



# Cisco uBR7246 Universal Broadband Features Commands

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This chapter describes the commands used to configure the Cisco uBR7246 Universal Broadband features. For uBR7246 Universal Broadband configuration information and examples, refer to the “Configuring Cisco uBR7246 Universal Broadband Features” chapter in the *Voice, Video and Home Applications Configuration Guide*.

## cable arp

To activate cable Address Resolution Protocol (ARP), use the **cable arp** cable interface configuration command. Use the **no** form of this command to disable cable ARP.

```
cable arp
no cable arp
```

### Syntax Description

This command has no arguments or keywords.

### Default

ARP enabled

### Command Mode

Cable interface configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

ARP is an Internet protocol used to map IP addresses to MAC addresses on computers and other equipment installed in a network. You need to activate ARP requests so the Cisco uBR7246 can perform IP address resolution on the downstream path.

## Example

The following example activates cable ARP requests for port 0 on the cable modem installed in slot 6:

```
configure terminal
interface cable 6/0
cable arp
```

## cable channel-change

To move a cable modem to another channel, use the **cable channel-change** cable interface configuration command. Use the **no** form of this command to disable this feature.

```
cable channel-change sid channel
no cable channel-change sid channel
```

## Syntax Description

<i>sid</i>	Service identifier (SID) of the cable modem. Valid entries are from 1 to 8191.
<i>channel</i>	User-defined or user-selected; in the current release, there is only one upstream channel available. Therefore, this value is always 0.

## Default

0

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Moving a cable modem to a new channel can improve performance, increase bandwidth availability, or troubleshoot a cable modem. You use the SID to identify a particular cable modem.

## Example

The following example changes a cable modem channel allocation from SID 50 to 0:

```
interface cable 6/0
cable channel-change 50 0
```

## cable downstream annex

To set the MPEG framing format for a downstream port on a cable modem card to either Annex A (Europe) or Annex B (North America), use the **cable downstream annex** cable interface configuration command.

```
cable downstream annex {A | B}
```

### Syntax Description

- A Annex A. The downstream is compatible with the European MPEG framing format specified in ITU-TJ.83 Annex A.
- B Default. The downstream is compatible with the North American MPEG framing format specified in ITU-TJ.83 Annex B.

### Default

Annex B

### Command Mode

Cable interface configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

The MPEG framing format must be compatible with the downstream symbol rate you set. Annex B is the North America standard and Annex A is the European standard. You should review your local standards and specifications for downstream MPEG framing to determine which format you should use.



**Note**

The cable modem card downstream ports and the cable modems on the HFC network connected through these ports must be set to the same MPEG framing format.

### Example

The following example sets the MPEG framing format to Annex A:

```
interface cable 6/0
 cable downstream annex A
```

## cable downstream frequency

To set the fixed center frequency for downstream RF carrier in Hz, enter the **cable downstream frequency** cable interface configuration command. Use the **no** form of this command to set no fixed center frequency.

```
cable downstream frequency down-freq-hz
no cable downstream frequency
```

## Syntax Description

*down-freq-hz*                      The known center frequency of the downstream carrier in Hz. The valid range is 54,000,000 to 1,020,000,000 Hz.

## Default

Disabled

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

You need to set the downstream frequency of your RF output to comply with the expected input frequency of your upconverter. To do this, you enter the fixed center frequency of the downstream RF carrier for a downstream port. (You can also select a default which does not set a specific fixed value.) The valid range for a fixed center frequency is 54,000,000 to 1,020,000,000 Hz. The center frequency is also used to configure an IF-to-RF upconverter that must be installed in your downstream path.

To calculate the center frequency, add the frequencies in Hz of the lowest channel and the highest channel available at your headend. Divide that number by 2. The typical range for current CATV headends is 88,000,000 to 860,000,000 Hz; the MCNS specification is 94,000,000 to 860,000,000 Hz.



**Note** This command currently has no effect on external upconverters; it is informational only.

## Example

The following example sets the downstream center frequency:

```
interface cable 6/0
 cable downstream frequency 96000000
```

## cable downstream if-output

To activate a downstream port on a cable modem card for digital data transmissions over the HFC network, use the **cable downstream if-output** cable interface configuration command. Use the **no** form of this command to disable the 44 MHz intermediate frequency (IF) carrier.

```
cable downstream if-output
no cable downstream if-output
```

## Syntax Description

This command has no arguments or keywords.

## Default

Downstream carrier enabled

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following example enables the downstream port 0 on the cable modem installed in slot 6:

```
interface cable 6/0
 cable downstream if-output
```

# cable downstream interleave-depth

To set the downstream interleave depth, use the **cable downstream interleave-depth** cable interface configuration command. Use the **no** form of this command to restore the default.

```
cable downstream interleave-depth {8 | 16 | 32 | 64 | 128}
no cable downstream interleave-depth
```

## Syntax Description

8   16   32   64   128	Indicates the amount of time (in milliseconds) that defines the downstream interleave depth. The default is 32.
------------------------	---

## Default

32

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

This command sets the minimum latency of the system. Higher interleave depth provides more protection from bursts of noise on the HFC network; however, higher depth also increases downstream latency. shows interleave characteristics.

I

**Table 1** *Interleaver Characteristics*

I (Number of Taps)	J (Increment)	Burst Protection 64 QAM/256QAM	Latency 64QAM/256QAM
8	16	5.9 $\mu$ sec/4.1 $\mu$ sec	0.22 msec/0.15 msec
16	8	12 $\mu$ sec/8.2 $\mu$ sec	0.48 msec/0.33 msec
32	4	24 $\mu$ sec/16 $\mu$ sec	0.98 msec/0.68 msec
64	2	47 $\mu$ sec/33 $\mu$ sec	2.0 msec/1.4 msec
128	1	95 $\mu$ sec/66 $\mu$ sec	4.0 msec/2.8 msec

## Example

The following example configures the downstream interleave depth to 128:

```
interface cable 6/0
 cable downstream interleave-depth 128
```

## cable downstream modulation

To set the modulation rate for a downstream port on a cable modem card, use the **cable downstream modulation** cable interface configuration command:

```
cable downstream modulation {64qam}
```

## Syntax Description

**64qam** Modulation is 6 bits per symbol.

## Default

64qam

## Command Mode

Cable interface configuration

## Usage Guidelines

This command was added in Cisco IOS Release 11.3 XA.

Downstream modulation is the speed at which downstream data travels to the user; by setting the downstream modulation, you define the speed, which is 64qam (6 bits per downstream symbol rate, which is the standard Multimedia Cable Network Systems (MCNS) rate).



**Note** The Cisco cable modem cards currently do not offer a downstream modulation setting for 256-QAM (8 bits per downstream symbol rate).

## Example

The following example sets the downstream modulation:

```
interface cable 6/0
 cable downstream modulation 64
```

## cable downstream symbol-rate

To set the megasymbols per second (MSPS) rate for a downstream port on a cable modem card, use the **cable downstream symbol-rate** cable interface configuration command. Use the **no** form of this command to restore the default.

```
cable downstream symbol-rate number
no cable downstream symbol-rate
```

## Syntax Description

<i>number</i>	Number of megasymbols per second (MSPS) rate for a downstream port. The valid range is 0 to 6000000 MSPS.
---------------	---

## Default

5056941 symbols per second (SPS) with 64-QAM and 5360537 SPS for 256-QAM.

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

A symbol is the basic unit of modulation. QPSK encodes 2 bits per symbol, 16-QAM encodes 4 bits per symbol, 64-QAM encodes 6 bits per symbol, and 256-QAM encodes 8 bits per symbol. The valid range for the downstream symbol rate is 0 to 6,000,000 MSPS.



**Caution** The default downstream symbol rate is set to comply with MCNS specifications for Annex B cable modem support at 5.056941 MSPS with 64-QAM modulation and 5.36037 MSPS with 256-QAM modulation. This command should only be used to change the symbol rate to support Annex A cable modems that are used outside of North America.

## Example

The following example sets the downstream symbol rate to 5056941 symbols per second (sps) to comply with MCNS specifications for Annex B:

```
interface cable 6/0
 cable downstream symbol-rate 5056941
```

## cable insertion-interval

To limit the amount of time that a cable modem can request a channel for the first time from the Cisco uBR7246, use the **cable insertion-interval** cable interface configuration command. Use the **no** form of this command to restore the default value fro this command.

```
cable insertion-interval milliseconds
no cable insertion-interval
```

## Syntax Description

<i>milliseconds</i>	Amount of time in milliseconds the cable modem can request a channel. Valid entries are from 100 to 2000 milliseconds.
---------------------	--

## Default

2000 milliseconds

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

When a cable modem connects to the HFC network, it requests a channel from the Cisco uBR7246. Use the **cable insertion-interval** command to limit the amount of time that a cable modem requests a channel for the first time from the Cisco uBR7246. A cable modem's initial channel request is known as insertion.

## Example

The following example limits the amount of time that a cable modem can request a channel for the first time from the Cisco uBR7246 (**insertion-interval**) to 1500 milliseconds:

```
interface cable 6/0
 cable insertion-interval 1500
```

## cable ip-multicast-echo

To enable IP multicast echo, use the **cable ip-multicast-echo** cable interface configuration command. Use the **no** form of this command to disable IP multicast echo.

```
cable ip-multicast-echo
no cable ip-multicast-echo
```

### Syntax Description

This command has no arguments or keywords.

### Default

IP multicast echo is enabled.

### Command Mode

Cable interface configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

### Example

The following example activates IP multicast echo:

```
interface cable 6/0
 cable ip-multicast-echo
```

## cable ip-broadcast-echo

To activate upstream IP broadcast echo so the Cisco uBR7246 can echo broadcast packets, use the **cable ip-broadcast-echo** cable interface configuration command. Use the **no** form of this command to disable the upstream IP broadcast echo.

```
cable ip-broadcast-echo
no cable ip-broadcast-echo
```

### Syntax Description

This command has no arguments or keywords.

### Default

IP broadcast echo is disabled

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following example activates IP broadcast echo:

```
interface cable 6/0
 cable ip-broadcast-echo
```

## cable privacy kek grace-time

To set key encryption keys (keks) grace-time values for baseline privacy on an HFC network, use the **cable privacy kek grace-time** global configuration command. Use the **no** form of this command to restore the default value.

```
cable privacy kek grace-time [seconds]
```

```
no cable privacy kek grace-time
```

## Syntax Description

<i>seconds</i>	(Optional) Number of seconds defining the length of key encryption grace-time. Valid range is 300 to 1800 seconds. Default is 600 seconds.
----------------	--

## Default

600 seconds

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Baseline privacy on an HFC network is configured with key encryption keys (keks) and traffic encryption keys (teks). The encryption is based on 40-bit or 56-bit data encryption standard (DES) encryption algorithms.

A kek is assigned to a cable modem based on the cable modem's service identifier (SID) and permits the cable modem to connect to the Cisco uBR7246 when baseline privacy is activated. Keks can be set to expire based on a grace-time or a life-time value. A grace-time key is used to assign a temporary key to a cable modem to access the network.

A cable modem must renew its kek (grace-seconds) before it expires.

## Example

The following example sets kek privacy grace-time to 800 seconds:

```
configure terminal
cable privacy kek grace-time 800
```

## cable privacy kek life-time

To set key encryption keys (keks) life-time values for baseline privacy on an HFC network, use the **cable privacy kek life-time** global configuration command. Use the **no** form of this command to restore the default value.

```
cable privacy kek life-time seconds
no cable privacy kek life-time
```

## Syntax Description

<i>seconds</i>	(Optional) Number of seconds defining the length of the key encryption life-time. Valid range is 86400 to 6048000. Default is 604800 seconds.
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## Default

604800 seconds

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Baseline privacy on an HFC network is configured with key encryption keys (keks) and traffic encryption keys (teks). The encryption is based on 40-bit or 56-bit data encryption standard (DES) encryption algorithms.

A kek is assigned to a cable modem based on the cable modem's service identifier (SID) and permits the cable modem to connect to the Cisco uBR7246 when baseline privacy is activated. Keks can be set to expire based on a grace-time or a life-time value. A life-time key is used to assign a more permanent key to a cable modem. Each cable modem that has a life-time key assigned will request a new life-time key from the Cisco uBR7246 before the current one expires.

A cable modem must renew its kek (lifetime-seconds) before it expires.

## Example

The following example sets kek privacy life-time to 750,000 seconds:

```
configure terminal
cable privacy kek life-time 750000
```

## cable privacy tek grace-time

To set traffic encryption keys (teks) grace-time values for baseline privacy on an HFC network, use the **cable privacy tek grace-time** global configuration command. Use the **no** form of this command to restore the default value.

```
cable privacy tek grace-time [seconds]
no cable privacy tek grace-time
```

## Syntax Description

<i>seconds</i>	(Optional) Number of seconds defining the length of traffic encryption grace-time. Valid range is 300 to 1800 seconds. Default is 600 seconds.
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## Default

600 seconds

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Baseline privacy on an HFC network is configured with key encryption keys (keks) and traffic encryption keys (teks). The encryption is based on 40-bit or 56-bit data encryption standard (DES) encryption algorithms.

The tek is assigned to a cable modem when its kek has been established. The tek is used to encrypt data traffic between the cable modem and the Cisco uBR7246. Teks can be set to expire based on a grace-time or a life-time value. A grace-time key is used to assign a temporary key to a cable modem to access the network.

A cable modem must renew its tek (grace-seconds) before it expires.

## Example

The following example sets traffic encryption key grace-time to 800 seconds:

```
configure terminal
cable privacy tek grace-time 800
```

## cable privacy tek life-time

To set traffic encryption keys (teks) grace-time and life-time values for baseline privacy on an HFC network, use the `cable privacy tek life-time` global configuration command. Use the `no` form of this command to restore the default value.

```
cable privacy tek life-time [seconds]  
no cable privacy tek life-time
```

### Syntax Description

<i>seconds</i>	(Optional) Number of seconds defining the length of the traffic encryption lifetime. Valid range is 1800 to 6048000. Default is 43200 seconds.
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### Default

43,200 seconds

### Command Mode

Global configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Baseline privacy on an HFC network is configured with key encryption keys (keks) and traffic encryption keys (teks). The encryption is based on 40-bit or 56-bit data encryption standard (DES) encryption algorithms.

The tek is assigned to a cable modem when its kek has been established. The tek is used to encrypt data traffic between the cable modem and the Cisco uBR7246. Teks can be set to expire based on a grace-time or a life-time value. A life-time key is used to assign a more permanent key to a cable modem. Each cable modem that has a life-time key assigned will request a new life-time key from the Cisco uBR7246 before the current one expires.

A cable modem must renew its tek (life-time second) before it expires.

### Example

The following example sets traffic encryption key life-time to 43,200 seconds:

```
configure terminal  
cable privacy tek life-time 43200
```

## cable proxy-arp

To activate cable proxy Address Resolution Protocol (ARP) on the cable interface, use the **cable proxy-arp** cable interface configuration command. Use the **no** form of this command to disable this feature.

```
cable proxy-arp
no cable proxy-arp
```

### Syntax Description

This command has no arguments or keywords.

### Default

Disabled

### Command Mode

Cable interface configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Because the downstream and upstream are separate interfaces, modems can not directly perform address resolution with other modems on the cable plant. This command allows modems to perform address resolution through a proxy.

### Example

The following example activates proxy ARP for host-to-host communications:

```
interface cable 6/0
 cable proxy-arp
```

## cable shared-secret

To enable cable modem authentication, use the **cable shared-secret** cable interface configuration command. Use the **no** form of this command to disable cable modem authentication.

```
cable shared-secret secret-key
no cable shared-secret
```

### Syntax Description

*secret-key* Text string used as secret key. Text string can be from 1 to 80 characters in length.

## Default

Null string

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Use this command to activate authentication so that all cable modems must return a known text string to register with the Cisco uBR7246 for access to the network.

## Example

The following example activates cable modem authentication, using “scoobee” as the shared secret key:

```
interface cable 6/0
 cable shared-secret scoobee
```

# cable spectrum-group

To create a spectrum group, use the `cable spectrum-group` global configuration command. Use the `no` form of this command to disable this spectrum group.

```
cable spectrum-group group-number type {blind | scheduled | daily periodic-sec seconds}
```

```
no cable spectrum-group group-number type {blind | scheduled | daily periodic-sec seconds}
```

## Syntax Description

<i>group-number</i>	Spectrum group number. Valid range is from 1 to 32.
<b>blind</b>	Allows the upstream frequency and input power level to change whenever noise impairs upstream data traffic.
<b>scheduled</b>	Allows the upstream frequency and power level to change at set times in a day.
<b>daily periodic-sec</b>	Allows the upstream frequency level at a specified interval in seconds.
<i>seconds</i>	Rate in seconds when upstream frequency and power level change.

## Default

No spectrum group is defined.

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Upstream traffic may be affected by noise or other cable plant impairment. The spectrum manager monitors the upstream traffic. If station maintenance messages from cable modems are not received for approximately 2.5 minutes, then the spectrum manager reassigns a different upstream frequency to the upstream channel.

Frequency agility is configured and activated using spectrum groups. A spectrum group is a table of frequencies that can be used by upstream ports to implement a frequency-hopping policy. There are two types of policies, blind and scheduled, with two corresponding types of spectrum groups.

- Blind—The spectrum manager automatically assigns a new upstream channel frequency when station maintenance (keep-alive) messages fail for approximately 2.5 minutes. This represents a complete impairment of the upstream due to noise, plant, or equipment failure.
- Scheduled—The spectrum manager automatically assigns a new upstream frequency at set times during the day.



### Note

The cable interface will not operate until you either create and configure a spectrum group or set a fixed upstream frequency. From the interface configuration prompt, an interface is assigned membership in a spectrum group. From the interface point of view, the spectrum group also represents the set of upstreams connected to the same group of fiber nodes. This allows the spectrum manager to know if the upstream spectrum is shared.

A maximum of 32 spectrum groups can be configured in the system.

## Example

The following example creates spectrum groups and sets the periodic rate to 48000 seconds:

```
configure terminal
cable spectrum-group 1 type blind
cable spectrum-group 2 type scheduled daily
cable spectrum-group 3 type scheduled periodic-sec 48000
```

## cable spectrum-group frequency

To configure a list of upstream frequencies and nominal power levels that each spectrum group can use when an upstream frequency change is necessary, use the **cable spectrum-group frequency** global configuration command. Use the **no** form of this command to delete a spectrum group list.

```
cable spectrum-group group-number [time hh:mm:ss] frequency up-freq-hz
[power-level-dbm]
no cable spectrum-group group-number
```

## Syntax Description

<i>group-number</i>	Spectrum group number. Valid range is 1 to 32. Configuring a spectrum group with multiple entries of this type, defines a list of frequencies which are available for use as upstream frequencies.
<i>time hh:mm:ss</i>	(Optional) For scheduled spectrum groups, specifies the time of day that the frequency and input power level should change.
<i>up-freq-hz</i>	Upstream frequency. Valid range is 5,000,000 to 42,000,000 Hz.
<i>power-level-dbmV</i>	(Optional) Nominal input power level. Valid range is -10 to +10 decibels per millivolt (dBmV). Some cable plants might want to change only the input power level and not frequency on a daily time schedule.

## Default

Operator must determine a value based on the spectrum allocation plan.

## Command Mode

Global configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

After you create a spectrum group, you need to configure a list of upstream frequencies and nominal power levels that each spectrum group can use when an upstream frequency change is necessary. Each spectrum group should have its own list of upstream frequencies. Valid frequencies are 5,000,000 to 42,000,000 Hz, and valid power levels are -10 dBmV to 10 dBmV. The power level value should only be changed if you want to change only the power level as part of spectrum management. The standard power level is 0 dBmV.

## Example

The following example creates spectrum group frequencies:

```
configure terminal
cable spectrum-group 1 frequency 6500000
cable spectrum-group 1 frequency 7000000d
cable spectrum-group 2 frequency 750000 -5
cable spectrum-group 3 time 02:00:00 frequency 9000000
cable spectrum-group 3 time 02:00:00 frequency 9500000 -5
end
```

## cable source-verify

To activate cable modem upstream verification, use the **cable source-verify** cable interface configuration command. Use the **no** form of this command to disable the display of this information.

```
cable source-verify
no cable source-verify
```

### Syntax Description

This command has no arguments or keywords.

### Default

Disabled

### Command Mode

Cable interface configuration

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Use this command to ensure that only known cable modems on the HFC network can transmit upstream data to a Cisco uBR7246.

### Example

The following example activates cable upstream verification:

```
configure terminal
interface cable 6/0
 cable source-verify
```

## cable upstream fec

To enable the upstream forward error correction (FEC), use the **cable upstream fec** cable interface configuration command. Use the **no** form of this command to disable FEC.

```
cable upstream port fec
no cable upstream port fec
```

### Syntax Description

*port* The port number identifying the location of the installed Cisco MC11cable modem card.

## Default

FEC is disabled.

## Command Mode

Interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

The Cisco uBR7246 uses forward error correction (FEC) to attempt to correct any upstream data that might have been corrupted. To use this feature, you need to activate FEC on the upstream RF carrier. When FEC is activated, the Cisco uBR7246 commands all cable modems on the network to activate FEC.

## Example

The following example activates upstream forward error correction:

```
configure terminal
interface cable 6/0
cable upstream 0 fec
```

## Related Commands

cable upstream frequency  
cable upstream power level  
cable upstream scrambler  
cable upstream shutdown

## cable upstream frequency

To enter a fixed frequency of the upstream RF carrier for an upstream port, use the **cable upstream frequency** cable interface configuration command. Use the **no** form of this command to restore the default value for this command.

```
cable upstream port frequency up-freq-hz
no cable upstream port frequency up-freq-hz
```

## Syntax Description

<i>port</i>	The port number identifying the location of the installed Cisco MC11 cable modem card.
<i>up-freq-hz</i>	The upstream center frequency is configured to a fixed value. The valid range is 5,000,000 to 42,000,000 Hz.

## Default

Upstream center frequency is not configured to a fixed value.

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

You need to set the upstream frequency of your RF output to comply with the expected input frequency of your Cisco MC11 cable modem. You do this by entering a fixed frequency of the upstream RF carrier for an upstream port. The valid range for a fixed upstream frequency is 5,000,000 Hz to 42,000,000 Hz.

## Example

The following example configures the upstream center frequency for port 0 (located in slot 6) to 5,700,000 Hz:

```
interface cable 6/0
 cable upstream 0 frequency 5700000
```

## cable upstream power-level

To set the input power level for the upstream RF carrier in decibels per millivolt (dBmV), use the **cable upstream power-level** cable interface configuration command. Use the **no** form of this command to restore the default configuration value for this command.

```
cable upstream port power-level dbmv
no cable upstream port power-level dbmv
```

## Syntax Description

<i>port</i>	The port number identifying the location of the installed Cisco MC11.
<i>dbmv</i>	Decibels per millivolt designating the upstream signal input power level. Valid range of -10 decibels per millivolt (dBmV to 10 dBmV).

## Default

Upstream nominal input power level is configured to 0 dBmV

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

The power level of the upstream signal has to match MC11 cable modems expected input power levels. Because of this, you need to set the nominal input power level for the upstream RF carrier in decibels per millivolt (dBmV). You can also select the default of 0 dBmV, which is the optimal setting for the upstream power level.

The valid range for the input power level is -10 dBmV to 10 dBmV. Higher values cause the modems to increase their transmit power, achieving a greater carrier-to-noise ratio (CNR). If your power levels operate at greater than 10 dBmV, you must use an in-line attenuator to bring the power level to within the valid range.

**Caution**

If you increase the input power level, the cable modems on your HFC network will increase their transmit power level. This might cause an increase in the carrier-to-noise ratio (CNR) on the network. Be careful if you adjust this parameter. You might violate the upstream return laser design parameters.

## Example

The following example sets the upstream input power level:

```
interface cable 6/0
 cable upstream 0 power-level -5
```

## Related Commands

- cable upstream fec
- cable upstream frequency
- cable upstream scrambler
- cable upstream shutdown

# cable upstream scrambler

To enable the cable upstream scrambler, use the **cable upstream scrambler** cable interface configuration command. Use the **no** form of this command to restore the default configuration value for this command.

```
cable upstream port scrambler
no cable upstream port scrambler
```

## Syntax Description

<i>port</i>	The port number identifying the location of the installed Cisco MC11.
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## Default

Upstream scrambler disabled

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

You need to activate the scrambler on the upstream RF carrier so that the cable modems on the HFC network will use built-in scrambler circuitry for upstream data transmissions. The scrambler circuitry improves reliability of the upstream receiver on the cable modem card. This command causes modems to enable their pseudo-random scrambler circuitry to improve the robustness of the upstream receiver on the line card.



### Caution

Scrambler must be activated for normal operation. Deactivate only for prototype modems that do not support scrambler.

## Example

The following example activates the upstream scrambler:

```
interface cable 6/0
 cable upstream 0 scrambler
```

## Related Commands

- cable upstream fec
- cable upstream frequency
- cable upstream power level
- cable upstream shutdown

## cable upstream shutdown

To disable the upstream port, use the **cable upstream shutdown** cable interface configuration command. Use the **no** form of this command to enable the upstream port.

```
cable upstream port shutdown
no cable upstream port shutdown
```

## Syntax Description

<i>port</i>	The port number identifying the location of the installed Cisco MC11.
-------------	---

## Default

Upstream port enabled

## Command Mode

Cable interface configuration

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following example disables the upstream ports:

```
interface cable 6/0
 cable upstream 0 shutdown
```

## show cable burst-profile

To display the upstream data burst profiles used to configure the upstream PHY, use the **show cable burst-profile** privileged EXEC command.

```
show cable burst-profile
```

## Syntax Description

This command has no arguments or keywords.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following is sample output from the **show cable burst-profile** command:

```
router# show cable burst-profile
Burst  Type Preamb Diff  FEC err FEC      Scrambl Max  Guard Last  Scrambl profile
length encode correct codeword seed  burst time  codeword
number
1      1    48    no    0x0    0x6    0x152  1    16    1    yes
2      1    48    no    0x0    0x6    0x152  1    12    1    no
3      1    48    no    0x5    0x2C   0x152  0    48    1    yes
4      1    48    no    0x5    0x2C   0x152  0    48    1    yes
5      1    48    no    0x5    0x32   0x152  0    20    1    yes
6      1    48    no    0x0    0x32   0x152  0    20    1    no
```

Table 1 describes the fields shown in the `show cable burst-profile` display.

**Table 1 Show Cable Burst-Profile Field Descriptions**

Field	Description
Burst profile number	The number of the burst profile.
Type	Type of burst profile.
Preamb length	Length of the preamble.
Diff encode	Shows if there is a diff encode.
FEC err correct	Shows the forward error correction.
FEC codeword length	Shows the length of the forward error correction codeword.
Scrambl seed	Shows the seed of the scrambler.
Max burst size	Designates the maximum burst size.
Guard time size	Indicates the guard time size.
Last codeword shortened	Shows last codeword shortened.
Scrambl	Indicates whether scramble is enabled (yes) or not (no).

## Related Commands

`show cable modem`  
`show cable modulation profile`  
`show cable privacy`  
`show cable qos`  
`show cable spectrum-group`

## show cable modem

To view configuration settings on the Cisco uBR7246, use the `show cable EXEC` command.

```
show cable modem [ip-address]
```

## Syntax Description

*ip-address* (Optional) Specify the IP address of the modem.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

This command displays information on all cable modems or a particular cable modem on the network.

## Example

The following are sample outputs from the `show cable modem` command specifying two different IP addresses:

```
router# show cable modem 172.16.0.0
Interface Upstream Timing offset SID QoS IP address MAC address
Cable6/0 U0 2851 1 2 1.1.1.5 00e0.1eab.2c0b
Cable6/0 U0 2850 2 2 1.1.1.7 00e0.1eb2.bb07
Cable6/0 U0 2852 3 2 1.1.1.2 00e0.1eab.2c29
Cable6/0 U0 2851 4 2 1.1.1.6 00e0.1eb2.bb8f
Cable6/0 U0 2851 5 2 1.1.1.3 00e0.1eb2.bb53
Cable6/0 U0 2852 6 2 1.1.1.4 00e0.1eb2.bbb1

router# show cable modem 1.1.1.5
Interface Upstream Timing offset SID QoS IP address MAC address
Cable6/0 U0 2851 1 2 1.1.1.5 00e0.1eab.2c0b
```

Table 2 describes the fields shown in the `show cable modem` display.

**Table 2** Show Cable Modem Field Descriptions

Field	Description
Interface	The interface on which the cable modem has an active connection.
Upstream	The upstream port on the interface that is being used by the cable modem.
Timing offset	The cable modem's current timing adjustment in units of the 10.24 MHz time base tick.
SID	The service identifier assigned to the modem.
QoS	The service class assigned to the modem.
IP address	IP address of the modem.
MAC address	Media access layer address.

## Related Commands

```
show cable burst-profile
show cable modulation-profile
show cable privacy
show cable qos
show cable spectrum-group
```

## show cable modulation-profile

To display modulation profile group information, use the `show cable modulation-profile` privileged EXEC command.

```
show cable modulation-profile
```

## Syntax Description

This command has no arguments or keywords.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

This command displays modulation profile group information. A modulation profile is a collection of six burst profiles that are sent out in a UCD message to configure a modem's transmit parameters for the following upstream message types: request, request/data, initial maintenance, station maintenance, short grant, and long grant.

## Example

The following is sample output from the `show cable modulation-profile` command:

```
router# show cable modulation-profile
Modulation profile group  Interval usage code  Burst profile number
1                          1                      1
1                          3                      3
1                          4                      4
1                          5                      5
1                          6                      6
```

Table 3 describes the fields shown in the `show cable modulation-profile` display.

**Table 3** Show Cable Modulation-Profile Field Descriptions

Field	Description
Modulation profile group	A modulation profile group is the set of burst profiles that define upstream transmit characteristics for the various types of upstream transmission classes.
Interval usage code	Each upstream transmit burst belongs to a class which is given a number called the IUC (interval usage code). Bandwidth maps messages (MAP) by used IUC codes to allocate upstream time slots. The following types are currently defined: <ol style="list-style-type: none"> <li>1. Request: bandwidth request slot</li> <li>2. Request/Data: bandwidth request or data slot</li> <li>3. Initial Maintenance: initial link registration contention slot</li> <li>4. Station Maintenance: link keep-alive slot</li> <li>5. Short Data Grant: short data burst slot</li> <li>6. Long Data Grant: long data burst slot</li> </ol>
Burst profile number	Burst profile number as displayed by the <code>show cable burst-profile</code> command.

## Related Commands

```
show cable burst-profile
show cable modem
show cable privacy
show cable qos
show cable spectrum-group
```

## show cable privacy

To display baseline privacy information, use the `show cable privacy` privileged EXEC command.

```
show cable privacy {tek | kek}
```

## Syntax Description

tek	Traffic encryption key.
kek	Key encryption key.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following are sample outputs for the `show cable privacy` command:

```
router# show cable privacy tek
Configured TEK life-time value = 56000
Configured TEK grace-time value = 900

router# show cable privacy kek
Configured KEK life-time value = 750000
Configured KEK grace-time value = 800
```

Table 4 describes the fields shown in the `show cable privacy` displays.

**Table 4** Show Cable Privacy Field Descriptions

Field	Description
Configured TEK life-time value =	Number of seconds defining the length of the traffic encryption life-time. Valid range is 1,800 to 6,048,000 seconds. Default is 43,200 seconds.

**Table 4 Show Cable Privacy Field Descriptions (continued)**

Field	Description
Configured TEK grace-time value =	Number of seconds defining the length of traffic encryption grace-time. Valid range is 300 to 1,800 seconds. Default is 600 seconds.
Configured KEK life-time value =	Number of seconds defining the length of the key encryption life-time. Valid range is 86,400 to 6,048,000. Default is 604,800 seconds.
Configured KEK grace-time value =	Number of seconds defining the length of key encryption grace-time. Valid range is 300 to 1,800 seconds. Default is 600 seconds.

## Related Commands

show cable burst-profile  
 show cable modem  
 show cable spectrum-group  
 show modulation-profile  
 show cable qos

## show cable qos

To display information about the quality of service (QoS), use the **show cable qos** privileged EXEC command.

```
show cable qos
```

## Syntax Description

This command has no arguments or keywords.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following is sample output from the **show cable qos** command:

```

router# show cable qos
Service Priority Max upstream Guarantee upstream Max downstream Max tx
class      bandwidth  bandwidth      bandwidth      burst
1          7          0              0              0              0
2          7          2000000       100000         4000000       0
  
```

Table 5 describes the fields shown in the `show cable qos` display.

**Table 5** Show Cable QoS Field Descriptions

Field	Description
Service class	Service class number, arbitrarily assigned.
Priority	Upstream bandwidth request priority.
Max upstream bandwidth	Upper rate limit for granted upstream bandwidth.
Guarantee upstream bandwidth	Lower rate limit for granted upstream bandwidth.
Max downstream bandwidth	Upper rate limit for granted downstream bandwidth.
Max tx burst	Maximum size of an upstream burst in minislots.

## Related Commands

```
show cable burst-profile
show cable modem
show cable spectrum-group
show modulation-profile
```

## show cable spectrum group

To display spectrum group information, use the `show cable spectrum-group` privileged EXEC command.

```
show cable spectrum group [group-number]
```

## Syntax Description

*group-number* (Optional) The assigned group number of the spectrum group.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

Use this command to display spectrum group information. Spectrum groups are used to manage frequency agility. The automatic reassignment of upstream channels when a channel shows loss of signal quality.

## Example

The following are sample outputs from two uses of the `show cable spectrum-group` command:

```
router# show cable spectrum-group
spectrum-group 1
  6 .500 MHz  0 dBmV input level
  7 .000 MHz  0 dBmV input level
  7 .500 MHz  0 dBmV input level
spectrum-group 2
  7 .000 MHz -10 dBmV input level
  7 .000 MHz  -5 dBmV input level
  7 .000 MHz  0 dBmV input level
  7 .000 MHz  5 dBmV input level
  7 .000 MHz 10 dBmV input level

router# show cable spectrum-group 1
spectrum-group 1
  6 .500 MHz  0 dBmV input level
  7 .000 MHz  0 dBmV input level
  7 .500 MHz  0 dBmV input level
```

Table 6 describes the fields shown in the `show cable spectrum-group` displays.

**Table 6** Show Cable Spectrum-Group Field Descriptions

Field	Description
spectrum-group	Identifies the spectrum group.
dBmV input level	Identifies the assigned decibels per millivolt (dBmV) input level.

## Related Commands

```
show cable burst-profile
show cable modem
show cable modulation-profile
show cable privacy
show cable qos
```

## show controllers cable

To display information about a specific cable modem card slot's interface controllers, use the `show controllers cable` privileged EXEC command.

```
show controllers cable slot/port [downstream | upstream [channel]]
```

## Syntax Description

<i>slot/port</i>	Slot number/port number indicating the location of the Cisco MC11 cable modem card.
<i>downstream</i>	(Optional) Displays downstream interface status.

<code>upstream</code>	(Optional) Displays upstream interface status.
<code>channel</code>	(Optional) Selects specific upstream channel.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following is sample output from the `show controllers cable` command for the cable modem located in slot 3/port 0:

```
router# show controllers cable 3/0
Cable3/0: Downstream is up
2422977 packets output, 126650143 bytes, 0 discarded
0 output errors
Hardware is CMTS Line Card
idb 0x6099DFD8 MAC regs 0x3CC80000 PLX regs 0x3CC00000
rx ring entries 64 tx ring entries 128 MAP tx ring entries 128
Rx ring 0x4B0607C0 shadow 0x60A64BF8 head 5
Tx ring 0x4B060A00 shadow 0x60A64D68 head 47 tail 47 count 0
MAP Tx ring 0x4B060E40 shadow 0x60A655D8 head 80 tail 80 count 0

MAP timer sourced from slot 6

throttled 0 enabled 0 disabled 0
Rx: spurious 0 framing_err 0 hcs_err 0 no_buffer 0
no_enqueue 0 no_enp 0 miss_count 2 latency 2
Tx: full 0 drop 0 stuck 0 latency 0
MTx: full 0 drop 0 stuck 0 latency 0
Slots 2134 NoUW 1 Uncorr 0 Corr 0
Req 96524429 ReqColl 0 ReqNoise 0
Rng 494 RngColl 0 RngNoise 1
MAP FIFO overflow 0, Rx FIFO overflow 0
Bandwidth Requests= 0x47B
Piggyback Requests= 0x2
Ranging Requests= 0x1EC
Timing Offset = 0x1
```

Table 7 describes the fields applicable to the Cisco uBR7246 shown in the `show controllers cable` display.

**Table 7** Show Controllers Cable Field Descriptions

Field	Description
Cable	Slot number/port number indicating the location of the Cisco MC11 cable modem card
Downstream is up	Indicates the RF downstream interface is enabled.
packets output	Total number of packets carried on the RF downstream.

**Table 7 Show Controllers Cable Field Descriptions (continued)**

Field	Description
bytes	Total number of bytes carried on the RF downstream.
discarded	Total number of packets discarded.
output error	Total number of output errors.
hardware is	Indicates the hardware being used.
idb	Interface description block.
hcs err	Header checksum errors.
NoUW	Number of allocated slots with power but no detection of unique word.
Req	Number of request bursts.
ReqColl	Number of collisions in a request burst region.
ReqNoise	Number of noise events in a request burst region.
Rng	Number of ranging bursts.
RngColl	Number of collisions detected on ranging bursts.
RngNoise	Number of noise events detected on ranging bursts.
MAP FIFO overflow	Hardware MAC MAP first-in first-out (FIFO) overflowed.
Rx FIFO overflow	Received MAC hardware FIFO overflowed.
Bandwidth Requests=	Number of requests for bandwidth MAC messages.
Piggyback Requests=	Number of piggyback request MAC messages.
Ranging Requests=	Number of ranging messages received.
Timing Offset=	Relative number of time units to which the cable modem needs to be adjusted.

The following is sample output for the downstream connection for slot 3 on port 0 from the **show controllers cable downstream** command:

```
router# show controllers cable 3/0 downstream
Cable 3/0 Downstream is up
Frequency not set, Channel Width 6 MHz, 64-QAM,
Symbol Rate 5.056941 Msps
FEC ITU-T J.83 Annex A, R/S Interleave I=12, J=17
```

Table 8 describes the fields shown in the **show controllers cable downstream** display.

**Table 8 Show Controllers Cable Downstream Field Descriptions**

Field	Description
Cable	Slot number/port number indicating the location of the Cisco MC11 cable modem card.
Downstream is up	Indicates the RF downstream interface is enabled.
Frequency	Transmission frequency of the RF downstream. (This information may not match the current transmission frequency, which is external to uBR.)
Channel Width	Indicates the width of the RF downstream channel.
QAM	Indicates the modulation scheme.

**Table 8 Show Controllers Cable Downstream Field Descriptions (continued)**

Field	Description
Symbol Rate	Indicates the transmission rate (in number of symbols per second).
FEC ITU-T	Indicates the MPEG framing standard.
R/S Interleave I/J	Indicates Reed Solomon framing based on ITU S.83-B.

The following is sample output for the upstream connection for slot 3 on port 0 from the **show controllers cable upstream** command:

```
router# show controllers cable 3/0 upstream 0
Cable3/0 Upstream 0 is up
Frequency 7.008 MHz, Channel Width 1.6 MHz, QPSK Symbol Rate 1.280 Msps
Nominal Input Power Level 0 dBmV, Tx Timing Offset 0
Ranging Backoff Start 0, Ranging Backoff End 3, Tx Backoff Start 2
Tx Backoff End 8, Modulation Profile Group 1
part_id=0x3136, rev_id=0x02, rev2_id=0x61
nb_agc_thr=0x0100, nb_agc_nom=0x3000
Range Load Reg Size=0x44
Request Load Reg Size=0x0C
DES Reg #580 = E204301, #584 = 3E030303, #588 = 0
#590 = C0C0C0C
```

Table 9 describes the fields shown in the **show controllers cable upstream** display.

**Table 9 Show Controllers Cable Upstream Field Descriptions**

Field	Description
Cable	Slot number/port number indicating the location of the Cisco MC11 cable modem card
Upstream is up	Indicates the RF upstream interface is enabled.
Frequency	Transmission frequency of the RF upstream.
Channel Width	Indicates the width of the RF upstream channel.
QPSK Symbol Rate	Indicates the QPSK symbol rate in symbols per second.
Nominal Input Power level	Indicates the desired power level coming into the receiver.
Tx Timing Offset	Indicates the current ranging offset on the channel.
Tx Backoff End	Indicates the end exponential backoff value for data collisions.
Modulation Profile Group	A set of burst profiles defining an upstream range.
part_id=	Identification number for burst demodulation hardware.
rev_id=	Identification number for burst demodulation hardware.
rev2_id=	Identification number for burst demodulation hardware.
nb_agc_thr=	Threshold used to control gain into hardware.
nb_agc_nom=	Used to accelerate convergence of input power level.
Range Load Reg Size=	Size, indicated by number of symbols, for range request bursts.
Request Load Reg Size=	Size, indicated by number of symbols, for request bursts.

## show interface cable

To display cable interface information, use the **show interface cable** privileged EXEC command:

```
show interface cable port/slot [downstream | upstream]
```

### Syntax Description

<i>port/slot</i>	The port number/slot number indicating the location of the installed Cisco MC11 cable modem.
<b>downstream</b>	(Optional) Displays cable downstream port information for a cable modem.
<b>upstream</b>	(Optional) Displays cable upstream port information for a cable modem.

### Command Mode

Privileged EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

### Example

The following is sample output for the cable modem located in slot 6/port 0 from the **show interface cable** command:

```
router# show interface cable 6/0
Cable6/0 is up, line protocol is up
  Hardware is BCM3210 FPGA, address is 00e0.1e5f.7a60 (bia 00e0.1e5f.7a60)
  Internet address is 1.1.1.3/24
  MTU 1500 bytes, BW 27000 Kbit, DLY 1000 usec, rely 255/255, load 1/255
  Encapsulation, loopback not set, keepalive not set
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input 4d07h, output 00:00:00, output hang never
  Last clearing of "show interface" counters never
  Queueing strategy: fifo
  Output queue 0/40, 0 drops; input queue 0/75, 0 drops
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
    10908 packets input, 855000 bytes, 0 no buffer
    Received 3699 broadcasts, 0 runts, 0 giants, 0 throttles
    3 input errors, 3 CRC, 0 frame, 0 overrun, 0 ignored, 0 abort
    5412 packets output, 646488 bytes, 0 underruns
    0 output errors, 0 collisions, 13082 interface resets
    0 output buffer failures, 0 output buffers swapped out
```

Table 10 describes the fields shown in the `show interface cable` display.

**Table 10 Show Interface Cable Field Descriptions**

Field	Description
Cable slot/port is up/ ...administratively down	Indicates whether the interface hardware is currently active or taken down by the administrator.
line protocol is up/ ...administratively down	Indicates whether the software processes that handle the line protocol believe the interface is usable or if it has been taken down by the administrator.
hardware	Hardware type and address.
Internet address	Internet address followed by subnet mask.
MTU	Maximum Transmission Unit (MTU) of the interface.
BW	Bandwidth of the interface in kilobits per second.
DLY	Delay of the interface in microseconds.
rely	Reliability of the interface as a fraction of 255, calculated as an exponential average over 5 minutes. (For example, 255/255 is 100% reliability.)
load	Load on the interface as a fraction of 255, calculated as an exponential average over 5 minutes. (For example, 255/255 is complete saturation.)
Encapsulation	Encapsulation method assigned to this interface.
ARP type	Type of Address Resolution Protocol (ARP) and timeout value assigned.
Last input	Number of hours, minutes, and seconds since the last packet was successfully received by an interface.
output	Number of hours, minutes, and seconds since the last packet was successfully transmitted by an interface.
Last clearing of "show interface" counters	Time at which the counters that measure cumulative statistics (such as number of bytes transmitted and received) were last reset to zero.
Queueing strategy	Displays the type of queueing configured for this interface. In The following example output, the type of queueing configured is First In First Out (FIFO).
Output queue	Number of packets in the output queue. The format of this number is A/B, where A indicates the number of packets in the queue and B indicates the maximum number of packets allowed in the queue.
drops	Indicates the number of packets dropped due to a full queue.
input queue/drops	Number of packets in the input queue. The format of this number is A/B, where A indicates the number of packets in the queue and B indicates the maximum number of packets allowed in the queue.
drops	Indicates the number of packets dropped due to a full queue.
Five minute input rate Five minute output rate	Average number of bits and packets transmitted per second in the last five minutes.
packets input	Total number of error-free packets received by the system.

**Table 10 Show Interface Cable Field Descriptions (continued)**

Field	Description
bytes input	Total number of bytes, including data and MAC encapsulation, in the error-free packets received by the system.
no buffer	Number of received packets discarded because there was no buffer space in the main system.
Received broadcast	Total number of broadcast or multicast packets received by the interface.
runts	Number of packets that are discarded because they are smaller than the medium's minimum packet size.
giants	Number of packets that are discarded because they exceed the medium's maximum packet size.
input errors	Includes runts, giants, no buffers, CRC, frame, overrun, and ignored counts.
CRC	Cyclic redundancy checksum generated by the originating LAN station or far-end device does not match the checksum calculated from the data received.
frame	Number of packets received incorrectly having a CRC error and a non-integer number of octets.
overrun	Number of times the receiver hardware was unable to hand received data to a hardware buffer because the input rate exceeded the receiver's ability to handle the data.
ignored	Number of received packets ignored by the interface because the interface hardware ran low on internal buffers.
packets output	Total number of messages transmitted by the system.
bytes	Total number of bytes, including data and MAC encapsulation, transmitted by the system.
underruns	Number of times the transmitter has been running faster than the receiving device can handle.
output errors	Sum of all errors that prevented the final transmission of packets out of the interface being examined.
collisions	Not applicable for the Cisco uBR7246.
interface resets	Number of times an interface has been completely reset.
output buffer failures	Number of times the output buffer has failed.
output buffer swapped out	Number of times the output buffer has been swapped out.

The following is sample output for the downstream cable interface of slot 6 on port 0 from the **show interface cable downstream** command:

```
router# show interface cable 6/0 downstream
Cable6/0: Downstream is up
      111947771 packets output, 1579682655 bytes, 0 discarded
      0 output errors
```

Table 11 describes the fields shown in the `show controllers cable downstream` display.

**Table 11 Show Interface Cable Downstream Field Descriptions**

Field	Description
Cable	Indicates the location of the downstream interface.
Downstream is up/...administratively down	Indicates the administrative state of the interface.
packets output	Total number of packets transmitted out of this interface.
bytes	Total number of bytes transmitted out of this interface.
discarded	Total number of packets discarded.
output errors	Sum of all errors that prevented downstream transmission of packets out of this interface.

The following is sample output for the upstream cable interface located in slot 6/port 0 from the `show interface cable upstream` command:

```
router# show interface cable 6/0 upstream
Cable6/0: Upstream 0 is up
  Received 3699 broadcasts, 0 multicasts, 28586 unicasts
  0 discards, 0 errors, 0 unknown protocol
  21817 packets error-free, 2371 corrected, 8097 uncorrectable
  0 noise, 0 microreflections
  CBR_queue_depth: [not implemented], ABR_queue_depth: [not implemented],
  UBR[1]_queue_depth: 0, UBR[2]_queue_depth: 0,
  UBR[3]_queue_depth: 0, POLLS_queue_depth: [not implemented]
  ADMIN_queue_depth: [not implemented]

  Last Minislot Stamp (current_time_base):190026   FLAG:1
  Last Minislot Stamp (scheduler_time_base):200706 FLAG:1
```

Table 12 describes the fields shown in the `show interface cable upstream` display.

**Table 12 Show Interface Cable Upstream Field Descriptions**

Field	Description
Cable	Identifying the cable interface.
Upstream is up/...administratively down	Indicates the administrative state of the upstream interface.
Received broadcasts	Number of broadcast packets received through this upstream interface.
multicasts	Number of multicast packets received through this upstream interface.
unicasts	Number of unicast packets received through this interface.
discards	Number of packets discarded by this interface.
errors	Sum of all errors that prevented upstream transmission of packets through this interface
unknown protocols	Number of packets received that were generated using a protocol unknown to the Cisco uBR7246.
packets error-free	Number of packets received through this upstream interface that were free from errors.

**Table 12 Show Interface Cable Upstream Field Descriptions (continued)**

Field	Description
corrected	Number of error packets received through this upstream interface that were corrected.
uncorrectable	Number of error packets received through this upstream interface that could not be corrected.
noise	Number of upstream packets corrupted by line noise.
microreflections	Number of upstream packets corrupted by microreflections.
CBR_queue_depth	Number of packets in the Constant Bit Rate queue; used to keep track of traffic allocated to the CBR service class.
UBR[1]_queue_depth	Number of packets per cable modem card in slot 1.
UBR[2]_queue_depth	Number of packets per cable modem card in slot 2.
UBR[3]_queue_depth	Number of packets per cable modem card in slot 3.
POLLS_queue_depth	Number of requests from other cable modems on the network requesting information or requesting permission to connect.

## Related Commands

show interface cable sid  
 show interface cable signal-quality

## show interface cable signal-quality

To display information about the signal quality, use the **show interface cable signal-quality** privileged EXEC command:

```
show interface cable slot/port signal-quality
```

## Syntax Description

*slot/port* Slot number/port number indicating the location of the Cisco MC11 cable modem card

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following is sample output from the `show interface signal quality` command:

```
router# show interface cable 6/0 signal-quality
Cable6/0: Upstream 0 is up includes contention intervals: TRUE
```

Table 13 describes the fields shown in the `show controllers cable upstream` display.

**Table 13** Show Interface Cable Signal Quality Field Descriptions

Field	Description
Cable	Interface name.
Upstream is up includes contention intervals	States whether this statement is true.

## Related Commands

```
show interface
show interface cable downstream
show interface cable sid
show interface cable upstream
```

## show interfaces cable sid

To display information by service identifier (SID) of each cable modem on the network, use the `show interface sid` privileged EXEC command:

```
show interfaces cable slot/port sid [sid-number]
```

## Syntax Description

*slot/port* Identifies the slot number and downstream port number.

*sid-number* (Optional) Identifies the service identification number.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following are sample outputs from two uses of the `show interface cable sid` command:

```
router# show interface cable 6/0 sid
SID Status QoS Creattime Inoctets Inpackets IP address MAC address
1 enable 2 57 80139964 101336 1.1.1.5 00e0.1eab.2c0b
2 enable 2 57 49132 649 1.1.1.7 00e0.1eb2.bb07
3 enable 2 58 80042891 100555 1.1.1.2 00e0.1eab.2c29
```

```
router# show interface cable 6/0 sid 1
SID Status QoS Creattime Inoctets Inpackets IP address MAC address
1 enable 2 57 80140204 101340 1.1.1.5 00e0.1eab.2c0b
```

If the value for the QoS group in the display appears as 0, it indicates that a temporary SID has been assigned to a cable modem that is in the process of connecting to the network:

```
router# show interface cable 6/0 sid
SID Status QoS Creattime Inoctets Inpackets IP address MAC address
1 enable 0 57 80140204 101340 1.1.1.5 00e0.1eab.2c0b
```

If there are no cable modems connected to the cable interface you have selected, the display will appear as follows:

```
router# show interface cable 6/0 sid
SID Status QoS Creattime Inoctets Inpackets IP address MAC address
1 Not in use
```



Use the `show cable qos` command to examine the actual quality of service parameters assigned to the QoS group numbers.

Table 14 describes the fields shown in the output for the `show interface cable sid` displays.

**Table 14 Show Interface cable SID Field Descriptions**

Field	Description
SID	Service identification number.
Status	“Disable” means that the SID has been administratively disabled. “Enable” is the normal state.
QoS	Quality of service.
Creattime	When the SID was created, number of seconds since system booted.
Inoctets	Number of octets received using this SID.
Inpackets	Number of packets received using this SID.
IP address	IP address of the modem owning this SID.
MAC address	MAC address of the modem owning this SID.

## Related Commands

`show interface cable signal-quality`

## show diag

To display the revision level information for the cable line card, use the `show diag` privileged EXEC command.

show diag

## Syntax Description

There are no arguments or keywords for this command.

## Command Mode

Privileged EXEC

## Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following is sample output from the **show diag** command displaying revision level information for the cable line card (slot 6):

```
router# show diag
Slot 6:
MC11 port adapter, 1 port
Port adapter is analyzed
Port adapter insertion time 02:37:10 ago
Hardware Revision      : 1.2
Part Number           : 800-02455-02
Board Revision        : 03
Deviation Number      : 0-3
Fab Version           : 03
PCB Serial Number     : 00004500239
RMA Test History      : 00
RMA Number            : 0-0-0-0
RMA History           : 00
Calibration Data      : Minimum: -8 dBmV, Maximum: 8 dBmV
  Calibration values  : 0x5D43 0x3F05 0x1794
Unknown Field (type 0083): 83 FF FF FF
EEPROM format version 4
EEPROM contents (hex):
0x00: 04 FF 40 00 F1 41 01 02 C0 46 03 20 00 09 97 02
0x10: 42 30 33 80 00 00 00 03 02 03 C1 8B 30 30 30 30
0x20: 34 35 30 30 32 33 39 03 00 81 00 00 00 00 04 00
0x30: C8 09 F8 08 03 5D 43 3F 05 17 94 83 83 FF FF FF
0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
```

Table 15 describes the fields shown in the **show diag** display.

**Table 15 Show Diag Field Descriptions**

Field	Description
MC11 port adapter	Line card type.
Port adapter is analyzed	The system has identified the Cisco uBR7246 port adapter.
Port adapter insertion time	Elapsed time since insertion.

**Table 15 Show Diag Field Descriptions (continued)**

Field	Description
Hardware Revision	Version number of the Cisco uBR7246 port adapter.
Part Number	In the Cisco uBR 7246, the part number of the port adapter.
Board Revision	Revision number (signifying a minor revision) of the Cisco uBR 7246 port adapter.
Deviation Number	Revision number (signifying a minor deviation) of the Cisco uBR7246 port adapter.
Fab Version	Manufacturing fabrication version number.
PCB Serial Number	Serial number of the printed circuit board.
RMA Test History	Counter indicating how many times diagnostics have been performed on this port adapter.
RMA Number	Return material authorization number, which is an administrative number assigned if port adapter needs to be returned for repair.
RMA History	Counter indicating how many times the port adapter has been returned and repaired.
Calibration Data	Input power calibration range.
Calibration values	Upstream port gain calibration constant.
Unknown Field (type)	Unrecognized EEPROM fields.
EEPROM format version	Version number of the EEPROM format.
EEPROM contents (hex)	Dumps of EEPROM programmed data.

## show c7200

To display the revision level information for the Cisco uBR7246 midplane, use the **show c7200** privileged EXEC command.

```
show c7200
```

### Syntax Description

There are no arguments or keywords for this command.

### Command Mode

Privileged EXEC

### Usage Guidelines

This command first appeared in Cisco IOS Release 11.3 XA.

## Example

The following is sample output from the `show c7200` command. The midplane EEPROM data describes the characteristics of the device's midplane chassis; the CPU EEPROM data describes the characteristics of the device's CPU. The fault history buffer data provides diagnostic information used only by Cisco Customer Support Engineers.

```
router# show c7200
Network IO Interrupt Throttling:
  throttle count=0, timer count=0
  active=0, configured=0
  netint usec=3999, netint mask usec=200

UBR7200 Midplane EEPROM:
  Number of Slots           : 6
  Hardware Revision        : 1.1
  Chassis MAC Address      : 0008.cef8.fc00
  MAC Address block size   : 256
  Unknown Field (type 01B9): 2C 1F E0 00
  Unknown Field (type 01B8): 85 FF FF FF
  EEPROM format version 4
  EEPROM contents (hex):
    0x00: 04 FF 40 00 F0 01 06 41 01 01 C3 06 00 08 CE FB
    0x10: FC 00 43 01 00 C7 20 45 53 00 29 00 2E 00 3D 00
    0x20: 4C 00 34 00 36 00 87 00 81 00 83 00 86 00 84 00
    0x30: B6 00 E0 00 00 B8 DB 00 B9 2C 1F E0 00 00 B8 85
    0x40: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x50: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x60: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
    0x70: FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

C7200 CPU EEPROM:
  Hardware revision 2.1           Board revision A0
  Serial number 4371856          Part number 73-1536-03
  Test history 0x0              RMA number 00-00-00
  EEPROM format version 1
  EEPROM contents (hex):
    0x20: 01 15 02 01 00 42 B5 90 49 06 00 03 00 00 00 00
    0x30: 50 00 00 00 FF FF FF FF FF FF FF FF FF FF FF FF

Fault History Buffer:
7200 Software (UBR7200-P-M), Experimental Version 11.3(19980514:205205)
[johnchen-spydrman_2 232]
Compiled Fri 12-Jun-98 19:20 by johnchen
Signal = 23, Code = 0x24, Uptime 00:02:09
$0 : 00000000, AT : 00000000, v0 : 00000000, v1 : 00000004
a0 : 00000000, a1 : 0000FF00, a2 : 00000006, a3 : 00000002
t0 : 00000020, t1 : 3401FF01, t2 : 3401C100, t3 : FFFF00FF
t4 : 6027E180, t5 : 30443044, t6 : 30384330, t7 : 30783630
s0 : 00000000, s1 : 608BFD88, s2 : 606D9E4C, s3 : 60B43E0C
s4 : 608BFD88, s5 : 0000004A, s6 : 00000000, s7 : 608BFF9C
t8 : 00009BCB, t9 : 00000000, k0 : 3041D001, k1 : BF800000
gp : 6083B400, sp : 60BC4CA0, s8 : 608BFD88, ra : 602797EC
EP6027AE58, SREG : 3401FF03, Cause : 00000424
```

