

TSW202 QoS

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The information in this page is updated in accordance with firmware version .

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Summary

Quality of Service (QoS) is used to set up priority to specific devices, services or applications within the network through the router, so that the maximum amount of available throughput and speed can be used.

Port priority

In QoS, traffic can be prioritized using different methods, and two common ways to set the priority are by Class of Service (CoS) and Differentiated Services Code Point (DSCP). Let's discuss each:

Class of Service (CoS):

- CoS is a 3-bit field in an Ethernet frame header, used to prioritize packets at the Layer 2 (data link layer) level. It's often used in LANs and can be associated with 802.1p (Priority) tags. CoS values range from 0 to 7, where 0 is the lowest priority, and 7 is the highest. CoS is typically used for local LAN prioritization.

Differentiated Services Code Point (DSCP):

- DSCP is part of the IP header (Layer 3) and is used to prioritize packets at the network level. It is typically used in Wide Area Networks (WANs) and the internet. DSCP values are 6 bits in length, allowing for 64 different priority levels. DSCP values are mapped to different service classes and can be used for more granular QoS.

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Field	Value	Description
Port	Physical device port	Port ID.

Priority	CoS-[0..7]; default: CoS-0	Port-based priority of the specified port. Utilizes either CoS, DSCP or both markings equally. CoS operates at Layer 2 of the OSI model and consists of eight different classification groups to which Ethernet frames can belong. DSCP serves a similar purpose as CoS, but it does so at the network layer -- Layer 3 -- of the OSI model and uses a 6-bit field, as opposed to only 3 bits.
Prioritization mode	CoS DSCP Equal; default: CoS	

DSCP priority

Differentiated Services Code Point (DSCP) is a means of classifying and managing network traffic and of providing quality of service (QoS) in modern Layer 3 IP networks. It uses the 6-bit Differentiated Services (DS) field in the IP header for the purpose of packet classification.



802.1p priority

802.1p is a quality of service (QoS)/class of service (CoS) method that operates at the MAC layer (Layer 2). Equipment that supports 802.1p can add and recognize a value that indicates the priority level of the Ethernet frame. 802.1p—Displays the 802.1p priority tag values to be assigned to an egress queue, where 0 is the lowest and 7 is the highest priority.



Field	Value	Description
Scheduling mode	SP WRR WFQ; default: WRR	Possible modes: <ul style="list-style-type: none"> • Strict Priority (SP): This method imparts the highest service to high priority traffic. Here, the queuing mechanism forwards as many frames as possible in a higher priority frame before moving to the queue with the next priority level. • Weighted Round Robin (WRR): In this method, frames or packets of all the queues in the scheduler are serviced in each cycle. Priority among the different queues is maintained by forwarding a specific number of frames in each queue per cycle in a rotational manner. • Combination of WRR and SP (WFQ): This queuing method is configurable in nature and it combines both WRR and SP. In this method, strict priority is given to time-sensitive or real-time traffic like voice and video, while WRR is adopted for other traffics.
Scheduling weights	Integer [1..127]	Weight value assignment of specific port queue for WFQ/WRR
802.1P Priority	Integer [0..7]	Internal priority mapping to egress queue ID. By default TC (Traffic Class) queue values are mapped 1 to 1 with CoS values. The higher the CoS marking, the higher will be the packet priority.

Bandwidth control

In networking, Quality of Service (QoS) mechanisms like bandwidth control and storm control are used to manage and control the flow of traffic on a network. They help ensure that critical traffic

receives priority and that network resources are used efficiently.

Rate limit

Rate limiting is a specific form of bandwidth control that restricts the rate at which data can be sent or received. It is used to prevent certain traffic flows from exceeding a predefined rate. Rate limiting can be applied to both inbound and outbound traffic. It is commonly used to control traffic such as email, file transfers, or streaming to ensure that it does not consume excessive network resources.



Field	Value	Description
Bandwidth inter frame gap	off on; default: off	Bandwidth control rate include IFG (inter frame gap and preamble).
Ingress bandwidth	Integer [0..1000000]; default: Disabled	Ingress bandwidth in Kbps units.
Egress bandwidth	Integer [0..1000000]; default: Disabled	Egress bandwidth in Kbps units.

Storm control

Storm control is a feature used to prevent broadcast, multicast, or unknown unicast "storms" from overloading a network. These storms can occur when a network device generates a high volume of these types of traffic, leading to congestion and network performance issues. Storm control mechanisms can include broadcast storm control, multicast storm control, and unknown unicast storm control.



Field	Value	Description
Storm control inter frame gap	off on; default: off	Storm control rate include IFG (inter frame gap and preamble).
	Bytes Packets; default: Bytes	Storm control is based on packet count or byte count.
Multicast burst	Integer [0..1000000]; default: 80	Multicast burst size of storm control counter in PPS units (packets per second) if mode is packets or Kbps units if mode is bytes
Broadcast burst	Integer [0..1000000]; default: 80	Broadcast burst size of storm control counter in PPS units (packets per second) if mode is packets or Kbps units if mode is bytes
Unicast burst	Integer [0..1000000]; default: 80	Unicast burst size of storm control counter in PPS units (packets per second) if mode is packets or Kbps units if mode is bytes



Field	Value	Description
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Multicast rate Integer [0..1000000]; default:
Disabled

Broadcast rate Integer [0..1000000]; default:
Disabled

Unicast rate Integer [0..1000000]; default:
Disabled

Multicast Storm Filtering Control Rate In
Kbps units.

Broadcast Storm Filtering Control Rate In
Kbps units.

Unicast Storm Filtering Control Rate In Kbps
units.