



Cable Commands: i through p

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init-tech-list

To set the DCC initialization techniques that the CMTS can use to load balancing cable modems, use the **init-tech-list** command in the config-lb-group configuration mode. To reset the DCC initialization techniques, use the **no** form of this command.

init-tech-list *group*list [**ucc**]

no **init-tech-list**

Syntax Description

<i>group</i> list	DCC initialization technique list.
ucc	(Optional) Determines whether Upstream Channel Change (UCC) can be used for modems during dynamic upstream load balancing.

Command Default

No default behavior or values.

Command Modes

DOCSIS load balancing group mode (config-lb-group)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to set the DCC initialization techniques on a DOCSIS load balancing group on the CMTS, using the **init-tech-list** command.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable load-balance docsis-group 1
Router(config-lb-group)# init-tech-list 1 ucc
Router(config-lb-group)#
```

Related Commands

Command	Description
cable load-balance docsis-group	Configures a DOCSIS load balancing group on the CMTS.

Command	Description
show cable load-balance docsis-group	Displays real-time configuration, statistical, and operational information for load balancing operations on the router.

init-tech-ovr

To set DCC initialization techniques that override the physical upstream channel pair, use the **init-tech-ovr** command in the config-lb-group configuration mode.

Cisco uBR10012 Router

init-tech-ovr cableslot/subslot/port upstream cable slot/subslot/port upstreaminit-tech-listinit-tech-list0 -4 [ucc]

Cisco uBR7225VXR and Cisco uBR7246VXR Routers

init-tech-ovr cableslot/subslot/port upstream cable slot/subslot/port upstreaminit-tech-listinit-tech-list0 -4 [ucc]

Syntax Description

cable slot/subslot/port upstream	Specifies the CMTS interface slot, subslot, port number, and upstream parameters that are to be overridden. <ul style="list-style-type: none"> • <i>slot</i>—Slot where the line card resides. The permitted range is from 5 to 8. • <i>subslot</i>—Subslot where the line card resides. The available slots are 0 or 1. • <i>port</i>—The downstream controller number on the line card. The permitted <i>port</i> range is from 0 to 4.
cable slot/subslot/port upstream	Specifies the CMTS interface slot, subslot, port number, and upstream channel ID parameters that will override the CMTS interface and upstream channel.
cable slot/port upstream	Specifies the CMTS interface slot, port number, and upstream parameters that are to be overridden. <ul style="list-style-type: none"> • <i>slot</i>—Slot where the line card resides. <ul style="list-style-type: none"> ◦ Cisco uBR7225VXR router—The valid range is from 1 to 2. ◦ Cisco uBR7246VXR router—The valid range is from 3 to 6. • <i>port</i>—Downstream controller number on the line card. The permitted <i>port</i> values are 0 or 1.

cable <i>slot/port upstream</i>	Specifies the CMTS interface slot, port number, and upstream parameters that will override the CMTS interface and upstream channel.
init-tech-list <i>0-4</i>	Specifies the DCC initialization technique list ranging from 0 to 4 for the upstream channel pair.
ucc	Determines whether Upstream Channel Change (UCC) can be used for modems during dynamic upstream load balancing.

Command Default None

Command Modes DOCSIS load balancing group mode (config-lb-group)

Command History	Release	Modification
	12.2(33)SCC	This command was introduced.
	IOS-XE 3.15.OS	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines The **init-tech-list** command accepts an upstream that is not added into the load balancing group. The upstream channel pair is invalid until the upstream is added. When the load balancing group is removed, all upstream channel pairs are also removed.

Examples The following example shows how to set DCC initialization techniques that override the physical upstream channel pair to a DOCSIS load balancing group on the CMTS, using the **init-tech-ovr** command.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable load-balance docsis-group
1
Router(config-lb-group)# init-tech-ovr cable
1/0 1 cable
1/1 2 1
```

Related Commands	Command	Description
	cable load-balance docsis-group	Configures a DOCSIS load balancing group on the CMTS.

Command	Description
show cable load-balance docsis-group	Displays real-time configuration, statistical, and operational information for load balancing operations on the router.

interface cable

To configure a cable interface, use the **interface cable** command in global configuration mode.

```
interface cable {slot/port | slot/subslot/port}
```

Cisco IOS Release 12.2(33)SCE and later

```
interface cable {slot/cable-interface-index | slot/subslot/cable-interface-index}
```

Syntax Description

<i>slot</i>	<p>Slot where the line card resides.</p> <ul style="list-style-type: none"> • Cisco uBR7225VXR router—The valid value is 1 or 2. • Cisco uBR7246VXR router—The valid range is from 3 to 6. • Cisco uBR10012 router—The valid range is from 5 to 8. • Cisco cBR Series Converged Broadband Routers— The valid range is from 0 to 3 and from 6 to 9.
<i>subslot</i>	<p>(Cisco uBR10012 only) Secondary slot number of the cable interface line card. The valid subslots are 0 or 1.</p> <p>For Cisco cBR Series Converged Broadband Routers, the valid value is 0.</p>
<i>port</i>	<p>Downstream port number.</p> <ul style="list-style-type: none"> • Cisco uBR7225VXR router and Cisco uBR7246VXR router—The valid value is 0 or 1. • Cisco uBR10012 router—The valid range is from 0 to 4 (depending on the cable interface).

<i>cable-interface-index</i>	<p>Downstream port of the Cisco uBR10-MC5X20 and Cisco uBR-MC28 line cards, or MAC domain index of the Cisco uBR-MC20X20V and Cisco uBR-MC3GX60V line cards.</p> <p>Cisco uBR7225VXR and Cisco uBR7246VXR routers—The valid port value is 0 or 1.</p> <p>Cisco uBR10012 router—The valid range for the Cisco uBR-MC20X20V and Cisco uBR-MC5X20 line cards is from 0 to 4. The valid range for the Cisco uBR-MC3GX60V line card is from 0 to 14.</p> <p>Cisco cBR Series Converged Broadband Routers—The valid range is from 0 to 15.</p>
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Command Default None

Command Modes Global configuration (config)

Command History

Release	Modification
12.3(21)BC	This command was introduced.
12.3(23)BC	This command was integrated into Cisco IOS Release 12.3(23)BC.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA.
12.2(33)SCB	This command was integrated into Cisco IOS Release 12.2(33)SCB.
12.2(33)SCD	This command was modified to support Cisco uBR7225VXR and Cisco uBR7246VXR routers.
12.2(33)SCE	This command was modified. The port parameter was changed to <i>cable-interface-index</i> to indicate the MAC domain index for the Cisco uBR-MC20X20V and Cisco uBR-MC3GX60V cable interface line cards.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to configure a cable interface in slot 5, and port 0 on a Cisco uBR7246VXR or Cisco uBR7225VXR router:

```
Router# configure terminal
Router(config)# interface cable 5/0
```

The following example shows how to configure a cable interface in slot 8, subslot 0, and port 0 on a Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# interface cable 8/0/0
```

The following example shows how to configure a Cisco uBR-MC3GX60V cable interface line card in slot 5, subslot 0, and cable interface index 13 (MAC domain index) on a Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# interface cable 5/0/13
```

The following example shows how to configure a Cisco uBR-MC3GX60V cable interface line card in slot 1, subslot 0, and cable interface index 13 (MAC domain index) on a Cisco cBR Series Converged Broadband Routers:

```
Router# configure terminal
Router(config)# interface cable 1/0/13
```

Related Commands

Command	Description
interface integrated-cable	Specifies a integrated cable interface.
interface modular-cable	Specifies a modular cable interface.
interface wideband-cable	Specifies a wideband cable interface.

interface cable-modem

To enter interface configuration mode for the cable interface on a router, use the **interface cable-modem** command in global configuration mode.

Cisco uBR904, uBR905, uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter

interface cable-modem *number*

Syntax Description

<i>number</i>	Identifies the cable interface (always 0).
---------------	--

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
11.3(4)NA	This command was introduced for the Cisco uBR904 cable access router.
12.0(4)XI1	Support was added for the Cisco uBR924 cable access router.
12.1(3)XL	Support was added for the Cisco uBR905 cable access router.
12.1(5)XU1	Support was added for the Cisco CVA122 Cable Voice Adapter.
12.2(2)XA	Support was added for the Cisco uBR925 cable access router.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

When this command is used, the router switches from global configuration mode to interface configuration mode.

Examples

The following example shows how to enter interface configuration mode for the router's cable interface and then to enter the available interface configuration commands:

```
Router(
config)#
interface cable-modem
0
Router(config-if)# cable-modem ?
  compliant      Enter compliant modes for interface
  downstream     Downstream channel characteristics
```

```

fast-search Enable/disable the DS fast search
upstream upstream channel characteristics
voip Options for Voice over IP traffic over the cable interface
Router(config-if)#

```

Related Commands

Command	Description
cable-modem compliant bridge	Enables DOCSIS-compliant bridging on the cable interface.
cable-modem downstream saved channel	Modifies the saved downstream channel setting and upstream power value on the cable interface.
cable-modem upstream preamble qpsk	Enables the QPSK modulation scheme in the upstream direction from the cable interface to the CMTS.
cable-modem voip best-effort	Allows voice traffic to be transmitted on the upstream using a best-effort QoS.

interface integrated-cable

To configure integrated cable interface on a cable interface line card, use the **interface integrated-cable** command in global configuration mode.

Cisco uBR10012 Universal Broadband Router

```
interface integrated-cable slot/subslot/port:rf-channel
```

Cisco uBR7225VXR and Cisco uBR7246VXR Universal Broadband Router

```
interface integrated-cable slot/subslot/port:rf-channel
```

Cisco cBR Series Converged Broadband Routers

```
interface integrated-cable slot/subslot/port:rf-channel
```

Syntax Description

<i>slot</i>	<p>Identifies the chassis slot where the cable interface line card resides.</p> <ul style="list-style-type: none"> • Cisco uBR10012 router—The valid range is from 5 to 8. • Cisco uBR7225VXR router—The valid value is 1 or 2. • Cisco uBR7246VXR router—The valid range is from 3 to 6. • Cisco cBR Series Converged Broadband Routers— The valid range is from 0 to 3 and 6 to 9.
<i>subslot</i>	<p>(Cisco uBR10012 only) Secondary slot number of the cable interface line card. The valid subslots are 0 or 1.</p> <p>For Cisco cBR Series Converged Broadband Routers, the valid subslot is 0.</p>
<i>port</i>	<p>Downstream port number.</p> <ul style="list-style-type: none"> • Cisco uBR7225VXR router and Cisco uBR7246VXR router—The valid value is 0 or 1. • Cisco uBR10012 router—The valid range is from 0 to 4. • Cisco cBR Series Converged Broadband Routers— The valid range is from 0 to 7.

<i>rf-channel</i>	RF channel number. The valid range is from 0 to 3.
-------------------	--

Command Default None

Command Modes Global configuration (config)

Command History	Release	Modification
	12.2(33)SCC	This command was introduced.
	IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines The **interface integrated-cable** command is used to configure the following line cards:

- [Configuring the Cisco UBR-MC20X20V Cable Interface Line Card](#)
- [Configuring the Cisco uBR-MC88V Cable Interface Line Card](#)

The **interface integrated-cable** command is supported on Cisco cBR Converged Broadband Routers and also on Cisco uBR-MC88V and Cisco UBR-MC20X20V line cards.

Examples The following example shows how to configure a integrated cable interface in slot 7, subslot 0, and port 0 on a Cisco UBR-MC20X20V cable interface line card:

```
Router# configure terminal
Router(config)# interface integrated-cable 7/0/0:1
```

Related Commands	Command	Description
	show interface integrated-cable	Displays the current configuration and status for an integrated channel.

interface modular-cable

To configure a modular cable interface, use the **interface modular-cable** command in global configuration mode.

Cisco IOS Releases 2.3(21)BC, 12.3(23)BC, and 12.2(33)SCA

```
interface modular-cableslot/subslot/bay:nb-channel-number
```

Cisco IOS Release 12.2(33)SCB

```
interface modular-cableslot/subslot/bay:nb-channel-number
```

Cisco IOS Release 12.2(33)SCE

```
interface modular-cableslot/subslot/bay:nb-channel-number
```

Syntax Description

<i>slot</i>	<p>Identifies the chassis slot where the Cisco Cable line card, or Cisco Wideband Shared Port Adaptor (SPA) is located.</p> <ul style="list-style-type: none"> • For the Cisco Cable line cards, the valid range is from 5 to 8. • For the Cisco Wideband SPA, the valid values are: <ul style="list-style-type: none"> ◦ <i>slot</i>—1 or 3 (for SIP-600) ◦ <i>slot</i>—1 (for Wideband SIP) <p>Note In Cisco IOS Release 12.2(33)SCE, support for configuring modular-cable interface on the Cisco uBR-MC3GX60V cable line card is introduced.</p>
<i>subslot</i>	<p>Identifies the subslot where the Cisco Cable line card is located.</p> <ul style="list-style-type: none"> • For the Cisco Cable line cards, the valid value is 0 or 1. <p>Note In Cisco IOS Release 12.2(33)SCE, support for configuring modular-cable interface on the Cisco uBR-MC3GX60V cable line card is introduced.</p>
<i>bay</i>	<p>Identifies the bay where the Cisco Wideband SPA is located.</p> <p>The valid range is from 0 to 3.</p>

<i>port</i>	Identifies the port on the Cisco Cable line card, or the Cisco Wideband SPA in the specified <i>slot/subslot</i> or <i>slot/bay</i> . <ul style="list-style-type: none"> • For the Cisco UBR-MC20X20V cable interface line card, the valid range for is from 0 to 5. • For the Cisco uBR-MC3GX60V cable interface line card, the valid range is from 0 to 2. • For the Cisco Wideband SPA, the valid value is 0.
<i>nb-channel-number</i>	Identifies the narrowband channel number.
<i>interface-number</i>	Identifies the modular-cable interface number. The valid range is from 0 to 23.

Command Default None

Command Modes Global configuration (config)

Command History

Release	Modification
12.3(21)BC	This command was introduced.
12.3(23)BC	This command was integrated into Cisco IOS Release 12.3(23)BC.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA.
12.2(33)SCB	This command was modified to change the addressing format for the modular cable interface from <i>slot/subslot/bay:nb-channel-number</i> to <i>slot/bay/port:nb-channel-number</i> .
12.2(33)SCE	Support for configuring modular-cable interface on the Cisco uBR-MC3GX60V cable line card was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to configure a modular cable interface in slot 1, bay 3, and channel 23 on a Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# interface modular-cable 1/3/0:23
```

The following example shows how to configure a modular cable interface in slot 5, subslot 1, and port 2 on a Cisco uBR-MC3GX60V cable line card.

```
Router# configure terminal  
Router(config)# interface modular-cable 5/1/2:0
```

Related Commands

Command	Description
cable attribute-mask	Specifies an attribute mask value for a modular cable interface.
interface wideband-cable	Specifies a wideband cable interface.
interface cable	Specifies a cable interface.

interface port-channel

To create an EtherChannel interface on the Cisco Cable Modem Termination System (CMTS), use the **interface port-channel** command in global configuration mode. To remove this EtherChannel port from the Cisco CMTS, use the **no** form of this command.

interface port-channel *n*

no interface port-channel *n*

Syntax Description

<i>number</i>	Identifying port channel number for this interface (EtherChannel port). The range is 1 to 64.
---------------	---

Command Default

By default, EtherChannel groups and ports are not defined, and they are disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(11)BC3	This command was introduced on the Cisco uBR7246VXR router.
12.2(9a)BC	This command was introduced on the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The first EtherChannel interface configured becomes the bundle master for all EtherChannel interfaces in the group. That is, the MAC address of the first EtherChannel interface is the MAC address for all EtherChannel interfaces in the group. If the first EtherChannel interface is later removed, the second EtherChannel interface to be configured becomes the bundled master by default.

Repeat this configuration on every EtherChannel port to be bundled into:

- FastEtherChannel (FEC) or GigabitEtherChannel (GEC) group on the Cisco uBR10012 and Cisco uBR7200 series routers.
- Ten Gigabit EtherChannel (Ten GEC) group on the Cisco cBR series routers.

This configuration must be present on all EtherChannel interfaces before the EtherChannel group can be configured.

Examples

The following example configures the port to have an EtherChannel port number of 1 within its EtherChannel group. The EtherChannel group is defined with the **channel-group** command.

```
Router(config-if)# interface port-channel 1
```

Related Commands

Command	Description
channel-group	Assigns an EtherChannel port to an EtherChannel group.
show interface port-channel	Displays the EtherChannel interfaces and channel identifiers, with their mode and operational status.

interface wideband-cable

To configure a wideband cable interface, use the **interface wideband-cable** command in global configuration mode.

Cisco uBR10012 Universal Broadband Router

Cisco IOS Releases 12.3(21)BC, 12.3(23)BC, and 12.2(33)SCA

```
interface wideband-cable slot/subslot/bay:wideband-channel
```

Cisco IOS Releases 12.3(21)BC, 12.3(23)BC, and 12.2(33)SCB

```
interface wideband-cable slot/bay/port:wideband-channel
```

Cisco IOS Releases 12.3(21)BC, 12.3(23)BC, and 12.2(33)SCC

```
interface wideband-cable slot / {subslot| bay} / port:wideband-channel
```

Cisco IOS Releases 12.3(21)BC, 12.3(23)BC, and 12.2(33)SCE

```
interface wideband-cable slot /subslot/controller:wideband-channel
```

Cisco uBR7225VXR and Cisco uBR7246VXR Universal Broadband Routers

Cisco IOS Releases 12.3(21)BC, 12.3(23)BC, and 12.2(33)SCD

```
interface wideband-cable slot //port:wideband-channel
```

Cisco cBR Series Converged Broadband Routers

```
interface wideband-cable slot /subslot/controller:wideband-channel
```

Syntax Description

<i>slot</i>	<p>The slot where a SIP or cable line card resides.</p> <ul style="list-style-type: none"> • Cisco uBR7246VXR router—The valid range is from 3 to 6. • Cisco uBR7225VXR router—The valid range is from 1 to 2. • Cisco uBR10012 router—The valid range for: <ul style="list-style-type: none"> ◦ Cable line card is from 5 to 8 ◦ SIP is 1 and 3
-------------	--

<i>subslot</i>	<p>The subslot where a SIP or cable line card resides.</p> <ul style="list-style-type: none"> • Cisco uBR10012 router—The valid value for: <ul style="list-style-type: none"> ◦ Cable line card in slot 5 to 8 is 0 or 1 ◦ SPAs in a SIP in slot 1 or 3, prior to Cisco IOS Release 12.2(33)SCB is 0 or 1. For Cisco IOS Release 12.2(33)SCB and later, subslot is not specified.
<i>bay</i>	<p>The bay in a SIP where a SPA is located. The valid range is from 0 to 3.</p>
<i>controller</i>	<p>Controller index for the modular cable. The valid range is from 0 to 2.</p> <p>For Cisco cBR Series Converged Broadband Routers, the valid range is from 0 to 7.</p>
<i>port</i>	<p>Specifies the port number.</p> <ul style="list-style-type: none"> • Cisco uBR7246VXR router and Cisco uBR7225VXR router—The valid range is from 0 to 1. • Cisco uBR10012 router—The valid value for: <ul style="list-style-type: none"> ◦ Slot 1 and 3 is 0 ◦ Slot 5 to 8 is from 0 to 4
<i>wideband-channel</i>	<p>Represents the wideband channel number.</p> <ul style="list-style-type: none"> • Cisco uBR10012 router—The valid range for: <ul style="list-style-type: none"> ◦ Cisco UBR-MC20X20V cable interface line card is from 0 to 5. ◦ Cisco uBR-MC3GX60V cable interface line card and SPAs is from 0 to 31. • Cisco uBR7246VXR and Cisco uBR7225VXR routers—The valid range is from 0 to 5. • Cisco cBR Series Converged Broadband Routers—The valid range is from 0 to 63.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(21)BC	This command was introduced.
12.3(23)BC	This command was integrated into Cisco IOS Release 12.3(23)BC.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA.
12.2(33)SCB	This command was modified to change the addressing format for the wideband cable interface from <i>slot/subslot/bay:wideband-channel</i> to <i>slot/bay/port:wideband-channel</i> .
12.2(33)SCD	This command was modified. Support was added for Cisco uBR7225VXR and Cisco uBR7246VXR routers.
12.2(33)SCE	Support was added for Cisco uBR-MC3GX60V cable interface line card on the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command was integrated into Cisco IOS-XE Release 3.15.0S. Support for the Cisco cBR Series Converged Broadband Routers was added.

Examples

The following example shows how to configure a wideband cable interface in slot 1, bay 3, and port 0 on a Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# interface wideband-cable 1/3/0:0
```

The following example shows how to configure a wideband cable interface in slot 5, subslot 1, and port 2 on a Cisco uBR-MC3GX60V cable line card.

```
Router# configure terminal
Router(config)# interface wideband-cable 5/1/2:0
```

The following example shows how to configure a wideband cable interface in slot 1, and port 0 on a Cisco uBR7225VXR or Cisco uBR7246VXR router:

```
Router# configure terminal
Router(config)# interface wideband-cable 1/0:0
```

Related Commands

Command	Description
cable downstream attribute-mask	Specifies an attribute mask value for a wideband cable interface.
interface modular-cable	Specifies a modular cable interface.

Command	Description
interface cable	Specifies a cable interface.

interleaver-depth

To set the interleaver-depth for a specific QAM profile, use the **interleaver-depth** command in QAM profile configuration mode.

```
interleaver-depth {I12-J17| I128-J1| I128-J2| I128-J3| I128-J4| I128-J5| I128-J6| I128-J7| I128-J8| I16-J8|
I32-J4| I64-J2| I8-J16}
```

Syntax Description

I12-J17	INTERLEAVER-I-12-J-17 for Annex A or C
I128-J1	INTERLEAVER-I-128-J-1 for Annex B
I128-J2	INTERLEAVER-I-128-J-2 for Annex B
I128-J3	INTERLEAVER-I-128-J-3 for Annex B
I128-J4	INTERLEAVER-I-128-J-4 for Annex B
I128-J5	INTERLEAVER-I-128-J-5 for Annex B
I128-J6	INTERLEAVER-I-128-J-6 for Annex B
I128-J7	INTERLEAVER-I-128-J-7 for Annex B
I128-J8	INTERLEAVER-I-128-J-8 for Annex B
I16-J8	INTERLEAVER-I-16-J-8 for Annex B
I32-J4	INTERLEAVER-I-32-J-4 for Annex B
I64-J2	INTERLEAVER-I-64-J-2 for Annex B
I8-J16	INTERLEAVER-I-8-J-16 for Annex B

Command Default

None

Command Modes

QAM profile configuration (config-qam-prof)

Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Use this command to set the interleaver-depth for a specific QAM profile.

Examples

The following example shows how to set the interleaver-depth for a specific QAM profile:

```
Router# configure terminal
Router(config)# cable downstream qam-profile 4
Router(config-qam-prof)# interleaver-depth I12-J17
```

Related Commands

Command	Description
cable downstream qam-profile	Set the QAM profile for the cable interface line card.
annex	Set the MPEG framing format.
modulation	Set the QAM modulation format.
spectrum-inversion	Set the spectrum-inversion on or off.
symbol-rate	Set the symbol rate.

interval

To set the duration of time the CMTS waits before checking the load on an interface, use the **interval** command in the load balancing group configuration mode. To reset the duration of time, use the **no** form of this command.

interval *seconds*

no interval

Syntax Description

<i>seconds</i>	The polling interval for the CMTS to determine the current load on each cable interface. The valid range is from 1 to 1000. The default value is 10 seconds in Cisco IOS Release 12.2(33)SCE and earlier. The default value is 30 seconds in Cisco IOS Release 12.2(33)SCE1 and later.
----------------	--

Command Default

None

Command Modes

Load balancing group configuration (config-lb-group)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
12.2(33)SCE1	This command was modified. The default value for this command was changed from 10 seconds to 30 seconds.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to set the duration of time that the CMTS waits before checking the load on the interface, using the **interval** command.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable load-balance docsis-group 1
Router(config-lb-group)# interval
50
Router(config-lb-group)#
```

Related Commands

Command	Description
cable load-balance docsis-group	Configures a DOCSIS load balancing group on the CMTS.
show cable load-balance docsis-group	Displays real time configuration, statistical, and operational information for load balancing operations on the router.

ip address docsis

To specify that the cable access router should use the DHCP protocol, as required by the DOCSIS specification, to assign an IP address for its cable interface, use the **ip address docsis** command in cable interface configuration mode. To disable the use of DHCP, use the **no** form of this command.

Cisco uBR905, uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter

ip address docsis

no ip address docsis

Syntax Description There are no key words or arguments for this command.

Command Default The cable access router uses the DHCP protocol, as required by the DOCSIS specification, to assign an IP address to its cable interface during system power-on.

Command Modes Interface configuration (cable interface only)

Command History	Release	Modification
	12.1(3)XL	This command was introduced for the Cisco uBR905 cable access router.
	12.1(4)T	Support was added for the Cisco uBR924 cable access router.
	12.1(3)XL	Support was added for the Cisco uBR905 cable access router.
	12.1(5)XU1	Support was added for the Cisco CVA122 Cable Voice Adapter.
	12.2(2)XA	Support was added for the Cisco uBR925 cable access router.
	IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines The **ip address docsis** command configures the cable access router so that it obtains its IP address from a DHCP server at system power-on, which is a requirement for DOCSIS operation. This is the default mode of operation. If the configuration for the cable interface does not include any form of **ip address** command, the cable access router defaults to configuring the cable interface with the **ip address docsis** command.

Configuring the cable interface with any other form of the **ip address** command or with the **no ip address docsis** command prevents the cable access router from operating in DOCSIS networks. This mode of operation should be used only in lab or test networks.

**Note**

Earlier Cisco IOS software releases for the cable access routers used either the **ip address negotiated** or the **ip address dhcp** command to specify that the cable interface should obtain its IP address from a DHCP server. These commands should no longer be used to configure the router's cable interface.

Examples

The following example shows how to configure the cable access router so that it obtains the IP address for its cable interface from a DHCP server:

```
Router(config)# interface cable-modem 0
Router(config-if)# ip address docsis
Router(config-if)# exit
Router(config)#
```

Related Commands

Command	Description
cable-modem dhcp-proxy	Specifies that a DHCP server should provide the IP address for the router's Ethernet interface or for a NAT address pool.
ip http dhcp	Specifies the use of the DHCP protocol to obtain an IP address for any interface except the cable interface at system power-on.
ip http negotiated	Specifies that a serial interface should use the PPP/IPCP to obtain an IP address at system power-on.

ip-address (controller)

To set the IP address of the Wideband SPA FPGA, use the **ip-address (controller)** command in controller configuration mode. To remove the IP address of the Wideband SPA FPGA, use the **no** form of this command.

ip-address *ip-address*

no ip-address *ip-address*

Syntax Description

<i>ip-address</i>	IP address for the Wideband SPA FPGA.
-------------------	---------------------------------------

Command Default

No IP address is set for the Wideband SPA FPGA.

Command Modes

Controller configuration (config-controller)

Command History

Release	Modification
12.3(21)BC	This command was introduced for the Cisco uBR10012 router.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Use this command to set the IP address for the Wideband SPA FPGA. This address is used as the source IP address for packets that the Wideband SPA transmits to the EQAM device.

Examples

The following example shows how to set the IP address of the Wideband SPA FPGA. The SPA is located in slot 1, subslot 0, bay 0.

```
Router(config)# controller modular-cable 1/0/0
Router(config-controller)# ip-address 192.168.200.6
```

Related Commands

Command	Description
annex modulation	Sets the annex and modulation for the Wideband SPA.
cable rf-channel	Associates an RF channel on a Wideband SPA with a wideband channel.

Command	Description
controller modular-cable	Enters controller configuration mode to configure the Wideband SPA controller.
modular-host subslot	Specifies the modular-host line card.
rf-channel frequency	Sets the frequency for each RF channel.
rf-channel ip-address mac-address udp-port	Sets the IP address, MAC address and UDP port for each RF channel.
rf-channel network delay	Specifies the CIN delay for each RF channel.
rf-channel description	Specifies the description for each RF channel.
rf-channel cable downstream channel-id	Assigns a downstream channel ID to an RF channel.

ipdr associate

To associate the Collector with a session, use the **ipdr associate** command in global configuration mode. To remove the association, use the **no** form of this command.

ipdr associate *session_id collector_name priority*

no ipdr associate *session_id collector_name*

Syntax Description

<i>session_id</i>	The unique IPDR session ID.
<i>collector_name</i>	The collector name. The name should not contain extra spaces.
<i>priority</i>	The priority value between the session and the collector. The value range is 1 to 10. A value of 1 indicates that the highest priority.

Command Default

An association with the session will not be created.

Command Modes

Global configuration mode

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to associate the Collector with a session. Once the Collector is configured, the Exporter sends data to the Collector. IPDR supports redundant collector and consistent streaming continues when a collector is down or not functioning.

The no form of the command will only remove the association for the stopped session.



Note

The collector and the session should be configured before running this command.

Examples

The following example configures a Collector.

```
Router# configure terminal
Router(config)#ipdr associate 1 federal 1
```

Related Commands

Command	Description
ipdr collector	Configures the IPDR Collector details.
show ipdr collector	Displays the collector information, message statistics and event for all the sessions that are associated with the collector.
ipdr session	Adds a session to the IPDR Exporter.

ipdr collector

To configure the Internet Protocol Detail Record (IPDR) Collector details, use the **ipdr collector** command in global configuration mode. To remove the Collector, use the **no** form of this command.

ipdr collector *collector_name ip_addr [port]*

no ipdr collector *collector_name*

Syntax Description

<i>collector_name</i>	The collector name. The name should not contain extra spaces.
<i>ip_addr</i>	The collector IP address.
<i>port</i>	(Optional) The collector port value. The default port number will be considered if the value is not entered.

Command Default

A Collector will not be configured.

Command Modes

Global configuration mode

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to configure an IPDR Collector and authenticate the IPDR protocol. Once the Collector is configured, the Exporter sends data to the Collector. User must provide the collector name and the IP address. Port number is used when an exporter creates an active connection.

The no form of the command will remove a specific IPDR Collector. If the collector is associated with an active session, you should stop the session before using the no command.

Examples

The following example configures a Collector.

```
Router# configure terminal
Router(config)#ipdr collector federal 192.0.2.0
```

Related Commands

Command	Description
show ipdr collector	Displays the collector information, message statistics and event for all the sessions that are associated with the collector.
ipdr session	Adds a session to the IPDR Exporter.

ipdr exporter ack-timeout

To set IPDR Exporter acknowledged records timeout value, use the **ipdr exporter ack-timeout** command in global configuration mode. To disable the acknowledged records timeout value, use the **no** form of this command.

```
ipdr exporter ack-timeout time_interval
no ipdr exporter ack-timeout
```

Syntax Description

<i>time_interval</i>	Acknowledged records timeout count. The valid range is from 5 to 60 seconds. The default value is 60.
----------------------	---

Command Default

This command is enabled when the IPDR Exporter is running.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(33)SCG	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows you to set acknowledged records timeout value for a session.



Note

Restart the IPDR Exporter for the timer values to take effect.

Examples

The following example shows how to configure the acknowledged records timeout value on the Cisco CMTS router:

```
Router# configure terminal
Router(config)
)# ipdr exporter ack-timeout 60
Router(config)# ipdr exporter start
```

Related Commands

Command	Description
show ipdr exporter	Displays information about the IPDR Exporter state on the Cisco CMTS router.

ipdr exporter keepalive

To set the keepalive timer value on the IPDR exporter, use the **ipdr exporter keepalive** command in global configuration mode. To disable the keepalive timer value, use the **no** form of this command.

ipdr exporter keepalive *time_interval*

no ipdr exporter keepalive

Syntax Description

<i>time_interval</i>	Keepalive timer count. The valid range is from 5 to 300 seconds. The default value is 300.
----------------------	--

Command Default

This command is enabled when the IPDR Exporter is running.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(33)SCG	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows you to set the keepalive timeout value for a session.



Note

Restart the IPDR Exporter for the keepalive timer values to take effect.

Examples

The following example shows how to configure the keepalive value on the Cisco CMTS router:

```
Router# configure terminal
Router(config)
)# ipdr exporter keepalive 300
Router(config)# ipdr exporter start
```

Related Commands

Command	Description
show ipdr exporter	Displays information about the IPDR Exporter state on the Cisco CMTS.

ipdr exporter max-unacked

To set the maximum number of unacknowledged records on the IPDR exporter, on the Cisco CMTS, use the **ipdr exporter max unacked** command in global configuration mode. To reset the maximum number of unacknowledged records, use the **no** form of this command.

ipdr exporter max-unacked *records*
no ipdr exporter max-unacked

Syntax Description

<i>records</i>	Number of unacknowledged records. The valid range is from 5 to 200 records. The default value is 200.
----------------	---

Command Default

This command is enabled when IPDR Exporter is running.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.3(33)SCG	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows you to set the maximum number of unacknowledged records for a session.



Note

Restart the IPDR Exporter for the number of records to take effect.

Examples

The following example shows how to configure the number of unacknowledged records configured on the Cisco CMTS router:

```
Router# configure terminal
Router(config)
)# ipdr exporter max-unacked 200
Router(config)# ipdr exporter start
```

Related Commands

Command	Description
show ipdr exporter	Displays information about the IPDR Exporter state on the Cisco CMTS router.

ipdr exporter start

To enable the CMTS application, to start the Internet Protocol Detail Record (IPDR) Exporter process to connect the exporter and the collector, use the **ipdr exporter start** command in global configuration mode. To terminate the connection between the exporter and collector, use the **no** form of this command.

ipdr exporter start

no ipdr exporter start

Syntax Description This command has no arguments or keywords.

Command Default By default, the IPDR exporter process will not be started.

Command Modes Global configuration mode

Command History	Release	Modification
	12.2(33)SCB	This command was introduced.
	IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines This command allows the user to explicitly start the IPDR Exporter and connect to the collector. As a default behavior, the command will initiate all the sessions configured in the Exporter to a "Start" state. The **no** form of the command will stop the IPDR Exporter process. The command will also clear the connection with the collector while retaining other configurations.

Examples The following example starts the IPDR Exporter process on the CMTS.

```
Router# configure terminal
Router(config)#ipdr exporter start
```

Related Commands	Command	Description
	show ipdr exporter	Displays information about the IPDR Exporter state.
	show ipdr collector	Displays the collector information, message statistics and event for all the sessions that are associated with the collector.

Command	Description
ipdr collector	Configures the Internet Protocol Detail Record (IPDR) Collector details.

ipdr session

To start or stop a specific session, use the **ipdr session** command in the privileged EXEC mode.

```
ipdr session session_id {start|stop}
```

Syntax Description

<i>session_id</i>	The unique IPDR session ID.
start	The keyword to start the session.
stop	The keyword to stop the session.

Command Default

No sessions are started.

Command Modes

Privileged EXEC mode

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to start or stop a specific session. This command can be executed only when the IPDR exporter is started.



Note

The user has to stop the session before configuring any tasks if the session is active.

Examples

The following example enables the user to start a session.

```
Router# configure terminal
Router(config)#ipdr session 1 start
```

Related Commands

Command	Description
ipdr exporter start	Starts the IPDR Exporter and connects to the collector.

Command	Description
show ipdr exporter	Displays information about the IPDR Exporter state.
ipdr associate	Associates the Collector with a session.

ipdr session (global configuration)

To enable the CMTS application to add a session to the Internet Protocol Detail Record (IPDR) exporter, use the **ipdr session** command in global configuration mode. To remove the session, use the **no** form of this command.

ipdr session *session_id session_name session_descr*

no ipdr session *session_id*

Syntax Description

<i>session_id</i>	The unique IPDR session ID.
<i>session_name</i>	The session name. The name should not contain extra spaces.
<i>session_descr</i>	The description of the session.

Command Default

No sessions are added to the IPDR exporter. It depends on the status of the IPDR exporter. After configuring one session; if the status of exporter is started, then the session is started automatically.

Command Modes

Global configuration mode

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to add a session to the IPDR exporter. User should provide session ID, session name and session description for every session.

The **no** form of the command will remove a specific session. Once a session is removed, the template and other information associated with the session is also lost.



Note

You can not update template details or other details when a session already created.

Examples

The following example adds a session to the Exporter.

```
Router# configure terminal
Router(config)#ipdr session 1 test no_descr
```

Related Commands

Command	Description
ipdr exporter start	Starts the IPDR exporter and connects to the collector.
show ipdr exporter	Displays information about the IPDR exporter state.
ipdr associate	Associates the IPDR collector with a session.

ipdr template

To add an Internet Protocol Detail Record (IPDR) template to the IPDR session on the Cisco CMTS, use the **ipdr template** command in global configuration mode. To remove the template, use the **no** form of this command.

ipdr template *session_id* *template_name*

no ipdr template *session_id* *template_name*

Syntax Description

<i>session_id</i>	Unique IPDR Session ID.
<i>template_name</i>	Template name.

Command Default

The IPDR template is not added to the IPDR session.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
12.2(33)SCG	A new template SERVICE-FLOW is added to the event-based and ad-hoc session types.
12.2(33)SCH5	A new template is defined for CM-STATUS and the old template is renamed as CM-STATUS-2008.
12.2(33)SCI1	This command is integrated from Cisco IOS Release 12.2(33)SCH5.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to add an IPDR template to the desired session (based on session ID) on the Cisco CMTS.



Note

You can only add the system-supported templates. The list can be viewed by entering “?” at the command prompt.

Examples

The following example displays the **show running-config** command output of the configured IPDR sessions and types:

```
Router(config)# do show running-config | i ipdr
ipdr session 1 test test
ipdr session 2 event2 event2
ipdr session 3 ad-hoc3 ad-hoc3
ipdr type 1 time-interval 15
ipdr type 2 event
ipdr type 3 event
```

The following example shows the templates available in a timer-interval session.

```
Router# ipdr template 1 ?
CM-STATUS      DOCSIS-CMTS-CM-REG-STATUS-TYPE template
CM-US          DOCSIS-CMTS-CM-US-STATS-TYPE template
DIAGLOG-DETAIL DOCSIS-DIAG-LOG-DETAIL-TYPE template
SAMIS-TYPE1    DOCSIS-SAMIS-TYPE-1 template
SAMIS-TYPE2    DOCSIS-SAMIS-TYPE-2 template
SPECTRUM       DOCSIS-SPECTRUM-MEASUREMENT-TYPE template
TEST           Template for test
```

The following example shows how to add the SAMIS_TYPE1 template in a timer-interval session.

```
Router(config)# ipdr template 1 SAMIS-TYPE1
```

The following example shows how to view the templates available in an event-based session.

```
Router(config)# ipdr template 2 ?
CM-STATUS      DOCSIS-CMTS-CM-REG-STATUS-TYPE template
CPE-TYPE       DOCSIS-CPE-TYPE template
DIAGLOG-DETAIL DOCSIS-DIAG-LOG-DETAIL-TYPE template
DIAGLOG-EVENT  DOCSIS-DIAG-LOG-EVENT-TYPE template
DS-UTIL        DOCSIS-CMTS-DS-UTIL-STATS-TYPE template
SAMIS          OSSI2.0 SAMIS template
SERVICE-FLOW  SERVICE-FLOW-TYPE template
TEST           Template for test
TOPOLOGY       DOCSIS-CMTS-TOPOLOGY-TYPE template
US-UTIL        DOCSIS-CMTS-US-UTIL-STATS-TYPE template
```

The following example shows how to view the templates available in an ad-hoc session.

```
Router(config)# ipdr template 3 ?
CM-STATUS      DOCSIS-CMTS-CM-REG-STATUS-TYPE template
CPE-TYPE       DOCSIS-CPE-TYPE template
DIAGLOG-DETAIL DOCSIS-DIAG-LOG-DETAIL-TYPE template
DIAGLOG-EVENT  DOCSIS-DIAG-LOG-EVENT-TYPE template
DS-UTIL        DOCSIS-CMTS-DS-UTIL-STATS-TYPE template
SAMIS          OSSI2.0 SAMIS template
SERVICE-FLOW  SERVICE-FLOW-TYPE template
TEST           Template for test
TOPOLOGY       DOCSIS-CMTS-TOPOLOGY-TYPE template
US-UTIL        DOCSIS-CMTS-US-UTIL-STATS-TYPE template
```

The following example shows the templates available in a timer-interval session for Cisco IOS Release 12.2(33)SCH5:

```
Router(config)# ipdr template 1 ?
CM-STATUS      DOCSIS-CMTS-CM-REG-STATUS-TYPE template
CM-STATUS-2008 DOCSIS-CMTS-CM-REG-STATUS-TYPE-2008 template
CPE-TYPE       DOCSIS-CPE-TYPE template
DIAGLOG-DETAIL DOCSIS-DIAG-LOG-DETAIL-TYPE template
DIAGLOG-EVENT  DOCSIS-DIAG-LOG-EVENT-TYPE template
```

```

DS-UTIL          DOCSIS-CMTS-DS-UTIL-STATS-TYPE template
SAMIS            OSSI2.0 SAMIS template
SERVICE-FLOW    SERVICE-FLOW-TYPE template
TEST            Template for test
TOPOLOGY        DOCSIS-CMTS-TOPOLOGY-TYPE template
US-UTIL         DOCSIS-CMTS-US-UTIL-STATS-TYPE template

```

Related Commands

Command	Description
ipdr exporter start	Starts the IPDR Exporter on the Cisco CMTS and connects to the collector.
show ipdr exporter	Displays information about the IPDR Exporter state on the Cisco CMTS.
ipdr session	Adds a session to the IPDR Exporter on the Cisco CMTS.

ipdr type

To configure the IPDR session type, use the **ipdr type** command in global configuration mode. The IPDR session types that can be defined using this command are event type, time-interval type, and the ad hoc type. Use the **no** form of the command to reset the session type to the default "event" type.

ipdr type *session_id* [**ad-hoc**| **event**| **time-interval** *value*]

no ipdr type *session_id*

Syntax Description

<i>session_id</i>	IPDR session ID. Range is from 1 to 255.
ad-hoc	The ad hoc session type.
event	The event session type.
time-interval <i>value</i>	The time-interval session type. Interval range is from 15 to 1440 minutes.

Command Default

The IPDR session type is not defined.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCD2	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to define the specific IPDR session type.



Note

Once the IPDR session type is configured, the templates supported by this IPDR type are automatically associated with it.

Examples

The following example shows how to configure the IPDR “time-interval” session type for a time interval of 15 minutes.

```
Router> enable
Router# configure terminal
Router(config)# ipdr type 1 time-interval 15
```

Related Commands

Command	Description
cable ipdr cm-us-status interval	Displays a cable modem's upstream channel status information.
cable ipdr docs-spectrum interval	Sets the interval between different spectrum measurements' data for a CMTS.
cable ipdr diaglog interval	Sets the time interval between different diagnostic logs' data for a CMTS.
cable ipdr cm-status interval	Displays the CMTS and cable modem registration status information.

issu linecard abortversion

To abort or roll back the current image version on a single line card or multiple line cards to the previous version, use the **issu linecard abortversion** command in the privileged EXEC mode.



Note

This command is used to abort or roll back the versions on redundant line cards only.

issu linecard abortversion {**all**| *lc slot/subslot*} [**forced**]

Syntax Description

all	All redundant line cards.
<i>lc_slot</i>	The line card slot number.
<i>subslot</i>	The line card sub slot number.
forced	(Optional) The ISSU would ignore potential service outage and line card incompatibility errors and proceed with abortversion instead of stopping and error handling.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to roll back to prior image on working or primary line card on a single or multiple line cards to the previous versions.



Note

The **issu linecard reloadversion** command is used to reload a line card with the original version of images.

The following example aborts the specific redundant line card's image version.

```
Router# configure terminal
Router(config)#issu linecard abortversion
```

Related Commands

Command	Description
issu linecard acceptversion	Accepts the new image version on the working line card.
issu linecard loadversion	Loads a specific image version on the primary line card.
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single line card or multiple line cards.

issu linecard acceptversion

To accept the new image version on the working line card, use the **issu linecard acceptversion** command in the privileged EXEC mode.

issu linecard acceptversion *lc slot* [/subslot]

Syntax Description

<i>lc_slot</i>	The line card slot number.
<i>subslot</i>	The line card sub slot number.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to accept the new image version on the working line card. The command also indicates the completion of changing the image version for the specific line card and allows the ISSU of the next line card in the queue.

Examples

The following example indicates a command accepting the image version on the slot 7 of the line card.

```
Router# configure terminal
Router(config)#issu linecard acceptversion 7/0
```

Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on working/primary line card.
issu linecard loadversion	Loads a specific image version on the primary line card.

Command	Description
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single line card or multiple line cards.

issu linecard changeversion

To start the upgrade or downgrade activity of the image version for a single working line card or multiple working line cards, use the **issu linecard changeversion** command in the privileged EXEC mode.



Note

Effective with Cisco IOS Release 12.2(33)SCH2, the **issu linecard changeversion** command is used to check and upgrade the line card images automatically during the RP-only ISSU process.

issu linecard changeversion { **all** | **stop** | *slot_1* [/subslot_1]} ... [*slot_n* [/subslot_n]] [**forced**]

Syntax Description

all	All redundant line cards.
<i>slot_1</i>	The slot number for the first line card.
<i>subslot_1</i>	The sub slot number for the first line card.
<i>slot_n</i>	The slot number for the n th line card.
<i>subslot_n</i>	The sub slot number for the n th line card.
forced	(Optional) The ISSU would ignore potential service outage and line card incompatibility errors and proceed with changeversion instead of stopping and error handling.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to start the upgrade or downgrade activity of the image version for a single line card or multiple line cards. Here the line cards are of the primary or working type only.

Using the all option, you can change the image version of all the redundant line cards instead of specifying explicitly each of the line card.

Using the stop option, you can abort or stop the version change process for a line card.

Examples

The following example displays the command and uses the all option.

```
Router# configure terminal
Router(config)#issu linecard changeversion all
```

The following example displays the command and uses the slot value of 6.

```
Router# configure terminal
Router(config)#issu linecard changeversion 6/0
```

Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on working/primary line card.
issu linecard acceptversion	Accepts the new image version on the working line card.
issu linecard loadversion	Loads a specific image version on the primary line card.
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.

issu linecard loadversion

To load a specific image version on the primary line card, use the **issu linecard loadversion** command in the privileged EXEC mode.

issu linecard loadversion *slot*[/*subslot*]

Syntax Description

<i>slot</i>	The line card slot number.
<i>subslot</i>	The line card sub slot number.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to load a specific image version on the working line card.

Examples

The following example shows the command that loads the image version on a line card with the slot number 7.

```
Router# configure terminal
Router(config)#issu linecard loadversion 7/0
```

Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on working/primary line card.
issu linecard acceptversion	Accepts the new image version on the working line card.

Command	Description
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single line card or multiple line cards.

issu linecard prepareversion

To determine if the image version on the line card has to be upgraded or downgraded to the route processor's image version, use the **issu linecard prepareversion** command in the privileged EXEC mode.

issu linecard prepareversion *lc_slot* [/subslot] [**forced**]

Syntax Description

<i>lc_slot</i>	The line card slot number.
<i>subslot</i>	The line card sub slot number.
forced	(Optional) The ISSU would ignore potential service outage and line card incompatibility errors and proceed with prepareversion instead of stopping and error handling.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to check if the image version on the line card has to be upgraded or downgraded to the route processor's image version.

This command also checks if the line card has a valid redundancy configuration. If the line card does not have a valid configuration, then the user has to reload the line card using the **issu linecard reloadversion** command.

Examples

The following example shows the command executed for a line card with a slot value of 7.

```
Router# configure terminal
Router(config)#issu linecard prepareversion 7/0
```

Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on working/primary line card.
issu linecard acceptversion	Accepts the new image version on the working line card.
issu linecard loadversion	Loads a specific image version on the primary line card.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single line card or multiple line cards.

issu linecard process stop


Note

Effective with Cisco IOS Release 12.2(33)SCG and later, `issu linecard process stop` is no longer supported on the Cisco CMTS router.

To stop the automatic line card ISSU process, use the `issu linecard process stop` command in privileged EXEC mode.

issu linecard process stop
Syntax Description

This command has no arguments or keywords.

Command Default

This command is enabled by default.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
12.2(33)SCG	This command is obsolete.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Use the `issu linecard process stop` command to interrupt the automatic ISSU process continuing to the next line card.

Associated Features:

The `issu linecard process stop` command is associated with following features:

[Cisco IOS In Service Software Upgrade Process](#)

Examples

Example

The following example shows how to stop the ISSU process:

```
Router> enable
Router# issu linecard process stop
```


Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on working/primary line card.
issu linecard acceptversion	Accepts the new image version on the working line card.
issu linecard loadversion	Loads a specific image version on the primary line card.
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single line card or multiple line cards.

issu linecard reloadversion

To reload the new loaded image on a working or a primary line card, use the **issu linecard reloadversion** command in the privileged EXEC mode.

issu linecard prepareversion {**original**|**target**} {**all**|*[slot_1 [subslot_1] ... [slot_n [/subslot_n]]*}

Syntax Description

original	The original image version.
all	All redundant line cards.
<i>slot_1</i>	The slot number for the first line card.
<i>subslot_1</i>	The sub slot number for the first line card.
<i>slot_n</i>	The slot number for the n th line card.
<i>subslot_n</i>	The sub slot number for the n th line card.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to reload the new loaded image on a working or a primary line card.

This command can be used for the following line card conditions.

- Line cards that are not configured with redundancy, and do not support Minimal Disruptive Restart (MDR.)
- Line cards which are capable of line card redundancy which were rolled back due to an unsuccessful **changeversion** command.

Examples

The following example shows the command executed with the original keyword.

```
Router# configure terminal
Router(config)#issu linecard reloadversion original 8/0
```

The following example shows the command executed with the target keyword.

```
Router# configure terminal
Router(config)#issu linecard reloadversion target 8/0
```

Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on working or primary line card.
issu linecard acceptversion	Accepts the new image version on the working line card.
issu linecard loadversion	Loads a specific image version on the primary line card.
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard runversion	Runs the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single linecard or multiple line cards.

issu linecard runversion

To run the new loaded image on a working or a primary line card, use the **issu linecard runversion** command in the privileged EXEC mode.

issu linecard runversion *lc_slot*[/*subslot*] [**forced**]

Syntax Description

<i>lc_slot</i>	The line card slot number.
<i>subslot</i>	The line card sub slot number.
forced	(Optional) The ISSU would ignore potential service outage and line card incompatibility errors and proceed with runversion instead of stopping and error handling.

Command Default

None

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command allows the user to run the new loaded image on a working or a primary line card.

Examples

The following example displays the command executed to run the loaded image in the line card slot 7.

```
Router# configure terminal
Router(config)#issu linecard runversion 7/0
```

Related Commands

Command	Description
issu linecard abortversion	Rolls back to the prior image on the working/primary line card.

Command	Description
issu linecard acceptversion	Accepts the new image version on the working line card.
issu linecard loadversion	Loads a specific image version on the primary line card.
issu linecard prepareversion	Determines if the image version on the line card has to be upgraded or downgraded to the route processor's image version.
issu linecard reloadversion	Reloads the new loaded image on a working or a primary line card.
issu linecard changeversion	Starts the upgrade or downgrade activity of the image version for a single linecard or multiple line cards.

lane start-freq

To set the start frequency for a specific lane, use the **lane start-freq** command from frequency profile configuration mode.

lane *lane_id***start-freq** *start-freq*

Syntax Description

<i>lane_id</i>	Specifies the ID of the lane that the start frequency to be set.
<i>start-freq</i>	Configures the start frequency for the lane.

Command Default

None

Command Modes

Frequency profile configuration (config-freq-prof)

Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Use this command to set the start frequency for a specific lane.

Examples

The following example shows how to set start frequency for a specific lane:

```
Router# Configure terminal
Router(config)# cable downstream freq-profile 4
Router(config-freq-prof)# lane 1 start-freq 45000000
```

Related Commands

Command	Description
cable downstream freq-profile	Set the start frequency for a specific lane.

license feature evaluation disable

To disable an evaluation license for Cisco uBR-MC3GX60V and Cisco UBR-MC20X20V cable interface line cards on the Cisco uBR10012 router, use the **license feature evaluation disable** command in global configuration mode.

license feature evaluation disable {DS_license| US_license| all } **subslot** *slot/subslot*

Syntax Description

disable	Disables an evaluation license for a cable interface line card.
DS_License	Disables a downstream evaluation license for a cable interface line card.
US_License	Disables an upstream evaluation license for a cable interface line card.
all	Disables both downstream and upstream evaluation licenses for a cable interface line card.
subslot <i>slot/subslot</i>	<ul style="list-style-type: none"> • <i>slot</i>—Slot where the line card resides. The valid range is from 5 to 8. • <i>subslot</i>—Secondary slot number of the cable interface line card. The valid value is 0 or 1.

Command Default

A cable interface line card evaluation license is disabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCE	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Evaluation licenses are temporary and used to evaluate a feature set on a new line card. Ensure that an equivalent permanent license is installed on the Cisco CMTS before the evaluation license expires to avoid any service disruptions.

To obtain evaluation licenses from the Cisco licensing portal, go to: <https://tools.cisco.com/SWIFT/LicensingUI/demoPage>

Examples

The following example shows how to disable both downstream and upstream evaluation licenses for a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# license feature evaluation disable all subslot 5/0
```

The following example shows how to disable a downstream evaluation license for a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# license feature evaluation disable DS_License subslot 6/0
```

The following example shows how to disable an upstream evaluation license for a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# license feature evaluation disable US_License subslot 6/1
```

Related Commands

Command	Description
license feature evaluation enable	Enables an evaluation license for Cisco uBR-MC3GX60V and Cisco UBR-MC20X20V cable interface line cards.

license feature evaluation enable

To enable an evaluation license for Cisco uBR-MC3GX60V and Cisco UBR-MC20X20V cable interface line cards on the Cisco uBR10012 router, use the **license feature evaluation enable** command in global configuration mode.

license feature evaluation enable {**DS_License** | **US_License** | **all**} **subslot** *slot/subslot*

Syntax Description

enable	Enables an evaluation license for a cable interface line card.
DS_License	Enables a downstream evaluation license for a cable interface line card.
US_License	Enables an upstream evaluation license for a cable interface line card.
all	Enables both downstream and upstream evaluation licenses for a cable interface line card.
subslot <i>slot/subslot</i>	<ul style="list-style-type: none"> <i>slot</i>—Slot where the cable interface line card resides. The valid range is from 5 to 8. <i>subslot</i>—Secondary slot number of the cable interface line card. The valid value is 0 or 1.

Command Default

A cable interface line card evaluation license is not enabled by default.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCE	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Evaluation licenses are temporary and used to evaluate a feature set on a new cable interface line card. Ensure that an equivalent permanent license is installed on the Cisco CMTS router before the evaluation license expires to avoid any service disruptions.

To obtain evaluation licenses from the Cisco licensing portal, go to: <https://tools.cisco.com/SWIFT/LicensingUI/demoPage>

Examples

The following example shows how to enable both downstream and upstream evaluation licenses for a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# license feature evaluation enable all subslot 5/0
```

The following example shows how to enable a downstream evaluation license for a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# license feature evaluation enable DS_License subslot 6/0
```

The following example shows how to enable an upstream evaluation license for a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# license feature evaluation enable US_License subslot 6/1
```

Related Commands

Command	Description
license feature evaluation disable	Disables an evaluation license for Cisco uBR-MC3GX60V and Cisco UBR-MC20X20V cable interface line cards.

logging cmts sea

To enable the logging of syslog messages to System Event Archive (SEA), use the **logging cmts sea** command from global configuration mode. To disable logging of syslog messages to SEA, use the **no** form of the command.

logging cmts sea

no logging cmts sea

Syntax Description

syslog-level <i>level</i>	(Optional) Configures the level of syslog messages inclusive of and above the specified level which will be stored in the SEA log file.
Possible values for level are: <i>level=emergencies</i>	Emergency severity level indicates system is unusable. The default severity level for emergency syslog messages is 0.
<i>level=alerts</i>	Alerts severity level indicates that immediate action is needed. The default severity level for alerts syslog messages is 1.
<i>level=critical</i>	Critical severity level indicates the critical condition of the system. The default severity level for critical syslog messages is 2.
<i>level=errors</i>	Errors severity level indicates the error conditions. The default severity level for errors syslog messages is 3.
<i>level=warnings</i>	Warning severity level warns the network administrator. The severity level for warning syslog messages is 4.
<i>level=notifications</i>	Notification severity level indicates normal but significant condition of the system. By default severity level for syslog messages is configured as 'normal'. The default severity level for notification syslog messages is 5.
<i>level=informational</i>	Informational severity level provides additional information about the system. The default severity level for informational syslog messages is 6.
<i>level=debugging</i>	Debugging severity level provides debugging messages. The default severity level for debugging syslog messages is 7.

Command Default By default, storing of syslog messages to SEA log file is enabled, with the severity-level of syslog messages being set to 'notification'.

Command Modes Global configuration (config)

Command History	Release	Modification
	12.2(33)SCC	This command was introduced.
	IOS-XE 3.15.OS	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines Use the **logging cmts sea** command is used to enable the logging of syslog messages to SEA log file. To change the severity-level of syslog messages inclusive of and above the level to be stored in SEA log file, specify the command **logging cmts sea [syslog-level level]**.

Examples The following example shows how to enable logging of syslog messages to SEA log file on the Cisco uBR10012 router:

```
Router(config)# logging cmts sea
```

The following example shows how to disable logging of syslog messages to SEA log file on the Cisco uBR10012 router:

```
Router(config)# no logging cmts sea
```

The following example shows how to change the severity-level of syslog messages inclusive of and above the level being stored in the SEA log file:

```
Router(config)# logging cmts sea syslog-level warning
```

Related Commands

Command	Description
clear logging system	Clears the event records stored in the SEA.
copy logging system	Copies the archived system events to another location.
logging system	Enables or disables the SEA logging system.

main-cpu

To enter main-CPU redundancy configuration mode, so that you can configure the synchronization of the active and standby Performance Routing Engine (PRE1) modules or Supervisor cards, use the **main-cpu** command in redundancy configuration mode.

main-cpu

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes Redundancy configuration (config-r)
Cisco RF Gateway 10
 Redundancy configuration (config-red)

Command History

Release	Modification
12.2(4)XF	This command was introduced for the Cisco uBR10012 router.
12.2(11)BC3	Support for the switchover timeout command was added.
12.3BC	This command was integrated into Cisco IOS Release 12.3BC.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA.
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.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines When you enter main-CPU redundancy configuration mode, the prompt changes to the following:

```
Router(config-r-mc)#
```

After you enter main-CPU redundancy configuration mode, you can use the **auto-sync** command to specify which files are synchronized between the active and standby PRE1 modules or Supervisor cards. In Cisco IOS Release 12.2(11)BC3 and later releases, you can also use the **switchover timeout** command to specify the amount of time that the standby PRE1 module should wait when it first detects that the active PRE1 module is not active and when it initiates a switchover and becomes the active PRE1 module.

To leave main-CPU redundancy configuration mode and to return to redundancy configuration mode, use the **exit** command.

Examples

The following example shows how to enter main-CPU redundancy mode and the commands that are available there:

```
Router# config t
Router(config)# redundancy
Router(config-r)# main-cpu
Router(config-r-mc)# ?

Main Cpu redundancy configuration commands:
 auto-sync   Sync elements
 exit        Exit from main-cpu configuration mode
 no          Negate a command or set its defaults
 switchover  Configuration of switchover
Router(config-r-mc)#
```

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
associate slot	Logically associate slots for APS processor redundancy
auto-sync	Configures which files are synchronized between the active and standby PRE1 modules or Supervisor cards.
redundancy	Enters redundancy configuration mode.
switchover timeout	Configures the switchover timeout period of the PRE1 module.

maintenance-mode

To configure the PRE1 modules on the router for maintenance mode, use the **maintenance-mode** command in redundancy configuration mode. To return to normal operations, use the **no** form of this command.

maintenance-mode

no maintenance-mode

Syntax Description This command has no keywords or arguments.

Command Default Normal operations (**no maintenance-mode**)

Command Modes Redundancy configuration

Command History	Release	Modification
	12.2(4)XF	This command was introduced for the Cisco uBR10012 router.
	IOS-XE 3.15.OS	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines When the Cisco uBR10012 router is configured with redundant PRE1 modules, the active PRE1 module automatically synchronizes the configuration, network state information, and other information with the standby PRE1 module, so that if a switchover occurs, the standby module can restore normal operations quickly. You can use the **maintenance-mode** command to disable this automatic synchronization of the PRE1 modules, and to disable the reporting of any faults on the standby module to the active module.



Note The **maintenance-mode** command disables the ability of the Cisco uBR10012 router to switchover PRE1 modules and should be used only while upgrading the router or troubleshooting network problems.

Examples The following example shows how to disable the automatic PRE1 module synchronization on the Cisco uBR10012 router and enter maintenance mode:

```
Router# config t
Router(config)# redundancy
Router(config-r)# maintenance-mode
Router(config-r)# exit
Router(config)#
```

The following example shows how to leave maintenance mode and return to normal operations, which includes the automatic synchronization of the PRE1 modules:

```
Router# config t
Router(config)# redundancy
Router(config-r)# no maintenance-mode
Router(config-r)# exit
Router(config)#
```

Related Commands

Command	Description
auto-sync	Configures which files are synchronized between the active and standby PRE1 modules.
redundancy	Enters redundancy configuration mode.

match rule

To configure the match rule, rule priority and related action in the selected cable multicast authorization profile, use the **match rule** command in interface configuration mode. To disable a cable multicast authorization profile match, use the **no** form of this command.

match rule [*ipv4* | *ipv6*] [*source-prefix*] [*group-prefix*] **priority** [*priority-value*] [*permit* | *deny*]

no match rule [*ipv4* | *ipv6*] [*source-prefix*] [*group-prefix*] **priority** [*priority-value*] [*permit* | *deny*]

Syntax Description

match rule [<i>ipv4</i> <i>ipv6</i>]	Specifies the matching source rule. Though CLI allows IPv6 to be configured, only IPv4 is supported in the CMTS.
<i>source-prefix</i>	(Optional) Specifies the matching source address prefix. Example: 223.1.1.1/16
<i>group-prefix</i>	(Optional) Specifies the matching group address prefix. Example: 223.1.1.1/16
priority [<i>priority-value</i>]	Specifies the priority of the cable multicast authorization profile. Priority value range is: 0-255.
<i>permit</i>	The argument <i>permit</i> allows specified packets to be forwarded.
<i>deny</i>	The argument <i>deny</i> allows to specified packets to be rejected.

Command Default

Cable multicast authorization is disabled.

Command Modes

Interface configuration—cable interface only (config-mauth)

Command History

Release	Modification
12.2(33)SCB	This command was introduced.
IOS-XE 3.15.OS	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command specifies the cable multicast authorization profile match to be used.

Examples

The following example shows how to use the selected multicast authorization profile match:

```
Router(config-mauth)# match rule rule1
```

Related Commands

Command	Description
cable multicast authorization enable default-action	This command enables the cable multicast authorization features. If the multicast authorization feature is disabled, all defined authorization profiles are ineffective.
cable multicast authorization profile-name	Defines the cable multicast authorization profile.
show cable multicast authorization	Displays the list of defined multicast authorization profiles and all CMs associated with corresponding profiles.

method

To select the method the CMTS uses to determine the load, use the **method** command in the config-lb-group configuration mode. To reset the method, use the **no** form of this command.

Cisco uBR Series Router

method {modems| service-flows| utilization} **us-method** {modems| service-flows| utilization}

no method

Cisco cBR Series Router

method {modems| service-flows| utilization} **us-method** {modems| utilization}

no method

Syntax Description

modems	Specifies the load balancing method for the number of modems on the CMTS.
service-flows	Specifies the load balancing method for the number of service flows on the CMTS.
utilization	Specifies the load balancing method for the interface utilization on the CMTS.
us-method {modems service-flows utilization}	Specifies the load balancing method for upstream (US) channels on modems, service-flows, or utilization. Note service-flows method is not supported in Cisco cBR-8 router.

Command Default

No default behavior or values.

Command Modes

DOCSIS load balancing group mode (config-lb-group)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers. The service-flows keyword was removed.

Usage Guidelines

The upstream channel uses the same method as the downstream channel. Change the method of the upstream channel using the **method** command.

Examples

The following example shows how to select the method the CMTS uses to determine the load, using the **method** command.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable load-balance docsis-group 1
Router(config-lb-group)# method modems us-method service-flows
Router(config-lb-group)#
```

Related Commands

Command	Description
cable load-balance docsis-group	Configures a DOCSIS load balancing group on the CMTS.
show cable load-balance docsis-group	Displays real-time configuration, statistical, and operational information for load balancing operations on the router.

microcode (uBR10012)

To reload the microcode software images on a Parallel eXpress Forwarding (PXF) processor or on all line cards that support downloadable microcode, use the **microcode** command in global configuration mode.

microcode {*pxf filename*| **reload**}

Syntax Description

pxf	Reloads the microcode for the PXF processors on the Performance Routing Engine (PRE1) module.
<i>filename</i>	Specifies the microcode software image for the PXF processors by device name and filename.
reload	Reloads the microcode for all PRE1 modules and other line cards that support downloadable microcode software images.

Command Default

None

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(1)XF1	This command was introduced for the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

By default, the Cisco uBR10012 router automatically loads all required microcode on to the PXF processors and other line cards when it loads the Cisco IOS software image. Also, the PRE1 module automatically reloads the microcode on a card when certain faults occur, allowing the card to recover from the fault.

You can reload the microcode on the PRE1 module or on all line cards that support downloadable microcode by using the **microcode** command. Typically, this is not needed and should be done only upon the advice of Cisco TAC or field service engineers.



Tip

You can also reload the microcode on the PXF processors or on all cards using the **microcode reload** command in privileged EXEC mode. In particular, use the **microcode reload** command to reload the PXF processors with the default microcode that was loaded along with the Cisco IOS software image.

Examples

The following example shows how to reload the microcode on all PRE processors and line cards that support downloadable microcode:

```
Router# configure terminal

Router(config)# microcode reload
Reload microcode? [confirm] yes

00:49:41: Downloading Microcode: file=system:pxf/ubr10k-ucode.1.2.3,
version=1.1.0, description=Release Software created Wed 17-Jul-02 16:58
<<list of interfaces going down or coming up>>
00:49:42: !!pxf clients started, forwarding code operational!!
Router(config)#
```

The following example shows how to reload the microcode on the PXF processors on the PRE1 module, using a specific image that is stored in the Flash memory:

```
Router# configure terminal

Router(config)# microcode pxf flash:pxf/ubr10k-ucode.122.1.2.3

Reload microcode? [confirm] yes

1d04h: Downloading Microcode: file=flash:pxf/ubr10k-ucode.122.1.2.3, version=122.1.2.3,
description=Release Software created Thu 17-Oct-02 11:33
<<list of interfaces going down or coming up>>
1d04h: !!pxf clients started, forwarding code operational!!
Router(config)#
```

Related Commands

Command	Description
hw-module reset	Resets a particular PRE1 module or a particular line card.
microcode reload	Reloads the microcode software images on one or all line cards that support downloadable microcode.
show pxf microcode	Displays display identifying information for the microcode being used on the PXF processors.

microcode reload (uBR10012)

To reload the microcode software images on one or all line cards that support downloadable microcode, use the **microcode reload** command in privileged EXEC mode.

microcode reload {all | pxf} device: [filename]

Syntax Description

all	Reloads the microcode for all Performance Routing Engine (PRE1) modules and other line cards that support downloadable microcode software images.
pxf	Reloads the microcode for the Parallel eXpress Forwarding (PXF) processors on the PRE1 module.
device: [filename]	(Optional) Loads the PXF processors with the microcode software image that has the specific filename on the specific device. If no filename is specified, the first image found on the device is loaded by default.

Command Default

For **microcode reload pxf**, defaults to loading the microcode image that was originally loaded when the Cisco IOS software image was loaded.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
12.2(1)XF1	This command was introduced for the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

By default, the Cisco uBR10012 router automatically loads all required microcode on to the PXF processors and other line cards when it loads the Cisco IOS software image. Also, the PRE1 module automatically reloads the microcode on a card when certain faults occur, allowing the card to recover from the fault.

You can reload the microcode on the PRE1 module or on all line cards that support downloadable microcode by using the **microcode reload** command. Typically, this is not needed and should be done only upon the advice of Cisco TAC or field service engineers.

**Tip**

You can also reload the microcode on the PXF processors or on all cards using the **microcode** command in global configuration mode.

Examples

The following example shows how to reload the microcode on all PRE processors and line cards that support downloadable microcode:

```
Router# microcode reload all
Reload microcode? [confirm] yes

00:49:41: Downloading Microcode: file=system:pxf/ubr10k-1-ucode.122.1.0, version=122.1.0,
description=Release Software created Wed 17-Jul-02 16:58
<<list of interfaces going down or coming up>>
00:49:42: !!pxf clients started, forwarding code operational!!
Router#
```

The following example shows a typical list of devices that you can use when loading microcode for the PXF processors. This list might vary, depending on whether a standby PRE1 module is installed and depending on the version of Cisco IOS software being used.

```
Router# microcode reload pxf ?

bootflash:      location of microcode
disk0:          location of microcode
disk1:          location of microcode
flash:          location of microcode
ftp:            location of microcode
null:           location of microcode
nvram:          location of microcode
rcp:            location of microcode
scp:            location of microcode
sec-bootflash:  location of microcode
sec-disk0:      location of microcode
sec-disk1:      location of microcode
sec-nvram:      location of microcode
sec-slot0:      location of microcode
sec-slot1:      location of microcode
slot0:          location of microcode
slot1:          location of microcode
system:         location of microcode
tftp:           location of microcode
<cr>
Router#
```

The following example shows how to reload the microcode on the PXF processors on the PRE1 module, using a specific image that is stored in the Flash memory:

```
Router# microcode reload pxf flash:pxf/ubr10k-1-ucode.122.1.0.4
Reload microcode? [confirm] yes

3d00h: Downloading Microcode: file=flash:pxf/ubr10k-1-ucode.122.1.0.4, version=122.1.0.4,
description=Release Software created Thu 27-Jun-02 16:05
<<list of interfaces going down or coming up>>
3d00h: !!pxf clients started, forwarding code operational!!
Router#
```


Related Commands

Command	Description
hw-module reset	Resets a particular PRE1 module or a particular line card.
microcode	Reloads the microcode software images on one or all line cards that support downloadable microcode.
show pxf microcode	Displays display identifying information for the microcode being used on the PXF processors.

modular-host subslot

To specify the modular-host line card that will be used for DOCSIS 3.0 downstream or downstream channel bonding operations, use the **modular-host subslot** command in controller configuration mode. To remove the modular-host line card used for DOCSIS 3.0 downstream or downstream channel bonding operations, use the **no** form of this command.

modular-host subslot *slot/subslot*

no modular-host subslot *slot/subslot*

Syntax Description

<i>slot/subslot</i>	The location of the modular-host line card.
---------------------	---

Command Default

No modular-host line card is configured for DOCSIS 3.0 downstream or downstream channel bonding operations.

Command Modes

Controller configuration (config-controller)

Command History

Release	Modification
12.3(21)BC	This command was introduced for the Cisco uBR10012 router.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command specifies the modular-host line card for DOCSIS 3.0 downstream or downstream channel bonding operations. This applies to the cable interface line card (for example, the Cisco uBR10-MC5X20S-D line card) that is used for these operations. The Wideband SPA itself does not support DOCSIS 3.0 downstream channel bonding operations.



Note

A maximum of 3 SPA controllers can be hosted on a single cable interface line card.

Examples

The following example shows how to configure the modular-host line card for DOCSIS 3.0 downstream channel bonding operations for the Wideband SPA located in slot/subslot/bay 1/0/0:

```
Router(config)# controller modular-cable 1/0/0
```

```
Router(config-controller)# modular-host subslot 7/0
```

Related Commands

Command	Description
annex modulation	Sets the annex and modulation for the Wideband SPA.
cable rf-channel	Associates an RF channel on a Wideband SPA with a wideband channel.
controller modular-cable	Enters controller configuration mode to configure the Wideband SPA controller.
ip-address (controller)	Sets the IP address of the Wideband SPA FPGA.
rf-channel frequency	Sets the frequency for each RF channel.
rf-channel ip-address mac-address udp-port	Sets the IP address, MAC address and UDP port for each RF channel.
rf-channel network delay	Specifies the CIN delay for each RF channel.
rf-channel description	Specifies the description for each RF channel.
rf-channel cable downstream channel-id	Assigns a downstream channel ID to an RF channel.

modulation

To set the QAM modulation format for a specific QAM profile, use the **annex** command in QAM profile configuration mode.

modulation {256| 64}

Syntax Description

modulation {256 64}	Specifies the QAM modulation format: <ul style="list-style-type: none"> • 256– 256-QAM modulation. • 64– 64-QAM modulation.
-----------------------------	---

Command Default

None

Command Modes

QAM profile configuration (config-qam-prof)

Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Use this command to set the QAM modulation format for a specific QAM profile.

Examples

The following example shows how to set the QAM modulation format for a specific QAM profile:

```
Router# configure terminal
Router(config)# cable downstream qam-profile 4
Router(config-qam-prof)# modulation 256
```

Related Commands

Command	Description
cable downstream qam-profile	Set the QAM profile for the cable interface line card.
interleaver-depth	Set the interleaver-depth.
annex	Set the MPEG framing format.
spectrum-inversion	Set the spectrum-inversion on or off.

Command	Description
symbol-rate	Set the symbol rate.

monitoring-basics

To specify the type of monitoring for subscriber traffic management on a Cisco CMTS router, use the **monitoring-basics** command in enforce-rule configuration mode. To disable the selected monitoring, use the **no** form of this command.

monitoring-basics {**legacy**| **peak-offpeak**} {**docsis10**| **docsis11**}

no monitoring-basics {**legacy**| **peak-offpeak**} {**docsis10**| **docsis11**}

Syntax Description

legacy	Provides only one threshold and one monitoring duration.
peak-offpeak	Allows the selection of two peak durations within a day.
docsis10	Specifies application of the enforce-rule to DOCSIS 1.0 cable modems.
docsis11	Specifies application of the enforce-rule to DOCSIS 1.1 cable modems.

Command Default

The default for this command is **legacy** and **docsis10**.

Command Modes

Enforce-rule configuration (enforce-rule)

Command History

Release	Modification
12.3(9a)BC	This command was introduced.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA. Support for the Cisco uBR7225VXR router was added.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Legacy monitoring (using the **legacy** keyword) occurs 24 hours a day, with no distinction between peak and offpeak hours. The available monitoring duration is between 10 minutes and 31 days.

Use the **peak-offpeak** keyword to set up monitoring duration and threshold for first peak, second peak, and offpeak monitoring. Each one can be different. After setting up first peak and second peak durations, the

remaining hours are treated as offpeak. Monitoring happens during offpeak hours if the offpeak duration and threshold are defined. Monitoring duration is between 60 minutes and 23 hours.

Examples

The following example shows configuration of peak-offpeak monitoring for DOCSIS 1.1 cable modems:

```
Router(enforce-rule)# monitoring-basics peak-offpeak docsis11
```

Related Commands

Command	Description
cable qos enforce-rule	Creates an enforce-rule to enforce a particular QoS profile for subscriber traffic management and enters enforce-rule configuration mode.
debug cable subscriber-monitoring	Displays enforce-rule debug messages for subscriber traffic management on the Cisco CMTS routers.
duration	Specifies the time period and sample rate to be used for monitoring subscribers.
peak-time1	Specifies peak and offpeak monitoring times.
qos-profile registered	Specifies the registered QoS profile that should be used for this enforce-rule.
qos-profile enforced	Specifies a QoS profile that should be enforced when users violate the registered QoS profiles.
service-class (enforce-rule)	Identifies a particular service class for cable modem monitoring in an enforce-rule.
show cable qos enforce-rule	Displays the QoS enforce-rules that are currently defined.
show cable subscriber-usage	Displays subscribers who are violating their registered QoS profiles.

monitoring-duration



Note

Effective with Cisco IOS Release 12.3(9a)BC, the **monitoring-duration** command is replaced by the **duration** command.

To specify the time period and sample rate to be used for monitoring subscribers, use the **monitoring-duration** command in enforce-rule configuration mode. To reset an enforce-rule to its default values, use the **no** form of this command.

monitoring-duration *minutes* [**sample-rate** *minutes*]

no monitoring-duration

Syntax Description

<i>minutes</i>	Specifies the time (in minutes). The valid range is 10 to 10080, with a default of 360 (6 hours).
sample-rate <i>minutes</i>	(Optional) Rate of sampling, in minutes. The valid range is 1 to 30, with a default value of 15.

Command Default

The **monitoring-duration** value defaults to 360 minutes (6 hours), and the **sample-rate** value defaults to 15 minutes.

Command Modes

Enforce-rule configuration (enforce-rule)

Command History

Release	Modification
12.2(15)BC1	This command was introduced.
12.2(15)BC2	The minimum sample-rate was reduced to 1 minute. Also, the sample-rate is not allowed to be set to a value greater than the monitoring-duration period. If you attempt to do so, the command is ignored and both parameters remain set to their current values.
12.3(9a)BC	This command was replaced by the duration command.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The **sample-rate** *minutes* must be less than or equal to the **monitoring-duration** *minutes* period.

When you enable an enforce-rule, the Cisco CMTS router periodically checks the bandwidth being used by subscribers, to determine whether any subscribers are consuming more bandwidth than that specified by their registered QoS profile. The Cisco CMTS router keeps track of the subscribers using a sliding window that begins at each sample-rate interval and continues for the monitoring-duration period.

For example, with the default sample-rate interval of 15 minutes and the default monitoring-duration window of 360 minutes, the Cisco CMTS router samples the bandwidth usage every 15 minutes and determines the total bytes transmitted at the end of each 360-minute period. Each sample-rate interval begins a new sliding window period for which the Cisco CMTS router keeps track of the total bytes transmitted.

**Note**

The **sample-rate** interval must be less than or equal to the **monitoring-duration** period. If you attempt to set the sample-rate interval to a value greater than the monitor-duration period, the command is ignored and the parameters are unchanged.

When you change the configuration of a currently active enforce-rule, that rule begins using the new configuration immediately to manage the cable modems tracked by this enforce-rule.

For more information about the Subscriber Traffic Management feature and to see an illustration of a sample monitoring window, refer to the Subscriber Traffic Management for the Cisco CMTS Routers feature document on Cisco.com.

Examples

The following example shows an enforce-rule being configured for a monitoring-duration period that is 20 minutes in length, with a sampling rate of every 10 minutes:

```
Router# configure terminal
Router(config)# cable qos enforce-rule residential
Router(enforce-rule)# monitoring-duration 20 sample-interval 10
```

The following example shows the error message that is displayed when the **sample-rate** interval is configured to be greater than the **monitoring-duration** period. In this situation, the command is ignored and the parameters remain unchanged.

```
Router# configure terminal
Router(config)# cable qos enforce-rule residential
Router(enforce-rule)# monitoring-duration 20 sample-interval 30
```

Monitoring duration cannot be less than the Sampling interval -- so the values would remain unchanged

Related Commands

Command	Description
activate-rule at-byte-count	Specifies the number of bytes that a subscriber can transmit during the monitoring period on a Cisco CMTS router.
cable qos enforce-rule	Creates an enforce-rule to enforce a particular QoS profile for subscriber traffic management and enters enforce-rule configuration mode.

Command	Description
enabled (enforce-rule)	Activates an enforce-rule and begins subscriber traffic management on a Cisco CMTS router.
penalty-period	Specifies the time period that an enforced QoS profile should be in effect for subscribers that violate their registered QoS profiles.
qos-profile enforced	Specifies a QoS profile that should be enforced when users violate their registered QoS profiles.
qos-profile registered	Specifies the registered QoS profile that should be used for this enforce-rule.
show cable qos enforce-rule	Displays the QoS enforce-rules that are currently defined.
show cable subscriber-usage	Displays subscribers who are violating their registered QoS profiles.

name

To specify the name of the CMTS tag, use the **name** command in the cmts-tag configuration mode. To remove the name, use the **no** form of this command.

name *tag-name*

no name *tag-name*

Syntax Description

<i>tag-name</i>	Name of the CMTS tag. The configured name is added to the DOCSIS load balancing group and policies.
-----------------	---

Command Default

No default behavior or values.

Command Modes

CMTS tag mode (cmts-tag)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to give name to a CMTS tag using the **name** command:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable tag 1
Router(cmts-tag)# name cisco
```

Related Commands

Command	Description
cable load-balance docsis-group	To configure a DOCSIS load balancing group on the CMTS.
show cable load-balance docsis-group	To display real-time configuration, statistical and operational information for load balancing operations on the router.

Command	Description
cable tag	To configure a tag for a DOCSIS load balancing group on the CMTS.

network

To configure the DHCP address pool with the specified *network-number* and subnet *mask*, which are the DHCP *yiaddr* field and Subnet Mask (DHCP option 1) field, use the **network** command in global configuration mode. To remove this configuration, use the **no** form of this command.

network *network-number* [*mask*]

no network *network-number* [*mask*]

Syntax Description

<i>network-number</i>	The DHCP <i>yiaddr</i> field.
<i>mask</i>	Subnet Mask (DHCP option 1). If you do not specify the <i>mask</i> value, it is supported to 255.255.255.255.

Command Default

DHCP settings are not configured by default.

Command Modes

DHCP configuration

Command History

Release	Modification
Release 12.2(4)BC1	Supported on the Cisco uBR7100 series, Cisco uBR7200 series, and Cisco uBR10012 routers.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command requires that you first use the **dhcp ip dhcp pool name** command in global configuration mode to enter DHCP configuration mode.



Note

To create an address pool with a single IP address, use the **host** command instead of **network**.

For additional information about DHCP support on the Cisco CMTS, refer to the following document on Cisco.com:

- *DHCP and ToD Servers on the Cisco CMTS*

Examples

The following example illustrates use of the **network** command with the **ip dhcp pool name** command.

```
Router# configure terminal
```

```
Router(config)# ip dhcp pool name platinum
Router(dhcp-config)# network 10.10.10.0 255.255.0.0

Router(dhcp-config)#
```

Related Commands

Command	Description
ip dhcp pool name	Creates a DHCP address pool and enters DHCP pool configuration file mode.

nls

To enable Network Layer signaling (NLS) functionality, use the **nls** command in global configuration mode. To disable NLS functionality, use the **no** form of this command.

nls [authentication]

no nls [authentication]

Syntax Description

authentication	(Optional) Enables NLS protocol security authentication.
-----------------------	--

Command Default

Disabled.

Command Modes

Global configuration

Command History

Release	Modification
12.3(21a)BC3	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

It is recommended that NLS message authentication is enabled all the time.

Examples

The following example shows nls enabled on a router:

```
router (config)# nls
```

Related Commands

Command	Description
cpd	Enables the CPD feature.
nls ag-id auth-key	Configures an Authorization Group Identifier (AG ID) for CMTS.
nls resp-timeout	Configures NLS response timeout.

nls ag-id auth-key

To configure an Authorization Group Identifier (AG ID) for CMTS, use the **nls ag-id auth-key** command in global configuration mode. To disable the AG ID, use the **no** form of this command.

nls ag-id *ag-id number* **auth-key** *auth-key char*

no nls ag-id auth-key

Syntax Description

<i>ag-id number</i>	Authorization Group Identifier. The valid range is 1-4294967295.
<i>auth-key char</i>	Authentication key provisioned on CMTS. The valid range is 20-64 characters.

Command Default

Disabled

Command Modes

Global configuration

Command History

Release	Modification
12.3(21a)BC3	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows configuring the AG ID:

```
Router(config) # nls ag-id 345 auth-key aabbccddeeeedccbbaa
```

Related Commands

Command	Description
cpd	Enables CPD.
nls	Enables Network Layer signaling (NLS) functionality.
nls resp-timeout	Configures NLS response timeout.

nls resp-timeout

To configure the NLS response timeout, use the **nls resp-timeout** command in global configuration mode. To disable CPD, use the **no** form of this command.

nls resp-timeout *timeout number*

no nls resp-timeout *timeout number*

Syntax Description

<i>timeout number</i>	Controls the time CTMS will wait before getting a response for an NLS information request. The valid range is 1-60 seconds. Upon a response timeout, the CPD message is dropped.
-----------------------	--

Command Default

The default timeout is 1 second.

Command Modes

Global configuration

Command History

Release	Modification
12.3(21a)BC3	This command was introduced.
IOS-XE 3.15.OS	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows configuring the NLS response timeout:

```
Router(config)#nls rssp-timeout 35
```

Related Commands

Command	Description
cpd	Enables CPD.
nls	Enables Network Layer signalling (NLS) functionality.
nls ag-id auth-key	Configures an Authorization Group Identifier (AG ID) for CMTS.

oui

To configure the Organizational Unique Identifier (OUI) of the CM for the CMTS tag, use the **oui** command in the cmts-tag configuration mode. To remove the configured OUI from the CMTS tag, use the **no** form of this command.

[exclude] oui *oui-of-CM*

no oui *oui-of-CM*

Syntax Description

exclude	(Optional) Configures the tag to exclude the specified OUI.
<i>oui-of-CM</i>	MAC address prefix of the vendor.

Command Default

None

Command Modes

CMTS tag mode (cmts-tag)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to configure the OUI for the CMTS tag using the **oui** command:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable tag 1
Router(cmts-tag)# oui 00.1a.c3
```

Related Commands

Command	Description
cable load-balance docsis-group	To configure a DOCSIS load balancing group on the CMTS.
show cable load-balance docsis-group	To display real-time configuration, statistical and operational information for load balancing operations on the router.

Command	Description
cable tag	To configure a tag for a DOCSIS load balancing group on the CMTS.

output-rate



Note Starting with Cisco IOS Release 12.2(33)SCG, the **output-rate** command is not supported on the Cisco uBR10012 router.

To specify a custom-defined output line rate to a WAN interface instead of the default output line rate, use the **output-rate** command in interface configuration mode. Use the **no** form of this command to use the default output line rate.

output-rate *rate*

no output-rate

Syntax Description

<i>rate</i>	Output rate to the WAN interface, in kilobits per second. Valid values range from 1 to 1,000,000.
-------------	---

Command Default

Gigabit Ethernet output line rate is 1,000,000 kbps.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
12.2(33)SCG	Support for this command was removed for the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command specifies a custom-defined output line rate for the WAN interface.

Starting with Cisco IOS Release 12.2(33)SCG, the **output-rate** command is not supported and the value 10,000 is used for the output line rate on a Cisco uBR10012 router.

Examples

The following example shows how to specify a custom-defined output line rate for the WAN interface:

```
Router# configure terminal
Router(config)
)# interface gigabitethernet 1/0/0
```

```
Router(config-if
)# output-rate 100
```

Related Commands

Command	Description
show running-config interface gigabitethernet	Displays the configuration settings for the specified Gigabit Ethernet interface.
show interfaces gigabitethernet	Displays the status and configuration settings for Gigabit Ethernet interfaces.

override

To override the Type/Length/Value (TLV) or SNMP when assigning a restricted load balancing group (RLBG) to CM, use the **override** command in the cmts-tag configuration mode. To reenable the TLV or SNMP when assigning a RLBG to CM, use the **no** form of this command.

override

no override

Command Default

TLV or SNMP are effective when assigning a RLBG to CM.

Command Modes

CMTS tag mode (cmts-tag)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to override the TLV or SNMP when assigning a RLBG using the **override** command:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable tag 1
Router(cmts-tag)# override
```

Related Commands

Command	Description
cable load-balance docsis-group	Configures a DOCSIS load balancing group on the CMTS.
show cable load-balance docsis-group	Displays real-time configuration, statistical, and operational information for load balancing operations on the router.
cable tag	Configures a tag for a DOCSIS load balancing group on the CMTS.

packetcable

To enable PacketCable operations on the Cisco CMTS, use the **packetcable** command in global configuration mode. To disable PacketCable operations, use the **no** form of this command.

packetcable

no packetcable

Syntax Description This command has no keywords or arguments.

Command Default PacketCable operation is disabled.

Command Modes Global Configuration (config)

Command History	Release	Modification
	12.2(8)BC2	This command was introduced for the Cisco uBR7200 series universal broadband router.
	12.2(11)BC1	Support was added for automatically creating a random Element ID when PacketCable operations are enabled.
	12.2(15)BC1	Support was added for the Cisco uBR10012 router.
	IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines This command enables PacketCable operations on all cable interfaces and takes effect immediately. If you do not need to change any parameters from their default values, this is the only command needed to enable PacketCable operations.

In Cisco IOS Release 12.2(11)BC1 and later releases, this command also automatically creates a random Element ID for the CMTS that is in the range of 0 and 99,999. To ensure that this Element ID is unique across the entire PacketCable domain, you should use the **packetcable element-id** command.



Note

PacketCable operations can be configured together with HCCP N+1 redundancy, but the PacketCable states are not synchronized between the Working and Protect interfaces. If a switchover occurs, existing voice calls continue, but when the user hangs up, PacketCable event messages are not generated because the Protect interface is not aware of the previous call states. However, new voice calls can be made and proceed in the normal fashion.

Channel Width Limitations

The 200,000 Hz channel width cannot be used on upstreams that support PacketCable voice calls, or on any upstreams that use Unsolicited Grant Service (UGS) or UGS with Activity Detection (UGS-AD) service flows. Using this small a channel width with voice and other UGS/UGS-AD service flows results in calls being rejected because of “DSA MULTIPLE ERRORS”.

Examples

The following example shows PacketCable operation being enabled:

```
Router# configure terminal
Router(config)# packetcable
Router(config)#
```

The following example shows PacketCable operation being disabled (default):

```
Router# configure terminal
Router(config)# no packetcable
Router(config)#
```

Related Commands

Command	Description
clear packetcable gate counter commit	Resets the counters that track the total number of committed gates.
packetcable authorize vanilla-docsis-mta	Allows Unsolicited Grant Service (UGS) service flows without a proper PacketCable gate ID when PacketCable operations are enabled on the Cisco CMTS.
packetcable element-id	Configures the PacketCable Event Message Element ID.
packetcable gate maxcount	Changes the maximum number of PacketCable gate IDs in the gate database on the Cisco CMTS.
packetcable timer	Changes the value of the different PacketCable DQoS timers.
show packetcable gate	Displays information about one or more gates in the gate database.
show packetcable gate counter commit	Displays the total number of committed gates since system reset or since the counter was last cleared.
show packetcable global	Displays the current PacketCable configuration.

packetcable authorize vanilla-docsis-mta

To allow Unsolicited Grant Service (UGS) service flows without a proper PacketCable gate ID when PacketCable operations are enabled on the Cisco CMTS, use the **packetcable authorize vanilla-docsis-mta** command in global configuration mode. To prevent CMTSs from requesting non-PacketCable UGS service flows when PacketCable operations are enabled, use the **no** form of this command.

packetcable authorize vanilla-docsis-mta

no packetcable authorize vanilla-docsis-mta

Syntax Description This command has no keywords or arguments.

Command Default Non-PacketCable UGS service flows are not allowed when PacketCable operations are enabled.

Command Modes Global Configuration (config)

Command History	Release	Modification
	12.2(11)BC2	This command was introduced for the Cisco uBR7200 series universal broadband router.
	12.2(15)BC1	Support was added for the Cisco uBR10012 router.
	IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines By default, when PacketCable operations are enabled (using the **packetcable** command), CMTSs must follow the PacketCable protocol when requesting UGS service flows. This prevents DOCSIS CMTSs that do not support PacketCable operations from using DOCSIS-style UGS service flows.

If you have a mixed network that contains both PacketCable and non-PacketCable DOCSIS CMTSs, you can allow DOCSIS CMTSs to request UGS service flows by using the **packetcable authorize vanilla-docsis-mta** command. If, however, your CMTS is providing PacketCable services, use the **no packetcable authorize vanilla-docsis-mta** command to disable DOCSIS-style service flows. This is the default configuration when PacketCable operations are enabled, and it requires that CMTSs must provide a validly authorized gate ID before being granted a UGS service flow.

Examples The following example shows PacketCable operation being enabled, while still allowing DOCSIS-style UGS service flows:

```
Router# configure terminal
Router(config)# packetcable
```

```
Router(config)# packetcable authorize vanilla-docsis-mta
```

The **show packetcable global** command has also been enhanced to display whether non-PacketCable DOCSIS-style UGS service flows are allowed.

The following is a sample output on the Cisco uBR10012 router:

```
Router# show packetcable global
Packet Cable Global configuration:
Enabled      : Yes
Element ID: 12456
Max Gates   : 1048576
Allow non-PacketCable UGS
Default Timer value -
  T0        : 30000 msec
  T1        : 300000 msec
  T2        : 2000 msec
  T5        : 500 msec
Router#
```

The following is a sample output on a Cisco cBR series router:

```
Router# show packetcable global
Packet Cable Global configuration:
Packetcable DQoS Enabled      : Yes
Packetcable Multimedia Enabled : No
Element ID: 88330
Max Gates   : 512000
Allow non-PacketCable UGS
Default Multimedia Timer value -
  T1          : 200000 msec
  Persistent gate : 0 hour
  Volume Limit  : STOPPED
Default DQoS Timer value -
  T0          : 30000 msec
  T1          : 300000 msec
Client Accept Timer: Disabled
Client Accept Timer Expired: 0
Packetcable DQoS Gate Send SubscriberID Enabled: No
Router#
```

Related Commands

Command	Description
clear packetcable gate counter commit	Resets the counters that track the total number of committed gates.
packetcable	Enables PacketCable operations on the Cisco CMTS.
packetcable element-id	Configures the PacketCable Event Message Element ID.
packetcable gate maxcount	Changes the maximum number of PacketCable gate IDs in the gate database on the Cisco CMTS.
packetcable timer	Changes the value of the different PacketCable DQoS timers.
show packetcable gate	Displays information about one or more gates in the gate database.

Command	Description
show packetcable gate counter commit	Displays the total number of committed gates since system reset or since the counter was last cleared.
show packetcable global	Displays the current PacketCable configuration.

packetcable element-id

To configure the PacketCable Event Message Element ID on the Cisco CMTS, use the **packetcable element-id** command in global configuration mode. To reset the counter to its default value, use the **no** form of this command.

packetcable element-id *n*

no packetcable element-id

Syntax Description

<i>n</i>	PacketCable Event Message Element ID for the Cisco CMTS. The valid range is 0 through 99999, with a default that is a random number in that range.
----------	--

Command Default

A random value between 0 and 99,999.

Command Modes

Global Configuration (config)

Command History

Release	Modification
12.2(11)BC1	This command was introduced for the Cisco uBR7200 series universal broadband router.
12.2(15)BC1	Support was added for the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The PacketCable Event Message specification (PKT-SP-EM-I03-011221) requires that each trusted PacketCable network element that generates an Event Message MUST identify itself with a static Element ID that is unique across an entire PacketCable domain. This command allows you to configure the CMTS with an Element ID that is unique for your particular network. If you do not manually configure this parameter with the **packetcable element-id** command, it defaults to a random value between 0 and 99,999 when PacketCable operations is enabled.

The CMTS includes the Element ID in its Event Messages, along with its timezone information. You can display the current value using the **show packetcable global** command.

Examples

The following example shows the Event Message Element ID for this particular CMTS being set to 12456:

```
Router# configure terminal
Router(config)# packetcable element-id 12456
```

```
Pktcbl: Configured element ID 12456  
Router(config)#
```

Related Commands

Command	Description
packetcable	Enables PacketCable operations on the Cisco CMTS.
packetcable authorize vanilla-docsis-mta	Allows Unsolicited Grant Service (UGS) service flows without a proper PacketCable gate ID when PacketCable operations are enabled on the Cisco CMTS.
packetcable gate maxcount	Changes the maximum number of PacketCable gate IDs in the gate database on the Cisco CMTS.
packetcable timer	Changes the value of the different PacketCable DQoS timers.
show packetcable global	Displays the current PacketCable configuration, including the Element ID.

packetcable gate maxcount

To change the maximum number of PacketCable gate IDs in the gate database on the Cisco CMTS, use the **packetcable gate maxcount** command in global configuration mode. To reset the counter to its default value, use the **no** form of this command.

packetcable gate maxcount *n*

no packetcable gate maxcount

Syntax Description

<i>n</i>	<p>Maximum number of gate IDs to be allocated in the gate database on the CMTS.</p> <p>The valid range on the Cisco uBR10012 and Cisco uBR7200 series routers is 512 through 2097152, with a default value of 2097152 (8 * 512 * 512), which is sufficient to support 8 cable interface line cards.</p> <p>The valid range on the Cisco cBR series routers is 1 to 512000 and the default is 512000.</p>
----------	--

Command Default

2097152 gate IDs on the Cisco uBR10012 and Cisco uBR7200 series routers.

512000 gate IDs on the Cisco cBR series routers.

Command Modes

Global Configuration (config)

Command History

Release	Modification
12.2(8)BC2	This command was introduced for the Cisco uBR7200 series universal broadband router.
12.2(11)BC2	The maximum number of possible gates and the default number of gates were doubled from 1,048,576 to 2,097,152 to accommodate a maximum of eight cable interface line cards (where each cable interface line card can use a maximum of 512*512, or 262,144, gates).
12.2(15)BC1	Support was added for the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command configures the number of gate IDs that the Cisco CMTS can store in its gate database. Because each PacketCable gate ID typically refers to both an upstream gate and a downstream gate, multiply this number by 2 to get the maximum number of gates that can be created on the Cisco CMTS.

**Note**

Each cable interface line card on the Cisco uBR10012 and Cisco uBR7200 series routers supports a maximum of 512*512 (262,144) PacketCable gates, so ensure that you set the maximum number of gates to accommodate all installed cable interface line cards.

Examples

The following example shows the maximum number of gate IDs being set to 524288 on the Cisco uBR10012 router, which is sufficient for two cable interface line cards:

```
Router# configure terminal
Router(config)# packetcable gate maxcount 524288
```

The following example shows the maximum number of gate IDs being set to 10 on a Cisco cBR series router:

```
Router# configure terminal
Router(config)# packetcable gate maxcount 10
```

Related Commands

Command	Description
packetcable	Enables PacketCable operations on the Cisco CMTS.
packetcable authorize vanilla-docsis-mta	Allows Unsolicited Grant Service (UGS) service flows without a proper PacketCable gate ID when PacketCable operations are enabled on the Cisco CMTS.
packetcable element-id	Configures the PacketCable Event Message Element ID.
packetcable timer	Changes the value of the different PacketCable DQoS timers.
show packetcable global	Displays the current PacketCable configuration.

packetcable gate send-subscriberID

To include subscriber identification in GATE-OPEN and GATE-CLOSE gate control messages, use the **packetcable gate send-subscriberID** command in global configuration mode. To remove subscriber identification information from the gate control messages, use the **no** form of this command.

packetcable gate send-subscriberID

no packetcable gate send-subscriberID

Syntax Description This command has no arguments or keywords.

Command Default No subscriber identification information is provided in the GATE-OPEN and GATE-CLOSE gate control messages.

Command Modes Global configuration (config)

Command History

Release	Modification
12.3(23)BC1	This command was introduced.
12.2(33)SCB	This command was integrated into Cisco IOS Release 12.2(33)SCB. Support for the Cisco uBR7225VXR router was added.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example enables gate control subscriber identification information using the **packetcable gate send-subscriberID** command:

```
Router(config)# packetcable gate send-subscriberID
```

Related Commands

Command	Description
packetcable	Enables PacketCable operation.
show packetcable gate	Displays information about one or more gates in the gate database.
show packetcable global	Displays the current PacketCable configuration.

packetcable timer

To change the value of the different PacketCable Dynamic Quality of Service (DQoS) timers, use the **packetcable timer** command in global configuration mode. To reset a timer to its default value, use the **no** form of this command.

packetcable timer {**T0** *timer-value* | **T1** *timer-value* | **multimedia T1** *timer-value*}

no packetcable timer {**T0** *timer-value* | **T1** *timer-value* | **multimedia T1** *timer-value*}

Syntax Description

T0 <i>timer-value</i>	Sets the T0 timer in milliseconds. The valid range is from 1 to 1,000,000,000 milliseconds, with a default value of 30000 milliseconds (30 seconds).
T1 <i>timer-value</i>	Sets the T1 timer in milliseconds. The valid range is from 1 to 1,000,000,000 milliseconds, with a default value of 200000 milliseconds (200 seconds).
multimedia T1 <i>timer-value</i>	Sets the PacketCable multimedia T1 timer in milliseconds. The valid range is 1 to 1,000,000,000 milliseconds, with a default value of 200000 milliseconds (200 seconds).

Command Default

None

Command Modes

Global Configuration (config)

Command History

Release	Modification
12.2(8)BC2	This command was introduced for the Cisco uBR7200 series universal broadband router.
12.2(11)BC2	The T2 and T5 timers were removed to conform to the requirements of the PacketCable DQoS Engineering Change Notice (ECN) 02148.
12.2(15)BC1	Support was added for the Cisco uBR10012 router.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command sets the following timers, which are defined in the *PacketCable™ Dynamic Quality-of-Service Specification* (PKT-SP-DQOS-I03-020116):

- T0 specifies the amount of time that a gate ID can remain allocated without any specified gate parameters. The timer begins counting when a gate is allocated with a Gate-Alloc command. The timer stops when a Gate-Set command marks the gate as Authorized. If the timer expires without a Gate-Set command being received, the gate is deleted.
- T1 specifies the amount of time that an authorization for a gate can remain valid. It begins counting when the CMTS creates a gate with a Gate-Set command and puts the gate in the Authorized state. The timer stops when the gate is put into the committed state. If the timer expires without the gate being committed, the CMTS must close the gate and release all associated resources.

**Note**

The new timer values apply to all gates that are created after giving the command. Existing gates are not affected.

Examples

The following example shows the T0 timer being set to 20 seconds (20,000 milliseconds):

```
Router# configure terminal
Router(config)# packetcable timer T0 20000
```

Related Commands

Command	Description
packetcable	Enables PacketCable operations on the Cisco CMTS.
packetcable authorize vanilla-docsis-mta	Allows Unsolicited Grant Service (UGS) service flows without a proper PacketCable gate ID when PacketCable operations are enabled on the Cisco CMTS.
packetcable element-id	Configures the PacketCable Event Message Element ID.
packetcable gate maxcount	Changes the maximum number of PacketCable gate IDs in the gate database on the Cisco CMTS.
show packetcable global	Displays the current PacketCable configuration. show packetcable global

peak-time1

To specify peak and offpeak monitoring times on a Cisco CMTS router, use the **peak-time1** command in enforce-rule configuration mode. To disable configuration of peak monitoring times, use the **no** form of this command.

peak-time1 {*hour*|*hour:minutes*} **duration** *minutes* **avg-rate** *rate***peak-time2** {*hour*|*hour:minutes*} **duration** *minutes* **avg-rate** *rate***duration** *offpeak-minutes* **avg-rate** *offpeak-minutes***sample-interval** *minutes*]*minutes* [**penalty** | *minutes*]{**downstream**|**upstream**}[**enforce**]

no peak-time1 {*hour*|*hour:minutes*} **duration** *minutes* **avg-rate** *rate***peak-time2** {*hour*|*hour:minutes*} **duration** *minutes* **avg-rate** *rate***duration** *offpeak-minutes* **avg-rate** *offpeak-minutes***sample-interval** *minutes*]*minutes* [**penalty** | *minutes*]{**downstream**|**upstream**}[**enforce**]

Syntax Description

<i>hour</i> <i>hour:minutes</i>	Specifies the time of day, in either hh or hh:mm format, during which monitoring occurs for the peak time. If the time is specified in hour (hh), the valid range is 1 to 23 using a 24-hour clock. If the time is specified in hour:minutes (hh:mm), the valid range for hour is 1 to 23 using a 24-hour clock, and the valid range for minutes is 0 to 59.
duration <i>minutes</i>	Specifies the size of the sliding window (in minutes) during which the subscriber usage is monitored for the first peak time, and optionally for a second peak time when used with the peak-time2 keyword. The valid range is 60 to 1440.
avg-rate <i>rate</i>	Specifies the average sampling rate in kilobits per second for the specified duration. The valid range is 1 to 400000 kilobits with no default.
duration <i>offpeak-minutes</i>	(Optional) Specifies the size of the sliding window (in minutes) during which the subscriber usage is monitored for the remaining offpeak time (time not specified for peak monitoring). The valid range is 60 to 1440.
avg-rate <i>offpeak-rate</i>	Specifies the average sampling rate in kilobits per second for the specified offpeak duration. The valid range is 1 to 400000 kilobits with no default.

peak-time2 hour hour:minutes	(Optional) Specifies the time of day during which monitoring occurs for a second peak time. The time can be specified either in hour or hour:minutes format. The valid range for hour is 1 to 23 using a 24-hour clock, and the valid range for minutes is 0 to 59.
sample-interval <i>minutes</i>	Specifies how often (in minutes) the CMTS router should sample a service flow to get an estimate of subscriber usage. The valid range is 1 to 30, with a default value of 15.
penalty <i>minutes</i>	(Optional) Specifies the period (in minutes) during which a cable modem can be under penalty. The valid range is 1 to 10080.
downstream	Specifies monitoring of traffic in the downstream direction.
upstream	Specifies monitoring of traffic in the upstream direction.
enforce	(Optional) Specifies that the enforce-rule QoS profile should be applied automatically if a user violates their registered QoS profile.

Command Default

Peak and offpeak monitoring is disabled. The only default value for the **peak-time1** command is the 15-minute sample interval.

Command Modes

Enforce-rule configuration (enforce-rule)

Command History

Release	Modification
12.3(9a)BC	This command was introduced.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA. Support for the Cisco uBR7225VXR router was added.
12.2(33)SCD2	The minute-level granularity (hh:mm) for peak-time1 and peak-time2 duration, and the penalty keyword option were added.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines **Note**

This command is applicable only after the **monitoring-basics** command is configured with the keyword **peak-offpeak**.

You can monitor two peak monitoring periods using the initial **peak-time1** command and its options, followed by the **peak-time2** keyword and the corresponding options. The remaining hours are considered offpeak and can be monitored by configuring the optional **duration** keyword and the corresponding options.

The **penalty** duration, which is configured using the **peak-time1** command, is unique to weekdays, and takes precedence over the global penalty duration configured using the **penalty-period** command.

When you use the **show running-configuration** command to display the configuration, the keyword options for the **peak-time1** command are truncated. In the following example, “d” represents **duration** (a single peak and offpeak duration are configured), “avg” represents **avg-rate**, “sa” represents **sample-interval**, “pen” represents penalty, “do” represents **downstream**, and “enf” represents **enforce**:

```
Router# show running-configuration
.
.
.
peak-time1 1 d 60 avg 2 d 60 avg 40 sa 10 pen 11 do enf
```

Examples

The following example shows an enforce-rule that defines two peak monitoring periods for upstream traffic:

```
Router(enforce-rule)# peak-time1 10:30 duration 120 avg-rate 10 peak-time2 23 duration 60
avg-rate 10 sample-interval 10 penalty 11 upstream enforce
```

Related Commands

Command	Description
cable qos enforce-rule	Creates an enforce-rule to enforce a particular QoS profile for subscriber traffic management and enters enforce-rule configuration mode.
debug cable subscriber-monitoring	Displays enforce-rule debug messages for subscriber traffic management on the Cisco CMTS routers.
duration	Specifies the time period and sample rate to be used for monitoring subscribers.
monitoring-basics	Specifies the type of monitoring for subscriber traffic management on a Cisco CMTS router.
penalty-period	Specifies the period during which an enforced quality of service (QoS) profile should be in force for subscribers who violate their registered QoS profile.

Command	Description
qos-profile enforced	Specifies a QoS profile that should be enforced when users violate their registered QoS profiles. This command is applicable for DOCSIS 1.0 cable modems
qos-profile registered	Specifies the registered QoS profile that should be used for this enforce-rule. This command is applicable for DOCSIS 1.0 cable modems
service-class (enforce-rule)	Identifies a particular service class for cable modem monitoring in an enforce-rule. This command is applicable for DOCSIS 1.1 or later cable modems.
show cable qos enforce-rule	Displays the QoS enforce-rules that are currently defined.
show cable subscriber-usage	Displays subscribers who are violating their registered QoS profiles.
weekend peak-time1	Configures peak and offpeak subscriber monitoring over weekends on a Cisco CMTS router.

penalty-period

To specify the time period that an enforced quality of service (QoS) profile should be in force for subscribers that violate their registered QoS profile, use the **penalty-period** command in enforce-rule configuration mode. To reset an enforce-rule to its default penalty period, use the **no** form of this command.

penalty-period *minutes* [**time-of-day** *hour*]

no penalty-period *minutes* [**time-of-day** *hour*]

Syntax Description

<i>minutes</i>	Specifies a time period (in minutes) during which a cable modem (CM) can be under penalty. The range is 1 to 10080, with a default value of 10080 (7 days).
time-of-day { <i>hour</i> <i>hour:minutes</i> }	(Optional) Specifies the time of day (in hh or hh:mm format) when: <ul style="list-style-type: none"> • A CM that is under penalty is released from the penalty period. • A CM that is not under penalty has its subscriber monitoring counters reset. <p>If the time of day is specified in hour (hh), the valid range is 1 to 23 using a 24-hour clock.</p> <p>If the time of day is specified in hour:minutes (hh:mm), the valid range for hour is 1 to 23 using a 24-hour clock, and the valid range for minutes is 0 to 59.</p>
monitoring-on	(Optional) Specifies that monitoring should be turned on after the penalty release time. If this keyword is not specified, by default, monitoring is turned off after the release time, until the end of the day, that is 00:00 hrs.

Command Default

The default time period is 10080 minutes (7 days).

Command Modes

Enforce-rule configuration (enforce-rule)

Command History

Release	Modification
12.2(15)BC1	This command was introduced.

Release	Modification
12.3(9a)BC	This command was integrated into Cisco IOS Release 12.3(9a)BC.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA. Support for the Cisco uBR7225VXR router was added.
12.3(23)BC2	The time-of-day keyword option was added.
12.2(33)SCB	The time-of-day keyword option was integrated into Cisco IOS Release 12.2(33)SCB.
12.3(23)SCD2	The minute-level granularity for the time-of-day duration, and the monitoring-on keyword option were added.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

When a subscriber overconsumes the maximum bandwidth that is specified in the enforce-rule, the Cisco CMTS router can automatically switch the subscriber to an enforced QoS profile for the time duration configured with the **penalty-period** command. When the penalty period expires, the Cisco CMTS router restores the subscriber to their registered QoS profile.

The penalty duration specified in the **penalty-period** command is a global configuration. This penalty duration is overridden if the individual penalty duration is already configured using the **duration**, **weekend duration**, **peaktime1** or **weekend peaktime1** commands. Similarly, if the individual penalty duration is not configured, the global penalty duration is used. The table below explains in detail the criteria for choosing the penalty duration:

Table 1: Criteria for Choosing Penalty Duration

Global Penalty-Period Configured	Weekday Penalty-Period Configuration (CLI: duration or peaktime1)	Weekend Penalty-Period Configuration (CLI: weekend duration, or weekend peaktime1)	Applied Penalty Duration for Weekdays	Applied Penalty Duration for Weekends
Yes	Yes	Yes	Weekday Penalty Configuration	Weekend Penalty Configuration
Yes	Yes	No	Weekday Penalty Configuration	Global Penalty Configuration
Yes	No	Yes	Global Penalty Configuration	Weekend Penalty Configuration
Yes	No	No	Global Penalty Configuration	Global Penalty Configuration

If the keyword `monitoring-on` is specified, monitoring starts immediately after the cable modems are released from penalty. However if this keyword is not specified, by default, all the cable modems using the `enforce-rule` are not monitored until the end of day, that is, 00:00 hrs.

The penalty period continues across reboots of the cable modem, so a user cannot avoid the enforced QoS profile by trying to reset their modem and reregister on the cable network. This allows service providers to set an appropriate penalty for users who consistently exceed the allocated maximum bandwidth.

**Note**

To manually move a DOCSIS 1.0 cable modem back to its registered profile before the end of the penalty period, use the `cable modem qos profile` command. To manually move a DOCSIS 1.1(or later) cable modem back to its registered profile before the end of the penalty period, use the `cable modem {ip-address | mac-address} service-class-name` command.

When you change the configuration of a currently active `enforce-rule`, that rule begins using the new configuration immediately to manage the cable modems tracked by this `enforce-rule`.

**Note**

Before making any changes to an active `enforce-rule`, we recommend that you first disable the `enforce-rule` using the `no enabled` command.

A cable modem consists of two service flows, Primary upstream and Primary downstream. If a DOCSIS 1.0 cable modem enters the penalty period because one of its service flows has exceeded its allowed bandwidth, the QoS profile of the entire modem is changed. However, if a DOCSIS 1.1 or later cable modem enters the penalty period because its upstream or downstream service flow has exceeded the allowed bandwidth threshold, the service class name is changed only for the upstream or downstream service flow.

Examples

The following example shows an `enforce-rule` named “test”, which is configured with a penalty period of 1440 minutes (1 day):

```
Router# configure terminal
Router(config)# cable qos enforce-rule test
Router(enforce-rule)# penalty-period 1440
```

The following example shows an `enforce-rule` named “test”, which is configured with a penalty period of 1440 minutes (1 day), but allowing the removal of the cable modems in penalty at 23:00. Monitoring will be turned off by default at 23:00, to 00:00 (1 hour):

```
Router# configure terminal
Router(config)# cable qos enforce-rule test
Router(enforce-rule)# penalty-period 1440 time-of-day 23
```

The following example shows an `enforce-rule` named “test”, which is configured with a penalty period of 1440 minutes (1 day), allowing the removal of the cable modems in penalty at 23:00. However, after the cable modems are released from penalty, fresh monitoring starts, with all the subscriber monitoring counters reset to 0:

```
Router# configure terminal
Router(config)# cable qos enforce-rule test
```

```
Router(enforce-rule)# penalty-period 1440 time-of-day 23 monitoring-on
```

Related Commands

Command	Description
activate-rule at-byte-count	Specifies the number of bytes that a subscriber can transmit during the monitoring period on a Cisco CMTS router.
cable qos enforce-rule	Creates an enforce-rule to enforce a particular QoS profile for subscriber traffic monitoring, and enters the enforce-rule configuration mode.
duration	Specifies the time period and sample rate to be used for monitoring subscribers.
enabled (enforce-rule)	Activates an enforce-rule and begins subscriber traffic management on a Cisco CMTS router.
qos-profile enforced	Specifies a QoS profile that should be enforced when users violate their registered QoS profiles. This command is applicable for only DOCSIS 1.0 cable modems.
qos-profile registered	Specifies the registered QoS profile that should be used for this enforce-rule. This command is applicable for only DOCSIS 1.0 cable modems.
service-class (enforce-rule)	Specifies a service class (enforced or registered) that should be used for the cable modem monitoring in an enforce-rule. This command is applicable for DOCSIS 1.1 or later cable modems.
show cable qos enforce-rule	Displays the QoS enforce-rules that are defined.
show cable subscriber-usage	Displays subscribers who are violating their registered QoS profiles.

periodic-rel-pxf enable

To enable the Reload PXF in the Standby PRE Support feature, use the **periodic-rel-pxf enable** command in redundancy configuration mode. To disable the Reload PXF in the Standby PRE feature, use the **no** form of this command.

periodic-rel-pxf enable

no periodic-rel-pxf enable

Syntax Description This command has no arguments or keywords.

Command Default None

Command Modes Redundancy configuration (config-red)

Command History	Release	Modification
	12.2(33)SCG2	This command was introduced.
	IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines The **periodic-rel-pxf enable** command is used to enable the [Reload PXF on Standby PRE Support feature](#). The **periodic-rel-pxf enable** command is supported on Cisco uBR10012 router only.

Examples The following example shows how to enable the Reload PXF on Standby PRE feature on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# redundancy
Router(config-red
)# periodic-rel-pxf enable
Router(config-red
)# end
```

Related Commands

Command	Description
redundancy	Enters redundancy configuration mode.

ping docsis

To determine whether a specific cable modem (CM) is reachable from the CMTS at the DOCSIS MAC layer, use the **ping docsis** command in privileged EXEC mode.

```
ping docsis {mac-addr | ip-addr | name fqdn} [ count ] [repeat queue-intervals] [verbose]
```

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```
ping docsis {mac-addr | ip-addr } [ count ] [repeat queue-intervals] [verbose]
```

Syntax Description

<i>mac-addr</i>	The 48-bit hardware (MAC) address of the CM. If you specify the MAC address of a CPE device, the command will resolve it to the MAC address of the CM servicing that CPE device and send the DOCSIS ping to the CM.
<i>ip-addr</i>	IPv4 or IPv6 address of the CM. If you specify the IP address of a CPE device, the command will resolve it to the IP address of the CM servicing that CPE device and send the DOCSIS ping to the CM.
name fqdn	Specifies the fully qualified domain name (FQDN) of the cable device to be displayed. This option is only available if the show cable modem domain-name command has been run for the first time to update the cable DNS cache on the CMTS router.
repeat queue-intervals	(Optional) Specifies the number of maintenance intervals for a queue. Valid values are from 1 to 2147483647.
verbose	(Optional) Specifies verbose mode for the output, giving additional details about the packets transmitted and received.

Command Default

If no count is specified, five DOCSIS ping packets are sent.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
11.3 NA	This command was introduced for the Cisco uBR7200 series router.

Release	Modification
12.0(4)XI1	Support was added for the Cisco uBR924 cable access router.
12.1(3)XL	Support was added for the Cisco uBR905 cable access router.
12.1(5)XU1	Support was added for the Cisco CVA122 Cable Voice Adapter.
12.1(1a)T1	The command output was enhanced.
12.1(3)XQ1	Support was added for wireless radio modems.
12.1(5)EC	Support was added for the Cisco uBR7100 series routers.
12.2(2)XA	Support was added for the Cisco uBR925 cable access router.
12.2(1)XF1	Support was added for the Cisco uBR10012 router.
12.2(4)BC1	This command was integrated into Cisco IOS Release 12.2(4)BC1.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA, with the following changes: <ul style="list-style-type: none"> • Support for the Cisco uBR7225VXR router was added. • Support for specifying the IPv6 address of a CM or CPE device was added. • The name keyword option was added for specifying the fully-qualified domain name of a CM.
12.2(33)SCC	The repeat keyword was added to specify maintenance intervals for queues.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers. The name keyword and <i>fqdn</i> variable were removed.

Usage Guidelines

The DOCSIS ping is a unique Cisco patented technology that allows a cable operator to quickly diagnose the health of a channel between the CMTS router and any particular DOCSIS cable CPE device. The DOCSIS ping is similar in concept to the IP ping but uses the lower MAC layer instead of the datalink or transport layers. Using the MAC layer has two major advantages:

- A DOCSIS ping uses only 1/64 of the bandwidth of an IP ping.
- A DOCSIS ping can be used with CMs that have not yet acquired an IP address. This allows cable operators to ping CMs that were not able to complete registration or that were improperly configured at the IP layer.

In addition to providing connectivity information, the **ping docsis** command provides a real-time view and plot of requested power adjustments, frequency, timing offset adjustments, and a measure of optimal headend reception power.

If a CM responds to the **ping docsis** command, but does not respond to an IP ping, the problem could be one of the following:

- The CM is still in the registration process and has not yet come completely online. In particular, the CM could be waiting for the DHCP server to assign it an IP address.
- Severe interference or other faults on the physical layer (either the upstream or downstream).
- Significant upstream signal error, distortion, or amplitude errors, often resulting in frequent power adjustments (which are shown in the cable flap list).
- A non-DOCSIS compliant upstream carrier-to-noise power ratio (C/N) that is between 14 and 21 dB, along with a mixed modulation profile, such as ranging request/response messages being sent in QPSK mode and short and long data grants in 16-QAM mode.

**Note**

The **ping docsis** command is a DOCSIS-compliant process that can be used with any two-way DOCSIS-compliant CM; the CM does not require any special features or code. The **ping docsis** command cannot be used with telco-return CMs.

**Note**

In Cisco IOS Release 12.2(33)SCA, the **show cable modem domain-name** command must be run first on the route processor (RP) of the CMTS router before any domain name can be used as part of a cable command.

The table below explains the different characters that can appear in the output for the **ping docsis** command:

Table 2: ping docsis Command Output Characters

Output Character	Description
!	Indicates that a successful response was received from the ping request. This indicates that the CM is reachable from the CMTS and can respond to CMTS requests at the DOCSIS MAC layer.
.	Indicates that a DOCSIS ping request was sent out but that the ping request timed out without receiving a response. This indicates that the CM is having difficulties maintaining DOCSIS MAC layer connectivity to the CMTS. Note If the ping docsis command displays a number of periods (.) along with exclamation points (!), it strongly indicates the presence of RF noise or physical cable and plant issues that is causing a loss of MAC layer connectivity.

Output Character	Description
a	Indicates that a response was received but that an adjustment of frequency, power, or timing was also made in the response. This indicates that, although the upstream channel is functional, some sort of problem is forcing power averaging and other misreads of the upstream received power signals.
f	Indicates that the CMTS failed to send the DOCSIS ping request because the CM is offline, and therefore MAC-layer communication is not possible. This indicates that the CM had previously registered with the CMTS, but that at some point it stopped responding to the DOCSIS station maintenance messages and that the CMTS eventually marked the CM as offline. The CM might have lost power or might have been disconnected from the coaxial cable. Tip Use the show cable modem command with the same MAC or IP address as you used with the ping docsis command to show the current status of this CM.

**Note**

If a CM is already in the flap list, the **ping docsis** command increments the hit, miss, and power-adjustment fields for it in the cable flap list.

Examples**Note**

The following example shows a default **ping docsis** command that sends five packets to the CM with the MAC address of 00d0.ba77.7595, with a response being received for each:

```
Router# ping docsis 00d0.ba77.7595

Queueing 5 MAC-layer station maintenance intervals, timeout is 25 msec:
!!!!
Success rate is 100 percent (5/5)
Router#
```

The following example shows the verbose output for the same command:

```
Router# ping docsis 00d0.ba77.7595 verbose

Queueing 5 MAC-layer station maintenance intervals, timeout is 25 msec:
Reply from 00d0.ba77.7595: 2 ms, tadj=-1, padj=0.50, fadj=0
Reply from 00d0.ba77.7595: 2 ms, tadj=-1, padj=0.50, fadj=0
Reply from 00d0.ba77.7595: 2 ms, tadj=-1, padj=0.50, fadj=0
Reply from 00d0.ba77.7595: 98 ms, tadj=-1, padj=0.25, fadj=0
Reply from 00d0.ba77.7595: 2 ms, tadj=-1, padj=0.25, fadj=0
Success rate is 100 percent (5/5)
Router#
```


Command	Description
clear cable flap-list	Clears all the entries in the flap-list table.
ping	Outputs one or more IP ping requests to a particular IP address.
show cable flap-list	Displays the current contents of the flap list.

platform punt-policer

To rate-limit the aggregate punt-rate on a per-punt-cause basis, use the **platform punt-policer** command in global configuration mode. Using the **no** form of the command returns the rate to the default value.

platform punt-policer *punt-cause_value* *rate_value* [**high**]

no platform punt-policer

Syntax Description

punt-policer *punt-cause_value* Specifies the punt cause value. The range is from 1 to 107. *punt-cause_value* can be obtained from **show platform software punt-policer** command.

rate_value Specifies the rate in packets-per-second. The range is from 10 to 146484.

Command Default

The default value can be obtained from **show platform software punt-policer** command.

Command Modes

Global configuration (config)

Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Please add usage guidelines here.

Examples

The following example shows a sample configuration:

```
Router# configure terminal
Router(config)# platform punt-policer 10 100 high
Router(config)#
```

Related Commands

Command	Description
show platform software punt-policer	Displays configuration and statistics for the per-cause punt-policer.
show platform hardware qfp active infrastructure punt-policer summary	Displays detailed configuration data and statistics for the per-cause punt-policer.

Command	Description
show platform hardware qfp active infrastructure punt summary	Displays the punt summary statistics which includes a summary of punted packets and aggregate drop-counts from CoPP, SBRL, the punt-policer and the global policer.
show platform hardware qfp active infrastructure punt sbrl	Displays the SBRL statistics.
platform punt-sbri	Rate-limit packet streams identified by the Source-Based Rate-Limit (SBRL).
show policy-map control-plane	Displays configuration and statistics for the control-plane service-policy.
clear control-plane	Clears the control-plane service-policy statistics.
show platform hardware qfp active infrastructure punt statistics type global-drop	Displays the global punt-policer statistics.

platform punt-sbri

To rate-limit packet streams identified by the Source-Based Rate-Limit (SBRL), use the **platform punt-sbri** command in global configuration mode. To disable the rate-limiting, use the **no** form of the command.

platform punt-sbri subscriber rate *rate_value*

platform punt-sbri subscriber punt-cause *punt-cause_value* **rate** *rate_value*

platform punt-sbri wan punt-cause *punt-cause_value* **rate** *rate_value* [**quarantine-time** *q_time* **burst-factor** *b_value*]

no platform punt-sbri

Syntax Description

punt-cause <i>punt-cause_value</i>	Specifies the punt-cause value. The range is from 1 to 107.
rate <i>rate_value</i>	Specifies the rate in packet per seconds. The range is from 1 to 256, specified in powers-of-2.
quarantine-time <i>q_time</i>	Specifies the quarantine time in minutes. The range is from 1 to 60.
burst-factor <i>b_value</i>	Specifies the quarantine burst factor in packets. The range is from 50 to 1000 .

Command Default

The WAN-side default rate is zero, which means that rate-limiting does not occur. Using the **no** configuration returns the rate to the default value.

The default subscriber-side global rate is zero. The default subscriber-side per-cause rate for CABLE_L3_MOBILITY is 4 packets per second. Using the **no** configuration returns the rate to the default value.

Command Modes

Global configuration (config)

Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers. The platform punt-sbri wan command replaces service divert-rate-limit ip and service divert-rate-limit ipv6 commands. The platform punt-sbri subscriber command replaces service divert-limit and cable divert-rate-limit commands.

Usage Guidelines

WAN-side configuration

WAN configuration consists of two parts:

- 1) Configure CoPP to specify which WAN-side packet streams are subject to SBRL. The policy-map action **set qos-group 99** specifies that packets matching that class are subject to SBRL.
- 2) Configure WAN-side SBRL to specify which punt-causes are rate-limited. Trusted sites are specified by adding classes to the CoPP policy-map. ACLs are used to finely identify trusted streams. It is important to understand the CoPP applies to all punted packets, so it may be necessary to ensure that subscriber-side packets do not match the trusted-site ACLs. Quarantine can optionally be configured. When a packet-stream enters quarantine, all punts from the stream are dropped for the configured period of time. When (*burst-factor x rate*) packets arrive at a rate faster than *rate*, quarantine is activated for that stream.

For more information, see the WAN-side configuration example.

Subscriber-side configuration

The subscriber-side configuration is global. There is also a per-cause configuration which currently only applies to the CABLE_L3_MOBILITY punt-cause. All subscriber-side packets go to SBRL, regardless of the CoPP configuration.

Examples

The following example shows the subscriber-side configuration:

```
Router# configure terminal
Router(config)# platform punt-sbri subscriber punt-cause 99 rate 8
Router(config)#

Router# configure terminal
Router(config)# platform punt-sbri subscriber rate 64
Router(config)#
```

The following example shows a simple CoPP configuration which sends all WAN-side punts to SBRL:

```
Router# configure terminal
Router(config)# policy-map copp_policy
Router(config-pmap)# class class-default
Router(config-pmap-c)# set qos-group 99
Router(config-pmap-c)# exit
Router(config-pmap)# exit
Router(config)# control-plane
Router(config-cp)# service-policy input copp_policy
Router(config-cp)# exit
Router(config)# platform punt-sbri wan punt-cause 11 rate 64 quarantine 5 burst-factor 500
```

Related Commands

Command	Description
show platform hardware qfp active infrastructure punt summary	Displays the punt summary statistics which includes a summary of punted packets and aggregate drop-counts from CoPP, SBRL, the punt-policer and the global policer.
show platform hardware qfp active infrastructure punt sbri	Displays the SBRL statistics.
platform punt-policer	Configures the per-cause punt-policer.
show platform software punt-policer	Displays configuration and statistics for the per-cause punt-policer.

Command	Description
show platform hardware active qfp infrastructure punt-policer summary	Displays detailed configuration data and statistics for the per-cause punt-policer.
show policy-map control-plane	Displays configuration and statistics for the control-plane service-policy.
clear control-plane	Clears the control-plane service-policy statistics.
show platform hardware qfp active infrastructure punt statistics type global-drop	Displays the global punt-policer statistics.

policy

To select modems based on the type of service flow that is balanced, use the **policy** command in the config-lb-group configuration mode. To reset the selection, use the **no** form of this command.

policy {pcmm| ugs| us-across-ds| pure-ds-load}

no policy {pcmm| ugs| us-across-ds| pure-ds-load}

Syntax Description

pcmm	Enables balancing of modems with active PCMM service flows.
ugs	Enables balancing of modems with active UGS service flows.
us-across-ds	Sets load balancing on upstream (US) groups across downstream (DS) and DS group methods are ignored.
pure-ds-load	Considers DS load and not US load when calculating DS utilization.

Command Default

None

Command Modes

DOCSIS load balancing group mode (config-lb-group)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Examples

The following example shows how to select the modems on the CMTS based on the type of service flow that is balanced using the **policy** command.

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable load-balance docsis-group 1
Router(config-lb-group)# policy
pure-ds-load
Router(config-lb-group)#
```

Related Commands

Command	Description
cable load-balance docsis-group	Configures a DOCSIS load balancing group on the CMTS.
show cable load-balance docsis-group	Displays real-time configuration, statistical, and operational information for load balancing operations on the router.

prefix

To configure an IPv4 or IPv6 prefix in a source address verification (SAV) group, use the **prefix** command in SAV configuration mode. To disable the use of a configured prefix in a SAV group, use the **no** form of this command.

```
prefix {ipv4_prefix/ipv4_prefix_length| ipv6_prefix/ipv6_prefix_length}
```

```
no prefix {ipv4_prefix/ipv4_prefix_length| ipv6_prefix/ipv6_prefix_length}
```

Syntax Description

<i>ipv4_prefix</i>	IPv4 prefix associated with a particular SAV group, specified in the X.X.X.X/X format.
<i>ipv4_prefix_length</i>	Length of the IPv4 prefix. The valid range is from 0 to 32.
<i>ipv6_prefix</i>	IPv6 prefix associated with a particular SAV group, specified in the X:X:X:X::/X format.
<i>ipv6_prefix_length</i>	Length of the IPv6 prefix. The valid range is from 0 to 128.

Command Default

None

Command Modes

SAV Configuration (config-sav)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The **prefix** command is used to configure IPv4 or IPv6 prefixes within a particular SAV groups. The Cisco CMTS uses these prefixes to authenticate a cable modem (CM). A CM may be configured with an IPv4 or IPv6 prefix belonging to a particular SAV group. The time, length, value (TLV) 43.7.2 specifies the prefix associated with the CM. The Cisco CMTS considers a packet from a CM authorized if that packet is sourced with an IP address that belongs to the configured prefix in a SAV group.

A maximum of four prefixes are supported on one SAV group. These prefixes can be either IPv4s, IPv6s, or a combination of both prefixes (maximum up to four)

Examples

The following example shows how to configure a SAV group with one IPv4 prefixes and one IPv6 prefixes:

```
Router(config)# cable source-verify group sav1
Router(config-sav)# prefix 10.16.0.0/12
Router(config-sav)# prefix 10::/12
Router(config-sav)# exit
```

Related Commands

Command	Description
<code>cable source-verify enable-sav-static</code>	Enables SAV prefix processing.
<code>cable source-verify group</code>	Configures SAV groups.

privacy

To create a DOCSIS configuration file that enables and configures the DOCSIS Baseline Privacy Interface (BPI) option, use the **privacy** command in cable config-file configuration mode. To disable BPI for the CM, use the **no** form of this command.

privacy grace-time {**authorization** *value*| **tek** *value*}

privacy timeout {**authorize** *value*| **operational** *value*| **re-authorize** *value*| **rekey** *value*}

no privacy grace-time {**authorization**| **tek**}

no privacy timeout {**authorize**| **operational**| **re-authorize**| **reject**| **rekey**}

Syntax Description

authorization <i>value</i>	Authorization grace time in seconds. Valid values are 1 to 1800 seconds. Default value is 600 seconds.
tek <i>value</i>	TEK grace time in seconds. Valid range is 1 to 1800 seconds. Default is 600 seconds.
authorize <i>value</i>	Authorize wait timeout in seconds. Valid range is 1 to 30 seconds. Default value is 10 seconds.
operational <i>value</i>	Operational Wait timeout in seconds. Valid range is 1 to 10 seconds. Default is 1 second.
re-authorize <i>value</i>	Re-authorize wait timeout in seconds. Valid range is 1 to 20 seconds.
reject <i>value</i>	Authorize reject wait timeout in seconds. Valid range is 1 to 600 seconds. Default is 60 seconds.
rekey <i>value</i>	Rekey wait timeout in seconds. Valid range is 1 to 10 seconds. Default is 1 second.

Command Default None

Command Modes Cable config-file configuration

Command History

Release	Modification
12.1(2)EC1	This command was introduced.
12.2(11)BC2	This command was supported on the Release 12.2 BC train.

Release	Modification
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

Specifying the **privacy** command without any of the keywords and arguments enables BPI encryption and decryption for the CM. In addition to this command, you must also specify the **service-class privacy** command to enable BPI operations on the cable modem.



Note

The **privacy** command appears and is supported only in images with support for BPI or BPI+ encryption. This option configures the CM for BPI or BPI+ encryption. To use BPI encryption, the Cisco CMTS must also be configured for BPI or BPI+ encryption, using the **cable privacy** command.

Examples

The following example shows how to set the CM privacy TEK gracetime to 1200 seconds and enables BPI operations for the cable modem.

```
router(config)# cable config-file bpi.cm
router(config-file)# privacy grace-time tek 1200
router(config-file)# service-class 1 privacy

router(config-file)# exit

router(config)#
```

Related Commands

Command	Description
access-denied	Disables access to the network.
cable config-file	Creates a DOCSIS configuration file and enters configuration file mode.
cable privacy	Enables BPI or BPI+ encryption on the Cisco CMTS.
channel-id	Specifies upstream channel ID.
cpe max	Specifies CPE information.
download	Specifies download information for the configuration file.
frequency	Specifies downstream frequency.
option	Provides config-file options.
service-class	Specifies service class definitions for the configuration file.

Command	Description
snmp manager	Specifies Simple Network Management Protocol (SNMP) options.
timestamp	Enables time-stamp generation.

profile-description

To provide a profile description for each profile in the selected cable multicast authorization profile, use the **profile-description** command in multicast authorization profile configuration mode. To remove the profile description, use the **no** form of this command.

profile-description *profile-description*

no profile-description *profile-description*

Syntax Description

<i>profile-description</i>	Specifies profile description for the selected profile. You can use up to 128 characters to describe the profile.
----------------------------	---

Command Default

Profile description is empty.

Command Modes

Multicast authorization configuration—(config-mauth)

Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

This command is available only from the cable multicast authorization profile mode.

Examples

The following example shows how to enter a profile description for a multicast authorization profile name:

```
Router# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)# cable multicast auth profile-name
Router(config)# cable multicast auth profile-name gold
Router(config-mauth)# profile-description gold-configured-may
```

Related Commands

Command	Description
cable multicast authorization enable default-action	Enables the cable multicast authorization features.
cable multicast authorization profile-name	Defines the cable multicast authorization profile.

Command	Description
show cable multicast authorization	Displays the list of defined multicast authorization profiles and all CMs associated with corresponding profiles.
show running-config interface cable	Displays the running configuration for each of the cable interfaces.

protect-tunnel

To configure a Downstream External PHY Interface (DEPI) tunnel for the protect cable interface line card on a Cisco CMTS router, 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

<i>protect-tunnel-name</i>	DEPI tunnel name for the protect cable interface line card.
----------------------------	---

Command Default

The N+1 DEPI redundancy feature is disabled.

Command Modes

Global configuration (config)

Command History

Release	Modification
12.2(33)SCE	This command was introduced.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

Usage Guidelines

The protect tunnel must be explicitly configured. The working tunnel and the protect tunnel are configured using the same **depi-tunnel** command. 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 uBR10012 router:

```
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
Router(config)# depi-tunnel 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.

