



# Class-Based Ethernet CoS Matching and Marking

The Class-Based Ethernet CoS Matching and Marking (801.1p and ISL CoS) feature allows you to mark and match packets using Class of Service (CoS) values.

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## Finding Feature Information

Your software release may not support all the features documented in this module. For the latest caveats and feature information, see [Bug Search Tool](#) and the release notes for your platform and software release. To find information about the features documented in this module, and to see a list of the releases in which each feature is supported, see the feature information table at the end of this module.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn). An account on Cisco.com is not required.

## Prerequisites for Class-Based Ethernet CoS Matching and Marking

When configuring this feature, you must first create a policy map (sometimes referred to as a service policy or a traffic policy) using the Modular QoS Command-Line Interface (CLI) (MQC). Therefore, you should be familiar with the procedure for creating a policy map using the MQC.

For more information about creating a policy map (traffic policy) using the MQC, see the “Applying QoS Features Using the MQC” module.

# Information About Class-Based Ethernet CoS Matching and Marking

## Layer 2 CoS Values

Layer 2 (L2) Class of Service (CoS) values are relevant for IEEE 802.1Q and Interswitch Link (ISL) types of frames. The Class-based Ethernet CoS Matching and Marking feature extends Cisco software capabilities to match packets by looking at the CoS value of the packet and marking packets with user-defined CoS values. This feature can be used for L2 CoS to L3 Terms of Service (TOS) mapping. CoS matching and marking can be configured via the Cisco Modular QoS CLI framework.

# How to Configure Class-Based Ethernet CoS Matching and Marking

## Configuring Class-Based Ethernet CoS Matching

In the following task, classes named voice and video-and-data are created to classify traffic based on the CoS values. The classes are configured in the CoS-based-treatment policy map, and the service policy is attached to all packets leaving Gigabit Ethernet interface 1/0/1.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **class-map** *class-map-name*
4. **match cos** *cos-value*
5. **exit**
6. **class-map** *class-map-name*
7. **match cos** *cos-value*
8. **exit**
9. **policy-map** *policy-map-name*
10. **class** {*class-name* | **class-default**}
11. **priority level** *level*
12. **exit**
13. **class** {*class-name* | **class-default**}
14. **bandwidth remaining percent** *percentage*
15. **exit**
16. **exit**
17. **interface** *type number*
18. **service-policy** {**input**| **output**} *policy-map-name*
19. **end**

## DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<b>enable</b> <b>Example:</b>  Device> enable	Enables privileged EXEC mode.  • Enter your password if prompted.
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b>  Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>class-map</b> <i>class-map-name</i> <b>Example:</b>  Device(config)# class-map voice	Specifies the name of the class map to be created and enters class-map configuration mode.
<b>Step 4</b>	<b>match cos</b> <i>cos-value</i> <b>Example:</b>  Device(config-cmap)# match cos 7	Configures the class map to match traffic on the basis of the CoS value.
<b>Step 5</b>	<b>exit</b> <b>Example:</b>  Device(config-cmap)# exit	(Optional) Exits class-map configuration mode.
<b>Step 6</b>	<b>class-map</b> <i>class-map-name</i> <b>Example:</b>  Device(config)# class-map video-and-data	Specifies the name of the class map to be created and enters class-map configuration mode.  • Enter the class map name.
<b>Step 7</b>	<b>match cos</b> <i>cos-value</i> <b>Example:</b>  Device(config-cmap)# match cos 5	Configures the class map to match traffic on the basis of the CoS value.
<b>Step 8</b>	<b>exit</b> <b>Example:</b>  Device(config-cmap)# exit	(Optional) Exits class-map configuration mode.
<b>Step 9</b>	<b>policy-map</b> <i>policy-map-name</i> <b>Example:</b>  Device(config)# policy-map cos-based-treatment	Specifies the name of the policy map created earlier and enters policy-map configuration mode.

	Command or Action	Purpose
Step 10	<b>class</b> <i>{class-name   class-default}</i> <b>Example:</b> Device(config-pmap)# class voice	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier.
Step 11	<b>priority level</b> <i>level</i> <b>Example:</b> Device(config-pmap-c)# priority level 1	Specifies the level of the priority service.
Step 12	<b>exit</b> <b>Example:</b> Device(config-pmap-c)# exit	(Optional) Exits policy-map class configuration mode.
Step 13	<b>class</b> <i>{class-name   class-default}</i> <b>Example:</b> Device(config-pmap)# class video-and-data	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier.
Step 14	<b>bandwidth remaining percent</b> <i>percentage</i> <b>Example:</b> Device(config-pmap-c)# bandwidth remaining percent 20	Specifies the amount of bandwidth assigned to the class.
Step 15	<b>exit</b> <b>Example:</b> Device(config-pmap-c)# exit	(Optional) Exits policy-map class configuration mode.
Step 16	<b>exit</b> <b>Example:</b> Device(config-pmap)# exit	(Optional) Exits policy-map configuration mode.
Step 17	<b>interface</b> <i>type number</i> <b>Example:</b> Device(config)# interface gigabitethernet 1/0/1	Configures an interface (or subinterface) type and enters interface configuration mode.
Step 18	<b>service-policy</b> <i>{input  output} policy-map-name</i> <b>Example:</b>	Specifies the name of the policy map to be attached to either the input or output direction of the interface.

	Command or Action	Purpose
	<pre>Device(config-if)# service-policy output cos-based-treatment</pre>	<p><b>Note</b> Policy maps can be configured on ingress or egress devices. They can also be attached in the input or output direction of an interface. The direction (input or output) and the device (ingress or egress) to which the policy map should be attached vary according your network configuration. When using the <b>service-policy</b> command to attach the policy map to an interface, be sure to choose the device and the interface direction that are appropriate for your network configuration.</p>
<b>Step 19</b>	<p><b>end</b></p> <p><b>Example:</b></p> <pre>Device(config-if)# end</pre>	(Optional) Exits interface configuration mode and returns to privileged EXEC mode.

## Configuring Class-Based Ethernet CoS Marking

In the following task, the policy map called `cos-set` is created to assign different CoS values for different types of traffic.



**Note** This task assumes that the class maps called `voice` and `video-and-data` have already been created.

### SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **policy-map** *policy-map-name*
4. **class** {*class-name* | **class-default**}
5. **set cos** *cos-value*
6. **exit**
7. **class** {*class-name* | **class-default**}
8. **set cos** *cos-value*
9. **end**

### DETAILED STEPS

	Command or Action	Purpose
<b>Step 1</b>	<p><b>enable</b></p> <p><b>Example:</b></p> <pre>Device&gt; enable</pre>	<p>Enables privileged EXEC mode.</p> <ul style="list-style-type: none"> <li>• Enter your password if prompted.</li> </ul>

	Command or Action	Purpose
<b>Step 2</b>	<b>configure terminal</b> <b>Example:</b>  Device# configure terminal	Enters global configuration mode.
<b>Step 3</b>	<b>policy-map <i>policy-map-name</i></b> <b>Example:</b>  Device(config)# policy-map cos-set	Specifies the name of the policy map created earlier and enters policy-map configuration mode.
<b>Step 4</b>	<b>class {<i>class-name</i>   class-default}</b> <b>Example:</b>  Device(config-pmap)# class voice	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier.
<b>Step 5</b>	<b>set cos <i>cos-value</i></b> <b>Example:</b>  Device(config-pmap-c)# set cos 1	Sets the packet's CoS value.
<b>Step 6</b>	<b>exit</b> <b>Example:</b>  Device(config-pmap-c)# exit	Exits policy-map class configuration mode.
<b>Step 7</b>	<b>class {<i>class-name</i>   class-default}</b> <b>Example:</b>  Device(config-pmap)# class video-and-data	Specifies the name of the class whose policy you want to create and enters policy-map class configuration mode. This class is associated with the class map created earlier.
<b>Step 8</b>	<b>set cos <i>cos-value</i></b> <b>Example:</b>  Device(config-pmap-c)# set cos 2	Sets the packet's CoS value.
<b>Step 9</b>	<b>end</b> <b>Example:</b>  Device(config-pmap-c)# end	(Optional) Exits policy-map class configuration mode and returns to privileged EXEC mode.

# Configuration Examples for Class-Based Ethernet CoS Matching and Marking

## Example: Configuring Class-Based Ethernet CoS Matching

This example creates two classes, voice and video-and-data, to classify traffic based on the CoS values. The CoS-based-treatment policy map is used to set priority and bandwidth values for the classes. The service policy is attached to all packets leaving interface Gigabit Ethernet1/0/1.



**Note** The service policy can be attached to any interface that supports service policies.

```
Device(config)# class-map voice
Device(config-cmap)# match cos 7
Device(config-cmap)# exit
Device(config)# class-map video-and-data
Device(config-cmap)# match cos 5
Device(config-cmap)# exit
Device(config)# policy-map cos-based-treatment
Device(config-pmap)# class voice
Device(config-pmap-c)# priority level 1
Device(config-pmap-c)# exit
Device(config-pmap)# class video-and-data
Device(config-pmap-c)# bandwidth remaining percent 20
Device(config-pmap-c)# exit
Device(config-pmap)# exit
Device(config)# interface gigabitethernet1/0/1
Device(config-if)# service-policy output cos-based-treatment
```

## Example: Class-Based Ethernet CoS Marking

```
Device(config)# policy-map cos-set
Device(config-pmap)# class voice
Device(config-pmap-c)# set cos 1
Device(config-pmap-c)# exit
Device(config-pmap)# class video-and-data
Device(config-pmap-c)# set cos 2
Device(config-pmap-c)# end
```

## Additional References for Class-Based Ethernet CoS Matching and Marking

### Related Documents

Related Topic	Document Title
Cisco commands	<a href="#">Cisco IOS Master Command List, All Releases</a>
QoS commands: complete command syntax, command modes, command history, defaults, usage guidelines, and examples	<i>Cisco IOS Quality of Service Solutions Command Reference</i>
Classifying network traffic	“Classifying Network Traffic” module
MQC	“Applying QoS Features Using the MQC” module
Marking network traffic	“Marking Network Traffic” module

### Technical Assistance

Description	Link
The Cisco Support and Documentation website provides online resources to download documentation, software, and tools. Use these resources to install and configure the software and to troubleshoot and resolve technical issues with Cisco products and technologies. Access to most tools on the Cisco Support and Documentation website requires a Cisco.com user ID and password.	<a href="http://www.cisco.com/cisco/web/support/index.html">http://www.cisco.com/cisco/web/support/index.html</a>

## Feature Information for Class-Based Ethernet CoS Matching & Marking

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

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**Table 1: Feature Information for Class-Based Ethernet CoS Matching and Marking**

<b>Feature Name</b>	<b>Releases</b>	<b>Feature Information</b>
Class-Based Ethernet CoS Matching and Marking	12.2(5)T 15.0(1)S Cisco IOS XE Release 2.1 Cisco IOS XE Release 3.2SE	This feature allows you to mark and match packets using Class of Service (CoS) values.  The following commands were introduced or modified: <b>match cos</b> , <b>set cos</b> .
User Priority Based QoS Marking for Wireless Deployments	Cisco IOS XE Release 3.2SE	This features allows you to mark and match packets on wireless deployments using the user-priority (CoS) vlaues.

