

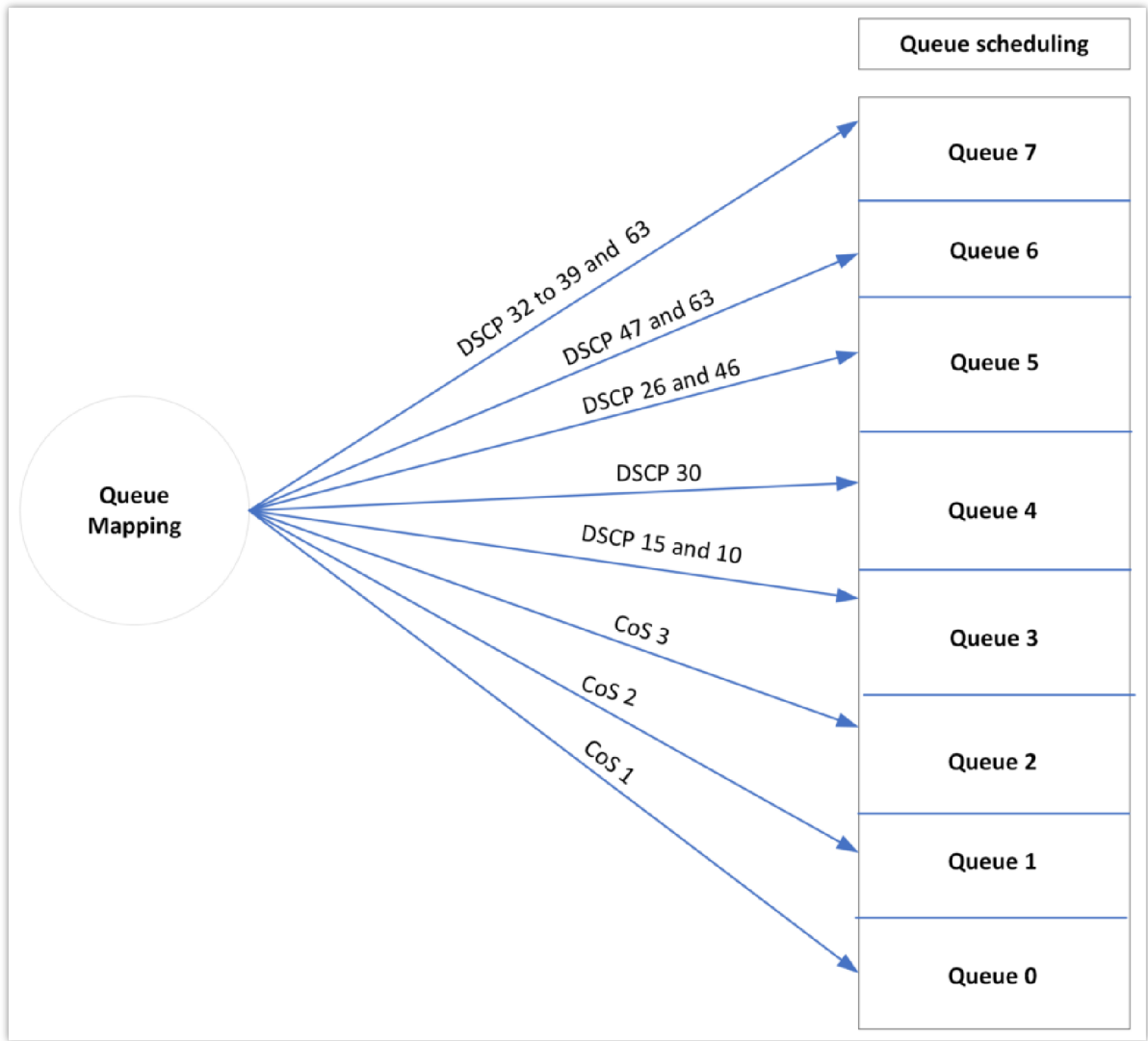
GWN78xx(P) – QoS: Queue Scheduling Configuration Guide

Overview

Queue Scheduling is a configuration parameter in the Quality of Service (QoS) feature of the GWN78xx network switches. It determines the order in which packets are transmitted from various queues.

By assigning priorities and scheduling algorithms to different queues, it helps optimize network performance and ensure that higher-priority traffic is given precedence. This configuration parameter ensures efficient resource allocation, minimizes latency, and enhances overall QoS in the network switch.

GWN78xx switches support 8 queues (0-7) for each port, Queue 7 has the highest priority.



Important definitions

- Queues are buffers where frames designated for outgoing traffic are placed in the order of priority based on the associated class of service.
- Scheduling is the process of servicing the frames in the queues according to the scheduling algorithm implemented in the switch.

Queue Scheduling Parameters

- **Queuing Algorithm:** The Queuing Algorithm determines how packets are prioritized and scheduled in the GWN78xx network switch. based on different algorithms :
 1. **Weighted Fair Queuing (WFQ):** WFQ assigns weights to different queues based on priority or fairness criteria. Each queue gets a fair share of the port's bandwidth based on its weight. It ensures that low-traffic flows are not starved and high-traffic flows do not monopolize the bandwidth.
 2. **Weighted Round Robin (WRR):** WRR assigns weights to different queues. Each queue gets a share of the link's bandwidth based on its weight. Queues are served in a round-robin fashion, and the weight determines the amount of data each queue can transmit in each round.
 3. **Strict Priority(SP):** SP assigns priorities to different queues, and packets from high-priority queues are served before lower-priority queues. This ensures that high-priority traffic is processed with minimal delay, but it can lead to lower-priority queues being starved if there is constant high-priority traffic.

4. **SP-WFQ:** SP-WFQ combines strict priority and WFQ. It divides traffic into multiple classes, each with its own priority and WFQ characteristics. High-priority queues are served before lower-priority queues, and within each priority class, WFQ is applied for fairness.
 5. **SP-WRR:** SP-WRR combines strict priority and WRR. It assigns priorities to different queues, and high-priority queues are served before lower-priority queues. Each queue, regardless of priority, follows a weighted round-robin scheduling algorithm to determine the order in which packets are transmitted. It is better to use this method when assigning higher weights to lower queues and keeping higher queues with strict priority.
- **Weight:** The “Weight” determines the priority and percentage of available bandwidth assigned to a specific queue. Higher weight values indicate higher priority and a larger share of bandwidth, while lower weight values indicate lower priority and a smaller share.

Port: 1/0/1

Queueing Algorithm: Strict Priority (SP)

Scheduled strictly according to the queue priority. Cannot set the weight.

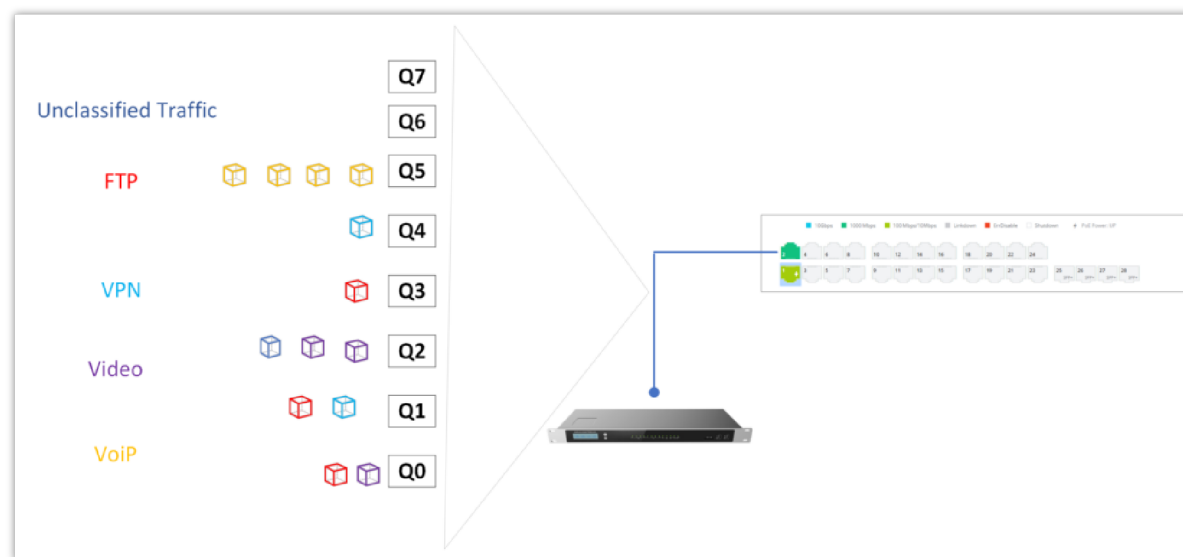
Queue ID	Weight
0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0

Cancel OK

Queue Scheduling Parameters

Queue Scheduling Configuration

Let's consider we have a IP PBX system such as UCM63xx connected to the GWN78xx network switch on port 1/0/2, we want to make sure that all traffic on this port is prioritized on queue 5 which is the queue defined for Voice Traffic in internal class of service value of the switch for port 1/0/2 ,



Queue Scheduling mechanism

To configure Queue Scheduling on the GWN78xx switch for that specified ports, follow these steps:

- Access the switch's management interface.
- Navigate to the **Quality of Service (QoS) => Queue Scheduling**.
- Select the port 1/0/2, set the Queue Scheduling algorithm to Weighted Round Robin (WRR). this is our choice of algorithm because we want to allocate higher share of bandwidth only for the queue that will be primarily be used for voice traffic, the other queues will get their share of bandwidth in a round robin form.

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Rate Limit

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Queue Scheduling > Edit

Port1/0/1

Queuing AlgorithmWeighted Round Robin (WRR)

Scheduled based on weighted round robin. The weight of each queue is set in packets

Queue ID	Weight
0	10
1	10
2	10
3	10
4	10
5	50
6	20
7	20

CancelOK

- Define the weights for each priority queue, we will set queues 7 and 6 to 20, queue 5 to 50, and the rest of the queues to 10.

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Queue ID	Weight
0	10
1	10
2	10
3	10
4	10
5	50
6	20
7	20

CancelOK

Weighted Round Robin

After saving this configuration, the switch will give the higher percentage of bandwidth coming through port 1/0/2 to queue 5 while making sure that the other queues are not starved and are allocated in round-robin manner.

Supported Devices

Device Name	Supported	Firmware Required
GWN7801	Yes	1.0.1.20 or higher
GWN7801P	Yes	1.0.1.20 or higher
GWN7802	Yes	1.0.1.20 or higher
GWN7802P	Yes	1.0.1.20 or higher
GWN7803	Yes	1.0.1.20 or higher

GWN7803P	Yes	1.0.1.20 or higher
GWN7811	Yes	1.0.1.8 or higher
GWN7811P	Yes	1.0.1.8 or higher
GWN7812P	Yes	1.0.1.8 or higher
GWN7813	Yes	1.0.1.8 or higher
GWN7813P	Yes	1.0.1.8 or higher
GWN7806	Yes	1.0.1.14 or higher
GWN7806P	Yes	1.0.3.3 or higher
GWN7830	Yes	1.0.3.3 or higher
GWN7831	Yes	1.0.3.3 or higher
GWN7832	Yes	1.0.3.3 or higher

List of supported Devices

Need Support?

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