DOCSIS 3.1 Commanded Power for Upstream SC-QAMs

This guide describes commanded power for upstream SC-QAMs on the Cisco cBR Router.

Hardware Compatibility Matrix for the Cisco cBR Series Routers

Note The hardware components that are 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	**Cisco IOS-XE Release 16.5.1 and Later Releases** Cisco cBR-8 Supervisor: • PID—CBR-SUP-250G • PID—CBR-CCAP-SUP-160G • PID—CBR-CCAP-SUP-60G • PID—CBR-SUP-8X10G-PIC	**Cisco IOS-XE Release 16.5.1 and Later Releases** Cisco cBR-8 CCAP Line Cards: • PID—CBR-LC-8D30-16U30 • PID—CBR-LC-8D31-16U30 • PID—CBR-RF-PIC • PID—CBR-RF-PROT-PIC • PID—CBR-CCAP-LC-40G • PID—CBR-CCAP-LC-40G-R Cisco cBR-8 Downstream PHY Modules: • PID—CBR-D30-DS-MOD • PID—CBR-D31-DS-MOD Cisco cBR-8 Upstream PHY Modules: • PID—CBR-D30-US-MOD • PID—CBR-D31-US-MOD

Information About Commanded Power Feature for Upstream SC-QAMs

To view the new commanded power levels pr upstream, use the following command:

```
Router# show cable modem [ ip-address | mac-address | cable {slot /subslot
/cable-interface-index}] verbose
```

> **Note** DOCSIS 3.1 Commanded Power feature is enabled by default.

Feature TLVs

TLVs Affected by Commanded Power for US SC-QAMs

The following table lists the TLVs affected by the DOCSIS 3.1 Ranging Response (RNG-RSP) Commanded Power for upstream SC-QAMs:

Name	Type	DOCSIS 3.1 Value
Power Level Adjust	2	TX Power offset adjustment (signed 8-bit, 1/4-dB units)
Power Offset	12.4.4	TX Power offset adjustment (signed 8-bit, 1/4-dB units)
Dynamic Range Window Upper Edge	14	The upper edge of the Dynamic Range Window expressed in units 1/4 dB below the max allowable setting (Phi) [DOCSIS PHYv3.0].
Commanded Power	17	This TLV contains the Dynamic Range Window value, P1.6load_min_set as well as the Transmit Power Level for each of the channels in the CM's Transmit Channel Set, expressed in units of quarter dBmV.

Commanded Power Sub-TLVs

The following table lists the sub-TLVs for DOCSIS 3.1 Commanded Power:

Name	Type (1 byte)	Length (1 byte)	Value (Variable Length)
Commanded Power	17	5 + 3*N	
Dynamic Range Window	17.1	1	The range, in decibels, of the maximum difference in power per 1.6 MHz between multiple transmitters in a cable modem's Transmit Channel Set.

Name	Type (1 byte)	Length (1 byte)	Value (Variable Length)
List of Upstream Channel IDs and Corresponding Transmit Power Levels	17.2	3*N	Values for each channel in the TCS: • Bits 23 to 16: UCID • Bits 15 to 0: Transmit Power Level (quarter dBmV)

Additional References

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. 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. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

Feature Information for Commanded Power for US SC-QAMs

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 www.cisco.com/go/cfn 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 Commanded Power Feature

Feature Name	Releases	Feature Information
DOCSIS 3.1 Commanded Power for US SC-QAMs	Cisco IOS XE Fuji 16.7.1	This feature was integrated on the Cisco cBR Series Converged Broadband Routers.