



Upstream Interface Configuration

This document describes how to configure the upstream interfaces on the Cisco cBR Series Converged Broadband Router.

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Finding Feature Information

Finding Feature Information

Your software release may not support all the features documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the Feature Information Table at the end of this document.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to <http://tools.cisco.com/ITDIT/CFN/>. An account on <http://www.cisco.com/> is not required.

Hardware Compatibility Matrix for Cisco cBR Series Routers



Note

The hardware components introduced in a given Cisco IOS-XE Release are supported in all subsequent releases unless otherwise specified.

Table 1: Hardware Compatibility Matrix for the Cisco cBR Series Routers

Cisco CMTS Platform	Processor Engine	Interface Cards
Cisco cBR-8 Converged Broadband Router	<p>Cisco IOS-XE Release 3.15.0S and Later Releases</p> <p>Cisco cBR-8 Supervisor:</p> <ul style="list-style-type: none"> • PID—CBR-CCAP-SUP-160G • PID—CBR-CCAP-SUP-60G¹ • PID—CBR-SUP-8X10G-PIC 	<p>Cisco IOS-XE Release 3.15.0S and Later Releases</p> <p>Cisco cBR-8 CCAP Line Cards:</p> <ul style="list-style-type: none"> • PID—CBR-LC-8D30-16U30 • PID—CBR-LC-8D31-16U30 • PID—CBR-RF-PIC • PID—CBR-RF-PROT-PIC <p>Cisco cBR-8 Downstream PHY Modules:</p> <ul style="list-style-type: none"> • PID—CBR-D30-DS-MOD • PID—CBR-D31-DS-MOD <p>Cisco cBR-8 Upstream PHY Modules:</p> <ul style="list-style-type: none"> • PID—CBR-D30-US-MOD

¹ Effective with Cisco IOS-XE Release 3.17.0S, CBR-CCAP-SUP-60G supports 8 cable line cards. The total traffic rate is limited to 60Gbps, the total number of downstream service flow is limited to 72268, and downstream unicast low-latency flow does not count against the limits.

Information About Upstream Interface Configuration

Upstream Channel Management

Upstream Channel Management (UCM) is responsible for the physical (PHY) layer configuration and resource management of upstream channels in the Cisco cBR Series Converged Broadband Router.

Upstream Controller

An upstream port represents a physical upstream RF connector on a cable line card, connected to one or more fiber nodes. An upstream RF port is a container of upstream RF channels, which imposes constraints on both topology and spectrum for the group of RF channels contained in the physical port. An upstream RF port also represents the RF front-end hardware component on a cable line card including the connector, variable gain adjustment (VGA), and A/D converter. This is directly connected to a set of upstream physical channel receivers. The number of upstream physical channels per port is thus constrained by the number of receivers accessible to the port.

Upstream Channel

An upstream RF channel represents DOCSIS physical layer operation on a single upstream center frequency with a particular channel width. It is contained by a single physical port on the CMTS line card hardware.

Upstream Resource Management

The upstream resource management (URM) feature is primarily responsible for the maintenance of the relationship between a physical upstream connector on the line card and the upstream RF channels received on that connector.

How to Configure Upstream Interfaces

This section contains the following:

Configuring the Cisco CMTS Manually Using Configuration Mode

Connect a console terminal to the console port on the I/O controller. When asked if you want to enter the initial dialog, answer no to go into the normal operating mode of the router. After a few seconds the user EXEC prompt (**Router>**) appears.

Configuring the Modulation Profile and Assigning to an Upstream Channel

Procedure

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	cable modulation-profile <i>profile mode_of_oper qam_profile</i> Example: Router(config)# cable modulation-profile 23 tdma qam-16	Creates a preconfigured modulation profile, where the burst parameters are set to their default values for each burst type.
Step 4	Controller Upstream-Cable <i>slot/subslot/port</i> Example: Router(config)# Controller Upstream-Cable 7/0/0	Enters the controller interface configuration mode.
Step 5	us-channel <i>n modulation-profile primary-profile-number [secondary-profile-number] [tertiary-profile-number]</i>	Assigns up to three modulation profiles to an upstream port.

	Command or Action	Purpose
	Example: Router(config-if)#cable upstreamus-channel 0 modulation-profile 23	
Step 6	end Example: Router(config-controller)# end	Exits controller configuration submode and returns to privileged EXEC mode.

Configuring the Upstream Channel with PHY Layer

Procedure

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	controller upstream-cable slot/subslot/port Example: Router(config)# controller upstream-cable 1/0/0	Specifies the controller interface line card and enters upstream controller config configuration submode.
Step 4	us-channel rf-channel frequency freq-val Example: Router(config-controller)# us-channel 1 frequency 20000000	Assigns frequency to an RF channel on a controller interface.
Step 5	us-channel rf-channel docsis-mode mode Example: Router(config-controller)# us-channel 1 docsis-mode tdma	Assigns DOCSIS mode to an RF channel on a controller interface.
Step 6	us-channel rf-channel channel-width value Example: Router(config-controller)# us-channel 1 channel-width 3200000	Assigns channel width in Hertz to an RF channel on a controller interface.

	Command or Action	Purpose
Step 7	us-channel <i>rf-channel</i> modulation-profile <i>profile</i> Example: Router(config-controller)# us-channel 1 modulation-profile 21	Assigns modulation profile to an RF channel on a controller interface.
Step 8	no us-channel <i>rf-channel</i> shutdown Example: Router(config-controller)# no us-channel 1 shutdown	Enables the upstream channel.
Step 9	end Example: Router(config-controller)# end	Exits upstream controller configuration submode and returns to privileged EXEC mode.

Associating Upstream Channels with a MAC Domain and Configuring Upstream Bonding

Procedure

	Command or Action	Purpose
Step 1	enable Example: Router> enable	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	configure terminal Example: Router# configure terminal	Enters global configuration mode.
Step 3	interface cable <i>slot/subslot/cable-interface-index</i> Example: Router(config)# interface cable 7/0/0	Specifies the cable interface line card on a Cisco CMTS router.
Step 4	downstream integrated-cable <i>slot/subslot/port rf-channel rf-chan</i> [upstream grouplist] Example: Router(config-if)# downstream integrated-cable 7/0/0 rf-channel 3 upstream 3	Associates a set of upstream channels to the integrated downstream channels.

	Command or Action	Purpose
Step 5	upstream <i>md-us-chan-id</i> upstream-cable <i>slot/subslot/port</i> us-channel <i>rf-channel</i> Example: Router(config-if)# upstream 0 upstream-cable 7/0/0 us-channel 0	Associates a set of physical upstream channels with the Mac Domain.
Step 6	cable upstream bonding-group <i>id</i> Example: Router(config-if)# cable upstream bonding-group 200	Creates the upstream bonding group on the specified cable interface and enters upstream bonding configuration submenu.
Step 7	upstream <i>number</i> Example: Router(config-upstream-bonding)# upstream 1	Adds an upstream channel to the upstream bonding group. Starting from Cisco IOS-XE 3.18.0S release, maximum of 16 upstream channels can be configured for each MAC Domain, which are divided into two groups: <ul style="list-style-type: none"> • Group 1: upstream channel 0-7 • Group 2: upstream channel 8-15 The upstream bonding-group should include all the upstream channels either from Group 1 or Group 2 only.
Step 8	attributes <i>value</i> Example: Router(config-upstream-bonding)# attributes eeeeeeee	Modifies the attribute value for the specified upstream bonding group.
Step 9	end Example: Router(config-upstream-bonding)# end	Exits upstream bonding configuration submenu and returns to privileged EXEC mode.

Configuration Examples

Upstream Channel with PHY Layer Configuration Example

```

...
us-channel 0 frequency 20000000
us-channel 0 channel-width 3200000 3200000
us-channel 0 power-level 0
us-channel 0 docsis-mode tdma
us-channel 0 minislot-size 2
us-channel 0 modulation-profile 21

```

```
no us-channel 0 shutdown
...
```

Upstream Channels with a MAC Domain Configuration Example

```
...
interface Cable8/0/0
downstream Modular-Cable 8/0/0 rf-channel 0
upstream 0 Upstream-Cable 8/0/0 us-channel 0
upstream 1 Upstream-Cable 8/0/0 us-channel 1
cable mtc-mode
cable upstream bonding-group 1
    upstream 0
    upstream 1
    attributes 80000000
...
```

Additional References

Technical Assistance

Description	Link
<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>	<p>http://www.cisco.com/support</p>

Feature Information for Upstream Interface Configuration on the Cisco cBR Router

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**Note**

The below table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Table 2: Feature Information for Upstream Interface Configuration

Feature Name	Releases	Feature Information
Upstream Interface Configuration	Cisco IOS-XE 3.15.0S	This feature was introduced on the Cisco cBR Series Converged Broadband Router.