

# QoS Profile Enforcement for the Cisco uBR7200 Series Router

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## Feature Overview

This feature allows cable modem termination system (CMTS) operators to override the provisioned service class of a cable modem at the time of registration with a CMTS local-static quality of service (QoS) profile.

## Benefits

This feature allows CMTS operators to control the QoS from the CMTS and eliminates any interference from improper local-rate limiting implemented on the cable modem. The CMTS provisions a registering cable modem with a default Data Over Cable System Interface Specification (DOCSIS) 1.0 service class that is assigned by the operator. This service class has no upstream or downstream rate limits.

When the modem sends data upstream, it makes bandwidth requests without throttling or dropping packets because of its own rate-policing algorithm. The CMTS does traffic shaping based on the QoS profile enforced by the operator.

## Supported Platform

Cisco uBR7200

## Supported MIBs and RFCs

None

## Configuration Tasks

Perform the following tasks to configure QoS Profile enforcement:

- Enforcing a QoS Profile Assignment
- Verifying QoS Profile Assignments

## Enforcing a Qos Profile Assignment

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Command	Purpose
Router(config)# <code>cable qos permission enforce index</code>	Assigns the QoS profile specified by the index number to all cable modems attempting to connect to the cable router.

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## Verifying QoS Profile Assignments

- Step 1** Load the ubr7200 and wait for the modems to come on line as indicated by the **show cable modem** command.

Notice that the modems are getting their provisioned class of service as indicated by the **show cable modem** and **show cable qos profile** commands.
- Step 2** Configure any qos profile with for example index 1 at the CMTS by using the SNMP/CLI.
- Step 3** Enter the global command **cable qos permission enforce 1**.
- Step 4** Enter the **clear cable modem all reset** global command to force the modems to reregister with the CMTS.

Notice that the cable modems temporarily are assigned the CMTS-defined PRE\_REGISTRATION QoS profile with index 2 until the cable modems register with CMTS.
- Step 5** Use the **debug cable reg** command to see that the provisioned QoS parameters of the modems are overwritten at the CMTS during registration.

Notice that at the end of registration, the modem gets the user-enforced QoS profile as indicated by the **show cable modem** and **show cable qos profile** commands.

## Configuration Examples

The following example shows how a cable modem with a QoS profile 4 created by the cable modem (*cm*) is reset to use QoS profile 225 enforced by the cable router (*management*):

```
Router#show cable modem
Interface      SID  Online  Timing Receive QoS IP address      MAC
address
                State  Offset Power
Cable6/0/U0   1    online  2848   0.00   4   19.2.20.139  0010.7b6b.7215

Router#show cable qos profile 4
Service Prio Max      Guarantee Max      Max tx TOS  TOS  Create  B
class    upstream upstream downstream burst  mask value by      priv
                bandwidth bandwidth bandwidth
4        7      128000   64000   2048000   255   0x0  0x0  cm      no

Router(config)#cable qos profile 225 max-upstream 256
Router(config)#cable qos permission enforce 225
Router#clear cable modem all reset
Router#show cable modem
Interface      SID  Online  Timing Receive QoS IP address      MACAddress
                State  Offset Power
Cable6/0/U0   1    offline 2848   0.25   2   19.2.20.139  0010.7b6b.7215

Router#debug cable reg
....
00:15:59: Finished parsing REG Request
00:15:59: Overriding Provisioned QoS Parameters In REG-REQ
....

Router#show cable modem
Interface      SID  Online  Timing Receive QoS IP address      MACAddress
                State  Offset Power
Cable6/0/U0   1    online  2852   0.00   225 19.2.20.139  0010.7b6b.7215

Router#show cable qos profile 225
Service Prio Max      Guarantee Max      Max tx TOS  TOS  Create  B
class    upstream upstream downstream burst  mask value by      priv
                bandwidth bandwidth bandwidth
225     0      256000   0        0        0     0x0  0x0  management no
```

## Command Reference

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

**cable qos permission enforce**

## cable qos permission enforce

To override the provisioned QoS profile of the cable modem and enforce a specific CMTS-local QoS profile, use the **cable qos permission enforce** global configuration command. Use the **no** form of this command to allow cable modems to use the QoS profile they were configured to use.

**cable qos permission enforce** *index*  
**no cable qos permission enforce**

### Syntax Description

*index* Specifies the number of the QoS profile to be enforced on all cable modems connecting to the CMTS. Valid values are from 1 to 255.

### Defaults

No default behavior or values.

### Command Modes

Global configuration

### Command History

Release	Modification
11.3(9)NA	This command was introduced.

### Usage Guidelines

This command allows CMTS operators to enforce a profile on all connected cable modems to ensure that rate-limiting is properly implemented.

If the QoS profile to be enforced does not exist at the CMTS during registration, the CMTS uses the QoS profile configured for the registering cable modem.

**Example**

The following example shows how a cable modem with a QoS profile 4 created by the cable modem (*cm*) is reset to use QoS profile 225 enforced by the cable router (*management*):

```
Router#show cable modem
Interface      SID  Online      Timing Receive QoS IP address      MAC
address
                State      Offset Power
Cable6/0/U0  1    online      2848    0.00    4    19.2.20.139 0010.7b6b.7215
```

```
Router#show cable qos profile 4
Service Prio Max      Guarantee Max      Max tx TOS  TOS  Create  B
class      upstream upstream downstream burst mask value by  priv
           bandwidth bandwidth bandwidth
4          7    128000    64000    2048000    255    0x0  0x0  cm    no
```

```
Router(config)#cable qos profile 225 max-upstream 256
Router(config)#cable qos permission enforce 225
Router#clear cable modem all reset
Router#show cable modem
Interface      SID  Online      Timing Receive QoS IP address      MACAddress
                State      Offset Power
Cable6/0/U0  1    offline     2848    0.25    2    19.2.20.139 0010.7b6b.7215
```

```
Router#debug cable reg
....
00:15:59: Finished parsing REG Request
00:15:59: Overriding Provisioned QoS Parameters In REG-REQ
....
```

```
Router#show cable modem
Interface      SID  Online      Timing Receive QoS IP address      MACAddress
                State      Offset Power
Cable6/0/U0  1    online      2852    0.00    225 19.2.20.139 0010.7b6b.7215
```

```
Router#show cable qos profile 225
Service Prio Max      Guarantee Max      Max tx TOS  TOS  Create  B
class      upstream upstream downstream burst mask value by  priv
           bandwidth bandwidth bandwidth
225      0    256000    0        0        0        0x0  0x0  management no
```

**Related Commands**

Command	Description
<b>cable qos profile</b>	Configures a QoS profile.