

Amplitude Averaging Compensation on the Cisco uBR7200 Series Cable Router

Feature Overview

Occasionally, the headend cable router drops modems with low Carrier-to-Noise ratios when making excessive power adjustments in response to ring-request (RNG-REQ) messages from affected modems. A solution to this problem of dropping modems is to have the cable router average a configurable number of RNG-REQ messages before making power adjustments. By compensating for a potentially unstable return path, the uBR router can maintain connectivity. However, you can interpret these power adjustments as indicating an unstable return path connection.

The **show cable flap-list** and **show cable modem** commands have been expanded to indicate which paths the cable router is making power adjustments and which modems have already reached maximum transmit power settings. Treat the marked paths as those that need service.

Benefits

- You can now configure cable router power adjustments to optimize cable operations under less than ideal conditions.
- You can also identify where the cable router is making power adjustments and service the affected paths.

Related Features and Technologies

Table 1 lists the IOS cable router features released in the IOS 12.0 timeframe.

Table 1 uBR7200 Series Cable Router Features Available Since 12.0 T

Available With:	Category	Feature
11.3(5)NA & 12.0(3)T	Cable Features	Feature Enhancements
11.3(6)NA		MC16 Modem Card
11.3(8)NA		Access List Support Enhancements
12.0(4)T		Downstream Channel ID Configuration
12.0(4)T		Multiple Service ID Support
12.0(4)T		Cable Modem and Host Subnet Addressing
12.0(5)T		Telephone Return
12.0(5)T		Time Server Functionality
12.0(7)T		Amplitude Averaging Compensation

Available With:	Category	Feature
12.0(7)XR		Cable Interface Bundling
12.0(7)XR		Enhanced Modem Status Display
12.0(7)XR		Show Interface Cable Command Verbose Enhancements
12.0(7)XR		IP Address Verification
12.0(7)XR		Registration Timeout Configuration
12.0(7)XR		Show Cable Modem Command Enhancements
12.0(7)XR		Modem Status Summary Enhancements
12.0(7)XR		Show Controller Command Enhancements
12.0(7)XR		Configuring Concatenation
12.0(7)XR		Virtual Private Network Support
12.0(7)XR		Blind Hopping Support on the MC16S Modem Card
12.0(7)XR		Signal-to-Noise Ratio Data Support
11.3(9)NA and 12.0(4)T	Cable QoS	QoS Profile Enforcement
12.0(4)T		Quality of Service for Voice
11.3(9)NA	Network Management	Upstream Traffic Shaping Feature
12.0(5)T		Enhanced-Spectrum Management
12.0(5)T		Downstream Rate Shaping with TOS bits
12.0(7)XR		Spectrum Management Using the MC16S Modem Card
12.0(7)XR		Downstream Test Signals Configuration
12.0(7)XR	Wireless Features	Point-to-Point Wireless Support

Related Documents

The uBR7200 series cable router is described in *Voice, Video, and Home Applications Configuration Guide* for Cisco IOS Release 12.0 and in the following online feature modules:

- *Cisco uBR7246 Universal Broadband Router Feature Enhancements*
- *MC16 Modem Card for uBR7200*
- *uBR7200 Series Access List Support Enhancements*
- *QoS Profile Enforcement for the Cisco uBR7200 Series Router*
- *Upstream Traffic Shaping Feature*
- *Configuring Downstream Channel IDs*
- *Telephone Return for the Cisco uBR7200 Series Cable Router*
- *Enhanced-Spectrum Management for the Cisco uBR7200 Series Cable Router*
- *Time Server Functionality*
- *Cable Interface Bundling for the Cisco uBR7200 Series Cable Router*
- *Quality of Service for Voice on the Cisco uBR7200 Series Cable Router* (this feature)

- *Modem Status Enhancements for the Cisco uBR7200 Series Cable Router*
- *Load Sharing Support*
- *Cable Modem and Host Subnet Addressing*
- *MGX Resource Pool Management Hardware Diagnostics*
- *IP Address Verification for the Cisco uBR7200 Series Cable Router*
- *Configuring the Registration Timeout Value for the Cisco uBR7200 Series Cable Router*
- *Spectrum Management Using the MC16S Modem Card on the Cisco uBR7200 Series Cable Router*
- *Configuring Downstream Test Signals for the Cisco uBR7200 Series Cable Router*
- *Configuring Concatenation on the Cisco uBR7200 Series Cable Router*
- *Point-to-Point Wireless Support for the Cisco uBR7200 Series Universal Broadband Router*
- *Blind Hopping Support on the MC16S Modem Card for the Cisco uBR7200 Series Cable Router*
- *Downstream Rate Shaping with TOS bits on the uBR7200 Series Cable Router*
- *Amplitude Averaging Compensation on the Cisco uBR7200 Series Cable Router (this feature)*

Supported Platforms

uBR7200 series cable router

Supported Standards, MIBs, and RFCs

Standards

No new or modified MIBs are supported by this feature.

MIBs

No new or modified MIBs are supported by this feature.

RFCs

No new or modified RFCs are supported by this feature.

Configuration Tasks

None

Monitoring Power Adjustments

Enter the **show cable flap** or the **show cable modem** commands to see where the cable modem termination system (CMTS) is making power adjustments and track which modems have reached maximum transmit power. Both these conditions indicate possible unstable paths that should be serviced.

The following example shows the output of the **show cable flap-list** command:

```
router# show cable flap-list
MAC Address      Upstream      Ins   Hit   Miss  CRC   P-Adj Flap  Time
0010.7bb3.fd19  Cable5/0/U1  0     2792  281   0     *45   58   Jul 27 16:54:50
0010.7bb3.fcfc  Cable5/0/U1  0     19    4     0     !43   43   Jul 27 16:55:01
0010.7bb3.fcdd  Cable5/0/U1  0     19    4     0     *3    3    Jul 27 16:55:01
```

The * symbol indicates the CMTS is using the power adjustment method on this modem. The ! symbol indicates the modem has reached maximum transmit power.

The following example shows the output of the **show cable modem** command:

```
router# show cable modem
Interface  Prim Online  Timing Rec    QoS CPE IP address  MAC address
          Sid  State  Offset Power
Cable3/0/U0 1  online  2257  0.00  3  0  10.30.128.142  0090.8330.0217
Cable3/0/U0 2  online  2262  *-0.50  3  0  10.30.128.145  0090.8330.020f
Cable3/0/U0 3  online  2260  0.25  3  0  10.30.128.146  0090.8330.0211
Cable3/0/U0 4  online  2256  *0.75  3  0  10.30.128.143  0090.8330.0216
Cable3/0/U0 5  online  2265  *0.50  3  0  10.30.128.140  0090.8330.0214
Cable3/0/U0 6  online  2256  0.00  3  0  10.30.128.141  0090.8330.0215
Cable3/0/U0 7  online  4138  !-1.00  3  1  10.30.128.182  0050.7366.124d
Cable3/0/U0 8  online  4142  !-3.25  3  1  10.30.128.164  0050.7366.1245
Cable3/0/U0 9  online  4141  !-3.00  3  1  10.30.128.185  0050.7366.17e3
Cable3/0/U0 10 online  4142  !-2.75  3  0  10.30.128.181  0050.7366.17ab
Cable3/0/U0 11 online  4142  !-3.25  3  1  10.30.128.169  0050.7366.17ef
```

As above, the * symbol indicates the CMTS is using the power adjustment method on this modem. The ! symbol indicates the modem has reached maximum transmit power.

Configuration Examples

None

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command reference publications.

- **cable upstream power-adjust noise**
- **cable upstream frequency-adjust averaging**

cable upstream power-adjust

To control power adjustment methods by setting the noise threshold, use the **cable upstream power-adjust noise** interface configuration command. To disable power adjustments, use the **no** form of this command.

cable upstream *n* power-adjust { threshold [*threshold #*] | continue [*tolerable value*] | noise [% of power adjustment]}

no cable upstream power-adjust

Syntax Description

<i>n</i>	Specifies the upstream port number.
<i>threshold #</i>	Specifies the power adjustment threshold. The threshold range is from 0 to 10dB. The default is 1 dB.
<i>tolerable value</i>	Determines if the status of the RNG-RSP should be set to CONTINUE or SUCCESS. the range is from 2 to 15 dB. The default is 2 dB.
<i>% of power adjustment</i>	Specifies the percentage of power adjustment packets required to switch from the regular power adjustment method to the noise power adjustment method. Range is from 10 to 100%. The default is 30%.

Defaults

Threshold default is 1 dB, the tolerable value default is 2 dB, and the power adjustment is 30%.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(7)T	This command was introduced.

Examples

The following example show how to change the power adjustment method when the percentage of power adjustment packets reaches 50%:

```
router(config-if)# cable upstream 0 power-adjust noise 50
```

Related Commands

Command	Description
cable upstream freq-adj	Control power adjustment methods by setting the frequency threshold.
show cable flap	Displays the quality of the connection for downstream modems. Information includes power adjustment flags showing where noise power adjustments are used.
show cable modem	Displays the status of connected modems, including receive power conditions that are having problems.

cable upstream freq-adj averaging

To control power adjustment methods by setting the frequency threshold, use the **cable upstream freq-adj averaging** interface configuration command. To disable power adjustments, use the **no** form of this command.

cable upstream *n* freq-adj averaging *% of frequency adjustment*

no cable upstream freq-adj averaging

Syntax Description

<i>n</i>	Specifies the upstream port number.
averaging	Specifies that a percentage of frequency adjustment packets is required to change the adjustment method from the regular power adjustment method to the noise power adjustment method.
<i>% of frequency adjustment</i>	Specifies the percentage of frequency adjustment packets required to switch from the regular power adjustment method to the noise power adjustment method. Valid range is from 10 to 100%.

Defaults

No default behavior or values.

Command Modes

Interface configuration

Command History

Release	Modification
12.0(7)T	This command was introduced.

Examples

The following example shows how to change the power adjustment method when the frequency adjustment packet count reaches 50%:

```
router(config-if)# cable upstream 0 freq-adj averaging 50
```

Related Commands

Command	Description
cable upstream power adjust	Controls power adjustment methods by setting the noise threshold.
show cable flap	Displays the quality of the connection for downstream modems. Information includes power adjustment flags showing where noise power adjustments are used.
show cable modem	Displays the status of connected modems, including receive power conditions that are having problems.

