group ID 33:
```

```
RF Profile ID : Remote-RF-Profile-14
First Port    : Qam-red4/5
Associated Qam Carrier ids:
        offset 0 - carrier-id 193 - Qam-red4/5.1
```

The table below describes the significant fields shown in the display.

Table 20: show cable linecard logical-qamid-mapping Field Descriptions

Field	Description
Slot	Indicates the line card slot.
Logical QAM ID	Indicates the QAM ID.
RF Profile ID	Indicates RF profile ID associated to the logical QAM.
Annex	Indicates annex mode set to the RF profile.
First Port	Indicates the port of the QAM interface.
Associated Qam Carrier IDs	Indicates the QAM carriers associated with the RF profile.
Offset	Indicates the QAM offset within that group for the carrier.
Carrier ID	Indicates the QAM carrier ID.

Related Commands

Command	Description
cable downstream rf-profile	Configures the RF profiles on the Cisco RFGW-10.
cable downstream lqam-group	Creates a logical qam group on the Cisco RFGW-10.

show cable linecard logs

To display the system log information of the line card at bootup, use the **show cable linecard logs** command in privileged EXEC mode.

show cable linecard logs *slot* {**all**| **slogs1**| **slogs1-boot**| **slogs2**| **slogs2-boot**}

Syntax Description

slot	Specifies the line card slot. Valid range is from 3 to 12.
all	Displays log information of all line cards on the chassis.
slogs1	Displays log information of latest system log 1 file.
slogs1-boot	Displays log information of latest system log 1 file at boot up.
slogs2	Displays log information of latest system log 2 file.
slogs2-boot	Displays log information of latest system log 2 file at boot up.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

The command may result in a lengthy output, if **all** option is used.

Examples

The following example shows the log information for all line cards on the chassis:

```
Router# show cable linecard logs 3 all
More linecard-3-flash:slogs1.txt ...
Time              Sev Major Minor Args
Jan 01 00:00:11    6 10000     0 root >> process is up (restart max 3 times)
Jan 01 00:00:11    6 10000     0 root >> guardian 94217 waiting on source 94216
Jan 01 00:00:11    6 10000     0 root >> thread [tid: 2] child_monitor awaiting
signal
Jan 01 00:00:11    6 10000     0 root >> thread [tid: 3] daemon_monitor awaiting
```

```
 event
Jan 01 00:00:11    6 10000     0 Active SUP: slot 1, mac 020000000100
Jan 01 00:00:11    5    14     0 tcpip starting
Jan 01 00:00:11    3    14     0 Using pseudo random generator.  See "random" op
tion
Jan 01 00:00:13    6 10000     0 NPM: init
Jan 01 00:00:13    6 10000     0 NPM: options seat_id=0x02030000
Jan 01 00:00:13    6 10000     0 NPM: Seat ID 2030000
Jan 01 00:00:13    6 10000     0 NPM: Cell 2, EndPt 0
Jan 01 00:00:13    6 10000     0 NPM: Start resmgr: No error
Jan 01 00:00:13    6 10000     0 NCM: init
Jan 01 00:00:13    6 10000     0 NCM: Cell 1, EndPt 0
Jan 01 00:00:13    6 10000     0 NPM: Advert: en0, mac 02:00:00:00:03:00, mtu 15
14, cell 1, endPt 0, iface 0
Jan 01 00:00:13    6 10000     0 NCM: Module started
Jan 01 00:00:13    6 10000     0 NCM: Start resmgr: No error
Jan 01 00:00:13    6 10000     0 NCM: ncm_cipc_en: IPC master mac 02:00:00:00:01
:00
More linecard-3-flash:slogs2.txt ...
%Error opening linecard-3-flash:slogs2.txt (No such file or directory)
More linecard-3-flash:slogs1_boot.txt ...
Time             Sev Major Minor Args
Jan 01 00:00:11    6 10000     0 root >> process is up (restart max 3 times)
Jan 01 00:00:11    6 10000     0 root >> guardian 94217 waiting on source 94216
Jan 01 00:00:11    6 10000     0 root >> thread [tid: 2] child_monitor awaiting
signal
Jan 01 00:00:11    6 10000     0 root >> thread [tid: 3] daemon_monitor awaiting
 event
Jan 01 00:00:11    6 10000     0 Active SUP: slot 1, mac 020000000100
Jan 01 00:00:11    5    14     0 tcpip starting
Jan 01 00:00:11    3    14     0 Using pseudo random generator.  See "random" op
tion
Jan 01 00:00:11    6 10000     0 NPM: init
Jan 01 00:00:11    6 10000     0 NPM: options seat_id=0x02030000
Jan 01 00:00:11    6 10000     0 NPM: Seat ID 2030000
Jan 01 00:00:11    6 10000     0 NPM: Cell 2, EndPt 0
Jan 01 00:00:11    6 10000     0 NPM: Start resmgr: No error
Jan 01 00:00:13    6 10000     0 NCM: init
Jan 01 00:00:13    6 10000     0 NCM: Cell 1, EndPt 0
Jan 01 00:00:13    6 10000     0 NPM: Advert: en0, mac 02:00:00:00:03:00, mtu 15
14, cell 1, endPt 0, iface 0
Jan 01 00:00:13    6 10000     0 NCM: Module started
Jan 01 00:00:13    6 10000     0 NCM: Start resmgr: No error
Jan 01 00:00:13    6 10000     0 NCM: ncm_cipc_en: IPC master mac 02:00:00:00:01
:00
More linecard-3-flash:slogs2_boot.txt ...
```

The table below describes the significant fields shown in the display.

Table 21: show cable linecard logs Field Descriptions

Field	Description
Time	Displays the time during which the log was recorded.
Sev	Indicates the severity of the issue logged.
Major Minor Args	Displays a short description of the issue.

Related Commands

Command	Description
show cable linecard version	Displays the version information for a line card.

show cable linecard process

To display all the processes running on the line card, use the **show cable linecard process** command in privileged EXEC mode.

show cable linecard process *slot*

Syntax Description

slot	Specifies the slot on the Cisco RF Gateway 10. Valid range is from 3 to 14.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the processes running on line card 3:

```
Router# show cable linecard process 3
                            start
pid    name                 counter  state
=====  ==================== =======  =====
45066  io-net               1        Registered,Launched
81934  mv_iu                1        Registered,Launched
81935  ipc_ping_server      1        Registered,Launched
81936  rfs                  1        Registered,Launched
81937  mv_cpuload           1        Registered,Launched
81938  mv_lcinfo            1        Registered,Launched
81939  mv_lcred             1        Registered,Launched
81940  mv_hw_ctrl           1        Registered,Launched
81941  mv_tsec_ctrl         1        Registered,Launched
81942  mv_depi              1        Registered,Launched
81943  mv_video             1        Registered,Launched
Total number of processes: 11
```

The table below describes the significant fields shown in the display.

Table 22: show cable linecard process Field Descriptions

Field	Description
pid	Displays the program identifier.
name	Displays the name of the process.

Field	Description
start counter	Displays how many times a process has been launched.
state	Displays the state of the process.

Related Commands

Command	Description
show cable linecard cpuload	Displays the CPU utilization information on the line card.

show cable linecard version

To display image version information of the line card, use the **show cable linecard version** command in privileged EXEC mode.

show cable linecard version *slot*

Syntax Description

slot	Specifies the line card on the Cisco RF Gateway 10. Valid range is from 3 to 14.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

Software, hardware version information, and programmed flash image information are displayed for the line card.

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the sample output of the **show cable line card version** command on a Cisco RF Gateway 10:

```
Router# show cable linecard version 4
Application Upgrade Version: 12.2(20100116.00032134): MV_APP_00000011_20100116-0
0032645
Application Permanent Version: MV_APP_00000011_20081112-00144210
Rommon Version: 12.2(12.2.394): MV_ROM_00000012_20081111-00141240
Board rev ID: 0x0000000A

Discus Image version: MV_DIS_00000013_20080603-00151016
Discus FPGA 1st rev ID: 0x00420042
Discus FPGA 2nd rev ID: 0x00420042

Cobia Image version: MV_COB_00000014_20080807-00112745
Cobia FPGA 1st rev ID: 0x02560029
Cobia FPGA 2nd rev ID: 0x00230276

Yellowfin Image version: MV_YEL_00000015_20090319-00124021
Yellowfin FPGA 1st rev ID: 0x02260025
Yellowfin FPGA 2nd rev ID: 0x00240277

UPX Image version: MV_ZMR_00000018_20091217-00145848
Zimmer module: 0
        Cisco S/N:
        Cisco Part Number:
        Cisco PN Number:
```

```
        Cisco Mfg Dev:
        OEM Name: Vecima Networks Inc
        OEM Serial Number: 2469876
        OEM Part Number: 00020000
        OEM HW Rev: 2
        Mfg Test Software Version: S1.0.94.0
        Production Status:
        UI Version 3885
Zimmer module: 1
        Cisco S/N:
        Cisco Part Number:
        Cisco PN Number:
        Cisco Mfg Dev:
        OEM Name: Vecima Networks Inc
        OEM Serial Number: 2469846
        OEM Part Number: 00020000
        OEM HW Rev: 2
        Mfg Test Software Version: S1.0.81.0
        Production Status:
        UI Version 3885
Zimmer module: 2
        Cisco S/N:
        Cisco Part Number:
        Cisco PN Number:
        Cisco Mfg Dev:
        OEM Name: Vecima Networks Inc
        OEM Serial Number: 2469854
        OEM Part Number: 00020000
        OEM HW Rev: 2
        Mfg Test Software Version: S1.0.84.0
        Production Status:
        UI Version 3885
```

The table below describes the significant fields shown in the display.

Table 23: show cable linecard version Field Descriptions

Field	Description
Rommon version	Displays the ROMMON version.

Related Commands

Command	Description
show cable linecard cpuload	Displays the CPU utilization information.
show cable linecard process	Displays the processes running on the line card.

show cable midplane ping statistics

To display the midplane ping statistics on the Cisco RFGW-10, use the **show cable midplane ping statistics** command in privileged EXEC mode.

show cable midplane ping statistics {**all**| **slot** *lc_slot*}

Syntax Description

all	Displays the midplane ping statistics of all line cards.
slot	Displays the midplane ping statistics of a line card slot.
lc_slot	Line card slot. The valid range is from 3 to 12.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ4	This command was introduced.

Usage Guidelines

Midplane pings sent and pings received counters are cumulative. The downstream traffic functions normally as the ping received counter increments,

It might also be possible that the ping failed counter may display a non-zero value, though the downstream traffic functions normally.

Examples

The following example is a sample output of the **show cable midplane ping statistics all** command that displays the midplane ping information on all line cards:

```
Router# show cable midplane ping statistics all

Slot: 3
  Port   : 0
      Pings sent     : 36841
      Pings received : 661
      Pings failed   : 36179
  Port   : 1
      Pings sent     : 36841
      Pings received : 36841
      Pings failed   : 0
Slot: 11
  Port   : 0
      Pings sent     : 0
      Pings received : 0
      Pings failed   : 0
  Port   : 1
      Pings sent     : 0
      Pings received : 0
```

```
Pings failed   : 0
```

The table below describes the significant fields shown in the display.

Table 24: show cable midplane ping statistics all Field Descriptions

Field	Description
Slot	Line card slot.
Port	Internal Gigabit Ethernet interface on the line card.
Pings sent	Number of midplane pings sent by the line card.
Pings received	Number of midplane pings received by the Supervisor.
Pings failed	Number of midplane pings lost between the line card and the Supervisor.

Related Commands

Command	Description
cable midplane ping	Configures the midplane pings between the line card and the Supervisor on the Cisco RFGW-10.
clear cable midplane ping statistics	Clears the midplane ping statistics on the Cisco RFGW-10.

show cable qam-partition

To display the QAM partition information on the line card, use the **show cable qam-partition** command in privileged EXEC mode.

show cable qam-partition {**all**| {*partition-id*| **default**} {**qam**| **route**| **sessions**}| **protocol** {**ermi**| **gqi**}}

Syntax Description

partition-id	QAM partition ID. The valid range is from 1 to 50.
all	Displays all QAM partitions configured on the line card.
default	Displays the default QAM partitions.
qam	Displays the QAM channels on QAM partition.
route	Displays the input route used for the QAM partition.
session	Displays the video sessions on the QAM partition.
protocol	Displays QAM partitions using the same protocol
ermi	Displays QAM paritions used by the ERMI procol.
qam	Displays QAM paritions used by the GQI procol.

Command Default

This command is enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Examples

This example displays the QAM partition information for partition ID 3 on the line card:

```
Router# show cable qam-partition 3

QAM Partition : 3
Management IP address: 10.78.179.187
State :       active
Protocol :    gqi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
```

```
SDV Bindings Service : Not Available
MAC Address : 30e4.db04.8dc0
Reset Timeout Period :  5 seconds
Server           State
--------------------------------
10.78.179.150    disconnected
Total QAM carriers :  34
QAM        Carrier    Logical    External
Interface  ID         QAM ID     Channel ID
-----------------------------------------------------------------
3/1.1      1          0          1
3/1.2      2          1          2
3/1.3      3          2          3
3/1.4      4          3          4
3/1.5      5          4          5
3/1.6      6          5          6
3/1.7      7          6          7
3/1.8      8          7          8
3/1.9      9          8          9
3/1.10     10         9          10
3/1.11     11         10         11
3/1.12     12         11         12
3/1.13     13         12         13
3/1.14     14         13         14
3/1.15     15         14         15
3/1.16     16         15         16
3/1.17     17         16         17
3/1.18     18         17         18
3/1.19     19         18         19
3/1.20     20         19         20
3/1.21     21         20         21
3/1.22     22         21         22
3/1.23     23         22         23
3/1.24     24         23         24
3/1.25     25         24         25
!
```

The table below describes the significant fields shown in the display.

Table 25: show cable qam-partition Field Descriptions

Field	Description
QAM partition	QAM partition ID
Management IP address	Management IP address configured on the QAM partition.
State	State of the QAM partition.
Protocol	Protocol used on the QAM partition.
Keepalive Timout Period	Keeplive time period in seconds
Number of retry	Number of connection retries.
MAC address	Cisco RFGW-10 MAC address in a GQI specific QAM partition.
Reset Timeout Period	Reset time period in seconds.
Server	Server IP address.

Field	Description
State	State of the video server.
Total QAM carriers	No of carriers on the QAM partition.
QAM interface	QAM interface associated with the QAM partition.
Carrier ID	QAM channel.
Logical QAM ID	Logical QAM ID.
External channel ID	External channel number for GQI protocol QAM partition.

This example displays the default QAM partition information for QAM channels on the line card:

```
Router# show cable qam-partition default qam

QAM Partition : 0
Total QAM carriers :  34
QAM         Carrier    Logical
Interface   ID         QAM ID
-------------------------------------------------------------------
3/3.1       65         64
3/3.2       66         65
3/3.3       67         66
3/3.4       68         67
3/3.5       69         68
3/3.6       70         69
3/3.7       71         70
3/3.8       72         71
3/3.9       73         72
3/3.10      74         73
3/3.11      75         74
3/3.12      76         75
3/3.13      77         76
3/3.14      78         77
3/3.15      79         78
3/3.16      80         79
3/3.17      81         80
3/3.18      82         81
```

This example displays the default QAM partition information for input routes used by the QAM partition:

```
Router# show cable qam-partition default route

QAM Partition : 0
Total Routes :  4
Slot  LBG  Destination      Low    High   Reserved   Bandwidth  Ingress  Numbe
Id    Id   IP               UDP    UDP    Bandwdith  In-Use     Port     Sessi
s
-------------------------------------------------------------------------------
--
3     1    30.0.3.10        1      49260  1000000    3300       0        2
3     2    1.21.1.2         1      49260  1000000    0          0        0
3     2    40.0.1.10        1      65535  1000000    3300       0        2
7     1    192.168.11.2     1      65535  112500     0          0        0
```

The table below describes the significant fields shown in the display.

Table 26: show cable qam-partition default route Field Descriptions

Field	Description
QAM Partition	Default QAM partition ID.
Total Routes	Routes used by the QAM partition.
Slot ID	Slot on the line card.
LBG ID	Load balancing group ID.
Low UDP	Low UDP value.
High UDP	Hig UDP value.
Reserved Bandwidth	Total bandwidth value.
Bandwidth In-Use	Used bandwidth value.
Ingress Port	Ingress port used by the QAM partition.
Number of Sessions	Total number of video sessions on the QAM partition.

This example displays the default QAM partition information for video sessions used by the QAM partition:

```
Router# show cable qam-partition default sessions

QAM Partition : default
Total QAM carriers :  34
Slot  Carrier    QAM        Session         Session
Id    Id         Port       Id              Type
-----------------------------------------------------------------
3     65         3/3.1      205586432       VIDEO
3     65         3/3.1      205586433       VIDEO
3     66         3/3.2      205651971       VIDEO
3     66         3/3.2      205651972       VIDEO
```

This example displays the default QAM partition information for ERMI protocol used by the QAM partition:

```
Router# show cable qam-partition protocol ermi

QAM Partition : 1
Management IP address: 10.78.179.167
State :       active
Protocol :    ermi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
ERRP Addr Domain     :  0
ERRP Hold Time       :  90 Seconds
ERRP Connect Time    :  10 Seconds
ERRP Connect Retry   :  0
ERRP Keepalive Time  :  0 Seconds
ERRP Keepalive Retry :  0
RTSP Connect Time    :  200 Seconds
RTSP Connect Retry   :  0
RTSP Keepalive Time  :  10 Seconds
RTSP Keepalive Retry :  0
RTSP Session Timeout :  10800 Seconds
Server           State
--------------------------------
```

```
10.78.179.170    disconnected
Total QAM carriers :  0
```

The table below describes the significant fields shown in the display.

Table 27: show cable qam-partition protocol ermi Field Descriptions

Field	Descriptions
ERRP Hold Time	Hold time in seconds.
ERRP Connect Time	Connection time in seconds.
ERRP Connect Retry	Connection retry interval.
ERRP Keepalive Time	Keepalive time interval in seconds.
ERRP Keepalive Retry	Keepalive retry interval.
RTSP Connect Time	Connection time in seconds.
RTSP Connect Retry	Connection retry interval.
RTSP Keepalive Time	Keepalive time interval in seconds.
RTSP Keepalive Retry	Keepalive retry interval.
RTSP Session Timeout	Session timeout interval.

This example displays the default QAM partition information for GQI protocol used by the QAM partition:

```
Router# show cable qam-partition protocol gqi

QAM Partition : 2
Management IP address: 10.78.179.185
State :       active
Protocol :    gqi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
SDV Bindings Service : Not Available
MAC Address : 30e4.db04.8dc1
Reset Timeout Period :  5 seconds
Server           State
--------------------------------
10.78.179.170    connected
Total QAM carriers :  32
QAM        Carrier    Logical    External
Interface  ID         QAM ID     Channel ID
-----------------------------------------------------------------
3/2.1      33         32         1
3/2.2      34         33         2
3/2.3      35         34         3
3/2.4      36         35         4
3/2.5      37         36         5
```

This example displays the default QAM partition information for all QAM partitions:

```
Router# show cable qam-partition all

QAM Partition : 1
```

```
Management IP address: 10.78.179.167
State :       active
Protocol :    ermi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
ERRP Addr Domain     :  0
ERRP Hold Time       :  90 Seconds
ERRP Connect Time    :  10 Seconds
ERRP Connect Retry   :  0
ERRP Keepalive Time  :  0 Seconds
ERRP Keepalive Retry :  0
RTSP Connect Time    :  200 Seconds
RTSP Connect Retry   :  0
RTSP Keepalive Time  :  10 Seconds
RTSP Keepalive Retry :  0
RTSP Session Timeout :  10800 Seconds
Server           State
---------------------------------
10.78.179.170    disconnected
Total QAM carriers :  0
Total Routes: 1
Slot  LBG  Destination      Low    High   Reserved   Bandwidth  Ingress  Numb
Id    Id   IP               UDP    UDP    Bandwdith  In-Use     Port     Sess
s
-------------------------------------------------------------------------------
--
3     1    1.1.1.1          1      65535  21         0          0        0
QAM Partition : 2
Management IP address: 10.78.179.185
State :       active
Protocol :    gqi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
SDV Bindings Service : Not Available
MAC Address : 30e4.db04.8dc1
Reset Timeout Period :  5 seconds
Server           State
---------------------------------
10.78.179.170    connected
Total QAM carriers :  32
QAM        Carrier    Logical    External
Interface  ID         QAM ID     Channel ID
-----------------------------------------------------------------
3/2.1      33         32         1
3/2.2      34         33         2
3/2.3      35         34         3
3/2.4      36         35         4
3/2.5      37         36         5
3/2.6      38         37         6
3/2.7      39         38         7
3/2.8      40         39         8
3/2.9      41         40         9
3/2.10     42         41         10
3/2.11     43         42         11
3/2.12     44         43         12
3/2.13     45         44         13
3/2.14     46         45         14
3/2.15     47         46         15
3/2.16     48         47         16
3/2.17     49         48         17
3/2.18     50         49         18
3/2.19     51         50         19
3/2.20     52         51         20
3/2.21     53         52         21
3/2.22     54         53         22
3/2.23     55         54         23
3/2.24     56         55         24
3/2.25     57         56         25
3/2.26     58         57         26
3/2.27     59         58         27
3/2.28     60         59         28
3/2.29     61         60         29
3/2.30     62         61         30
```

```
3/2.31      63          62          31
3/2.32      64          63          32
Total Routes: 0
QAM Partition : 3
Management IP address: 10.78.179.187
State :       active
Protocol :    gqi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
SDV Bindings Service : Not Available
MAC Address : 30e4.db04.8dc0
Reset Timeout Period :  5 seconds
Server           State
--------------------------------
10.78.179.150    disconnected
Total QAM carriers :  34
QAM         Carrier    Logical    External
Interface   ID         QAM ID     Channel ID
-----------------------------------------------------------------
3/1.1       1          0          1
3/1.2       2          1          2
3/1.3       3          2          3
3/1.4       4          3          4
3/1.5       5          4          5
3/1.6       6          5          6
3/1.7       7          6          7
3/1.8       8          7          8
3/1.9       9          8          9
3/1.10      10         9          10
3/1.11      11         10         11
3/1.12      12         11         12
3/1.13      13         12         13
3/1.14      14         13         14
3/1.15      15         14         15
3/1.16      16         15         16
3/1.17      17         16         17
3/1.18      18         17         18
3/1.19      19         18         19
3/1.20      20         19         20
3/1.21      21         20         21
3/1.22      22         21         22
3/1.23      23         22         23
3/1.24      24         23         24
3/1.25      25         24         25
3/1.26      26         25         26
3/1.27      27         26         27
3/1.28      28         27         28
3/1.29      29         28         29
3/1.30      30         29         30
3/1.31      31         30         31
3/1.32      32         31         32
3/5.1       129        128        33
3/5.2       130        129        34
Total Routes: 3
Slot  LBG  Destination      Low    High   Reserved   Bandwidth  Ingress  Numb
Id    Id   IP               UDP    UDP    Bandwdith  In-Use     Port     Sess
s
-------------------------------------------------------------------------------
--
3     1    0.0.0.0          0      0      34         0          20       0
3     1    10.1.1.1         1      65535  21         0          10       0
3     1    30.0.3.10        49261  65535  1000000    0          1        0
QAM Partition : 4
Management IP address: 10.78.179.184
State :       active
Protocol :    gqi
Keepalive Timeout Period :  5 seconds
Number of Retry : 3
SDV Bindings Service : Not Available
MAC Address : 30e4.db04.8dc2
Reset Timeout Period :  5 seconds
Server           State
--------------------------------
```

```
10.78.179.150    disconnected
```

Related Commands

Command	Description
cable partition	Associates the QAM partition to the QAM interface.
cable qam-partition	Creates a QAM partition for the video server on the Cisco RFGW-10 DS-384 line card.

show cable qam-replication-group

To display the QAM Replication Group (QRG) information on the line card, use the **show cable qam-replication-group** command in privileged EXEC mode.

show cable qam-replication-group {*qam-replication-group-id*| **all**| **slot** *slot-id*}

Syntax Description

qam-replication-group-id	Specifies the QRG group ID. The valid range is from 1 to 3840.
all	Displays all QRGs configured on the line card.
slot *slot-id*	Specifies a slot on the line card.

Command Default

This command is enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Examples

The following example displays QRG information for group ID 3 on the line card:

```
Router# show cable qam-replication-group 10

QRG    Pilot Qam      Replicate Qams
-----------------------------------------------------
10     3/1.2          3/6.2, 3/8.2, 3/7.2
```

The following example displays QRG information for slot 8:

```
Router# show cable qam-replication-group slot 8

QRG   Pilot Qam    Replicate Qams
-------------------------------------------------
3     8/1.1        8/2.1, 8/3.1
4     8/1.2        8/2.2, 8/3.2
```

The following example displays QRG information for all line cards:

```
Router# show cable qam-replication-group all

QRG          Pilot Qam         Replicate Qams
-----------------------------------------------------------
1            3/1.1             3/6.1, 3/7.1, 3/8.1
3            8/1.1             8/2.1, 8/3.1
4            8/1.2             8/2.2, 8/3.2
10           3/1.2             3/6.2, 3/8.2, 3/7.2
```

```
11          3/1.3             3/6.3, 3/7.3, 3/8.3
```

The table below describes the significant fields shown in the display.

Table 28: show cable qam-replication-group Field Descriptions

Field	Description
QRG	QAM replication group number.
Pilot Qam	Pilot Qam information.
Replicate Qams	Replicate Qam information.

Related Commands

Command	Description
cable qam-replication-group	Configures QAM Replication Group.

show cable rf-profile

To display RF profiles created on the Cisco RFGW-10, use the **show cable rf-profile** command in privileged EXEC mode.

show cable rf-profile [**all**| *profile-id*]

Syntax Description

all	Displays information of all the RF profiles on the Cisco RFGW-10.
profile-id	RF profile ID applied to the QAM channel on the line card.

Command Default

Information on configured RF profiles are displayed.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.2.0SQ	This command was introduced.

Usage Guidelines

Use the **show cable rf-profile** command to view the mapping of the RF profiles with the QAM channels.

Examples

The following example displays the RF profiles configured on the Cisco RFGW-10:

```
Router# show cable rf-profile

RF Profile ID default-rf-profile is configured
        annex: B
        modulation: 64
        interleaver-depth options: I32-J4, I32-J4
        srate: 5056941
        remote: 0
RF Profile ID line 1 is configured
        annex: A
        modulation: 64
        interleaver-depth options: I12-J17, I12-J17
        srate: 3500000
        remote: 0
RF Profile ID line 10 is configured
        annex: A
        modulation: 256
        interleaver-depth options: I12-J17, I12-J17
        srate: 3500000
        remote: 0
```

The table below describes the significant fields shown in the display.

Table 29: show cable rf-profile Field Descriptions

Field	Description
RF Profile ID	Indicates the RF profile ID.
annex	Indicates the annex for the RF downstream channel.
modulation	Indicates the modulation level of the QAM.
Interleaver-depth options	Indicates the frequency interleaver depth on the QAM.
srate	Indicates the symbol rate configured on the QAM.
remote	Indicates the RF profile is remote.

Related Commands

Command	Description
cable downstream rf-profile	Configures the RF profiles on the Cisco RFGW-10.

show cable service group

To display the service group information, use the **show cable service-group** command in privileged EXEC mode.

show cable service-group {**brief**| **detail**} {**all**| **name**}

Syntax Description

brief	Displays summarized information about the service group.
detail	Displays detailed information about the service group.
all	Displays information about the all service group configured on the Cisco RFGW-10.
name	Displays information about the a particular service group.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Examples

The following example shows a summary of all the cable service groups configured on the Cisco RFGW-10:

```
Router# show cable service-group brief all

Service Group : servicegroup1
 QAM Group                          QAM Carriers
 -------------------------------------------
 qamgroup1                          4
 qamgroup2                          3
Service Group : servicegroup2
 QAM Group                          QAM Carriers
 -------------------------------------------
 qamgroup3                          0
 qamgroup4                          0
Total Qam Service Groups: 2
```

The following example shows output of the **show cable service-group brief name** command:

```
Router# show cable service-group brief name servicegroup1

QAM Service Group : servicegroup1
```

```
QAM Group                          QAM Carriers
-------------------------------------------------
qamgroup1                          4
qamgroup2                          3
```

The following example shows output of the **show cable service-group detail name** command:

```
Router# show cable service-group detail name servicegroup1

Service Group : servicegroup1
  Qam Group   : qamgroup1
  Slot  Carrier ID  Qam Group
  ----  ----------  ---------
  3     1           qamgroup1
  3     2           qamgroup1
  3     3           qamgroup1
  3     4           qamgroup1
  Total QAM carriers :  4
  Qam Group   : qamgroup2
  Slot  Carrier ID  Qam Group
  ----  ----------  ---------
  3     5           qamgroup2
  3     6           qamgroup2
  3     7           qamgroup2
  Total QAM carriers :  3
```

The following example shows output of the **show cable service-group detail all** command:

```
Router# show cable service-group detail all

Service Group : servicegroup1
  Qam Group   : qamgroup1
  Slot  Carrier ID  Qam Group
  ----  ----------  ---------
  3     1           qamgroup1
  3     2           qamgroup1
  3     3           qamgroup1
  3     4           qamgroup1
  Total QAM carriers :  4
  Qam Group   : qamgroup2
  Slot  Carrier ID  Qam Group
  ----  ----------  ---------
  3     5           qamgroup2
  3     6           qamgroup2
  3     7           qamgroup2
  Total QAM carriers :  3
Service Group : servicegroup2
  Qam Group   : qamgroup3
  Slot  Carrier ID  Qam Group
  ----  ----------  ---------
  Total QAM carriers :  0
  Qam Group   : qamgroup4
  Slot  Carrier ID  Qam Group
  ----  ----------  ---------
  Total QAM carriers :  0
Router#
```

The table below describes the significant fields shown in the display.

Table 30: show cable service-group Field Descriptions

Field	Description
Carrier ID	Carrier identifier.
Service Group	Service group name.
QAM group	QAM group name.

Field	Description
QAM carriers	QAM carriers associated to QAM group.

Related Commands

Command	Description
cable service-group	Configures a cable service group on the Cisco RFGW-10.
qam-group	Configures the QAM group in a cable service group.

show cable video gqi

To display all the GQI video sessions information, use the **show cable video gqi** command in privileged EXEC mode.

show cable video gqi {**connection**| **sessions**| **statistics**} {**all**| **qam-partition** *partition-id*}

Syntax Description

qam-partition *partition-id*	QAM partition ID. The valid range is from 1 to 50.
all	Information for all QAM partitions configured on the line card.
connection	Connection information for the QAM partition.
sessions	Session information for the QAM partition.
statistics	Statistics information for the QAM partition.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.3.0SQ	This command was introduced.

Examples

The following example shows all the GQI connection information on the line card:

```
Router# show cable video gqi connections all

Management      Server         Protocol  QP Connection RPC     Resp    Event   Reset
Encryption
IP              IP             Type      ID State      Version Pending Pending Indication
Discovery
-------------------------------------------------------------------------------------------
10.78.179.185   10.78.179.170  GQI       2  Connected  2       0       0        Acked
 -
10.78.179.187   10.78.179.150  GQI       3  Disconnect 0       0       0        -
 -
10.78.179.184   10.78.179.150  GQI       4  Disconnect 0       0       0        -
 -
```

The table below describes the significant fields shown in the display.

Table 31: show cable video gqi connections Field Descriptions

Field	Description
Management IP	Management IP address.
Server IP	GQI server IP address.
Protocol Type	Protocol on QAM partition.
Connection State	State of connection.
RPC Version	GQI Remote Procedure Call interface version.
Resp Pending	Number of responses that could not be sent to the requestor (USRM or DNCS).
Event Pending	Number of announcement events pending in the system waiting to be sent to the ERM (DNCS or USRM).
Reset indication	Indicates whether an acknowledgement has been received from the peer after the reset indication message is sent to the peer.
Encryption Discovery	Asynchronous message sent to USRM to inform type of encryption currently supported in Cisco RFGW-10.

The following example shows the GQI session information for all QAM partitions on the line card:

```
Router# show cable video gqi sessions all

QP    GQI                                SCM        Session   Encryption   Current
Id    Id                                 Id         Type      Type         State
-------------------------------------------------------------------------------------
3     00 00 00 00 00 00 00 00 00 03      201785344  VOD       None         Clear Mode
3     00 00 00 00 00 00 00 00 00 08      201457668  VOD       PowerKey     Encrypted
2     D0 67 E5 F3 6E E7 00 5D 32 95      203489281  SDV       None         Clear Mode
Total Sessions for All QAM Partitions: 3
```

The following example shows how to create an encrypted session with no CA blob and verify that the session is created, but the gqi state is set to 'Waiting CA':

```
Router# show cable video gqi sessions all

QP    GQI                                SCM        Session   Encryption   Current

Id    Id                                 Id         Type      Type         State

-------------------------------------------------------------------------------------
1     00 00 00 00 00 00 00 00 00 01      201457664  SDV       PowerKey     Waiting CA

Total Sessions: 1
```

The following example shows how to create a session with override and verify that the session is updated and session is active:

```
Router# show cable video session a

Slot:11 Lic-Enforcement module sent Simultaneous PKEY_N_DVB encryption to GQIll
Session    QAM     Stream Sess IP               UDP   Out   Input    Input  Output PSI Ctrl
ID         Port    Type   Type Address          Port  Pgm   Bitrate  State  State  Rdy State
---------- ------- ------ ---- ---------------- ----- ----- -------- ------ ------ --- --
201457664  3/1.2   Remap  SSM  -                -     1     2500320  ACTIVE OFF    NO  -

Total Sessions = 1
Router# show cable video gqi sessions all
QP    GQI                                  SCM        Session   Encryption   Current

Id    Id                                   Id         Type      Type         State

-------------------------------------------------------------------------------------------
1     00 00 00 00 00 00 00 00 00 01        201457664  SDV       PowerKey     Encrypted

Total Sessions: 1
```

The following example shows the GQI session information on QAM partition ID 3 of the line card:

```
Router# show cable video gqi sessions qam-partition 3

QP    GQI                                  SCM        Session   Encryption   Current
Id    Id                                   Id         Type      Type         State
-------------------------------------------------------------------------------------------
3     00 00 00 00 00 00 00 00 00 00 03     201785344  VOD       None         Clear Mode
3     00 00 00 00 00 00 00 00 00 00 08     201457668  VOD       PowerKey     Encrypted
Total Sessions for QAM Partition 3: 2
```

The table below describes the significant fields shown in the display.

Table 32: show cable video gqi sessions Field Descriptions

Field	Description
QP ID	QAM partition ID.
GQI ID	GQI session ID.
SCM ID	Session control manager ID.
Session Type	Type of session.
Encryption Type	Encryption type used.
Current State	Current state of session.
Total Sessions	Total number of sessions.

The following example shows the GQI statistics on QAM partition 3 on the line card:

```
Router# show cable video gqi statistic qam 3

Qam Partition 3 Statistics:
         Create     Delete     Create     Delete     Insert     Cancel     Switch     Bind
       Unbind     Reset      Encryption Event
         Shell      Shell      Session    Session    Packet     Packet     Source     Session
    Session    Indication Discovery  Notification
```

```
-------------------------------------------------------------------------------------------
Success: 0          0          0          0          0          0          0          0
   0          0          0          0
Error:   0          0          0          0          0          0          0          0
   0          0          0          0
Total:   0          0          0          0          0          0          0          0
   0          0          0          0
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition for video server on the Cisco RFGW-10 DS-384 line card.
protocol	Sets the control plane protocol of the QAM partition.

show cable video label

To display the active video labels, use the **show cable video label** command in privileged EXEC mode.

show cable video label [*label*]

Syntax Description

label	(Optional) Specifies the label name given to the video label.

Command Default

None

Command Modes

Privileged EXEC (#)

Usage Guidelines

The command displays all the labels configured on the chassis.

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
12.2(50)SQ1	The output of the command is modified to display the filtered PIDs for pass-through video sessions.

Examples

The following example shows the video labels configured on the Cisco RFGW-10:

```
Router# show cable video label

Multicast Label: s1
  Label Type: SSM
  Label Sources: [1]
SRC ADDR        DST ADDR        BITRATE   JITTER
    --------------- --------------- --------- ------
    162.0.0.10      232.3.1.1        3750000 200
  Current Active Src: 0
  Label Output Streams: [2]
    QAM         Program ID
    ---------   ----------
    10/1.1       1
    10/7.1       1
Multicast Label: s2
  Label Type: SSM
  Label Sources: [1]
SRC ADDR        DST ADDR        BITRATE   JITTER
    --------------- --------------- --------- ------
    162.0.0.10      232.3.1.2        15000000    200
  Current Active Src: 0
  Label Output Streams: [2]
    QAM         Program ID
    ---------   ----------
```

```
    10/1.1       2
    10/7.1       2
```

The following example shows the PIDs filtered when filtering is configured for pass-through video sessions:

```
Router# show cable video label
Multicast Label ID: 2
  Label Name: ssm0
  Label Type: SSM
  Label Sources: [3]
SRC ADDR        DST ADDR        BITRATE   JITTER
    --------------- --------------- --------- ------
    111.17.1.101    232.2.1.0       25000000   200
    SRC ADDR        DST ADDR        BITRATE   JITTER
    --------------- --------------- --------- ------
    111.17.1.102    232.2.1.0       25000000    200
    SRC ADDR        DST ADDR        BITRATE   JITTER
    --------------- --------------- --------- ------
    111.17.1.103    232.2.1.0       25000000    200
Filtered PIDs: [25]
     00000101 00000102 00000103 00000104 00000105 00000106 00000107 00000108
     00000109 00000110 00000111 00000112 00000113 00000114 00000115 00000116
     00000117 00000118 00000119 00000120 00000200 00000201 00000202 00000203
     00000800
MAP: 1
Current Active Src: 0
  Label Output Streams: [1]
    QAM         Program ID
    ---------   ----------
    3/7.1        -1
```

The table below describes the significant fields shown in the display.

Table 33: show cable video label Field Descriptions

Field	Description
Multicast Label	Name of the label.
Label Type	Whether it is an ASM label or an SSM label.
Label Sources	Source of the label.
SRC ADD	Source IP address.
DST ADDR	Destination IP address.
BITRATE	Amount of bandwidth allotted.
JITTER	Amount of Jitter allotted.
Filtered PIDs	Lists the PIDs that are dropped when PID filtering is configured for pass-through video sessions.
Current Active Src	Name of the active source.
Label Output Stream	Name of the output stream label.
QAM	QAM interface.

Field	Description
Program ID	Program Identifier (PID).

Related Commands

Command	Description
asm	Configures ASM video session definition.
cable video labels	Enters the cable video label configuration.
cable video multicast	Configures video multicast sessions on the QAM interface.
ssm	Configures SSM video session definition.

show cable video multicast uplink

To display the multicast uplink interfaces, use the **show cable video multicast uplink** command in privileged EXEC mode.

show cable video multicast uplink [**GigabitEthernet**| **TenGigabitEthernet** *interface/port*]

Syntax Description

GigabitEthernet	Indicates the Gigabit Ethernet interface. Valid port range is 3 through 6, 13 and 14.
TenGigabitEthernet	Indicates the 10 Gigabit Ethernet interface. Valid slots are 1 and 2.
interface/port	Specifies the interface slot and port.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows all uplink interfaces configured on the Cisco RFGW-10:

```
Router# show cable video multicast uplink

Uplink Interface       Status  Allocated  Maximum    Allocated  Backup Interface
       Backup
                               Streams    Bandwidth  Bandwidth
       Activated
------------------------------------------------------------------------------
--------------------
TenGigabitEthernet1/1  UP      240        10000000   30240
```

The table below describes the significant fields shown in the display.

Table 34: show cable video multicast uplink Field Descriptions

Field	Description
Uplink Interface Backup Activated	Displays the status of the Uplink interface such as activated or deactivated.

Field	Description
Status	Displays the status of the interface such as up or down..
Allotted Streams	Specifies the number of allotted streams.
Maximum Bandwidth	Specifies the maximum amount of bandwidth for the specified interface
Allocated Bandwidth	Specifies the bandwidth allocated for that interface.
Backup Interface	Dispays the name of the backup interface.

Related Commands

Command	Description
cable video multicast uplink	Configures an uplink port for multicast traffic.
ip multicast-routing	Enables multicast routing on the Cisco RFGW-10.

show cable video packet

To display the video insertion packet information, use the **show cable video packet** command in privileged EXEC mode.

show cable video packet {**qam**| **qam-red** *slot/port.channel* [**stream** *stream-id*]| **all**| **slot** *slot*}

Syntax Description

qam	Specifies the QAM interface on the Cisco RFGW-10.
qam-red	Specifies the QAM interface when line card redundancy is configured on the Cisco RFGW-10.
slot	Specifies the slot on the QAM interface. Valid range is from 3 to 12.
port	Specifies the port on the interface. Valid range is from 1 to12.
channel	(Optional) Specifies the channel on the port. Valid range is from 1 to 4.
stream	(Optional) Specifies packet stream insertion information.
stream-id	(Optional) Specifies the packet stream identifier. Valid range is from 1 to 4294967295.
all	Displays a summary of the packet insertion on the chassis.
slot	Displays packet insertion for a slot.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the video packets on a QAM interface 3:

```
Router# show cable video packet qam-red 3/1.1

Packet                          Times        Actual     Insert       Num Pkts
Stream ID  Interface  Version  Repeat       Repeated   Rate (bps)   Inserted  State
-------------------------------------------------------------------------------------
1          Qam3/1.1   1        Continuos    14460      1000        1   ON
```

The table below describes the significant fields shown in the display.

Table 35: show cable video packet Field Descriptions

Field	Description
Packet Stream ID	Packet stream identifiers of the video packets.
Interface	QAM channel or QAM subinterface.
Version	Version of video packets.
Times Repeat	Packets repetition state such as continuos.
Actual Repeated	The number of times the packets are repeated.
Insert rate	Rate at which packets are inserted.
Num pkts inserted	Number of packets inserted.
State	Displays the status of the packets whether on or off.

show cable video route

To display video route information, use the **show cable video route** command in privileged EXEC mode.

show cable video route {**multicast**| **unicast**} {**all**| **slot** *slot*}

Syntax Description

multicast	Displays information for multicast routes.
unicast	Displays information for unicast routes.
all	Displays information on all routes on the chassis.
slot	Displays information of a slot on the line card.
slot	Specifies the slot on the line card. Valid range is from 3 to 12.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ. The **qam-domain** is *not* supported. The **unicast** keyword is removed. Use **show cable linecard load-balancing group** command to view unicast video sessions

Examples

The following example displays all the multicast routes configured on the chassis:

```
Router# show cable video route multicast all

Source           Group            rx-interface           tx-qamblock      Sessions
-------------------------------------------------------------------------------
162.0.0.10       232.3.1.1        TenGigabitEthernet1/1  qam 10/1-6       1
162.0.0.10       232.3.1.2        TenGigabitEthernet1/1  qam 10/1-6       1
162.0.0.10       232.3.1.3        TenGigabitEthernet1/1  qam 10/1-6       1
162.0.0.10       232.3.1.4        TenGigabitEthernet1/1  qam 10/1-6       1
162.0.0.10       232.3.1.5        TenGigabitEthernet1/1  qam 10/1-6       1
```

The table below describes the significant fields shown in the display.

Table 36: show cable video route Field Descriptions

Field	Description
Source	Source IP address.
Group	Group IP address.
rx-interface	Multicast interfaces.
tx-qamblock	QAM block on a slot.
Sessions	Number of sessions.
Route Type	Type of route configured.

Related Commands

Command	Description
video route	Configures the video route on the line card.

show cable video scrambler

To display scrambling information for the video sessions, use the **show cable video scrambler** command in privileged EXEC mode.

show cable video scrambler {**brief**| **eis** {*eis-id*| **all**}| **linecard** *slot* {**brief**| **tier-based**| **arp-entries**| **routes**| **ecmg** {**all**| *ecmg-id* {**brief**| **connection**| **desc-rule**| **overrule**}}}| **scg** {**all**| **tsid** *tsid*| **slot** *slot*| **eis-id** *eis-id* {*scg-id* {**brief**| **detail**}| **all**}}| **pme status**}

Syntax Description

brief	Displays the scrambler general setting information.
eis *eis-id*	Displays the Event Information Scheduler (EIS) details. The valid range for EIS connection ID is from 1 to 10.
all	Displays EIS information for all the EIS connections.
linecard	Displays the scrambler details for a line card.
slot	Line card slot number. The valid range is from 3 to 12.
brief	Displays the summary of scrambling settings for a line card.
tier-based	Displays the tier-based scrambling details for a line card.
arp-entries	Displays the ARP entries in line card.
routes	Displays the IP routes for the line card.
ecmg	Displays the ECMG details.
all	Displays Entitlement Control Message Generator (ECMG) information for all the ECMGs.
ecmg-id	ECMG ID. The valid range is from 2 to 4.
brief	Displays the summary of the ECMG.
connection	Displays the details of all connections of the ECMG.
desc-rule	Displays the details of all descriptor rules for the ECMG.
overrule	Displays the details of all overrules for the ECMG.

scg	Displays the details of the Scrambling Control Group (SCG).
all	Displays the summary of all SCGs.
tsid *tsid*	Displays the details for an SCG. The valid range for Transport Stream ID (TS ID)is from 1 to 65535.
slot*slot*	Displays a summary of all the SCGs of the line card in the slot. The valid value of slot ranges from 3 to 12.
eis-id *eis-id*	Displays a summary of SCGs from the EIS. The valid range for EIS proxy ID is from 1 to 10.
scg-id	SCG ID. The valid range is from 1 to 65535.
brief	Displays the summary of the SCG in the EIS proxy.
detail	Displays the details of the SCG in the EIS proxy.
all	Displays information for all SCGs in the EIS proxy.
pme status	Displays the PME configurations.

Command Default None

Command Modes Privileged EXEC (#)

Command History

Release	Modification
Cisco IOS-XE Release 3.4.0SQ	This command was introduced.
Cisco IOS-XE Release 3.5.0SQ	This command was modified. The **pme status** keyword was introduced.

Examples The following example shows the summary of scrambler general settings :

```
Router# show cable video scrambler brief
General Settings related to Scrambling
--------------------------------------
Scramble Audio & Video Only    : DISABLED
Check SCG At Provision Time    : ENABLED
NDS Strong Pairing Enforcement : DISABLED
```

The following example shows the EIS settings for all EIS connections:

```
Router# show cable video scrambler eis all
-------------------------------------------------------------------------------------------
EIS EIS             Peer        TCP      CP           CP         Overwrite   Connection
ID  Name            IP          Port     Overrule     Duration   SCG         Status
-------------------------------------------------------------------------------------------
1   server1         0.0.0.0     1024     DISABLED     0          DISABLED    Waiting
10  test_EIS        0.0.0.0     6000     DISABLED     0          DISABLED    Waiting
-------------------------------------------------------------------------------------------

NA - Not Available
```

The following example shows the EIS settings for EIS ID 1:

```
Router# show cable video scrambler eis 1
-------------------------------------------------------------------------------------------
EIS EIS             Peer        TCP      CP           CP         Overwrite   Connection
ID  Name            IP          Port     Overrule     Duration   SCG         Status
-------------------------------------------------------------------------------------------
1   server1         0.0.0.0     1024     DISABLED     0          DISABLED    Waiting
-------------------------------------------------------------------------------------------

NA - Not Available
```

The following example shows the scrambler settings on line card 3:

```
Router# show cable video scrambler linecard 3 brief
CA Interface Details of Line Card : 3
--------------------------------------
IP Address : 192.168.2.250
Net Mask   : 255.255.255.0
Gateway    : 0.0.0.0
--------------------------------------

Encryption Configuration Details of Line Card : 3
-------------------------------------------------
Encryption: DVB
Algorithm : DVB-CSA
-------------------------------------------------
```

The following example shows the tier-based scrambling details on line card 3:

```
Router# show cable video scrambler linecard 3 tier-based
-------------------------------------------------------------------
SLOT TIER       ECMG ID   ACCESS CRITERIA
-------------------------------------------------------------------
3    Enabled    2         A076B300005E
-------------------------------------------------------------------
```

The following example shows the ARP entries for line card 5:

```
Router# show cable video scrambler linecard 3 arp-entries
-----------------------------------------
SLOT IP ADDRESS        MAC ADDRESS
-----------------------------------------
192.168.0.8      30e4.db04.8dc0
-----------------------------------------
```

The following example shows the IP routes for line card 3:

```
Router# show cable video scrambler linecard 3 routes
-------------------------------------------------------------
SLOT IP ADDRESS        GATEWAY           SUBNET MASK
-------------------------------------------------------------
3    192.168.0.15     192.168.0.19     255.255.255.128
-------------------------------------------------------------
```

The following example shows the ECMG information for all ECMGs on line card 3:

```
Router# show cable video scrambler linecard 3 ecmg all
-------------------------------------------------------------------------------------------------------------
ECMG ECMG    ECMG     CA Sys   CA Subsys  PID     Lower  Upper  Streams/   Open Streams/
```

```
Auto Chan  LC    ECMG
ID   Name    Type     ID       ID         Source  limit  limit  ECMG       ECMG
ID         Slot  Connections
-------------------------------------------------------------------------------------------------------
2    ecmg1   standard 0x952    0x0        sid     0      0      0          0
Enabled    3       1
3    ecmg2   standard 0x952    0x0        sid     34     36     0          0
Enabled    3       1
-------------------------------------------------------------------------------------------------------
```

The following example shows the summary of ECMG configuration for an ECMG on line card 3:

```
Router# show cable video scrambler linecard 3 ecmg 2 brief
-------------------------------------------------------------------------------------------------------
ECMG ECMG    ECMG     CA Sys   CA Subsys  PID     Lower  Upper  Streams/   Open Streams/
Auto Chan  LC    ECMG
ID   Name    Type     ID       ID         Source  limit  limit  ECMG       ECMG
ID         Slot  Connections
-------------------------------------------------------------------------------------------------------
2    ecmg1   standard 0x952    0x0        sid     0      0      0          0
Enabled    3     1
-------------------------------------------------------------------------------------------------------
```

The following example shows the details of all the ECMG connections for an ECMG on line card 3:

```
Router# show cable video scrambler linecard 3 ecmg 2 connection
-------------------------------------------------------------------------------------------------------
ECMG ECMG   ECMG     CA Sys     CA Subsys  PID     Lower  Upper  Streams/   Open Streams/
  Auto Chan  LC    ECMG
ID   Name   Type     ID       ID         Source  limit  limit  ECMG       ECMG
  ID         Slot  Connections
-------------------------------------------------------------------------------------------------------
2    ecmg1  standard 0x952      0x0        sid     0      0      18         18
  Enabled    3     1
-------------------------------------------------------------------------------------------------------

ECMG Connections for ECMG ID = 2

-----------------------------------------------------------------
Conn Conn     IP               Port    Channel Conn       Open
ID   Priority Address          Number  ID      Status     Streams
-----------------------------------------------------------------
1    1        192.168.0.2      4001    0       Open       0
-----------------------------------------------------------------
```

The following example shows the details of the descriptor rules for an ECMG on line card 3:

```
Router# show cable video scrambler linecard 3 ecmg 2 desc-rule
-------------------------------------------------------------------------------------------------------
ECMG ECMG    ECMG     CA Sys     CA Subsys  PID     Lower  Upper  Streams/   Open Streams/
   Auto Chan  LC    ECMG
ID   Name    Type     ID       ID         Source  limit  limit  ECMG       ECMG
   ID         Slot  Connections
-------------------------------------------------------------------------------------------------------
2    ecmg1   standard 0x952      0x0        sid     0      0      0          0
   Enabled    3     1
-------------------------------------------------------------------------------------------------------


ECMG Descriptor Rules for ECMG ID = 2
---------------------------------------

Rule ID       : 1
Rule Name     : rule1
Rule Type     : add-priv-data
Insert Option : as-per-eis
ECM ID(s)     :
Private Data  : a042
-------------------------------------------------------------------------
```

The following example shows the details of the overrules for an ECMG on line card 3:

```
Router# show cable video scrambler linecard 3 ecmg 2 overrule
------------------------------------------------------------------------------------------------------------
ECMG ECMG    ECMG     CA Sys     CA Subsys  PID     Lower  Upper  Streams/   Open Streams/
   Auto Chan  LC    ECMG
ID   Name    Type     ID         ID         Source  limit  limit  ECMG       ECMG
   ID         Slot  Connections
------------------------------------------------------------------------------------------------------------
2    ecmg1   standard 0x952      0x0        sid  0      0      0          0
Enabled    3     1
------------------------------------------------------------------------------------------------------------


ECMG Advanced Overrule Settings for ECMG ID = 2
-----------------------------------------------
Maximum Compute Time   : Disabled, Value = 0
Minimum CP Duration    : Disabled, Value = 0
Transition Start Delay : Disabled, Value = 0
Transition Stop Delay  : Disabled, Value = 0
Start Delay            : Disabled, Value = 0
Stop Delay             : Disabled, Value = 0
AC Start Delay         : Disabled, Value = 0
AC Stop Delay          : Disabled, Value = 0
Repetition Period      : Disabled, Value = 0
Maximum Streams        : Disabled, Value = 0
Hint Bit Start Delay   : Disabled, Value = 0
```

The following examples shows the summary of all SCGs:

```
Router# show cable video scrambler scg all
-------------------------------------------------------------------------
SCG  ON  TS   SCG Ref     Activation           CP Duration LC    EIS
ID   ID  ID   ID          Time                 (msec)      Slot  ID
-------------------------------------------------------------------------
1    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 257,258,259
2    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 289,290
3    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 321,322
4    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 353,354
5    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 385,386
6    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 417,418,419
7    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 449,450
8    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 481,482
100  0   2    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 258,259
101  0   2    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 289,290,291
102  0   2    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 322,321
103  0   2    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 353,354,355
104  0   2    0           Immediate            100000      3     10
     Service IDs : NA
```

```
     ES PIDs : 385,386,387
105  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 417,418
106  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 449,450,451
107  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 481,482,483
108  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 513,514
200  0   321  0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 257,258,259
-------------------------------------------------------------------------
Total SCGs available = 18
```

The following example shows the details of the SCG with TSID 1:

```
Router# show cable video scrambler scg tsid 1
-------------------------------------------------------------------------
SCG  ON  TS   SCG Ref     Activation          CP Duration LC    EIS
ID   ID  ID   ID          Time                (msec)      Slot  ID
-------------------------------------------------------------------------
1    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 257,258,259
2    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 289,290
3    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 321,322
4    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 353,354
5    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 385,386
6    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 417,418,419
7    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 449,450
8    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 481,482
-------------------------------------------------------------------------
Number of SCGs = 8
```

The following example shows the summary of all SCGs on the line card in slot 3:

```
Router# show cable video scrambler scg slot 3
-------------------------------------------------------------------------
SCG  ON  TS   SCG Ref     Activation          CP Duration LC    EIS
ID   ID  ID   ID          Time                (msec)      Slot  ID
-------------------------------------------------------------------------
1    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 257,258,259
2    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 289,290
3    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 321,322
4    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 353,354
5    0   1    0           Immediate           100000      3     10
```

```
     Service IDs : NA
     ES PIDs : 385,386
6    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 417,418,419
7    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 449,450
8    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 481,482
100  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 258,259
101  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 289,290,291
102  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 322,321
103  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 353,354,355
104  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 385,386,387
105  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 417,418
106  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 449,450,451
107  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 481,482,483
108  0   2    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 513,514
200  0   321  0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 257,258,259
-------------------------------------------------------------------
Number of SCGs = 18
```

The following example shows the summary of all the SCGs from the EIS:

```
Router# show cable video scrambler scg eis-id 10 all
-------------------------------------------------------------------
SCG  ON  TS   SCG Ref     Activation          CP Duration LC    EIS
ID   ID  ID   ID          Time                (msec)      Slot  ID
-------------------------------------------------------------------
1    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 257,258,259
2    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 289,290
3    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 321,322
```

The following example shows the summary of the SCG in the EIS proxy:

```
Router# show cable video scrambler scg eis-id 10 3 brief
-------------------------------------------------------------------
SCG  ON  TS   SCG Ref     Activation          CP Duration LC    EIS
ID   ID  ID   ID          Time                (msec)      Slot  ID
-------------------------------------------------------------------
3    0   1    0           Immediate           100000      3     10
     Service IDs : NA
     ES PIDs : 321, 322
```

The following example shows the details of the SCG in the EIS proxy:

```
Router# show cable video scrambler scg eis-id 10 3 detail
------------------------------------------------------------------------
SCG  ON  TS   SCG Ref     Activation           CP Duration LC    EIS
ID   ID  ID   ID          Time                 (msec)      Slot  ID
------------------------------------------------------------------------
3    0   1    0           Immediate            100000      3     10
     Service IDs : NA
     ES PIDs : 321, 322

SCG Group Details
-----------------------------------------------------
SCG  ECM   Super      AC      Access
ID   ID    CAS ID     Change  Criteria
-----------------------------------------------------
3    1     9520000    FALSE   12345678
```

The following example shows the PME status:

```
Router# show cable video scrambler pme status

Vodsid     : 111
CEM IP     : 10.78.206.100
CEM Port   : 5000
Local Port : 63363
Count of ECMs recd   : 1
CEM Connection State : Connected
```

The table below describes the significant fields shown in the display.

Table 37: show cable video scrambler Field Descriptions

Field	Description
EIS ID	Displays the EIS connection ID.
EIS Name	Displays EIS server name in the Conditional Access (CA) system.
Peer IP	Displays the IP address of the EIS.
TCP Port	Displays the port number used to establish TCP connection with the EIS.
CP Overrule	Displays whether the CP overrule is enabled or disabled.
CP Duration	Displays the CP overrule duration in seconds.
Overwrite SCG	Displays whether the SCG overwrite is enabled or disabled.
Connection Status	Displays the status of the connection to the EIS.
ECMG ID	Displays the ECMG ID.
ECMG Name	Displays the name of the ECMG.
ECMG Type	Displays the type of the ECMG.

Field	Description
CA Sys ID	Displays the CA system ID.
CA Subsys ID	Displays the CA subsytem ID.
PID Source	Displays the ECM PID source information.
Lower Limit	Displays the Lower limit of the ECM PID range.
Upper Limit	Displays the Upper limit of the ECM PID range.
Streams/ECMG	Displays the number of ECMG streams.
Open Streams/ECMG	Displays the number of open ECMG streams.
Auto Chan ID	Displays whether auto channel ID is enabled or disabled.
LC Slot	Displays the line card slot number.
ECMG Connections	Displays the number of ECMG connections.
SCG ID	Displays the SCG ID.
ON ID	Displays the Original Network ID.
TS ID	Displays the Transport Stream ID.
SCG Ref ID	Displays the SCG reference ID.

Related Commands

Command	Description
cable video scrambler	Configures the scrambling parameters for the video sessions.
access-criteria	Configures the access criteria for the Entitlement Control Message Generator (ECMG).
cp-overrule	Configures the Crypto Period (CP) overrule duration.
overwrite-scg	Sets the Scrambling Control Group (SCG) overwrite.
auto-channel-id	Configures automatic channel ID selection.
connection	Configures ECMG connection.
desc-rule	Configures descriptor rule.

Command	Description
overrule	Overrules the default setting for the ECMG.

show cable video server-group

To display information on a video server group, use the **show cable video server-group** command in privileged EXEC mode.

show cable video server-group {**all**| **mapping**| **name** *group_name*}

Syntax Description

all	Displays all the server groups configured on a line card.
mapping	Displays external and internal session mapping.
name	Displays the information of a server group.
group_name	Specifies a server group.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command is used to view all the server groups configured on a line card.

Examples

The following example displays information on all server groups configured on the line card:

```
Router# show cable video server-group all

Server-Group :    gqi1
State :           ACTIVE
Protocol :        GQI
Timeout Period :  5 seconds
Number of Retry : 3
Server[0] :       172.22.23.161
       Management IP :  172.22.22.181   Port : 844    Mac Id : 0017.94fe.a9c0
                                           Reset             Pending
       Server           State              Indication        Requests
       ------------------------------------------------------------------------
       172.22.23.161    Connected          In-progress       0
Server-Group :    GQI
State :           NON-ACTIVE
Protocol :        GQI Emulation
Emulation Type :  24-qam
Timeout Period :  5 seconds
```

```
Number of Retry : 3
Server[0] :       56.1.1.11
Management IP :  56.1.1.101   Port : 0    Mac Id : 001a.a2ff.0d03
        QAM Interfaces : 5/1.1-5/6.4
```

The table below describes the significant fields shown in the display.

Table 38: show cable video server-group Field Descriptions

Field	Description
Server-Group	Specifies the name of the server group.
State	Indicates whether the group is active or non-active.
Protocol	Indicates the protocol configured on the server group.
Timeout Period	Indicates the time period for a time out.
Number of Retry	Indicates the number of retries.
Server	Indicates the IP address of the external server. IP address must be configured for the GQI protocol.
Management IP	IP address of the manaagement port of the server configured on the server group.
Port	Specifies the port number.
Mac Id	Specifies the MAC address of the server.
QAM Interfaces	Specifies the QAM interfaces.

Related Commands

Command	Description
cable video servers	Configures external control server groups on the line card.

show cable video session

To display the video session information, use the **show cable video session** command in privileged EXEC mode.

{**show cable video session** [{**Qam** *qam-interface-number*| **Qam-red** *qam-interface-number*| **all**} [**brief** [*filter*]| **summary**]]| **id** *session-id-number* [**in**| **out**] [**psi**| **si**| **stats**]| **local** {**Qam** *qam-interface-number*| **Qam-red** *qam-interface-number*| **all**| **slot** *slot*}| **remote** {**Qam** *qam-interface-number*| **Qam-red** *qam-interface-number*| **all**| **ermi**| **gqi**| **slot** *slot*}| **slot** [**brief** [*filter*]| **count**| **summary**]}

Syntax Description

Qam	Displays information on video session configured on a QAM interface.
Qam-red	Displays the video session configured on a QAM interface with line card redundancy.
qam_interface_number	Indicates the interface number of the QAM. • *slot*: Specifies the slot of the QAM interface. Valid range is from 3 to 12. • *port*: Specifies the number of port on the slot. The following are the valid range For DS384, the valid range is 8 and for ds48, the valid range is12. • *channel*: Specifies the channel on the QAM. The following are the valid range: For DS384, the valid range is 48 and for ds48, the valid range is 4.
all	Displays information of all video sessions configured on the chassis.
summary	(Optional) Displays a summary of all the video sessions configured on the chassis.
brief	(Optional) Displays brief video information.

filter	(Optional) Filters the information using the following criteria: • **active—**Shows the active sessions present. • **asm—**Shows the ASM video sessions. • **blocked—**Shows blocked video sessions. • **data—**Shows sessions with the data-piping processing type. • **idle—**Shows idle sessions. • **off—**Shows off sessions. • **passthru—**Shows sessions with the pass-through processing type. • **psi—**Shows packet stream identifiers of video sessions. • **remap—**Shows remapped video streams. • **shell—**shows video sessions in shell. • **ssm—**Shows SSM video sessions. • **udp—**Shows the UDP port.
id	Displays video session information for a session ID.
session-id-number	Specifies the ID of a particular session. Valid session IDs are 1 and 2.
in	(Optional) Displays input session information.
out	(Optional) Displays output session information.
si	(Optional) Displays only the SI information of an input or output session.
psi	(Optional) Displays detailed Program Specific Information (PSI) video session information with program table.
stats	(Optional) Displays detailed video session .
slot	Displays video sessions information for a slot.
slot	Specifies the slot on the QAM interface. Valid slot number range is from 3 to 12.

ermi	Displays video session information for ERMI sessions.
gqi	Displays video session information for GQI sessions.
count	(Optional) Displays the session count for all QAM channels on the line card interface.
local	Displays local video sessions.
remote	Displays remote video sessions.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
12.2(50)SQ2	This command was modified. The **count** keyword was added.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ. **qam-domain** is *not* supported. The **local** and **remote** keywords are added.
Cisco IOS-XE Release 3.4.0SQ	This command was modified. The **si** keyword was added. The command displays the de-jittering mode and master PCR information.
Cisco IOS-XE Release 3.5.0SQ	This command was modified. A new column **Current State** was added in the command output.

Examples

The following example shows the video sessions configured on 3/1.1 QAM interface:

```
Router# show cable video session qam 3/1.1

Session   QAM        Stream    Sess IP        UDP   Out Input   Input  Output PSI
ID        Port       Type      Type Address   Port  Pgm Bitrate State  State  Rdy

Ctrl      Encryption Current
State     Type       State
--------- ---------- -------   ---- --------- ----- --- ------- ------ ------ ---
201392133 3/1.1      Remap     UDP  30.0.3.10 49155 4   2999750 ACTIVE ON     YES
-         DVB        Encrypted
201392134 3/1.1      Remap     UDP  30.0.3.10 49156 5   2999856 ACTIVE ON     YES
-         DVB        Encrypted
201392135 3/1.1      Remap     UDP  30.0.3.10 49157 6   2993065 ACTIVE ON     YES
-         DVB        Encrypted
Total Sessions = 3
```

The following example shows the video sessions configured on the chassis:

```
Router# show cable video session all

Session   QAM        Stream    Sess IP        UDP   Out  Input   Input  Output PSI
ID        Port       Type      Type Address   Port  Pgm  Bitrate State  State  Rdy

Ctrl      Encryption Current
State     Type       State
--------- ---------- -------   ---- --------- ----- ---- ------- ------ ------ ---
201392133 3/1.1      Remap     UDP  30.0.3.10 49155 4    2999750 ACTIVE ON     YES
-         DVB        Encrypted
201392134 3/1.1      Remap     UDP  30.0.3.10 49156 5    2999856 ACTIVE ON     YES
-         DVB        Encrypted
201392135 3/1.1      Remap     UDP  30.0.3.10 49157 6    2993065 ACTIVE ON     YES
-         DVB        Encrypted
201457672 3/1.2      Remap     SSM  -         -     4    1692577 ACTIVE ON     YES
-         -          -
201457673 3/1.2      Remap     SSM  -         -     5    2042924 ACTIVE ON     YES
-         -          -
268500996 4/1.1      Remap     UDP  30.0.3.10 49262 1111 2999846 ACTIVE ON     YES
-         PowerKey   Encrypted
268566533 4/1.2      Remap     UDP  30.0.3.10 49263 1112 2999257 ACTIVE ON     YES
-         PowerKey   Encrypted
268632070 4/1.3      Remap     UDP  30.0.3.10 49264 1113 2999980 ACTIVE ON     YES
-         PowerKey   Encrypted
Total Sessions = 8
```

The following example shows the SI information along with the other information of the sessions configured on the chassis:

```
Router# show cable video session id 201523208
INPUT Source      : 201523208
  Created On      : 07:38:55 AM
  Uptime [SUP]    : 07:38:55 AM
  Data State      : ACTIVE, PSI,
  Config Bitrate  : 3000000 bps
  Jitter          : 200 ms
  Stream Type     : SPTS
  Stream Rate     : VBR
  PID Remap       : ENABLED
  Source IP       : 20.0.1.1
  Source UDP      : -
  Destination IP  : 232.2.2.2
  Destination UDP : -
  Idle Timeout    : 250 msecs
  Init Timeout    : 1000 msecs
  Off Timeout     : 70 seconds


Input SI Info:
NIT :   pid 0x10
SDT :   pid 0x11
TDT :   pid 0x14

Output Session: 201523208:
  SPTS PGM Number: 265
  Data State     : PSI,
  Control State  : ACTIVE
  QAM            : 3/1.3
  QAM-partition  : None


Output SI Info:
NIT :   pid 0x10
SDT :   pid 0x11
TDT :   pid 0x14
```

The following example shows the SI information for the input sessions:

```
Router# show cable video session id 201523208 in
INPUT Source      : 201523208
  Created On      : 07:38:55 AM
```

```
  Uptime [SUP]    : 07:38:55 AM
  Data State      : ACTIVE, PSI,
  Config Bitrate  : 3000000 bps
  Jitter          : 200 ms
  Stream Type     : SPTS
  Stream Rate     : VBR
  PID Remap       : ENABLED
  Source IP       : 20.0.1.1
  Source UDP      : -
  Destination IP  : 232.2.2.2
  Destination UDP : -
  Idle Timeout    : 250 msecs
  Init Timeout    : 1000 msecs
  Off Timeout     : 70 seconds


Input PSI Info:
  PAT Info:
  Ver 2, TSID 1, len 16, section 0/0
    Prog 1: pmt 16
  PMT Info:
  Ver 2, program 1, pcr pid 17, len 32
    Type 2, PID 17, len 0
    Type 129, PID 20, len 6 (desc 10, len 4)


Input SI Info:
NIT :   pid 0x10
SDT :   pid 0x11
TDT :   pid 0x14
```

The following example shows the SI information for the output sessions:

```
Router# show cable video session id 201523208 out
Output Session: 201523208:
  SPTS PGM Number: 265
  Data State     : PSI,
  Control State  : ACTIVE
  QAM            : 3/1.3
  QAM-partition  : None

  Output PSI Info (Carrier ID 3):
  PAT Info for Pgm Num 265:
  Ver 5, TSID 5003, len 68, section 0/0
    Prog 265: pmt 496
  PMT Info for Pgm Num 265:
  Ver 0, program 265, pcr pid 497, len 32
    Type 2, PID 497, len 0
    Type 129, PID 498, len 6 (desc 10, len 4)
```

The following example shows only the input SI info:

```
Router#show cable video session id 201523208 in si
Input SI Info:
NIT :   pid 0x10
SDT :   pid 0x11
TDT :   pid 0x14
```

The following example shows only the output SI info:

```
Router#show cable video session id 201523208 out si
Output SI Info:
NIT :   pid 0x10
SDT :   pid 0x11
TDT :   pid 0x14
```

The following example displays the de-jittering mode for a pass through session:

```
Router# show cable video session id 201392130

INPUT Source      : 201523204
  Created On      : 11:05:12 AM
  Uptime [SUP]    : 11:05:12 AM
  Data State      : ACTIVE, PSI
```

```
 Config Bitrate  : 0 bps
 Jitter          : 200 ms
 Stream Type     : MPTS
 Stream Rate     : VBR
 PID Remap       : DISABLED
 De-jitter mode  : SINGLE-STREAM
 Source IP       : 20.0.1.1
 Source UDP      : -
 Destination IP  : 232.2.2.253
 Destination UDP : -
 Idle Timeout    : 5000 msecs
 Init Timeout    : 1000 msecs
 Off Timeout     : 60 seconds


 Elapsed time [LC]: 0 days 00 hours 06 min 33 secs
 IP Packets: In: 743567, Drop: 0
TP Packets: In: 5204969, PCR: 180513, Non-PCR: 3981494, PSI: 4939, NULL: 679782, Filtered:
0, Unreferenced: 0
             Sync-Loss: 0, Dis-continous: 0, CC Errors: 0, PCR Jump: 34, Idle: 0
 Measured Bitrate 20000155 (19994056 min 20003570 max) bps, stay 163 ms, jitter 30 ms
 PCR Bitrate 20132 (19994084 min 0 max) bps, stay 163 ms, jitter 30 ms
 Idle Count: 0, Total Idle Time: 0 sec
 Master PCR pid: 80 M-PCR switch cnt: 35
```

The following example shows the detailed summary of video sessions configured on the chassis:

```
Router# show cable video session all summary

Video Session Summary for Chassis:
Active    : 3        Init      : 0        Idle      : 0
Off       : 0        Blocked   : 0        PSI-Ready : 3
UDP       : 3        ASM       : 0        SSM       : 0
Remap     : 3        Data      : 0        Passthru  : 0
Shell     : 0        Bound     : 0
Total Sessions: 3
Total Measured Bitrate : 7070361 bps
```

The following example shows information about video sessions configured on the chassis:

```
Router# show cable video session all brief

Session   QAM        Stream    Sess IP        UDP   Out  Input   Input  Output PSI
ID        Port       Type      Type Address   Port  Pgm  Bitrate State  State  Rdy

Ctrl      Encryption Current
State     Type       State
--------- ---------- -------   ---- --------- ----- ---- ------- ------ ------ ---
201392133 3/1.1      Remap     UDP  30.0.3.10 49155 4    3000215 ACTIVE ON     YES
-         DVB        Encrypted
201392134 3/1.1      Remap     UDP  30.0.3.10 49156 5    3000093 ACTIVE ON     YES
-         DVB        Encrypted
201392135 3/1.1      Remap     UDP  30.0.3.10 49157 6    2992358 ACTIVE ON     YES
-         DVB        Encrypted
201457672 3/1.2      Remap     SSM  -         -     4    1692777 ACTIVE ON     YES
-         -          -
201457673 3/1.2      Remap     SSM  -         -     5    2051344 ACTIVE ON     YES
-         -          -
268500996 4/1.1      Remap     UDP  30.0.3.10 49262 1111 3000480 ACTIVE ON     YES
-         PowerKey   Encrypted
268566533 4/1.2      Remap     UDP  30.0.3.10 49263 1112 3000094 ACTIVE ON     YES
-         PowerKey   Encrypted
268632070 4/1.3      Remap     UDP  30.0.3.10 49264 1113 3000342 ACTIVE ON     YES
-         PowerKey   Encrypted
Total Sessions = 8
```

The table below describes the significant fields shown in the display.

Table 39: show cable video session all Field Descriptions

Field	Description
Session ID	Represents the internal ID allocated by the chassis to the output stream of the input session.
QAM Port	Indicates the QAM interface or QAM subinterface.
Stream Type	Indicates the transport stream.
IP address	Session IP address
Session Type	Indicates the video session type.
UDP Port	Indicates the UDP port.
Output Program	Indicates the Single ProgramTransport Stream (SPTS) or Multiple ProgramTransport Stream (MPTS) program number.
Input Bitrate	Indicates the actual bitrate measured on the input.
Input State	Indicates the state on the input.
Output State	Indicates the stare on the output.
PSI Rdy	Indicates the PSI ready state.
Ctrl State	Indicates the controller state.
Encryption Type	Indicates the encryption type.
Current State	Indicates the encryption state.

The following example shows the detailed video session configuration on the line card:

```
Router# show cable video session id 201392130

INPUT Source      : 201392130
  Created On      : 04:41:10 AM
  Uptime [SUP]    : 04:41:10 AM
  Data State      : ACTIVE, PSI,
  Config Bitrate  : 3000000 bps
  Jitter          : 200 ms
  Stream Type     : SPTS
  Stream Rate     : VBR
  PID Remap       : ENABLED
  Source IP       : 0.0.0.0
  Source UDP      : 0
  Destination IP  : 30.0.3.10
  Destination UDP : 49261
  Idle Timeout    : 250 msecs
  Init Timeout    : 1000 msecs
  Off Timeout     : 60 seconds
  PID Filter [0] :
```

```
Input PSI Info:
  PAT Info:
  Ver 2, TSID 1, len 16, section 0/0
    Prog 1: pmt 16
  PMT Info:
  Ver 2, program 1, pcr pid 17, len 32
    Type 2, PID 17, len 0
    Type 129, PID 20, len 6 (desc 10, len 4)
  Elapsed time [LC]: 0 days 17 hours 48 min 52 secs
  IP Packets: In: 17879939, Drop: 0
  TP Packets: In: 125159573, PCR: 1782371, Non-PCR: 117297535, PSI: 264196, NU
: 5682013, Filtered: 0, Unreferenced: 133458
              Sync-Loss: 0, Dis-continous: 0, CC Errors: 18, PCR Jump: 826, Id
: 0
  Measured Bitrate 2998635 (0 min 3159570 max) bps, stay 169 ms, jitter 34 ms
  PCR Bitrate 3000092 (600014 min 0 max) bps, stay 169 ms, jitter 34 ms
  Idle Count: 0, Total Idle Time: 0 sec
Output Session: 201392130:
  SPTS PGM Number: 3111
  Data State     : PSI,
  Control State  : ACTIVE
  QAM            : 3/1.1
  QAM-partition  : 3
  Output PSI Info (Carrier ID 1):
  PAT Info for Pgm Num 3111:
  Ver 1, TSID 311, len 16, section 0/0
    Prog 3111: pmt 352
  PMT Info for Pgm Num 3111:
  Ver 0, program 3111, pcr pid 353, len 32
    Type 2, PID 353, len 0
    Type 129, PID 354, len 6 (desc 10, len 4)
Elapsed time [LC]: 0 days 17 hours 48 min 53 secs
  TP Packets: PCR: 4, Non-PCR: 215, PSI: 2, New PAT: 1, New PMT: 1
              Drop: 0, Info-Err: 0, Inv-Rate: 0, Output Adjust: 0
              Overruns: 0, Overdue Drop 0, Under-Flow: 0, Over-Flow: 0
```

The following example shows the cable video session information for session ID 2:

```
Router# show cable video session id  2 in psi

Session PAT:   Ver 0, TSID 1, len 16, section 0/0
    Prog 1: pmt 500
  Session PMT:   Ver 0, program 1, pcr pid 481, len 43
    Type 3, PID 482, len 6 (desc 10, len 4)
    Type 129, PID 483, len 6 (desc 10, len 4)
    Type 2, PID 481, len 0
```

The following example shows detailed video session statistics:

```
Router# show cable video session id 2 in stats

  Elapsed time [LC]: 14142 days 22 hours 52 min 41 secs
  IP Packets: In: 0, Drop: 0
  TP Packets: In: 0, PCR: 0, Non-PCR: 0, PSI: 0, NULL: 0, Unreferenced: 0
              Sync-Loss: 0, Dis-continous: 0, CC Errors: 0, PCR Jump: 0, Idle: 0
  Measured Bitrate 0 (0 min 0 max) bps, stay 0 ms, jitter 0 ms
  PCR Bitrate 0 (0 min 0 max) bps, stay 0 ms, jitter 0 ms
  Idle Count: 0, Total Idle Time: 0 sec
```

The following example shows the session count on all QAMs on the line card in slot 9:

```
Router# show cable video session slot 9 count

     QAM Port           Sessions
   x------------------x-----------
    Channel 9/1.1       2
    Channel 9/1.2       10
```

The table below describes the significant fields shown in the display.

Table 40: show cable video session id Field Descriptions

Field	Description
Elapsed time	Indicates the session time elapsed in days, hours, minutes. and seconds.
IP packets	Indicates the number of IP packets used and dropped.
TP packets	Indicates the number of transport packets that are program clock referenced, known and unknown bitrates, unreferenced, discontinuous, and idle.
Measured Bitrate	Indicates the size of the video stream. Standard definition (SD) video programs have bitrates from 62.5 kbps to 15 Mbps, high definition (HD) video programs have bitrates from 6 to 20 Mbps, and music programs have bitrates of 128 to 384 kbps. 32 SD programs, or 4 HD programs per QAM channel.
PCR Bitrate	Indicates the known bitrate size of the video stream.
Idle count	Indicates the number of times the line card is idle. When the input session enters into the IDLE state, an update is sent to the Supervisor card.
QAM Port	Indicates the QAM channel on a linecard.
Sessions	Indicates the session count on a QAM channel.

The following example displays the local sessions on the line card:

```
Router# show cable video session local all

Session   QAM        Stream   Sess IP               UDP   Out   Input    Input  Output PSI
ID        Port       Type     Type Address          Port  Pgm   Bitrate  State  State  Rdy

Ctrl      Encryption Current
State     Type       State
--------- ---------- ------   ---- ---------------- ----- ----- -------- ------ ------ ---
201392133 3/1.1      Remap    UDP  30.0.3.10        49155 4     2999994  ACTIVE ON     YES
-         DVB        Encrypted
201392134 3/1.1      Remap    UDP  30.0.3.10        49156 5     2999777  ACTIVE ON     YES
-         DVB        Encrypted
201392135 3/1.1      Remap    UDP  30.0.3.10        49157 6     2992876  ACTIVE ON     YES
-         DVB        Encrypted
201457672 3/1.2      Remap    SSM  -                -     4     1692888  ACTIVE ON     YES
-         -          -
201457673 3/1.2      Remap    SSM  -                -     5     2038039  ACTIVE ON     YES
-         -          -
Total Sessions = 5
```

Related Commands

Command	Description
cable qam-partition	Creates a QAM partition on the line card.

show cable video statistics packet

To display unicast and multicast video packets, use the **show cable video statistics packet** command in privileged EXEC mode.

show cable video statistics packet {**all**| **slot** *slot-num*} {**brief**| **detail**}

Syntax Description

all	Displays video unicast and multicast packets configured on the chassis.
slot	Displays video unicast and multicast packets for a specified slot.
slot-num	Specifies the slot on the chassis. Valid range is from 3 to 12.
brief	Displays the brief information of packets for a given slot.
detail	Displays detailed summary information of packets for a given slot.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.0SQ	This command was integrated into Cisco IOS-XE Release 3.3.0SQ. The command output is modified to display the load balancing groups.
Cisco IOS-XE Release 3.5.0SQ	This command was modified. Two new fields **Total Multicast Sessions** and **Total Unicast Sessions** are added to summarize the sessions count per slot or chassis level.

Examples

The following example shows the information of all packets on a chassis:

```
Router# show cable video statistics packet all brief

Slot    LBG    Multicast  Multicast     Unicast    Mcast DS    Unicast DS
Id      Id     Groups     Sessions      Sessions   Packets     Packets
```

```
-------------------------------------------------------------------------------
3       1       0          0             40          17          858851741
3       2       6          48            0           1735875     0
6       1       0          0             0           29          0
6       2       0          0             0           29          0

Total Multicast Sessions : 48
Total Unicast Sessions   : 40
```

The following example shows the detailed summary information of all packets on a chassis:

```
Router# show cable video statistics packet slot 3 detail

Slot: 3
LBG ID: 1
QAM Range:              qam3/1-6
Multicast Groups:       0
Multicast Sessions:     0
Unicast Sessions:       3
DS BYTES:               135146944
MCAST DS PACKETS:       48                  UCAST DS PACKETS:     563833

CRC ALIGN ERROR:        0                   DROPPED BAD PKTS:     0
COLLISIONS:             0                   SYMBOL ERROR:         255
UNDERSIZE PKTS:         0                   OVERSIZE PKTS:        0
FRAGMENTS PKTS:         0                   JABBERS:              0

SINGLE COL:             0                   MULTI COL:            0
LATE COL:               0                   ACCESSIVE COL:        0

DEFERRED COL:           0                   FALSE CARRIER:        0
CARRIER SENSE:          0                   SEQUENCE ERROR:       255

QAM Range:              qam3/7-12
Multicast Groups:       0
Multicast Sessions:     0
Unicast Sessions:       0
DS BYTES:               20160
MCAST DS PACKETS:       48                  UCAST DS PACKETS:     0

CRC ALIGN ERROR:        0                   DROPPED BAD PKTS:     0
COLLISIONS:             0                   SYMBOL ERROR:         255
UNDERSIZE PKTS:         0                   OVERSIZE PKTS:        0
FRAGMENTS PKTS:         0                   JABBERS:              0

SINGLE COL:             0                   MULTI COL:            0
LATE COL:               0                   ACCESSIVE COL:        0

DEFERRED COL:           0                   FALSE CARRIER:        0
CARRIER SENSE:          0                   SEQUENCE ERROR:       255
```

The table below describes the significant fields shown in the display.

Table 41: show cable video statistics packet Field Descriptions

Field	Description
Qam Range	QAM domains configured on the chassis.
LBG ID	Load balancing group ID.
Multicast Groups	Multicast groups configured.
Multicast Sessions	Number of video multicast sessions.
Unicast Sessions	Number of video unicast sessions.

Field	Description
Mcast DS Packets	Multicast downstream packets.
Unicast DS Packets	Unicast downstream packets.
CRC ALIGN ERROR	Number of packets with a CRC align errors.
DROPPED BAD PKTS	Number of bad packets that were dropped.
COLLISIONS	Number of packet collisions.
SYMBOL ERROR	Number of symbol errors.
UNDERSIZE PKTS	Number of undersized packets.
OVERIZE PKTS	Number of oversized packets
FRAGMENTS PKTS	Number of fragmented packets.
JABBERS	Number of jabber errors.
DEFFERED COL	Number of times the interface has tried to send a frame, but found the carrier busy at the first attempt.
FALSE CARRIER	False carrier counter. It is incremented when a false error is detected in the register.
CARRIER SENSE	Indicates the signal.
SEQUENCE ERROR	Frame check sequence error.
Total Multicast Sessions	Total number of video multicast sessions.
Total Unicast Sessions	Total number of video unicast sessions.

Related Commands

Command	Description
cable video group	Creates a group of video sessions.
cable video multicast	Configures multicast sessions on a QAM interface.

show controllers linecard

To display information about used bandwidth and total bandwidth on all QAMs on a line card interface, use the show controllers **linecard** command in user EXEC or privileged EXEC mode.

show controllers linecard *number* **bandwidth**

Syntax Description

linecard	Specifies the slot location of the line card. The valid range is from 3 to 12.
bandwidth	Displays the used bandwidth and total bandwidth on all QAMs on a line card interface.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ2	This command was introduced.

Examples

The following is sample output for the **show controllers linecard** command for a line card in slot 3:

```
Router# show controllers linecard 3 bandwidth

       QAM Port         Bandwidth Used(bps)  Bandwidth Total(bps)
       x----------------x--------------------x-------------------------
       Channel 3/1.1    0                    38810000
       Channel 3/1.2    0                    38810000
       Channel 3/1.3    0                    38810000
       Channel 3/1.4    0                    38810000
```

The table below describes the fields shown in the **show controllers linecard** command display.

Table 42: show controllers linecard Field Descriptions

Field	Description
QAM Port	QAM channel on the line card.
Bandwidth Used (bps)	Amount of bandwidth used by the QAM interface.
Bandwidth Total (bps)	Amount of bandwidth alloted to the QAM interface.

Related Commands

Command	Description
show running-config interface qam	Displays the running configuration of the QAM interface.

show controllers qam

To display information about downstream configuration on a line card, use the **show controllers qam** command in privileged EXEC mode.

show controllers {**qam**| **qam-red**} *slot/port.channel* **downstream**

Syntax Description

slot	Specifies the line card in the QAM interface. Line card redundancy configured interfaces appear as QAM -red. Valid range is from 3 to 12.
port	Specifies the QAM RF port number in the line card.Valid range is from 1 to 12.
channel	Specifies the QAM channel in the port of the line card. Valid range is from 1 to 4.
downstream	Specifies the configuration of the QAM interface.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command displays the downstream information for a QAM interface. If line card redundancy (LCRED) is configured on the QAM interface, the interface is denoted by **qam-red**.

Examples

The following example shows the downstream configuration on a redundancy line card:

```
Router# show controllers qam 3/1.1 downstream

Qam3/1.1 Downstream is up
        Annex B, Stacking set to 4
        Frequency: 279000000 Hz, Power: 50.0 dBmV
        Modulation: 256QAM, TSID: 0, QAM IDB_State: UP
        Bandwidth Reserved for Video:   0        bps
        Bandwidth Used:                 8223776  bps
        Bandwidth Total:                38810000 bps
        Transport Mode: QAM_MODE_MPT Qam Owner: LOCAL
        Interleave Level: 2, FEC I: 32 FEC J: 4
```

The table below describes the significant fields shown in the display.

Table 43: show controllers qam Field Descriptions

Field	Description
Downstream	Indicates whether the interface hardware is currently active or disabled by the administrator.
Annex	Indicates the annex for the RF downstream channel.
Stacking	Indicates the stacking level set on the QAM interface.
Modulation	Indicates the modulation level of the QAM.
TSID	Indicates the TSID value set on the QAM.
QAM_IDB_State	Indicates the state of the QAM interface.
Bandwidth Reserved for video	Amount of bandwidth alloted for video.
Bandwidth Used	Amount of bandwidth used by the QAM interface.
Bandwidth Total	Amount of bandwidth alloted to the QAM interface.
Transport Mode	Indicates the mode on the QAM.
Interleave Level	Indicates the frequency interleave level on the QAM.
FEC	Length of the forward error correction in bytes. The range is 0 to 10 bytes; a value of 0 implies no forward error correction.

Related Commands

Command	Description
show running-config interface qam	Displays the running configuration of the QAM interface.

show depi

To display Downstream External PHY Interface (DEPI) tunnel and session information, use the **show depi** command in privileged EXEC mode.

show depi

Syntax Description

This command has no arguments or keywords.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced.

Examples

The following example shows a sample output of the **show depi** command on a Cisco RF Gateway 10:

```
Router# show depi

DEPI Tunnel and Session Information Total tunnels 3 sessions 12

LocTunID   RemTunID   Remote Name   State  Remote Address  Sessn L2TP Class
                                                Count
555844637  4037701912 RFGW-10-1     est    11.30.14.100    4     test10

LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1252048235 1074332337 555844637  717,       est    1w0d     16         P
1252049362 1074332330 555844637  711,       est    1w0d     15         P
1252005266 1074332288 555844637  699,       est    1w0d     13         P
1252000641 1074332316 555844637  705,       est    1w0d     14         P

LocTunID   RemTunID   Remote Name   State  Remote Address  Sessn L2TP Class
                                                Count
1486289361 1394811300 RFGW-10-1     est    12.30.14.100    4     test10
LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1252014460 1074332279 1486289361 549,       est    1w0d     20         P
1252059306 1074332234 1486289361 531,       est    1w0d     17         P
1252057709 1074332245 1486289361 537,       est    1w0d     18         P
1252006708 1074332262 1486289361 543,       est    1w0d     19         P

LocTunID   RemTunID   Remote Name   State  Remote Address  Sessn L2TP Class
                                                Count
1688275168 1361251901 RFGW-10-1     est    24.30.14.100    4     test10
LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1252018493 1074332252 1688275168 537,       est    1w0d     22         S
1252054974 1074332286 1688275168 549,       est    1w0d     24         S
1252022230 1074332263 1688275168 543,       est    1w0d     23         S
1252059782 1074332236 1688275168 531,       est    1w0d     21         S
```

The table below describes the major fields shown in the **show depi** command display:

Table 44: show depi Field Descriptions

Field	Description
LocTunID	Identifier of the local tunnel.
RemTunID	Identifier of the remote tunnel.
Remote Name	Name of the remote tunnel.
State	State of the tunnel.
Remote Address	IP address of the remote tunnel.
Session Count	Number of sessions.
LocID	Identifier of the session.
RemID	Identifier of the remote session.
TunID	Identifier of the tunnel.
State	State of the session.
Last Chg	Last state change timestamp.
Uniq ID	Unique identifier of the QAM channel.
Type	Primary or secondary session.

Related Commands

Command	Description
depi-tunnel	Creates a template of DEPI tunnel configuration settings that can be inherited by different pseudowire classes.
show depi session	Displays information about DEPI sessions.
show depi tunnel	Displays information about DEPI tunnels.

show depi session

To display information about Downstream External PHY Interface (DEPI) sessions, use the **show depi session** command in privileged EXEC mode.

show depi session [*session-id* **verbose| configured**| **name** *session-name* **[verbose]| primary**| **secondary**| **tsid** *ts-id*]

Syntax Description

session-id	(Optional) Local session ID value. The allowed range is from 1 to 4294967295.
verbose	(Optional) Displays detailed DEPI tunnel or session information.
configured	(Optional) Displays all the DEPI sessions configured and their state. The states are IDLE and ACTIVE.
name *session-name*	(Optional) Specifies the name of the DEPI session.
primary	(Optional) Specifies the primary DEPI session.
secondary	(Optional) Specifies the backup DEPI session.
tsid *ts-id*	(Optional) Specifies the Transport Stream Identifier (TSID).

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced.
12.2(50)SQ2	This command was modified. The following keywords were added to this command: • **configured** • **name** • **primary** • **secondary** • **tsid**

Examples

The following example shows sample output of the **show depi session** command for all the established DEPI data sessions in Cisco IOS Release 12.2(50)SQ:

```
Router# show depi session

LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1074004031 1252011014 641420592  514        est    04:19:46 4           P
1074003980 1252043972 641420592  511        est    04:19:46 1           P
1074266112 1252009847 641420592  7711       est    04:19:46 5           P
1074266158 1252028749 641420592  7713       est    04:19:45 7           P
1074004011 1252053945 641420592  513        est    04:19:46 3           P
1074266138 1252065065 641420592  7712       est    04:19:46 6           P
1074003990 1252034268 641420592  512        est    04:19:46 2           P
1074266170 1252049135 641420592  7714       est    04:19:45 8           P
1074332283 1252057764 1102797124 549        est    04:19:46 16          S
1074332237 1252023871 1102797124 531        est    04:19:46 10          S
1074332269 1252060064 1102797124 543        est    04:19:46 14          S
1074332247 1252030448 1102797124 537        est    04:19:46 12          S
1074332254 1252061912 2073848961 537        est    04:19:47 11          P
1074332258 1252020223 2073848961 543        est    04:19:47 13          P
1074332275 1252030759 2073848961 549        est    04:19:47 15          P
```

The following is sample output of the **show depi session** command for a specific established DEPI data session identified by the session-id in Cisco IOS Release 12.2(50)SQ:

```
Router# show depi session 1074528558 verbose

Session id 1074528558 is up, tunnel id 3574340018
  Remote session id is 1252003902, remote tunnel id 3815831337
  Remotely initiated session
  Session Type: Secondary
Qam Channel Parameters
  Tsid is 953
  Group Tsid is 76
  Frequency is 435000000
  Modulation is 256qam
  Annex is B
  Interleaver Depth I=32 J=4
  Power is 480
  Qam channel status is 0
  Unique ID is 58
Call serial number is 2504300043
Remote tunnel name is romeo
  Internet address is 1.30.54.1
Local tunnel name is RFGW-10-1
  Internet address is 1.30.54.100
IP protocol 115
  Session is L2TP signaled
  Session state is established, time since change 00:22:48
    0 Packets sent, 0 received
    0 Bytes sent, 0 received
  Last clearing of counters never
  Counters, ignoring last clear:
    0 Packets sent, 0 received
    0 Bytes sent, 0 received
    Receive packets dropped:
      out-of-order:             0
      out-of-order:             0
      total:                    0
    Send packets dropped:
      exceeded session MTU:     0
      exceeded session MTU:     0
      total:                    0
  DF bit on, ToS reflect enabled, ToS value 0, TTL value 255
  UDP checksums are disabled
  Session PMTU enabled, path MTU is 1518 bytes
  No session cookie information available
  FS cached header information:
```

```
    encap size = 28 bytes
    45000014 00004000 FF730CD6 011E3664
    011E3601 4AA0103E 00000000
  Sequencing is on
    Ns 0, Nr 0, 0 out of order packets received
    Packets switched/dropped by secondary path: Tx 0, Rx 0
  Peer Session Details
  Peer Session ID : 1073808091
  Peer Qam ID : Qam3/12.2
  Peer Qam State : ACTIVE
  Peer Qam Type : Secondary
  Peer Qam Statistics
  Total Pkts : 35177
  Total Octets : 6613276
  Total Discards : 0
  Total Errors : 0
  Total In Pkt Rate : 0
  Bad Sequence Num : 0
  Total In DLM Pkts : 0
  Conditional debugging is disabled
```

The following is sample output of the **show depi session** command for all the configured DEPI data sessions:

```
Router# show depi session configured

Session Name                 State  Reason                       Time
Qam5/1.1:0                   ACTIVE -
Qam5/1.2:0                   ACTIVE -
Qam5/1.3:0                   ACTIVE -
Qam5/1.4:0                   ACTIVE -
Qam7/1.1:0                   ACTIVE -
Qam7/1.2:0                   ACTIVE -
Qam7/1.3:0                   ACTIVE -
Qam7/1.4:0                   ACTIVE -
Qam7/10.1:0                  ACTIVE -
Qam7/10.1:1                  ACTIVE -
Qam7/10.2:0                  ACTIVE -
Qam7/10.2:1                  ACTIVE -
Qam7/10.3:0                  ACTIVE -
Qam7/10.3:1                  ACTIVE -
Qam7/10.4:0                  ACTIVE -
Qam7/10.4:1                  ACTIVE -
Qam7/11.1:0                  IDLE                                  0  00:00:00
Qam7/11.2:0                  IDLE                                  0  00:00:00
Qam7/11.3:0                  IDLE                                  0  00:00:00
Qam7/11.4:0                  IDLE                                  0  00:00:00
Qam9/1.1:0                   ACTIVE -
Qam12/4.1:0                  IDLE                                  0  00:00:00
```

The following is a sample output of the **show depi session** command that displays all primary data sessions on the Cisco RFGW-10:

```
Router# show depi session primary

LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1252048235 1074332337 555844637  717,       est    3d09h    16         P
1252049362 1074332330 555844637  711,       est    3d09h    15         P
1252005266 1074332288 555844637  699,       est    3d09h    13         P
1252000641 1074332316 555844637  705,       est    3d09h    14         P
1252014460 1074332279 1486289361 549,       est    3d09h    20         P
1252059306 1074332234 1486289361 531,       est    3d09h    17         P
1252057709 1074332245 1486289361 537,       est    3d09h    18         P
1252006708 1074332262 1486289361 543,       est    3d09h    19         P
```

The following is a sample output of the **show depi session** command that displays all secondary data sessions on the Cisco RFGW-10:

```
Router# show depi session secondary

LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1252018493 1074332252 1688275168 537,       est    3d09h    22         S
1252054974 1074332286 1688275168 549,       est    3d09h    24         S
```

```
1252022230 1074332263 1688275168 543,       est    3d09h    23          S
1252059782 1074332236 1688275168 531,       est    3d09h    21          S
```

The following is a sample output of the **show depi session** command that shows all secondary data sessions on the Cisco RFGW-10:

```
Router# show depi session tsid 549

LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1074332275 1252030759 2073848961 549        est    04:30:38 15          P

LocID      RemID      TunID      Tsid       State  Last Chg Uniq ID    Type
1074332283 1252057764 1102797124 549        est    04:30:37 16          S
```

The table below describes the major fields shown in the **show depi session** command display:

Table 45: show depi Field Descriptions

Field	Description
State	State of the tunnel or the session.
LocID	Identifier of the session.
RemID	Identifier of the remote session.
TunID	Identifier of the tunnel.
Last Chg	Last state change timestamp.
Uniq ID	Unique identifier of the QAM channel.
Session Name	Name of the session.
Reason	Reason for the current state of the session.
Time	Timestamp of the session.
Type	Primary or secondary session.

Related Commands

Command	Description
cable mode	Sets the mode of the QAM channel.
depi-class	Creates a template of Downstream External PHY Interface (DEPI) control plane configuration settings, which different pseudowire classes can inherit, and enters the DEPI class configuration mode.
depi-tunnel	Creates a template of DEPI tunnel configuration settings that can be inherited by different pseudowire classes.

Command	Description
show depi	Displays information about DEPI sessions and tunnels.
show depi tunnel	Displays information about DEPI tunnels.
snmp-server enable traps l2tun	Enables trap notifications when there is change in DEPI tunnel or session state.

show depi tunnel

To display information about Downstream External PHY Interface (DEPI) tunnels, use the **show depi tunnel** command in privileged EXEC mode.

show depi tunnel [*tunnel-id* **verbose**]

Syntax Description

tunnel-id	(Optional) Name of the DEPI tunnel.
verbose	(Optional) Displays detailed DEPI tunnel or session information.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(50)SQ	This command was introduced.

Examples

The following example shows a sample output of the **show depi tunnel** command for all the active control connections:

```
Router# show depi tunnel

LocTunID   RemTunID   Remote Name   State  Remote Address  Sessn L2TP Class
                                                          Count
555844637  4037701912 RFGW-10-1     est    11.30.14.100    4     classM
1486289361 1394811300 RFGW-10-1     est    12.30.14.100    4     class1
1688275168 1361251901 RFGW-10-1     est    24.30.14.100    4     class1
```

The following example shows a sample output of the **show depi tunnel** command for a specific active control connection identified by the DEPI tunnel name:

```
Router# show depi tunnel 1834727012 verbose

Tunnel id 1834727012 is up, remote id is 3849925733, 1 active sessions
  Locally initiated tunnel
  Tunnel state is established, time since change 04:10:38
  Remote tunnel name is RFGW-10
    Internet Address 1.3.4.155, port 0
  Local tunnel name is myankows_ubr10k
    Internet Address 1.3.4.103, port 0
  L2TP class for tunnel is rf6
  Counters, taking last clear into account:
    0 packets sent, 0 received
    0 bytes sent, 0 received
    Last clearing of counters never
  Counters, ignoring last clear:
```

```
  0 packets sent, 0 received
  0 bytes sent, 0 received
Control Ns 255, Nr 254
Local RWS 1024 (default), Remote RWS 8192
Control channel Congestion Control is enabled
  Congestion Window size, Cwnd 256
  Slow Start threshold, Ssthresh 8192
  Mode of operation is Slow Start
Retransmission time 1, max 1 seconds
Unsent queuesize 0, max 0
Resend queuesize 0, max 2
Total resends 0, ZLB ACKs sent 252
Total peer authentication failures 0
Current no session pak queue check 0 of 5
Retransmit time distribution: 0 0 0 0 0 0 0 0 0 0
Control message authentication is disabled
```

The table below describes the major fields shown in the **show depi tunnel** command display:

Table 46: show depi Field Descriptions

Field	Description
LocTunID	Identifier of the local tunnel.
RemTunID	Identifier of the remote tunnel.
Remote Name	Name of the remote tunnel.
State	State of the tunnel.
Remote Address	IP address of the remote tunnel.
Session Count	Number of sessions.
L2TP Class	L2TP class name for the tunnel.

Related Commands

Command	Description
depi-tunnel	Creates a template of DEPI tunnel configuration settings that can be inherited by different pseudowire classes.
rf-channel depi-tunnel	Binds the depi-tunnel to an rf-channel on a shared port adapter (SPA).
controller modular-cable	Enters controller configuration mode to configure the SPA controller.
show depi	Displays information about DEPI sessions and tunnels.
show depi session	Displays information about DEPI sessions.

Command	Description
snmp-server enable traps l2tun	Enables trap notifications when there is change in DEPI tunnel or session state.

show interfaces qam

To display the QAM details, use the **show interfaces qam** command in privileged EXEC mode.

show interfaces {**qam**| **qam-red**} *slot/port.*[*channel*] **[cable]** [**psi**| **pat**| **pmt**| **carousel**]

Syntax Description

slot	Specifies the slot on the QAM interface. Line card redundancy configured interfaces appear as QAM-red. Valid range is from 3 to 12.
port	Specifies the port on the interface. Valid range is from 1 to 12.
channel	(Optional) Specifies the channel on the port. Valid range is from 1 to 4.
cable	(Optional) Displays cable specific information of the QAM interface.
psi	(Optional) Displays the Packet Stream Identifier (PSI) information of the QAM interface such as Program Allocation Table (PAT) information, PMT information of sessions such as elementary streams and PIDs associated.
pat	(Optional) Displays PAT table information of the QAM interface.
pmt	(Optional) Displays PMT information of the QAM interface.
carousel	(Optional) Displays the IDs and the packets of the different packet stream.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

This command displays packet and byte counts and protocol information of the QAM interface. PSI, PMT, and PAT information details are not displayed.

The Program Allocation Table (PAT) is the master table that contains the list of PIDs for all programs on the output stream of the QAM.

Note The **show interfaces qam** *slot/port.channel* **psi** and **show interfaces qam** *slot/port.channel* **pmt** commands could potentially create a large amount of output and are recommended to be used sparingly.

Examples

The following example displays the protocol and byte information on QAM slot 3:

```
Router# show interfaces qam 3/1

Qam3/1 is up, line protocol is up
  Hardware is RFGW-48DS Line Card - QAM Port
  MTU 1464 bytes, BW 107880 Kbit, DLY 0 usec,
     reliability 0/255, txload 1/255, rxload 1/255
  Encapsulation QAM, loopback not set
  Keepalive set (10 sec)
  Last input never, output never, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes, 0 no buffer
     Received 0 broadcasts (0 IP multicasts)
     0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
  8439807 packets output, 67518456 bytes 0 underruns
     0 output errors, 0 collisions, 0 interface resets
     0 output buffer failures, 0 output buffers swapped out
```

The table below describes the significant fields shown in the display.

Table 47: show interfaces qam Field Descriptions

Field	Description
QAM slot/port	Indicates whether the interface hardware is currently active or taken down by the administrator.
line protocol	Indicates whether the software processes that handle the line protocol believe the interface is usable or if it has been taken down by the administrator.
Hardware	Hardware type and address.
MTU	Maximum transmission unit (MTU) of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.

Field	Description
reliability	Reliability of the interface as a fraction of 255, calculated as an exponential average over 5 minutes. (For example, 255/255 is 100-percent reliability)
txload	Load on the interface as a fraction of 255, calculated as an exponential average over 5 minutes. (For example, 255/255 is complete saturation)
rxload	Load on the interface as a fraction of 255, calculated as an exponential average over 5 minutes. (For example, 255/255 is complete saturation)
Encapsulation	Encapsulation method assigned to this interface.
Keepalive set	Indicates the time for the keep alive set.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface.
output	Number of hours, minutes, and seconds since the last packet was successfully sent by an interface.
Last clearing of "show interfaces" counters	Time at which the counters that measure cumulative statistics (such as number of bytes sent and received) were last reset to zero.
Input queue	Number of packets in the input queue. The format of this number is A/B, where A indicates the number of packets in the queue, and B indicates the maximum number of packets allowed in the queue.
Total output drops	Indicates the number of packets dropped because of a full queue.

Field	Description
5 minute input rate 5 minute output rate	Average number of bits and packets sent and received per second in the last five minutes. The five-minute interval is the default time period for statistics collection and can be changed for each individual cable interface using the **load-interval** command in the interface configuration mode. **Note** These statistics are calculated using a decayed averaging method, where only the average is stored over the interval period, not the individual samples. Every time a sample average is taken, a percentage of the sample and a percentage of the average are added together to create the new average. If traffic stops for a time period, these statistics do not immediately go to zero but drop with a decay rate of about 70 percent per time period. For example, if the interface is passing 1,000 packets per second (pps) before traffic stops, the **show interface cable** command shows the rate being 300 pps at the end of the first time interval. The rate then drops to 90 pps at the end of the second time interval, and so forth.
packets input	Total number of error-free packets received by the system.
bytes input	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system.
Received broadcast	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the medium's minimum packet size.

Field	Description
giants	Number of packets that are discarded because they are bigger than the standard Ethernet Maximum Transmission Unit (MTU) size. For Ethernet packets, RFC 1757 defines giants as "the total number of packets received that were longer than 1518 octets (excluding framing bits, but including FCS octets) and were otherwise well formed." **Note** In addition, to account for the different Ethernet and other packet encapsulations on the network, packets are considered giants when they exceed the configured MTU size plus 114 bytes.
input errors	Total number of errors received on the interface. This count includes runts and giants, as well as other errors, such as no buffers, and CRC, frame, overrun, and ignored counts. This count can also include DOCSIS protocol errors such as an invalid SID in the DOCSIS frame, a bad extended header length, corrupted concatenated packets, and invalid bandwidth requests.
CRC	Indicates the number of times the cyclic redundancy check (CRC) generated by the originating LAN station or far-end device does not match the checksum calculated from the data received.
frame	Number of packets received incorrectly having a CRC error and a non-integer number of octets.
overrun	Number of times the receiver hardware was unable to forward received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers.
packets output	Total number of messages sent by the system.
bytes	Total number of bytes, including data and MAC encapsulation, sent by the system.
underruns	Number of times the sender has been relaying faster than the receiving device can handle.
output errors	Sum of all errors that prevented the final transmission of packets out of the interface.

Field	Description
collisions	Not applicable.
interface resets	Number of times an interface has been completely reset.
output buffer failures	Number of times the output buffer has failed.
output buffers swapped out	Number of times the output buffer has been swapped out.

Related Commands

Command	Description
interface qam	Enters QAM interface configuration mode.

show redundancy

To display the current redundancy status, use the **show redundancy** command in user EXEC or privileged EXEC mode.

show redundancy [**clients**| **counters**| **history**| **states**]

Syntax Description

clients	(Optional) Displays the Redundancy Facility client list.
counters	(Optional) Displays RF operational counters.
history	(Optional) Summarizes RF history.
states	(Optional) Displays RF states for active and standby cards.

Command Default

None

Command Modes

User EXEC (>)

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was integrated into Cisco IOS Release 12.2(44)SQ. Support for the Cisco RF Gateway 10 was added.

Usage Guidelines

The **show redundancy** command shows whether the Supervisor A slot or Supervisor B slot contains the active (primary) Supervisor card, the status of the standby (secondary) Supervisor card, and the standby Supervisor card boot variable values and configuration register.

The redundancy mode set on the Supervisor can also be seen.

Note The **show redundancy** command always shows the correct location of the active Supervisor card. The other Supervisor slot will always be marked as **secondary**, even if a standby Supervisor card is not installed.

Examples

The following example shows sample output of the **show redundancy** command when Supervisor redundancy RPR mode is configured on the Cisco RF Gateway 10:

```
Router# show redundancy

Load for five secs: 8%/0%; one minute: 9%; five minutes: 10%
Time source is hardware calendar, *15:26:51.687 PDT Wed Sep 16 2009

Redundant System Information :
------------------------------
       Available system uptime = 2 days, 4 hours, 5 minutes
Switchovers system experienced = 0
              Standby failures = 1
        Last switchover reason = none
                  Hardware Mode = Simplex
    Configured Redundancy Mode = RPR
     Operating Redundancy Mode = RPR
              Maintenance Mode = Disabled
                Communications = Down      Reason: Simplex mode

Current Processor Information :
-------------------------------
               Active Location = slot 1
        Current Software state = ACTIVE
       Uptime in current state = 2 days, 4 hours, 5 minutes
                 Image Version = Cisco IOS Software, Catalyst 4500 L3 Switch Sof
tware (rfgw-ENTSERVICESK9-M), Version 12.2(122SQ_20090905)SQ EARLY DEPLOYMENT DA
TECODE BUILD, synced to 122_50_SG_THROTTLE_BASE_LABEL
Copyright (c) 1986-2009 by Cisco Systems, Inc.
Compiled Sat 05-Sep-09 04:24 by jdkerr
                        BOOT = bootflash:rfgw-entservicesk9-mz.122SQ_20090905,
12;
        Configuration register = 0x2

Peer (slot: 2) information is not available because it is in 'DISABLED' state
```

The following example shows Supervisor redundancy SSO mode on the Cisco RFGW-10:

```
Router# show redundancy

Load for five secs: 8%/0%; one minute: 10%; five minutes: 10%
Time source is hardware calendar, *15:18:51.999 PDT Wed Sep 16 2009

Redundant System Information :
------------------------------
       Available system uptime = 2 days, 3 hours, 57 minutes
Switchovers system experienced = 0
              Standby failures = 0
        Last switchover reason = none
                  Hardware Mode = Duplex
    Configured Redundancy Mode = Stateful Switchover
     Operating Redundancy Mode = Stateful Switchover
              Maintenance Mode = Disabled
                Communications = Up

Current Processor Information :
-------------------------------
               Active Location = slot 1
        Current Software state = ACTIVE
       Uptime in current state = 2 days, 3 hours, 57 minutes
                 Image Version = Cisco IOS Software, Catalyst 4500 L3 Switch Sof
tware (rfgw-ENTSERVICESK9-M), Version 12.2(122SQ_20090905)SQ EARLY DEPLOYMENT DA
TECODE BUILD, synced to 122_50_SG_THROTTLE_BASE_LABEL
Copyright (c) 1986-2009 by Cisco Systems, Inc.
Compiled Sat 05-Sep-09 04:24 by jdkerr
                        BOOT = bootflash:rfgw-entservicesk9-mz.122SQ_20090905,
12;
        Configuration register = 0x2

Peer Processor Information :
```

```
----------------------------
              Standby Location = slot 2
         Current Software state = STANDBY HOT
       Uptime in current state = 2 days, 3 hours, 56 minutes
                 Image Version = Cisco IOS Software, Catalyst 4500 L3 Switch Sof
tware (rfgw-ENTSERVICESK9-M), Version 12.2(122SQ_20090905)SQ EARLY DEPLOYMENT DA
TECODE BUILD, synced to 122_50_SG_THROTTLE_BASE_LABEL
Copyright (c) 1986-2009 by Cisco Systems, Inc.
Compiled Sat 05-Sep-09 04:2
                        BOOT = bootflash:rfgw-entservicesk9-mz.122SQ_20090905,
12;
        Configuration register = 0x2Router
```

Clients Display

The following example shows a sample output of the **show redundancy clients** command:

```
Router# show redundancy clients
 clientID = 0       clientSeq = 0        RF_INTERNAL_MSG
 clientID = 25      clientSeq = 130      CHKPT RF
 clientID = 5       clientSeq = 170      RFS client
 clientID = 50      clientSeq = 530      Slot RF
 clientID = 65000   clientSeq = 65000    RF_LAST_CLIENT
```

The table below describes the significant fields shown in the display.

Table 48: show redundancy clients Field Descriptions

Field	Description
clientID	Client ID number.
clientSeq	Client notification sequence number.

Counters Display

The following example shows a sample output of the **show redundancy counters** command:

```
Router# show redundancy counters

Redundancy Facility OMs
               comm link up = 1
        comm link down down = 0

          invalid client tx = 0
          null tx by client = 0
                tx failures = 0
      tx msg length invalid = 0

      client not rxing msgs = 0
 rx peer msg routing errors = 0
           null peer msg rx = 0
        errored peer msg rx = 0

                buffers tx = 1009
     tx buffers unavailable = 0
                buffers rx = 1006
      buffer release errors = 0

 duplicate client registers = 0
  failed to register client = 0
       Invalid client syncs = 0
```

History Display

The following example shows a sample output of the **show redundancy history** command:

```
Router# show redundancy history

00:00:00 client added: RF_INTERNAL_MSG(0) seq=0
00:00:00 client added: RF_LAST_CLIENT(65000) seq=65000
00:00:00 client added: CHKPT RF(25) seq=130
00:00:01 client added: Slot RF(50) seq=530
00:00:15 client added: RFS client(5) seq=170
00:00:16 *my state = INITIALIZATION(2) *peer state = DISABLED(1)
00:00:16 RF_PROG_INITIALIZATION(100) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) CHKPT RF(25) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) RFS client(5) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) Slot RF(50) op=0 rc=11
00:00:16 RF_PROG_INITIALIZATION(100) RF_LAST_CLIENT(65000) op=0 rc=11
00:00:16 *my state = NEGOTIATION(3) peer state = DISABLED(1)
00:00:16 RF_EVENT_GO_ACTIVE(512) op=0 rc=0
00:00:16 *my state = ACTIVE-FAST(9) peer state = DISABLED(1)
00:00:16 RF_STATUS_MAINTENANCE_ENABLE(403) CHKPT RF(25) op=0 rc=0
00:00:16 RF_STATUS_MAINTENANCE_ENABLE(403) RFS client(5) op=0 rc=0
00:00:16 RF_STATUS_MAINTENANCE_ENABLE(403) Slot RF(50) op=0 rc=0
00:00:16 RF_PROG_ACTIVE_FAST(200) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) CHKPT RF(25) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) RFS client(5) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) Slot RF(50) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_FAST(200) RF_LAST_CLIENT(65000) op=0 rc=11
00:00:16 *my state = ACTIVE-DRAIN(10) peer state = DISABLED(1)
00:00:16 RF_PROG_ACTIVE_DRAIN(201) RF_INTERNAL_MSG(0) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(201) CHKPT RF(25) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(201) RFS client(5) op=0 rc=11
00:00:16 RF_PROG_ACTIVE_DRAIN(201) Slot RF(50) op=0 rc=11
```

States Display

The following example shows a sample output of the **show redundancy states** command:

```
Router# show redundancy states

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

  Redundancy Mode = Hot Standby Redundancy
Maintenance Mode = Disabled
    Manual Swact = Enabled
   Communications = Up

            client count = 5
client_notification_TMR = 30000 milliseconds
          RF debug mask = 0x0
```

Related Commands

Command	Description
mode	Configures the redundancy mode of operation.
redundancy	Enters redundancy configuration mode.
redundancy force-failover main-cpu	Forces a manual switchover when Supervisor is in RPR mode between the active and standby Supervisor cards.

Command	Description
redundancy force-switchover	Forces the standby Supervisor cards to assume the role of the active Supervisor card.

show redundancy linecard

To display the information pertaining to a redundancy line card or line card group, use the **show redundancy linecard** command privileged EXEC mode.

show redundancy linecard {**all**| **slot** *slot*| **group all**| *groupID*}

Syntax Description

all	Displays information of all the redundancy line cards.
slot	Displays information about line cards in the specified slot.
slot	Specifies the slot number of the line card. Valid range is from 3 to 12.
group	Displays information about the redundancy line card group: • **all—**Displays information on all groups on the line card • *groupID***—**Displays information on a specified group.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following example shows the output for the redundancy line card in slot 3:

```
Router# show redundancy linecard slot 3

 LC Redundancy Is Configured:
 LC Group Number: 0
 LC Slot: 3 (idx=3)
 LC Card Type: 0xFFFFFFFF , -1
 LC Name: 3
 LC Mode: Primary
 LC Role: None
 LC My State: Init
```

```
 LC Peer State: Init
```

The following example shows the output for all redundancy line cards:

```
Router# show redundancy linecard all

              LC     My         Peer       Peer     Peer
Slot Subslot  Group  State      State      Slot     Subslot  Role     Mode
-------------------------------------------------------------------------------
 3   -        0      Init       Init       11       -        None     Primary
 11  -        0      -          -          Multiple None     None     Secondary
 7   -        1      Init       Active     12       -        None     Primary
 12  -        1      Active     Init       7        -        Active   Secondary
```

The table below describes the significant fields shown in the display.

Table 49: show redundancy linecard all Field Descriptions

Field	Description
Slot	The slot of the line card.
LC Group	If a line card group exists in the line card.
My State	The state of the line card.
Peer State	If the peer state is active.
Peer Slot	The peer line card slot.
Role	Whether the line card is active.
Mode	Whether the line card is in primary or secondary mode.

The following example shows the output for redundancy line card group 2:

```
Router# show redundancy linecard group 2

Group Identifier: 2
Group Description: "line card group 2 created."
NON-revertive
Reserved Cardtype: 0x6011  24593
Group Redundancy Type: INTERNAL SWITCH
Group Redundancy Class: 1:1
Group Redundancy Configuration Type: LINECARD GROUP
Primary: 7
Secondary: 12
```

The table below describes the significant fields shown in the display.

Table 50: show redundancy linecard group Field Descriptions

Field	Description
Group Identifier	Indicates the name of the group.
Group Description	Displays the description given to the line card group.

Field	Description
Reserved Cardrtype	Displays the reserved card.
Group Redundancy Type	Indicates the type of redundancy group.
Group Redundancy class	Indicates the redundancy class set for the group.
Group Redundancy Configuration Type	Indicates the linecard group.
Primary	Indicates the primary line card.
Secondary	Indicates the secondary line card.

Related Commands

Command	Description
class	Configures redundancy class on the line card.
description	Adds a description to the line card group.
member slot	Adds a slot to the line card redundancy group.
redundancy	Enters redundancy configuration mode.
show redundancy linecard	Displays information about a line card or a line card group.

show redundancy tcc

To display the information pertaining to a redundancy Timing, Communication and Control (TCC) card, use the **show redundancy tcc** command in privileged EXEC mode.

show redundancy tcc {**all**| **slot** *slot*}

Syntax Description

all	Displays information about all TCC cards.
slot	Displays information about TCC cards in the specified slot.
slot	Specifies the slot number of the TCC card. Valid slots are 13 and 14.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Examples

The following is the sample output for all redundancy TCC cards:

```
Router# show redundancy tcc all

     My          Peer
Slot State       Slot   Role
---------------------------------
13   -           14     -
14   Ready       None   Active
```

The table below describes the significant fields shown in the display.

Table 51: show redundancy tcc Field Descriptions

Field	Descriptions
Slot	Indicates the slot of the TCC card.
My State	Indicates the state of the TCC card.
Peer Slot	Indicates the peer TCC card slot.

Field	Descriptions
Role	Indicates whether the TCC card is active.

Related Commands

Command	Description
redundancy	Enters redundancy configuration mode.

show running-config interface qam

To display the running configuration of the QAM interfaces, use the **show running-config interface qam** command in privileged EXEC mode.

show running-config interface {**qam| qam-red**} *slot/port.channel*

Syntax Description

slot	Specifies the line card in the QAM interface. Line card redundancy configured interfaces appear as QAM-red. Valid range is from 3 to 12.
port	Specifies the QAM RF port number in the line card. Valid range is from 1 to 12.
channel	Specifies the QAM channel in the port of the line card. Valid range is from 1 to 4.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

If line card redundancy (LCRED) is configured on the QAM interface, then the interface appears as **qam-red**.

Examples

The following example shows a running configuration of QAM interface 3:

```
Router# show running-config interface qam-red 3/1.1

Load for five secs: 12%/0%; one minute: 14%; five minutes: 15%
Time source is hardware calendar, *00:39:45.193 UTC Fri Nov 28 2008

Building configuration...

Current configuration : 263 bytes
!
interface Qam-red3/1.1
 cable mode depi local
 no cable downstream rf-shutdown
 cable downstream rf-power 50.0
 cable downstream frequency 279000000
 cable downstream modulation 256
 cable depi dest-ip 192.168.201.100 session-id 311
 snmp trap link-status
```

```
end
```

The table below describes the significant fields shown in the display.

Table 52: show running-config interface qam Field Descriptions

Field	Description
Current configuration	Displays all the downstream parameters configured on the QAM interface.

Related Commands

Command	Description
show controllers qam	Displays downstream information of a QAM interface.

ssm

To configure a Source Specific Multicast (SSM) definition, use the **ssm** command in cable video label configuration mode. To remove the SSM label, use the **no** form of this command.

ssm *label* {**source** *source-ip*} {**group** *group-ip*} [**cbr**| **bitrate** *bps*| **jitter** *ms*| **GigabitEthernet**| **TenGigabitEthernet** *interface*]

no ssm *label* {**source** *source-ip*} {**group** *group-ip*} [**cbr**| **bitrate** *bps*| **jitter** *ms*| **GigabitEthernet**| **TenGigabitEthernet** *interface*]

Syntax Description

label	Specifies the name of the session.
source	Indicates the source.
source-ip	Specifies the IP address of the source.
group	Indicates the multicast group.
group-ip	Specifies the destination IP address.
cbr	Specifies that the session is supposed to be constant bitrate.
bitrate	(Optional) Sets the bitrate allocated for the session.
bps	Specifies the bitrate value. Valid range is 1 to 52000000 bps.
GigabitEthernet	(Optional) Indicates the Gigabit Ethernet interface. Valid slot range is 1 to 12.
TenGigabitEthernet	(Optional) Indicates the 10-Gigabit Ethernet interface. Valid slot range is 1 to 12.
interface	Specifies the interface slot and port.
jitter	(Optional) Sets the jitter for group sessions.
ms	Specifies the jitter value. Valid range is from 10 to 200 ms.

Command Default

None

Command Modes

Cable video label configuration (cfg-video-lbl)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.
Cisco IOS-XE Release 3.3.1SQ	This command is modified. The **bitrate** keyword is made optional.

Usage Guidelines

Cisco RF Gateway 10 supports Source Specific Multicast (SSM) video sessions. An SSM video label is identified by the source and group IP address pair. You can specify upto three source addresses for each SSM video label. This can be achieved by reusing the same video label for all the source addresses. The address pairs under the same label must have different source IP addresses. The Cisco RFGW-10 cycles the address pairs to look for an active source.

These address pairs are redundant sources for the label. Address pairs under the same label must have identical settings for cbr, bitrate, and jitter. If additional address pairs are entered without these parameters, the corresponding values for the first address pair are used. These parameters can be modified by re-entering the first address pair with new parameter settings. The change is propagated to all the address pairs under the same label.

An SSM video session can be mapped to multiple QAM channels. All cloned sessions of the same video label share the same attributes.

Note The label definition cannot be modified once the label is used in a QAM channel. Address pairs cannot be added or deleted, or any optional parameters cannot be modified. Effective with Cisco IOS-XE Release 3.3.0SQ and later releases, the label definitions can be modified. The optional parameters like bitrate and jitter cannot be modified. You can also add or delete backup sources. However, an active source cannot be deleted.

Note To avoid oversubscription, ensure that the actual bitrate of the video session does not exceed the allocated bitrate.

Examples

The following example shows the SSM configuration on the Cisco RF Gateway 10:

```
Router# configure terminal
Router(config)# cable video labels
Router(cfg-video-lbl)# ssm ssm1 source 10.1.1.1 group 233.1.1.1 bitrate 3750000
Router(cfg-video-lbl)# exit
```

The following example shows how to configure a backup source:

```
Router# configure terminal
Router(config)# cable video labels
Router(cfg-video-lbl)# ssm ssm1 source 10.2.2.2 group 233.1.1.1 bitrate 3750000
Router(cfg-video-lbl)# ssm ssm1 source 10.3.3.3 group 233.1.1.1 bitrate 3750000
Router(cfg-video-lbl)# exit
```

Effective with Cisco IOS-XE Release 3.3.1SQ, the **bitrate** keyword is optional. This example shows the SSM configuration without the **bitrate** keyword.

```
Router(cfg-video-lbl)# ssm ssm1 source 10.1.1.1 group 233.1.1.1
```

Related Commands

Command	Description
asm	Configures the ASM video session definition.
cable video labels	Enters the cable video label configuration.
cable video ip multicast	Configures video multicast session on a QAM subinterface.
show cable video label	Displays the labels configured on a chassis.

video route

To create policy routes to redirect traffic to the line cards, use the **video route** command in QAM domain configuration mode. To remove the policy route, use the **no** form of this command.

video route {**local | remote**} {**udp** *startport endport*| **table 24-qam-map**} **qam** *slot/* {**1-6 | 7-12**}

no video route {**local | remote**} {**udp** *startport endport*| **table 24-qam-map**} **qam** *slot/* {**1-6 | 7-12**}

Syntax Description

local	Creates a local video session.
remote	Creates a remote video session.
udp	Specifies UDP mode.
startport	Specifies the start port of the UDP range.
endport	Specifies the end port of the UDP range.
table	Specifies table-based mode. This is only applicable to local sessions.
24-qam-map	Specifies the pre-defined port map. This is only applicable to local sessions.
qam	Specifies the QAM interface.
slot	Specifies the slot on the line card. Valid ranges are from 3 to 12.
1-6	Specifies the first QAM block of channels.
7-12	Specifies the second QAM block of channels.

Command Default

None

Command Modes

QAM domain configuration (qam-domain)

Command History

Release	Modification
12.2(44)SQ	This command was introduced on the Cisco RF Gateway 10.

Usage Guidelines

Video routes are used to direct traffic to the underlying QAM blocks in a QAM domain. A video route specifies a continous range of UDP ports mapped to a QAM block. For a local route, the UDP ports are taken from the local IP address. For a remote route, the UDP ports are taken from the remote IP address. A pre-defined UDP map also is present for local video routes, where the UDP ports are defined by a map.

Policy routes are used to redirect traffic to line cards. QAM blocks are added to QAM domains using video policy routes. Each video policy route specifies a range of QAM channels. QAM channels are bound to a QAM block in the video route.

In a local configuration, you can configure the QAM channels using the CLI, GUI or SNMP.

In a remote configuration, the video control plane configures the QAM channels using GQI.

The local session offers two methods of mapping UDP ports to QAM ports:

- User- specified UDP ranges: Start and end UDP ports are specified in the CLI. The video route maps a range of UDP destination ports from the local IP address to the QAM block.
- Table-based: referred to as **24-qam-map**. This is a pre-defined range with a default UDP port range of 49152 to 55295. The video route uses the UDP port map defined in the table for the QAM block.

Note Only one QAM map is used per QAM domain.

In the remote session, only user-specified UDP range setup is allowed. Data network Control Station (DNCS) and Universal Session and Resource Manager (USRM) controls the session setup.

Note No two video routes within a QAM domain can overlap in IP address and UDP range.

Note Removing a video route results in removal of all the sessions configured with that video route.

Examples

The following example shows a video route for a local session on QAM domain 5:

```
Router# configure terminal
Router(config)# cable qam-domain 5
Router(qam-domain)# ip 1.1.1.1 local
Router(qam-domain)# video route local udp 50000 51000 qam 7/1-6
Router(qam-domain)# video route local udp 51001 52000 qam 7/7-12
Router(qam-domain)# exit
Router(config)# exit
```

The following example shows a video route for a remote session on QAM domain 5:

```
Router# configure terminal
Router(config)# cable qam-domain 5
Router(qam-domain)# ip 1.1.1.1 remote
Router(qam-domain)# video route remote udp 20000 21000 qam 7/1-6
Router(qam-domain)# video route remote udp 21001 22000 qam 7/7-12
Router(qam-domain)# exit
Router(config)# exit
```

The following example shows a table-based policy route on QAM domain 5:

```
Router# configure terminal
Router(config)# cable qam-domain 5
Router(qam-domain)# ip 1.1.1.1 local
Router(qam-domain)# video route local table 24-qam-map qam 3/1-6
Router(qam-domain)# exit
```

The following example shows non-overlapping UDP ranges and QAM channel lists:

```
Router(qam-domain)# video route local udp 50001 51000 qam 3/1-6
Router(qam-domain)# video route local udp 51001 52000 qam 3/7-12
Router(qam-domain)# video route local udp 52001 53000 qam 5/1-6
```

Related Commands

Command	Description
cable qam-domain	Enters QAM domain configuration mode.
ip	Configures the IP address for video and remote sessions.