



Overview

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Information About Quality of Service

You can use quality of service (QoS) to provide the most desirable flow of traffic through a network. QoS allows you to classify your network traffic, police and prioritize the traffic flow, and provide congestion avoidance. Traffic is processed based on how you classify it and the QoS policies that you put in place.

You can implement a QoS policy using the following steps:

- 1 Define a traffic class by using the **class-map** command. For more information, see [Configuring QoS Classification](#).
- 2 Create a traffic class by using the **policy-map** command. A traffic policy defines how specific traffic is to be acted upon to improve the quality of service. For more information, see [Configuring QoS Marking Policies](#).
- 3 Attach the traffic policy to an interface or port profile by using the **service-policy** command. For more information, see [Creating Ingress and Egress Policies](#).
- 4 Police the traffic. For more information, see [Configuring QoS Policing](#).

Traffic Classification and Marking

QoS classifies network traffic, uses or assigns QoS labels to indicate priority, makes the packets comply with the configured resource usage limits (policies the traffic and marks the traffic), and provides congestion avoidance where resource contention exists. The following table describes these processes.

QoS Method	Description	Command	Mechanism
Traffic Classifications	Groups network traffic based on defined criteria.	match	class maps
Traffic Marking	Modifies traffic attributes by matching the class.	set	policy maps

QoS Commands

QoS configuration commands are shown in the following table.

Command	Configuration	Description
class-map	Global configuration	Defines a class map that represents a class of traffic.
table-map	Global configuration	Defines a table map that represents a mapping from one set of field values to another set of field values. You can reference a table map from a policy map.
policy-map	Global configuration	Defines a policy map that represents a set of policies to be applied to a set of class maps. Policy maps can reference table maps.
match	Class map QoS configuration	Defines the criteria for a class map.
set	Policy map QoS configuration	Defines the action to be taken on the packet.

Command	Configuration	Description
service-policy	Interface or port profile configuration	Applies a specified policy map to input or output packets on interfaces configured as follows: <ul style="list-style-type: none"> • inherited from a port-profile • port-channel • Ethernet • vEthernet
police	Policy map class QoS configuration	Defines the rate at which data traffic is monitored.

Default QoS Behavior

QoS has no default behavior. Policing and prioritization of traffic are implemented only when you apply a policy map to an interface. When you are configuring QoS with an ACL, note that packets are processed as follows:

- QoS ingress processing follows ACL processing.
- QoS egress processing precedes ACL egress processing.

Supported RFCs

The following table lists RFCs that are supported by QoS.

Number	Title
RFC 2475	Architecture for Differentiated Services
RFC 2697	A Single Rate Three Color Marker
RFC 2698	A Dual Rate Three Color Marker
RFC 3289	Management Information Base for the Differentiated Services Architecture
RFC 3550	RTP: A Transport Protocol for Real-Time Applications

High Availability Requirements for QoS Features

QoS recovers its previous state after a software restart, and it is able to switch over from the active supervisor to the standby supervisor without a loss of state.

Commonly Used DSCP Values

You can mark both incoming and outgoing packets. The following commonly used DSCP values are described in [RFC 2475](#).

DSCP Value	Decimal Value	Meaning	Drop Probability	Equivalent IP Precedence Values
101 110	46	High Priority Expedited Forwarding (EF)	N/A	101—Critical
000 000	0	Best effort	N/A	000—Routine
001 010	10	AF11	Low	001—Priority
001 100	12	AF12	Medium	001—Priority
001 110	14	AF13	High	001—Priority
010 010	18	AF21	Low	010—Immediate
010 100	20	AF22	Medium	010—Immediate
010 110	22	AF23	High	010—Immediate
011 010	26	AF31	Low	011—Flash
011 100	28	AF32	Medium	011—Flash
011 119	30	AF33	High	011—Flash
100 010	34	AF41	Low	100—Flash Override
100 100	36	AF42	Medium	100—Flash Override
100 110	38	AF43	High	100—Flash Override
001 000	8	CS1		1
010 000	16	CS2		2
011 000	24	CS3		3

DSCP Value	Decimal Value	Meaning	Drop Probability	Equivalent IP Precedence Values
100 000	32	CS4		4
101 000	40	CS5		5
110 000	48	CS6		6
111 000	56	CS7		7
000 000	0	Default		
101 110	46	EF		

IP Precedence Values

The IP precedence values from least to most important are listed in the following table.

Value	Description
000 (0)	Routine or Best Effort
001 (1)	Priority
010 (2)	Immediate
011 (3)	Flash (mainly used for voice signaling or for video)
100 (4)	Flash Override
101 (5)	Critical (mainly used for voice RTP)
110 (6)	Internet
111 (7)	Network

