



# CHAPTER 1

## Overview

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This chapter describes the configurable Cisco NX-OS Quality of Service (QoS) features on the device. QoS allows you to classify the network traffic, police and prioritize the traffic flow, and provide congestion avoidance.

This chapter includes the following sections:

- [Information About QoS Features, page 1-1](#)
  - [High Availability Requirements for QoS Features, page 1-4](#)
  - [QoS Feature Configuration with MQC, page 1-5](#)
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## Information About QoS Features

You use the QoS features to provide the most desirable flow of traffic through a network. QoS allows you to classify the network traffic, police and prioritize the traffic flow, and provide congestion avoidance. The control of traffic is based on the fields in the packets that flow through the system. You use the Modular QoS CLI (MQC) to create the traffic classes and policies of the QoS features.

QoS features are applied using QoS policies and queuing policies, as follows:

QoS policies include the policing feature and the marking features.

Queuing policies use the queuing and scheduling features as well as a limited set of the marking feature.



**Note**

[Chapter 2, “Using Modular QoS CLI”](#)

apply globally to the entire switch and cannot be modified. See the *Cisco Nexus 7000 Series NX-OS Virtual Device Context Configuration Guide, Release 4.0* for complete information on VDCs.

This section includes the following topics:

- [Using QoS, page 1-2](#)
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- [Queuing and Scheduling, page 1-3](#)
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## Using QoS

- 1.
- 2.
- 3.



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The queuing and scheduling operations of the overall QoS feature use IPv6 and IPv4; the rest of the feature uses only IPv4.

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## Classification

The values used to classify traffic are called match criteria. When you define a traffic class, you can specify multiple match criteria, you can choose to not match on a particular criterion, or you can determine traffic class by matching any or all criteria.

Traffic that fails to match any class is assigned to a default class of traffic called class-default.

For more information about configuring classification, see [Chapter 3, “Configuring Classification.”](#)

## Marking

## Mutation

## Policing

supplied: conform (green), exceed (yellow), or violate (red). You can configure only one action for each condition. When the data rate exceeds the user-supplied values, packets are either marked down or dropped. You can define single-rate, dual-rate, and color-aware policers.

Single-rate policers monitor the specified committed information rate (CIR) of traffic. Dual-rate policers monitor both CIR and peak information rate (PIR) of traffic. Color-aware policers assume that traffic has been previously marked with a color.

For more information about configuring policing, see [Chapter 6, “Configuring Policing.”](#)

## Queuing and Scheduling

You can apply weighted random early detection (WRED) to a class of traffic, which allows packets to be dropped based on the Class of Service (CoS) field. The WRED algorithm allows you to perform proactive queue management to avoid traffic congestion.

You can schedule traffic by imposing a maximum data rate on a class of traffic so that excess packets are retained in a queue to smooth (constrain) the output rate.

For information about configuring queuing and scheduling, see [Chapter 7, “Configuring Queuing and Scheduling.”](#)

## Sequencing of QoS Actions

- **qos**—Defines MQC objects that you can use for marking and policing.  
**queuing**



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**qos**

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qos



Note

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## Sequencing of Ingress Traffic Actions

- 1.
- 2.
- 3.
- 4.
- 5.

## Sequencing of Egress Traffic Actions

- 1.
- 2.
- 3.
- 4.
- 5.



Note

# High Availability Requirements for QoS Features



Note

*Cisco Nexus 7000 Series NX-OS High Availability and Redundancy Guide, Release 4.0*

# QoS Feature Configuration with MQC

**Table 1-1** *MQC Configuration Commands*

MQC Command	Description
<code>table-map</code>	
<code>policy-map</code>	

You can modify or delete MQC objects, except system-defined objects, when the objects are not associated with any interfaces. See [Chapter 2, “Using Modular QoS CLI”](#) for information on system-defined MQC objects.

Once a QoS policy is defined, you can attach the policy map to an interface using the interface configuration command shown in [Table 1-2](#).

**Table 1-2** *Interface Command to Attach a Policy Map to an Interface*

Interface Command	Description
<code>service-policy</code>	

For information about using MQC, see [Chapter 2, “Using Modular QoS CLI.”](#)

## QoS Statistics

`show policy-map`  
`clear qos statistics`

[Chapter 8, “Monitoring QoS Statistics.”](#)

## Default QoS Behavior

