# Cable Commands: a through cable-modem

**Revised: July 2012, OL-15510-15**

### New Commands

| Command | Cisco IOS Software Release |
|---|---|
| application-id | 12.2(33)SCA |

### Obsolete Commands

| Command | Effective Cisco IOS Release |
|---|---|
| activate-rule-at-byte-count | 12.3(9a)BC |
| auto-sync | 12.2(33)SCA |

### Replaced Commands

| Command | Replacement Command | Effective Cisco IOS Release |
|---|---|---|
| annex modulation | rf-channel frequency | 12.3(23)BC |

**Cisco Systems, Inc.**
www.cisco.com

# 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 (**no access-denied**).

## 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. |

## 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

| Command | Description |
|---|---|
| **cable config-file** | Creates a DOCSIS configuration file and enters configuration file mode. |
| **channel-id** | Specifies upstream channel ID. |
| **cpe max** | Specifies customer premise equipment information. |
| **download** | Specifies download information for the configuration file. |

| Command | Description |
|---|---|
| **frequency** | Specifies the downstream frequency. |
| **option** | Specifies vendor-specific information fields in a DOCSIS configuration file. |
| **privacy** | Specifies privacy options for baseline privacy images. |
| **service-class** | Specifies service class definitions for the configuration file. |
| **snmp manager** | Specifies Simple Network Management Protocol (SNMP) options. |
| **timestamp** | 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

| | |
|---|---|
| *kbytes* | 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).<br>**Note** To reset the kilobyte count to 0, use the **no** form of this command. |
| **downstream** | Specifies that the kilobyte count applies to traffic in the downstream direction. |
| **upstream** | Specifies that the kilobyte count applies to traffic in the upstream direction. The default value is **upstream**. |
| **enforce** | (Optional) Specifies that the enforce-rule QoS profile should be applied automatically if a user violates the registered QoS profile.<br>**Note** You must have previously configured a registered QoS profile, using the **qos-profile registered** command, before being able to use the **enforce** 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. |
| 12.3(9a)BC | This command was removed. |

## 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 |
|---|---|
| **cable qos enforce-rule** | Creates an enforce-rule to enforce a particular QoS profile for subscriber traffic management and enters enforce-rule configuration mode. |
| **enabled (enforce-rule)** | Activates an enforce-rule and begins subscriber traffic management on a Cisco CMTS router. |
| **duration** | Specifies the time period and sample rate to be used for monitoring subscribers. |

| Command | Description |
|---|---|
| **penalty-period** | Specifies the time period that an enforced QoS profile should be in effect for subscribers that violate their registered QoS profiles. |
| **qos-profile enforced** | Specifies a QoS profile that should be enforced when users violate their registered QoS profiles. |
| **qos-profile registered** | Specifies the registered QoS profile that should be used for this enforce-rule. |
| **show cable qos enforce-rule** | Displays the QoS enforce-rules that are currently defined. |
| **show cable subscriber-usage** | Displays subscribers who are violating their registered QoS profiles. |

# 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:<br>• **A**–Annex A. The downstream is compatible with the European MPEG framing format specified in ITU-TJ.83 Annex A.<br>• **B**–Annex B. The downstream is compatible with the North American MPEG framing format specified in ITU-TJ.83 Annex B. |
| {**64qam** \| **256qam**} | Specifies the modulation rate:<br>• **64qam**–64-QAM modulation.<br>• **256qam**–256-QAM modulation. |
| *rf-start-index*<br>*rf-end-index* | (Optional) Specifies the start and end indexes for RF channels. The following values are allowed:<br>• If the annex is A and the modulation is 256 QAM, *rf-start-index* must be 0, and *rf-end-index* must be 17.<br>• For all other cases, *rf-start-index* must be 0, and *rf-end-index* must be 23. |

## Command Default

No annex or modulation is set for the Wideband SPA.

## Command Modes

Controller configuration

## 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 **annex** and **modulation** were included as keyword options in the **rf-channel frequency** command. |

## 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 |
|---|---|
| **cable rf-channel** | Associates an RF channel on a Wideband SPA with a wideband channel. |
| **controller modular-cable** | Enters controller configuration mode to configure the Wideband SPA controller. |
| **ip-address (controller)** | Sets the IP address of the Wideband SPA FPGA. |
| **modular-host subslot** | Specifies the modular-host line card. |
| **rf-channel frequency** | Sets the frequency for each RF channel. |
| **rf-channel ip-address mac-address udp-port** | Sets the IP address, MAC address and UDP port for each RF channel. |
| **rf-channel network delay** | Specifies the CIN delay for each RF channel. |
| **rf-channel description** | Specifies the description for each RF channel. |
| **rf-channel cable downstream channel-id** | 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

| | |
|---|---|
| *number* | Specifies the application identification number of the multicast QoS group. The valid range is 1–65535. |

## 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. |

## Usage Guidelines

In order 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
```

## Related Commands

| Command | Description |
|---|---|
| **cable multicast qos group** | Specifies and configures a cable multicast QoS group. |
| **show interface bundle multicast-sessions** | Displays multicast session information for a specific virtual cable bundle. |
| **show interface cable multicast-sessions** | 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

| | |
|---|---|
| *value* | The upstream bonding group attibute value, in hexadecimal format. The range is from 0 to FFFFFFFF. The default is 80000000. |

## 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. |

## Usage Guidelines

**Note** Efective 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
```

## Related Commands

| Command | Description |
|---|---|
| **cable upstream bonding-group** | Creates an upstream bonding group on a cable interface. |

# auto-sync

To enable automatic synchronization of the configuration files in NVRAM, use the **auto-sync** command in main-cpu redundancy configuration mode. To disable automatic synchronization, use the **no** form of this command.

**auto-sync** {**startup-config** | **config-register** | **bootvar** | **running-config** | **standard**}

**no auto-sync** {**startup-config** | **config-register** | **bootvar** | **standard**}

## Syntax Description

| | |
|---|---|
| **startup-config** | Specifies synchronization of the startup configuration files. |
| **config-register** | Specifies synchronization of the configuration register values. |
| **bootvar** | Specifies synchronization of the following boot variables:<br>• BOOT—Set by the **boot system** *device:filename* command.<br>• CONFIG_FILE—Set by the **boot config** *device:filename* command.<br>• BOOTLDR—Set by the **boot bootldr** *device:filename* command. |
| **running-config** | Specifies synchronization of the running configuration files. |
| **standard** | Specifies synchronization of all of the system files (startup configuration, boot variables, and config configuration registers). |

## Defaults

For the Performance Routing Engines (PREs) on the Cisco uBR10012 universal broadband router, the system defaults to synchronizing all system files on the (**auto-sync standard**).

For the Supervisor Engines on the Cisco 7600 series routers, the system defaults to synchronizing the running configuration. (**running-config**).

## Command Modes

Redundancy configuration (config-r)

## Command History

| Release | Modification |
|---|---|
| 12.2(4)XF1 | This command was introduced on the Cisco uBR10012 universal broadband router. |
| 12.2(14)SX | This command was integrated into the Supervisor Engine 720. |
| 12.2(17d)SXB | Support was added for the Supervisor Engine 2. |
| 12.2(18)SXD | Support for this command on the Cisco 7600 series routers was removed. |
| 12.3BC | This command was integrated into Cisco IOS Release 12.3BC for the Cisco uBR10012 router. |
| 12.2(33)SCA | This command is obsolete on the Cisco uBR10012 universal broadband router. |

## Usage Guidelines

### Cisco 7600 Series Routers

If you enter the **no auto-sync standard** command, no automatic synchronizations occur. If you want to enable any of the keywords, you have to enter the appropriate command for each keyword.

The **auto-sync** command is not supported in RPR+ mode.

### Cisco uBR10012 Universal Broadband Router

By default, the system synchronizes all system files, which is the typical setting for most applications. However, you might want exclude certain files from synchronization for specialized applications.

For example, if you have configured the active and standby PRE1 (or PRE2) modules to run different versions of Cisco IOS software, you might want to use different configuration files as well. In this case, you would not synchronize the startup configuration file.

## Examples

### Cisco 7600 Series Routers

The following example shows how (from the default configuration) to enable automatic synchronization of the configuration register in the main CPU:

```
Router# configure terminal
Router (config)# redundancy
Router (config-r)# main-cpu
Router (config-r-mc)# no auto-sync standard
Router (config-r-mc)# auto-sync config-register
```

### Cisco uBR10012 Universal Broadband Router

The following example shows the system being configured to synchronize only the startup configuration file:

```
router(config)# redundancy
router(config-r)# main-cpu
router(config-r-mc)# auto-sync startup-config
router(config-r-mc)# exit
router(config-r)# exit
```

The following example shows how to configure the system to synchronize all system files except for the startup configuration file. This typically is done when the two PRE1 (or PRE2) modules are running different software images.

```
router(config)# redundancy
router(config-r)# main-cpu
router(config-r-mc)# no auto-sync startup-config
router(config-r-mc)# auto-sync config-register
router(config-r-mc)# auto-sync bootvar
router(config-r-mc)# exit
router(config-r)# exit
```

## Related Commands

| Command | Description |
|---|---|
| **redundancy** | Enters redundancy configuration mode. |
| **main-cpu** | Enters main CPU redundancy configuration mode. |

# cable-modem compliant bridge

To enable DOCSIS-compliant bridging for the cable interface at startup, use the **cable-modem compliant bridge** command in cable interface configuration mode. To disable DOCSIS-compliant bridging, which is required to enable routing mode, use the **no** form of this command.

**Cisco uBR904, uBR905, uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter**

**cable-modem compliant bridge**

**no cable-modem compliant bridge**

## Syntax Description

This command has no arguments or keywords.

## Command Default

DOCSIS-compliant bridging is enabled by default.

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 11.3(4)NA | This command was introduced for the Cisco uBR904 cable access router. |
| 12.0(4)XI1 | Support was added for the Cisco uBR924 cable access router. |
| 12.1(3)XL | Support was added for the Cisco uBR905 cable access router. |
| 12.1(5)XU1 | Support was added for the Cisco CVA122 Cable Voice Adapter. |
| 12.2(2)XA | Support was added for the Cisco uBR925 cable access router. |

## Usage Guidelines

It is normally not necessary to enter this command in data-over-cable bridging applications because DOCSIS-compliant bridging is enabled by default. However, to configure the router for full transparent bridging or for routing mode, use the **no** form of the command and then configure the router as desired using the appropriate CLI commands.

## Examples

The following example shows how to disable DOCSIS-compliant bridging on the cable interface:

```
Router# configure terminal
Router(config)# interface cable-modem 0
Router(config-if)# no cable-modem compliant bridge
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem downstream saved channel** | Modifies the saved downstream channel setting and upstream power value on the cable interface. |
| **cable-modem fast-search** | Enables a faster downstream search algorithm on the cable interface. |
| **cable-modem upstream preamble qpsk** | Enables the QPSK modulation scheme in the upstream direction from the cable interface to the CMTS. |
| **cable-modem voip best-effort** | Allows voice calls to be sent upstream over the cable interface via best effort. |

# cable-modem dhcp-proxy

To specify that a Dynamic Host Configuration Protocol (DHCP) server should provide an IP address for the router's Ethernet interface, for the loopback interface, or for the router's Network Address Translation (NAT) address pool, use the **cable-modem dhcp-proxy** command in cable interface configuration mode. To disable this feature so that you can then manually assign an IP address to the Ethernet interface or NAT address pool, use the **no** form of this command.

**Cisco uBR905, Cisco uBR924, Cisco uBR925 Cable Access Routers, and Cisco CVA122 Cable Voice Adapter**

**cable-modem dhcp-proxy** {**interface ethernet** *number* | **interface loopback** *number* | **nat** *pool-name*}

**no cable-modem dhcp-proxy** {**interface ethernet** *number* | **interface loopback** *number* | **nat** *pool-name*}

**Note** This command is available only when the router is configured for routing mode and cannot be used when the router is configured for DOCSIS-compliant bridging.

## Syntax Description

| | |
|---|---|
| **interface ethernet** *number* | Identifies the Ethernet interface to be assigned the static IP address from the DHCP server (always **0**). |
| **interface loopback** *number* | Identifies the loopback interface to be assigned the static IP address from the DHCP server (always **0**). |
| **nat** *pool-name* | Specifies the name of the NAT pool to be created using the IP address and subnet mask supplied by the DHCP server. (This option is equivalent to giving the **ip nat pool** *pool-name start-ip end-ip* **netmask** *subnet* command, using the IP address and subnet mask supplied by the DHCP server.) |

## Command Default

No default behavior or values

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 12.1(1)T | This command was introduced on the Cisco uBR924 cable access router. |
| 12.1(3)XL | Support was added for the Cisco uBR905 cable access router. |
| 12.1(5)XU1 | Support was added for the Cisco CVA122 Cable Voice Adapter. |
| 12.2(2)XA | Support was added for the Cisco uBR925 cable access router. |
| 12.2(8)YJ | The **loopback** option was added to support automatic configuration of the IP address on the cable modem tunnel interface for the Cisco uBR905 and Cisco uBR925 cable access routers. |
| 12.2(15)T | This command was integrated into Cisco IOS Release 12.2(15)T. |

## Usage Guidelines

This command is useful in three situations:

- When the router is configured for routing mode, an IP address must be assigned to its Ethernet interface. Without the **cable-modem dhcp-proxy** command, this IP address must be a static IP address assigned either by using a Cisco IOS configuration file or by manually entering the necessary interface configuration CLI commands. The **cable-modem dhcp-proxy** command allows a DHCP server to assign an IP address to the Ethernet interface.
- When NAT is used, an inside global address pool must be created on the Ethernet interface. Without the **cable-modem dhcp-proxy** command, this must be done by specifying a static IP address in the **ip nat pool** *pool-name start-ip end-ip* **netmask** *subnet* command. The **cable-modem dhcp-proxy** command allows a DHCP server to assign an IP address that automatically creates the NAT address pool.

  When using this option, you must also use the following NAT configuration commands:

  – Use the **ip nat inside** command in interface configuration mode to configure the Ethernet interface as the inside interface.

  – Use the **ip nat outside** command in interface configuration mode to configure the cable interface as the outside interface.

  – Specify the **overload** option with the **ip nat** command in global configuration mode to implement Port Address Translation (PAT) so that multiple PCs can use the single IP address in the NAT pool created by the **cable-modem dhcp-proxy** command.
- When using the Cisco Easy VPN feature to create a VPN tunnel, the command allows a static address to be used for the tunnel's creation.

After configuring the router with the **cable-modem dhcp-proxy** command, reboot the router. During the DOCSIS provisioning process, the router sends a DHCP client request to obtain an IP address for the cable interface.

The router then sends a proxy DHCP request to the DHCP server using the Ethernet interface's MAC address. The DHCP server replies with a second IP address that the router assigns to either the Ethernet or loopback interface, or to the NAT pool, depending on which option was used in the **cable-modem dhcp-proxy** command.

**Note** When replying to the proxy request for the Ethernet interface, the DHCP server should assign an IP address that is on the same network as the customer premises equipment (CPE) devices that are attached to the router's Ethernet interface.

**Tip** If you have configured a Cisco CM for routing mode and are also using the **cable-modem dhcp-proxy nat** command on the CM, you must configure the corresponding cable interface on the Cisco CMTS with the **cable dhcp-giaddr policy** command.

### Using NAT and DHCP Proxy and Copying Configuration Files

Most service providers typically create a standard configuration file for their cable modems, verify it, and then copy the working configuration as needed to other cable modems. This can cause problems when using the **cable-modem dhcp-proxy** command to create a NAT address pool for NAT/PAT translation.

The reason is that the default router configuration is for DOCSIS-compliant bridging, which includes two **bridge-group 59** commands for each interface. To use the **cable-modem dhcp-proxy** command, you must put the router into routing mode, which means removing the **bridge-group** commands with the equivalent **no bridge-group** commands.

However, because **no bridge-group** is the default for these CLI commands, they are not saved in the running configuration. So when you save the Cisco IOS configuration file and copy it to other routers, the router is only partially configured for routing mode and continually resets its interfaces.

In addition, whenever you use the **cable-modem dhcp-proxy** command to create a NAT pool, the router automatically adds the appropriate **ip nat pool** commands to the configuration when it receives the actual IP addresses from the DHCP server. The IP addresses specified in this command are particular to each user and should not be copied to other routers.

To avoid this problem, use the following procedure to create a Cisco IOS configuration file that uses the **cable-modem dhcp-proxy** command to create a NAT address pool for NAT/PAT address translation:

**Step 1** Create and test a working configuration on a cable access router.

**Step 2** After you have created a standardized configuration, save it to memory, and then copy the Cisco IOS configuration file to the TFTP server that will be used to copy the file to the other routers.

**Step 3** Open the Cisco IOS configuration file with a text editor and add the following lines underneath each interface:

```
no bridge-group 59
no bridge-group 59 spanning-disabled
```

**Step 4** Remove the **ip nat pool** command.

For example, the following are the relevant lines in a typical DHCP proxy NAT configuration for a cable access router:

```
interface Ethernet0
 ip address 192.168.1.1 255.255.255.0
 ip nat inside
 load-interval 30
!
interface cable-modem0
 ip nat outside
 load-interval 30
 no cable-modem compliant bridge
 cable-modem dhcp-proxy nat nat-pool
!
ip nat pool nat-pool 10.15.0.10 10.15.0.10 netmask 255.255.0.0
```

When you copy this configuration file to the TFTP server, modify this portion of the configuration file to add the **no bridge-group** commands under each interface and to remove the **ip nat pool** command:

```
interface Ethernet0
 ip address 192.168.1.1 255.255.255.0
 ip nat inside
 load-interval 30
 no bridge-group 59
 no bridge-group 59 spanning-disabled
!
interface cable-modem0
 ip nat outside
 load-interval 30
 no cable-modem compliant bridge
```

```
 cable-modem dhcp-proxy nat nat-pool
 no bridge-group 59
 no bridge-group 59 spanning-disabled
!
```

**Note** Be sure to remove the **ip nat pool** command.

## Examples

The following example shows how to configure the router so that it makes a proxy DHCP request to obtain an IP address for its Ethernet interface:

```
Router(config)# interface c0
Router(config-if)# cable-modem dhcp-proxy interface ethernet 0
```

The following example creates a NAT address pool with the IP address assigned by the DHCP server; this IP address must be in the network attached to the Ethernet address (which in this case is 192.168.100.0).

```
Router(config)# ip nat inside source list 1 pool net-208 overload
Router(config)# interface cable0
Router(config-if)# ip nat outside
Router(config-if)# no cable compliant bridge
Router(config-if)# cable-modem dhcp-proxy nat net-208
Router(config-if)# exit
Router(config)# interface ethernet0
Router(config-if)# ip address 192.168.100.94 255.255.255.0
Router(config-if)# ip nat inside
Router(config-if)# exit
Router(config)# access-list 1 permit 192.168.100.0 0.0.0.255
Router(config)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem compliant bridge** | Enables DOCSIS-compliant transparent bridging for the cable interface at startup. |

# cable-modem downstream saved channel

To modify the saved downstream channel setting and upstream power value on the cable interface, use the **cable-modem downstream saved channel** command in cable interface configuration mode. To remove the saved settings, which will be saved at the next initialization cycle, use the **no** form of this command.

**Cisco uBR904, uBR924 cable access routers**

**cable-modem downstream saved channel** *ds-frequency us-power*

**no cable-modem downstream saved channel** *ds-frequency us-powe*r

**Note** Cisco IOS Release 12.1(2)T removed this command from the CLI for all platforms and reserved it for exclusive use by the DOCSIS provisioning process.

## Syntax Description

| | |
|---|---|
| *ds-frequency* | Downstream channel frequency in Hz, which can be from 91,000,000 to 860,000,000. |
| *us-power* | Upstream power level in decibels per millivolt (dBmV), which can be from 8 to 61. |

## Command Default

Enabled

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 11.3(4)NA | This command was introduced for the Cisco uBR904 cable access router. |
| 12.0(4)XI1 | Support was added for the Cisco uBR924 cable access router. |
| 12.1(2)T | This command was removed from the CLI for all platforms and reserved for exclusive use by the DOCSIS provisioning process. |

## Usage Guidelines

This command is auto-generated by the operation of the cable MAC layer process. The DOCSIS RFI specification requires that CMs remember the downstream frequency and upstream power of the last successfully ranged session. These arguments are called up as the first downstream frequency and upstream power to use the next time the CM is booted. This operation dramatically speeds up the channel search.

Use the **no cable-modem downstream saved channel** *ds-frequency us-power* command to remove the saved frequency and power setting from the running configuration, which will be saved at the next initialization cycle.

To comply with DOCSIS requirements, Cisco IOS Release 12.1(2)T removed this command from the CLI for all platforms and reserved it for exclusive use by the DOCSIS provisioning process. This command exists in earlier Cisco IOS versions, but Cisco recommends that this command NOT be used by end users of Cisco cable CPE devices.

## Examples

The following example shows how to remove the downstream frequency of 91,000,000 Hz and the upstream power level of 33 dBmV from the running configuration of a cable-modem interface:

```
Router(config)# interface cable-modem 0
Router(config-if)# no cable-modem downstream saved channel 91000000 33
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem compliant bridge** | Enables DOCSIS-compliant transparent bridging for the cable interface at startup. |
| **cable-modem fast-search** | Enables a faster downstream search algorithm on the cable interface. |
| **cable-modem upstream preamble qpsk** | Enables the QPSK modulation scheme in the upstream direction from the CM interface to the CMTS. |
| **cable-modem voip best-effort** | Allows voice calls to be sent upstream over the cable interface via best effort. |

# cable-modem fast-search

To enable a faster downstream search algorithm on the cable interface, use the **cable-modem fast-search** command in cable interface configuration mode. To disable the downstream fast-search feature, use the **no** form of this command.

**Cisco uBR904, uBR924 cable access routers**

**cable-modem fast-search**

**no cable-modem fast-search**

**Note** Cisco IOS Release 12.1(2)T removed this command from the CLI for all platforms and reserved it for exclusive use by the DOCSIS provisioning process.

## Syntax Description

This command has no arguments or keywords.

## Command Default

Disabled

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 11.3(4)NA | This command was introduced for the Cisco uBR904 cable access router. |
| 12.0(4)XI1 | Support was added for the Cisco uBR924 cable access router. |
| 12.1(2)T | This command was removed from the CLI for all platforms and reserved for exclusive use by the DOCSIS provisioning process. |

## Usage Guidelines

This feature speeds up the frequency search performed by the cable access router. Normally it takes the cable access router about 30 to 50 seconds to sample 30 to 50 frequencies. The **cable-modem fast-search** command can reduce this search time. However, there might be some cases where this fast-search algorithm might not perform as well as the default algorithm. Trial and error is the only way to discover how well this feature works for your environment.

## Examples

The following example shows how to enable the faster downstream search algorithm on the router's cable interface:

```
Router(config)# interface cable-modem 0
Router(config-if)# cable-modem fast-search
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem compliant bridge** | Enables DOCSIS-compliant transparent bridging for the cable interface at startup. |
| **cable-modem downstream saved channel** | Modifies the saved downstream channel setting and upstream power value on the cable interface. |
| **cable-modem upstream preamble qpsk** | Enables the QPSK modulation scheme in the upstream direction from the cable interface to the CMTS. |
| **cable-modem voip best-effort** | Allows voice calls to be sent upstream over the cable interface via best effort. |

# cable-modem qos drop-ack

To enable the automatic dropping of unnecessary TCP packet acknowledgements on the cable interface, use the **cable-modem qos drop-ack** command in cable interface configuration mode. To disable this feature, so that all TCP packet acknowledgements are sent, use the **no** form of this command.

**Cisco uBR905, uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter**

**cable-modem qos drop-ack**

**no cable-modem qos drop-ack**

## Syntax Description

This command has no arguments or keywords.

## Command Default

Enabled

## Command Modes

Interface configuration and subinterface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 12.2(2)XA4 | This command was introduced for the Cisco uBR905 cable access router and Cisco CVA122 Cable Voice Adapter. |
| 12.2(7) | Support was added for the Cisco uBR924 cable access router. |
| 12.2(8)T | Support was added for the Cisco uBR925 cable access router. |

## Usage Guidelines

TCP traffic uses a packet-acknowledge algorithm, where a group of packets must be acknowledged before additional traffic can be sent. When a large number of packets is transmitted on the downstream, it can result in a large number of acknowledgements on the upstream. Because the downstream bandwidth is typically many times greater than the upstream bandwidth, certain applications can temporarily overrun the upstream with a large volume of acknowledgement packets.

If any of those acknowledgements are dropped or lost, traffic can be backed up, and data packets might have to be resent, even if those packets had in fact been successfully received. This can significantly impact real-time traffic, such as voice calls.

To optimize the TCP traffic on the upstream in these circumstances, the Cisco uBR905, Cisco uBR924, and Cisco uBR925 cable access routers and the Cisco CVA122 Cable Voice Adapters automatically analyze the upstream traffic and drop unnecessary packet acknowledgements when traffic begins backing up. This feature has been automatically enabled by default on the routers, starting with Cisco IOS Release 12.0(5)T.

In some situations, however, this feature can result in packets being dropped on the upstream, which could impact the performance of certain applications such as FTP transfers. If packet drops do occur on the upstream, this feature can be turned off with the **no cable-modem qos drop-ack** command.

## Examples

The following example shows how to disable the TCP packet optimization feature on the cable interface, so that all TCP packet acknowledgements are sent:

```
Router(config)# interface cable-modem 0
Router(config-if)# no cable-modem qos drop-ack
Router(config-if)#
```

The following example shows how to enable the TCP packet optimization feature on the cable interface. This is the default configuration, so it does not need to be done unless it has been previously disabled.

```
Router(config)# interface cable-modem 0
Router(config-if)# cable-modem qos drop-ack
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **show controllers cable-modem qos** | Displays detailed information about the Quality of Service (QoS) configuration. |

# cable-modem upstream preamble qpsk

To enable the QPSK modulation scheme in the upstream direction from the cable interface to the CMTS, use the **cable-modem upstream preamble qpsk** command in cable interface configuration mode. To disable upstream modulation for the interface, use the **no** form of this command.

**Cisco uBR904, uBR905, uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter**

**cable-modem upstream preamble qpsk**

**no cable-modem upstream preamble qpsk**

## Syntax Description

This command has no arguments or keywords.

## Command Default

Enabled

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 11.3(4)NA | This command was introduced for the Cisco uBR904 cable access router. |
| 12.0(4)XI1 | Support was added for the Cisco uBR924 cable access router. |
| 12.1(3)XL | Support was added for the Cisco uBR905 cable access router. |
| 12.1(5)XU1 | Support was added for the Cisco CVA122 Cable Voice Adapter. |
| 12.2(2)XA | Support was added for the Cisco uBR925 cable access router. |

## Examples

The following example shows how to configure the cable interface for QPSK modulation on the upstream:

```
Router(config)# interface cable-modem 0
Router(config-if)# cable-modem upstream preamble qpsk
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem compliant bridge** | Enables DOCSIS-compliant transparent bridging for the cable interface at startup. |
| **cable-modem downstream saved channel** | Modifies the saved downstream channel setting and upstream power value on the cable interface. |
| **cable-modem fast-search** | Enables a faster downstream search algorithm on the cable interface. |
| **cable-modem voip best-effort** | Allows voice calls to be sent upstream over the cable interface via best effort. |

# cable-modem voip best-effort

To allow voice calls to be sent upstream over the cable interface using best-effort quality of service (QoS), use the **cable-modem voip best-effort** command in cable interface configuration mode. To disable best-effort voice calls, use the **no** form of this command.

**Cisco uBR924 cable access router**

**cable-modem voip best-effort**

**no cable-modem voip best-effort**

**Note** Cisco IOS Release 12.1(2)T removed this command from the CLI for all platforms and reserved it for exclusive use by the DOCSIS provisioning process.

## Syntax Description

This command has no arguments or keywords.

## Command Default

Enabled

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 11.3(4)NA | This command was introduced for the Cisco uBR904 cable access router. |
| 12.0(4)XI1 | Support was added for the Cisco uBR924 cable access router. |
| 12.1(2)T | This command was removed from the CLI for all platforms and reserved for exclusive use by the DOCSIS provisioning process. |

## Usage Guidelines

This command allows you to configure the voice traffic on a router to allow only calls having a high-priority service identifier (SID) to be connected.

If the dynamic configuration of high-priority queues for voice traffic fails, or if the far end cannot support the multiple SIDs and multiple classes of service required by high-priority traffic, the flag set by this command will be checked. If enabled (the default setting), the call will be allowed to go through. If disabled, the call will fail.

## Examples

The following example shows how to disable best-effort voice calls:

```
Router(config)# interface cable-modem 0
Router(config-if)# no cable-modem voip best-effort
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem compliant bridge** | Enables DOCSIS-compliant transparent bridging for the cable interface at startup. |
| **cable-modem downstream saved channel** | Modifies the saved downstream channel setting and upstream power value on the cable interface. |
| **cable-modem fast-search** | Enables a faster downstream search algorithm on the cable interface. |
| **cable-modem upstream preamble qpsk** | Enables the QPSK modulation scheme in the upstream direction from the cable interface to the CMTS. |

# cable-modem voip clock-internal

To enable the router's internal clock for Voice-over-IP (VoIP) calls, use the **cable-modem voip clock-internal** command in cable interface configuration mode. To disable the internal clock, so that it uses the clock from the cable interface for VoIP calls, use the **no** form of this command.

**Cisco uBR924, uBR925 cable access routers, Cisco CVA122 Cable Voice Adapter**

**cable-modem voip clock-internal**

**no cable-modem voip clock-internal**

## Syntax Description

This command has no arguments or keywords.

## Command Default

The default is to use the clock from the cable interface for VoIP calls.

## Command Modes

Interface configuration (cable interface only)

## Command History

| Release | Modification |
|---|---|
| 12.1(4)T | This command was introduced for the Cisco uBR924 cable access router. |
| 12.1(5)XU1 | Support was added for the Cisco CVA122 Cable Voice Adapter. |
| 12.2(2)XA | Support was added for the Cisco uBR925 cable access router. |

## Usage Guidelines

This command enables the internal clock, allowing it to make VoIP calls over the Ethernet and USB interfaces even when the cable interface is down or disconnected. If the CMTS is a Cisco uBR7200 series with a Cable Clock Card, this command disables the use of that clock.

This command can be used in both DOCSIS IP bridging and routing mode. However, when operating in DOCSIS IP bridging mode, VoIP packets are transmitted out only on the cable interface, so the router must be operating in routing mode to transmit voice packets out the Ethernet and USB interfaces.

## Examples

The following example shows how to enable the internal clock for VoIP calls:

```
Router(config)# interface cable0
Router(config-if)# cable-modem voip clock-internal
Router(config-if)#
```

## Related Commands

| Command | Description |
|---|---|
| **cable-modem compliant bridge** | Enables DOCSIS-compliant transparent bridging for the cable interface at startup. |
| **cable-modem downstream saved channel** | Modifies the saved downstream channel setting and upstream power value on the cable interface. |

| Command | Description |
|---|---|
| **cable-modem fast-search** | Enables a faster downstream search algorithm on the cable interface. |
| **cable-modem upstream preamble qpsk** | Enables the QPSK modulation scheme in the upstream direction from the cable interface to the CMTS. |