



## Cable Commands: a through cable-modem

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## access-denied

To create a DOCSIS configuration file that disables network access to the customer premise equipment (CPE) devices that are attached to the cable modem (CM) on a Cisco CMTS router, use the **access-denied** command in cable config-file configuration mode. To enable access, use the **no** form of this command.

**access-denied**

**no access-denied**

**Syntax Description** This command has no arguments or keywords.

**Command Default** Access to the cable network is permitted.

**Command Modes** Cable config-file configuration (config-file)

### Command History

Release	Modification
12.1(2)EC1	This command was introduced.
12.2(33)SCA	This command was integrated into Cisco IOS Release 12.2(33)SCA. Support for the Cisco uBR7225VXR router was added.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

### Usage Guidelines

This command sets the Network Access Control object in the DOCSIS configuration file. If the object is set to 1 (set by the default of **no access-denied**), the CPE devices behind the CM allow access to the network. If the object is set to 0 (by configuration of the **access-denied** command) to disable network access for the CPE devices, the CM does not forward traffic from its attached CPE devices.

For normal operation, the CM must be set to allow access (the default). However, to deny service for reasons such as nonpayment or unauthorized use of services, the **access-denied** command can be used.

### Examples

The following example shows how to disable network access for the CPE devices that are connected to the CM:

```
cable config-file disable.cm
  access-denied
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>cable config-file</b>	Creates a DOCSIS configuration file and enters configuration file mode.
<b>channel-id</b>	Specifies upstream channel ID.
<b>cpe max</b>	Specifies customer premise equipment information.
<b>download</b>	Specifies download information for the configuration file.
<b>frequency</b>	Specifies the downstream frequency.
<b>option</b>	Specifies vendor-specific information fields in a DOCSIS configuration file.
<b>privacy</b>	Specifies privacy options for baseline privacy images.
<b>service-class</b>	Specifies service class definitions for the configuration file.
<b>snmp manager</b>	Specifies Simple Network Management Protocol (SNMP) options.
<b>timestamp</b>	Enables time-stamp generation.

# activate-rule at-byte-count



**Note** Effective with Cisco IOS Release 12.3(9a)BC, the **activate-rule at-byte-count** command is not available in Cisco IOS software.

To specify the number of bytes that a subscriber can transmit during the monitoring period on a Cisco CMTS router, use the **activate-rule at-byte-count** command in enforce-rule configuration mode. To reset the rule to its default values, use the **no** form of this command.

**activate-rule at-byte-count** *kbytes* {**downstream**|**upstream**} [**enforce**]

**no activate-rule at-byte-count** *kbytes* {**downstream**|**upstream**} [**enforce**]

## Syntax Description

<i>kbytes</i>	Maximum number of kilobytes that the subscriber can transmit in the specified direction during the monitoring period. The valid range is 1 to 4294967, with a default of 0 (no limit).  <b>Note</b> To reset the kilobyte count to 0, use the <b>no</b> form of this command.
<b>downstream</b>	Specifies that the kilobyte count applies to traffic in the downstream direction.
<b>upstream</b>	Specifies that the kilobyte count applies to traffic in the upstream direction. The default value is <b>upstream</b> .
<b>enforce</b>	(Optional) Specifies that the enforce-rule QoS profile should be applied automatically if a user violates the registered QoS profile.  <b>Note</b> You must have previously configured a registered QoS profile, using the <b>qos-profile registered</b> command, before being able to use the <b>enforce</b> keyword.

## Command Default

The *kbytes* value defaults to 0 (no limit), upstream direction, and enforce-rule QoS profiles are not automatically applied (**no activate-rule at-byte-count enforce**).

## Command Modes

Enforce-rule configuration (enforce-rule)

## Command History

Release	Modification
12.2(15)BC1	This command was introduced.

Release	Modification
12.3(9a)BC	This command was removed.
IOS-XE 3.15.0S	This command is not supported on the Cisco cBR Series Converged Broadband Routers.

### Usage Guidelines

The **activate-rule at-byte-count** command specifies the maximum number of bytes that a subscriber can transmit during the monitor window period (see the **monitoring-duration** command). If a subscriber transmits traffic beyond this maximum value, the CMTS router considers the subscriber to be overconsuming.

If the optional **enforce** keyword has been specified for an enforce-rule, the CMTS router automatically switches overconsuming subscribers to the enforced QoS profile (see the **qos-profile enforced** command). The enforced QoS profile remains in force during the penalty time period (see the **qos-profile registered** command).

An enforce-rule can be created for only one direction, either upstream or downstream. To activate subscriber traffic management for both the upstream and downstream directions, create two different enforce-rules, with one rule's **activate-rule-at-byte-count** command specifying the downstream direction and the other rule specifying the upstream direction.

When you change the configuration of a currently active enforce-rule, that rule begins using the new configuration immediately to manage the cable modems tracked by the enforce-rule.



#### Note

You can create an enforce-rule that is a duplicate of an existing enforce-rule, but the duplicate rule is not activated and applied to service flows until at least one of its parameters is changed so that it has a unique configuration.

### Examples

The following example shows a typical **activate-rule-at-byte-count** command for the downstream direction:

```
Router# configure terminal
Router(config)# cable qos enforce-rule residential
Router(enforce-rule)# activate-rule at-byte-count 20 downstream
```

The following example shows a typical **activate-rule-at-byte-count** command for the upstream direction. The **enforce** option is also added so that the enforce-rule QoS profile is automatically applied to users who exceed their registered profile:

```
Router# configure terminal
Router(config)# cable qos enforce-rule test
Router(enforce-rule)# activate-rule at-byte-count 5 upstream enforce
```

The following example shows the same command being given for a second enforce-rule. The system rejects the command because it is a duplicate of an existing rule, using the same QoS profile and direction. You must change at least one of the rule parameters to make it unique before it is mapped and applied to service flows.

```
Router# configure terminal
Router(config)# cable qos enforce-rule test2
```

```
Router(enforce-rule)# activate-rule at-byte-count 5 upstream enforce
```

Enforce-rule test2 won't be mapped to service flows as it is duplicate of test1 with same registered qos-profile 5 and same direction

### Related Commands

Command	Description
<b>cable qos enforce-rule</b>	Creates an enforce-rule to enforce a particular QoS profile for subscriber traffic management and enters enforce-rule configuration mode.
<b>enabled (enforce-rule)</b>	Activates an enforce-rule and begins subscriber traffic management on a Cisco CMTS router.
<b>duration</b>	Specifies the time period and sample rate to be used for monitoring subscribers.
<b>penalty-period</b>	Specifies the time period that an enforced QoS profile should be in effect for subscribers that violate their registered QoS profiles.
<b>qos-profile enforced</b>	Specifies a QoS profile that should be enforced when users violate their registered QoS profiles.
<b>qos-profile registered</b>	Specifies the registered QoS profile that should be used for this enforce-rule.
<b>show cable qos enforce-rule</b>	Displays the QoS enforce-rules that are currently defined.
<b>show cable subscriber-usage</b>	Displays subscribers who are violating their registered QoS profiles.

## admission-control max-reserved-bandwidth

To define the maximum reserved bandwidth per bonding group for all service flows that are allowed by the Cisco CMTS, use the **admission-control max-reserved-bandwidth** command in the interface configuration mode. To reset or disable the maximum reserved bandwidth value, use the **no** form of this command.

**admission-control max-reserved-bandwidth** *bw-in-kbps*

**no admission-control max-reserved-bandwidth**

### Syntax Description

<i>bw-in-kbps</i>	Maximum admission control reserved bandwidth. The value is in kbps and is based on the RF bandwidth percent defined for the bonding group. Valid range is from 0 to the maximum bandwidth of the upstream bonding group.
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### Command Default

Without explicitly configured max-reserved-bandwidth, service flows admitted on a US bonding group are not subject to admission control.

### Command Modes

Upstream bonding configuration (config-upstream-bonding)

### Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers.

### Usage Guidelines

This command allows the user to define the maximum reserved bandwidth per bonding group. The default maximum reserved bandwidth value is 80 percent. However the user can choose to configure a higher (up to 96 percent) or lower reserved bandwidth so that there is bandwidth allocated for zero committed information rate (CIR) best effort traffic.

### Examples

The following example shows a sample definition of the maximum reserved bandwidth value.

```
Router> enable
Router# configure terminal
Router(config)# interface c5/0/1
Router(config-if)# cable upstream bonding-group 1
Router(config-upstream-bonding)# admission-control max-reserved-bandwidth 6344
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>cable admission-control</b>	Configures the CPU and memory thresholds for the Cisco CMTS router and supporting broadband processing engines (BPEs).
<b>cable admission-control event</b>	Configures and enables admission control event types on the Cisco CMTS router.
<b>cable admission-control ds-bandwidth</b>	Configures admission control downstream bandwidth thresholds on the Cisco CMTS router.
<b>cable admission-control us-bandwidth</b>	Configures admission control upstream bandwidth thresholds on the Cisco CMTS router.
<b>debug cable admission-control</b>	Enables automatic admission control troubleshooting processes on the Cisco CMTS router.
<b>show cable admission-control</b>	Displays the current admission control configuration and status on the Cisco CMTS router or on a specified interface.



## annex

To set the annex (MPEG framing format) for a specific QAM profile, use the **annex** command in QAM profile configuration mode.

**annex** {A|B|C}

### Syntax Description

A  B  C	<p>Specifies the MPEG framing format:</p> <ul style="list-style-type: none"> <li>• <b>A</b>—Annex A. The downstream is compatible with the European MPEG framing format specified in ITU-TJ.83 Annex A.</li> <li>• <b>B</b>—Annex B. The downstream is compatible with the North American MPEG framing format specified in ITU-TJ.83 Annex B.</li> <li>• <b>C</b>—Annex C. The downstream is compatible with the Japan MPEG framing format specified in ITU-TJ.83 Annex C.</li> </ul>
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### Command Default

None

### Command Modes

QAM profile configuration (config-qam-prof)

### Command History

Release	Modification
IOS-XE 3.15.0S	This command was introduced on the Cisco cBR Series Converged Broadband Routers.

### Usage Guidelines

Use this command to set the Annex (MPEG framing format) for a specific QAM profile.

### Examples

The following example shows how to set the MPEG framing format for a specific QAM profile:

```
Router# configure terminal
Router(config)# cable downstream qam-profile 4
Router(config-qam-prof)# annex A
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>cable downstream qam-profile</b>	Set the QAM profile for the cable interface line card.
<b>interleaver-depth</b>	Set the interleaver-depth.
<b>modulation</b>	Set the QAM modulation format.
<b>spectrum-inversion</b>	Set the spectrum-inversion on or off.
<b>symbol-rate</b>	Set the symbol rate.

# annex modulation



**Note** Effective with Cisco IOS Release 12.3(23)BC, the **annex modulation** command is obsolete and **annex** and **modulation** are included as keyword options in the **rf-channel frequency** command.

To set the annex (MPEG framing format) and modulation for the Wideband SPA, use the **annex modulation** command in controller configuration mode. To set the annex to B and the modulation to 64 QAM, use the **no** form of this command.

**annex** {A|B} **modulation** {64qam|256qam} [*rf-start-index* *rf-end-index*]

**no annex** {A|B} **modulation** {64qam|256qam} [*rf-start-index* *rf-end-index*]

## Syntax Description

A B	Specifies the MPEG framing format: <ul style="list-style-type: none"> <li>• <b>A</b>—Annex A. The downstream is compatible with the European MPEG framing format specified in ITU-TJ.83 Annex A.</li> <li>• <b>B</b>—Annex B. The downstream is compatible with the North American MPEG framing format specified in ITU-TJ.83 Annex B.</li> </ul>
64qam 256qam	Specifies the modulation rate: <ul style="list-style-type: none"> <li>• <b>64qam</b>—64-QAM modulation.</li> <li>• <b>256qam</b>—256-QAM modulation.</li> </ul>
<i>rf-start-index</i> <i>rf-end-index</i>	(Optional) Specifies the start and end indexes for RF channels. The following values are allowed: <ul style="list-style-type: none"> <li>• If the annex is A and the modulation is 256 QAM, <i>rf-start-index</i> must be 0, and <i>rf-end-index</i> must be 17.</li> <li>• For all other cases, <i>rf-start-index</i> must be 0, and <i>rf-end-index</i> must be 23.</li> </ul>

**Command Default** No annex or modulation is set for the Wideband SPA.

**Command Modes** Controller configuration (config-controller)

**Command History**

Release	Modification
12.3(21)BC	This command was introduced for the Cisco uBR10012 router.
12.3(23)BC	This command was made obsolete and <b>annex</b> and <b>modulation</b> were included as keyword options in the <b>rf-channel frequency</b> command.
IOS-XE 3.15.0S	This command was replaced by the <b>controller Integrated-Cable</b> and <b>controller Upstream-Cable</b> commands on the Cisco cBR Series Converged Broadband Routers.

**Usage Guidelines**

Use this command to set the following on a Wideband SPA:

- Annex (MPEG framing format)
- Modulation
- Start and end indexes for RF channels

Each Wideband SPA supports up to 24 RF channels depending on how the SPA is configured with the **annex modulation** command.

- For annex A and 256 QAM modulator, each Wideband SPA supports 18 RF channels.
- For all other cases, each Wideband SPA supports 24 RF channels.

The *rf-start-index* and *rf-end-index* arguments are intended for future use and are not currently needed. If *rf-start-index* and *rf-end-index* are not specified, the default values are as follows:

- If the annex is A and the modulation is 256 QAM, *rf-start-index* is 0, and *rf-end-index* is 17.
- For all other cases, *rf-start-index* is 0, and *rf-end-index* is 23.

**Examples**

The following example shows how to set the MPEG framing format and modulation for the Wideband SPA located at slot 1, subslot 0, bay 0:

```
Router(config)# controller modular-cable 1/0/0
Router(config-controller)# annex B modulation 64qam
```

**Related Commands**

Command	Description
<b>cable rf-channel</b>	Associates an RF channel on a Wideband SPA with a wideband channel.
<b>controller modular-cable</b>	Enters controller configuration mode to configure the Wideband SPA controller.
<b>ip-address (controller)</b>	Sets the IP address of the Wideband SPA FPGA.

<b>Command</b>	<b>Description</b>
<b>modular-host subslot</b>	Specifies the modular-host line card.
<b>rf-channel frequency</b>	Sets the frequency for each RF channel.
<b>rf-channel ip-address mac-address udp-port</b>	Sets the IP address, MAC address and UDP port for each RF channel.
<b>rf-channel network delay</b>	Specifies the CIN delay for each RF channel.
<b>rf-channel description</b>	Specifies the description for each RF channel.
<b>rf-channel cable downstream channel-id</b>	Assigns a downstream channel ID to an RF channel.

## application-id

To specify an application type to allow admission control to be applied to a group configuration, use the **application-id** command in multicast QoS configuration mode. To disable admission control, use the **no** form of this command.

**application-id** *number*

**no application-id** *number*

### Syntax Description

<i>number</i>	Specifies the application identification number of the multicast QoS group. The valid range is 1–65535.
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### Command Default

Multicast QoS group application type is not identified.

### Command Modes

Multicast QoS configuration (config-mqos)

### Command History

Release	Modification
12.2(33)SCA	This command was introduced.
IOS-XE 3.15.0S	This command was integrated into Cisco IOS-XE Release 3.15.0S. Support for the Cisco cBR Series Converged Broadband Routers was added.

### Usage Guidelines

To enable intelligent multicast admission control, you must enable and configure an application type using the **application-id** command.

### Examples

The following example identifies a multicast QoS group application ID using the **applicaton-id** command:

```
Router(config)# cable multicast qos group 20 priority 55 global
Router(config-mqos)# application-id 44
```

The following example identifies a multicast QoS group application ID using the **applicaton-id** command in Cisco cBR Series Converged Broadband Routers:

```
Router(config)# cable multicast qos group 30 priority 60 global
Router(config-mqos)# application-id 77
```

**Related Commands**

<b>Command</b>	<b>Description</b>
<b>cable multicast qos group</b>	Specifies and configures a cable multicast QoS group.
<b>show interface bundle multicast-sessions</b>	Displays multicast session information for a specific virtual cable bundle.
<b>show interface cable multicast-sessions</b>	Displays multicast session information for a specific cable interface.

# attributes

To configure the attribute value for an upstream bonding group, use the **attributes** command in upstream bonding configuration submode. To restore the default attribute value, use the **no** form of this command.

**attributes** *value*

**no attributes**

## Syntax Description

<i>value</i>	The upstream bonding group attribute value, in hexadecimal format. The range is from 0 to FFFFFFFF. The default is 80000000.
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## Command Default

The upstream bonding group attribute value is 80000000.

## Command Modes

Upstream bonding configuration (config-upstream-bonding)

## Command History

Release	Modification
12.2(33)SCC	This command was introduced.
IOS-XE 3.15.0S	This command was implemented on the Cisco cBR Series Converged Broadband Routers.

## Usage Guidelines

The changes made to the configuration, using this command, on the working line card are synchronized with the configuration on the protect line card only after exiting the configuration mode. Use the end command to exit to Privileged EXEC mode, before using the show running configuration command.



### Note

Effective with Cisco IOS Release 12.2(33)SCH, the **no** form of this command disables the attribute on a Cisco uBR10012 router.

## Examples

The following example shows how to configure the attribute value for an upstream bonding group on a cable interface line card on the Cisco uBR10012 router:

```
Router# configure terminal
Router(config)# interface cable7/1/0
Router(config-if)# cable upstream bonding-group 20
Router(config-upstream-bonding)# attributes eeeeeeee
```



The following example shows how to configure the attribute value for an upstream bonding to allow all devices:

```
Router# configure terminal
Router(config)# interface cable7/1/0
Router(config-if)# cable upstream 2 attribute-mask 20000000
```

The following example shows how to configure the attribute value for an upstream bonding to specific devices:

```
Router# configure terminal
Router(config)# interface cable7/1/0
Router(config-if)# cable upstream 2 attribute-mask 20000004
```

### Related Commands

Command	Description
<b>cable upstream bonding-group</b>	Creates an upstream bonding group on a cable interface.

