



## Controller Profile Configuration

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This document describes how to configure the controller profile on the Cisco cBR Series Converged Broadband Router.

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## Hardware Compatibility Matrix for the Cisco cBR Series Routers



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

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

Cisco CMTS Platform	Processor Engine	Interface Cards
Cisco cBR-8 Converged Broadband Router	<b>Cisco IOS-XE Release 16.5.1 and Later Releases</b> Cisco cBR-8 Supervisor: <ul style="list-style-type: none"> <li>• PID—CBR-SUP-250G</li> <li>• PID—CBR-CCAP-SUP-160G</li> <li>• PID—CBR-CCAP-SUP-60G</li> </ul>	<b>Cisco IOS-XE Release 16.5.1 and Later Releases</b> Cisco cBR-8 CCAP Line Cards: <ul style="list-style-type: none"> <li>• PID—CBR-LC-8D30-16U30</li> <li>• PID—CBR-LC-8D31-16U30</li> <li>• PID—CBR-RF-PIC</li> <li>• PID—CBR-RF-PROT-PIC</li> <li>• PID—CBR-CCAP-LC-40G</li> <li>• PID—CBR-CCAP-LC-40G-R</li> <li>• PID—CBR-CCAP-LC-G2-R</li> <li>• PID—CBR-SUP-8X10G-PIC</li> <li>• PID—CBR-2X100G-PIC</li> </ul> Digital PICs: <ul style="list-style-type: none"> <li>• PID—CBR-DPIC-8X10G</li> <li>• PID—CBR-DPIC-2X100G</li> </ul> Cisco cBR-8 Downstream PHY Module: <ul style="list-style-type: none"> <li>• PID—CBR-D31-DS-MOD</li> </ul> Cisco cBR-8 Upstream PHY Modules: <ul style="list-style-type: none"> <li>• PID—CBR-D31-US-MOD</li> </ul>

## Information about Controller Profile Configuration

As density increases with the merging of CMTS and UEQAM functions in the same device, the current controller configuration method becomes too complex and difficult. There are too many identical lines of configuration.

To simplify the controller configuration, a new concept called controller profile is introduced. A controller profile is a group of configuration parameters that apply to downstream and upstream controller, the benefits include:

- Speed up deployment
- Simplify cBR-8 deployment, configuration and troubleshooting

- Common configurations across nodes/regions
- Consistency across Cisco products for common functions

## How to Configure the Controller Profile

User configures I-CMTS controllers using legacy controller configuration commands by default. If user wants to use I-CMTS controller profile, needs to enable it first with **cable controller-profile I-CMTS enable** command.



### Note

- If user wants to configure controller using profile, it is recommended to start configuration on a “clean” CMTS without any legacy command configured in Integrated-Cable and Upstream-Cable controllers. Do not switch over between legacy configuration and profile.
- When modifying controller profile, all related controllers will be changed. So if user wants to configure a specific controller, for example, modify the base-channel power of a controller, user should not bind this controller to a profile together with other controllers.
- Legacy controller configuration commands are not supported if I-CMTS controller-profile is enabled.
- Legacy controller configuration cannot be shown in running-config if I-CMTS controller-profile is enabled.

## Configuring Downstream Controller Profile

To configure downstream controller profile, use the steps below:

```
enable
configure terminal
cable downstream controller-profile id [RPHY|I-CMTS]
base-channel-power value
max-carrier value
freq-profile id
max-ofdm-spectrum value
ofdm-freq-excl-band start-frequency value width value
rf-chan start_id [end_id]
type value
rf-output value
power-adjust value
qam-profile id
docsis-channel-id id
power-profile id
ofdm channel-profile id start-frequency value width value [plc value]

enable
configure terminal
controller integrated-cable slot/subslot/port
profile id
```

Below is an example:

```
cable downstream controller-profile 0 I-CMTS
max-carrier 32
base-channel-power 34
rf-chan 0 3
  type DOCSIS
  frequency 111000000
  rf-output NORMAL
  qam-profile 1
  docsis-channel-id 1

controller integrated-cable 2/0/0
profile 0
```



#### Note

- When configure a new I-CMTS controller profile, keyword I-CMTS is needed. If input RPHY or do not input any keyword, the system will consider it as a RPHY controller profile. Once a profile type (RPHY/I-CMTS) is set, it cannot be modified.
- Updating a profile will affect all the controllers bond with it. To delete a profile that bond with controller, user must unbind all the controllers first. All rf-channel configuration in controller will be deleted after unbind.
- At least 8 QAM channels should be configured to get the right power. Single continuous wave (CW) mode is not supported.

## Verifying Downstream Controller Profile Configuration

Use the **show cable downstream controller-profile** command to verify the configuration of the downstream controller profile.

```
Router# show cable downstream controller-profile 0
Downstream controller-profile 0, type I-CMTS
Description:
Downstream controller-profile 0 is being used by controller Integrated-Cable:
2/0/0,
Admin: UP
MaxOfdmSpectrum: 192000000
MaxCarrier: 128
BasePower: 33.0 dBmV
Mode: normal
Frequency profile: unconfigured
DS Splitting: No
OFDM frequency exclusion bands: None
```

#### Configured RF Channels:

Chan	Admin	Frequency	Type	Annex	Mod	srate	Qam-profile	dcid	power	output
0	UP	213000000	DOCSIS	B	256	5361	1	1	33.0	NORMAL
1	UP	219000000	DOCSIS	B	256	5361	1	2	33.0	NORMAL
2	UP	225000000	DOCSIS	B	256	5361	1	3	33.0	NORMAL
3	UP	231000000	DOCSIS	B	256	5361	1	4	33.0	NORMAL
4	UP	237000000	DOCSIS	B	256	5361	1	5	33.0	NORMAL
5	UP	243000000	DOCSIS	B	256	5361	1	6	33.0	NORMAL

In the above output, integrated-cable 2/0/0 is bond to profile 0. So the output of the **show controllers integrated-Cable 2/0/0 rf-channel 0 5** should match the above output. See the example below:

```
Router# show controllers integrated-cable 2/0/0 rf-channel 0-5
...
Chan Admin Frequency Type Annex Mod srate Qam-profile dcid power output
0 UP 213000000 DOCSIS B 256 5361 1 1 33.0 NORMAL
1 UP 219000000 DOCSIS B 256 5361 1 2 33.0 NORMAL
2 UP 225000000 DOCSIS B 256 5361 1 3 33.0 NORMAL
3 UP 231000000 DOCSIS B 256 5361 1 4 33.0 NORMAL
4 UP 237000000 DOCSIS B 256 5361 1 5 33.0 NORMAL
5 UP 243000000 DOCSIS B 256 5361 1 6 33.0 NORMAL
```

To check if the parameters in a profile match with the ones configured, use the **show running-config [all] | section cable downstream controller-profile** command as shown in the example below:

```
Router# show running-config | section downstream controller-profile
cable downstream controller-profile 0 I-CMTS
max-carrier 32
base-channel-power 34
rf-chan 0 3
type DOCSIS
frequency 111000000
rf-output NORMAL
qam-profile 1
docsis-channel-id 1
```

## Configuring Upstream Controller Profile

To configure upstream controller profile, use the steps below:

**enable**

**configure terminal**

**cable upstream controller-profile** *id* [RPHY|I-CMTS]

**us-channel** *id* {**chan-class-id** *id*|**channel-width** {*first-choice-width*  
[*last-choice-width*]}}|**docsis-mode**{**atdma**| **tdma**|

**tdma-atdma**}|**equalization-coefficient**|**frequency***value*|**hop-priority**{**frequency**  
**modulation channel-width**| **modulation frequency channel-width**| **frequency**  
**channel-width modulation**}|**ingress-noise-cancellation**

**interval**|**maintain-psd**|**max-logical-chans** *id*|**minislot-size**  
*value*|**modulation-profile**

**primary-profile-number**[**secondary-profile-number**] [**tertiary-profile-number**] |**power-level**  
*value*|**rng-holdoff** *priority*|**specsvl error-adaptive-profile** *id*|**spectrum-group**  
*id*|**threshold** {**cnr-profiles** *value* [*value*] |**corr-fec** *value*|**hysteresis**  
*value*|**snr-profiles** *value* [*value*] |**corr-fec** *value*}

**enable**

**configure terminal**

**controller upstream-cable** *slot/subslot/port*  
**profile** *id*

**Note**

- When configure a new I-CMTS controller profile, keyword I-CMTS is needed. If input RPHY or do not input any keyword, the system will consider it as a RPHY controller profile. Once a profile type (RPHY/I-CMTS) is set, it cannot be modified.
- Updating a profile will affect all the controllers bond with it. To delete a profile that bond with controller, user must unbind all the controllers first.
- OFDMA does not support the use of profile in this release.

## Verifying Upstream Controller Profile Configuration

Use the **show cable upstream controller-profile** command to verify the configuration of the upstream controller profile.

```
Router# show cable upstream controller-profile 0
Upstream controller-profile 0, type I-CMTS
Description:
Upstream controller-profile 0 is being used by controller Upstream-Cable:
9/0/0

Controller Upstream-Cable
...
Upstream-channel 0
  chan-class-id           : 0x0
  channel-width           : 1600000 1600000
  docsis-mode             : atdma
  equalization-coefficient : TRUE
  frequency                : 5000000
  ...
  modulation-profile      : 221
  ...
  shutdown                : FALSE
  ...
```

In the above output, upstream-cable 9/0/0 is bond to profile 0. So the output of the **show controllers upstream-Cable 9/0/0 us-channel 0** should match the above output. See the example below:

```
Router# show controllers upstream-Cable 9/0/0 us-channel 0
...
Controller 9/0/0 upstream 0 AdminState:UP OpState: UP
  atdma mode enabled
  Frequency 5.000 MHz, Channel Width 1.600 MHz, Symbol Rate 1.280 Msps
  Modulation Profile Group 221
```

To check if the parameters in a profile match with the ones configured, use the **show running-config [all] | section cable upstream controller-profile** command as shown in the example below:

```
Router# show running-config | s cable upstream controller-profile 0
cable upstream controller-profile 0 I-CMTS
us-channel 0 channel-width 1600000 1600000
us-channel 0 docsis-mode atdma
us-channel 0 minislots-size 4
us-channel 0 modulation-profile 221
us-channel 0 shutdown
...
```

# Feature Information for Controller Profile Configuration

Use Cisco Feature Navigator to find information about the platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to the <https://cfng.cisco.com/> link. An account on the Cisco.com page is not required.



**Note** The following table lists the software release in which a given feature is introduced. Unless noted otherwise, subsequent releases of that software release train also support that feature.

*Table 2: Feature Information for Controller Profile Configuration*

Feature Name	Releases	Feature Information
SG Based Config (OpSimp) Phase 2	Cisco IOS XE Fuji 16.7.1	This feature was introduced on Cisco IOS XE Fuji 16.7.1 on the Cisco cBR Series Converged Broadband Routers.

