QoS Configuration through CoS Trust Mode on 200/300 Series Managed Switches

Objective

A common method of optimizing a network is through the use of Quality of Service (QoS). QoS works by prioritizing certain network traffic according to the different configurable criteria. Lower priority traffic is slowed down to provide better throughput for higher priority traffic. Cisco Series Managed Switches support four queues, where queue four has the highest priority. QoS can be configured on Cisco Series Managed Switches based on different trusted modes.

The switch supports the following Trusted Modes:

• Class of Service (CoS / 802.1p) allows the user to specify priority for data packets when traffic is buffered in the switch due to congestion. CoS values ranges from 0-7, where 7 has the highest priority.

• IP Differentiated Services Code Point (DSCP) detects packets based on their DSCP values. The VLAN priority TAG remains unchanged.

This article explains how to configure QoS CoS trust mode on the 200/300 Series Managed Switches.

Default Cos to Queue mapping Table

802.1p Values	Queue	Notes
0	1	Background
1	1	Best Effort
2	2	Excellent Effort
3	3	Critical Application LSV phone SIP
4	3	Video
5	4	Voice Cisco IP phone default
6	4	Interwork Control LSV phone RTP
7	4	Network Control

Applicable Devices

• SF/SG 200 and SF/SG 300 Series Managed Switches

Software Version

• v1.2.7.76

QoS Configuration

QoS Properties

The *QoS Properties* page is used to enable QoS globally and configure a QoS trust mode.

Step 1. Log in to the web configuration utility and choose **Quality of Service > General > QoS Properties**. The *QoS Properties* page opens:

Step 2. Check **Enable** in the QoS Mode field to enable QoS on the switch.

Step 3. Click the **CoS/802.1p** radio button in the Trust Mode field to configure the trust mode as CoS/802.1p. The trust mode determines how network traffic will be sent to queues.

Step 4. Click **Apply**. The QoS trust mode is configured.

QoS Configuration Table

Showing 1-26 of 26 | All ▼ | per page

Filter: *Interface Type* equals to | Port ▼ | Go

	Entry No.	Interface	Default CoS	
☑	1	FE1	0	
☐	2	FE2	0	
☐	3	FE3	0	
☐	4	FE4	0	
☐	5	FE5	0	
☐	6	FE6	0	
☐	7	FE7	0	
☐	8	FE8	0	
☐	9	FE9	0	
☐	10	FE10	0	
☐	11	FE11	0	
☐	12	FE12	0	
☐	13	FE13	0	
☐	14	FE14	0	
☐	15	FE15	0	
☐	16	FE16	0	
☐	17	FE17	0	
☐	18	FE18	0	
☐	19	FE19	0	
☐	20	FE20	0	
☐	21	FE21	0	
☐	22	FE22	0	
☐	23	FE23	0	
☐	24	FE24	0	
☐	25	GE1	0	
☐	26	GE2	0	

Copy Settings... | Edit... | Restore Defaults

Step 5. Scroll down to the QoS Configuration Table and choose an interface from the Interface Type drop-down list.

Step 6. Click **Go** to bring up a list of ports or LAGs.

Step 7. Click the radio button of the port or LAG you want to edit.

Step 8. Click **Edit** to configure the specified interface. The *Edit Interface CoS Configuration* window appears.

Step 9. (Optional) Click the radio button that corresponds to the desired Interface.

• Port — From the Port drop-down list choose the port to configure. This will only affect the single port chosen.

• LAG — From the LAG drop-down list choose the LAG to configure. This will affect the group of ports defined in the LAG configuration.

Step 10. From the Default CoS drop-down list choose a default CoS value for incoming packets that do no have a VLAN tag. The 0 CoS value has the lowest priority while 7 has the highest priority.

Step 11. Click **Apply**. The Default CoS value for the interface is configured.

QoS Interface Settings

The *QoS Interface Settings* page is used to enable QoS on a per port basis.

Step 1. Log in to the web configuration utility and choose **Quality of Service > General > Interface Settings**. The *Interface Settings* page opens:

Interface Settings

QoS Interface Setting Table

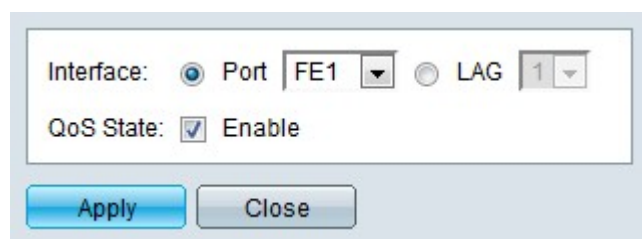Showing 1-26 of 26 | All ▼ | per page

Filter: *Interface Type* equals to | Port ▼ | Go

	Entry No.	Port	QoS State	
◉	1	FE1	Enabled	
○	2	FE2	Enabled	
○	3	FE3	Enabled	
○	4	FE4	Enabled	
○	5	FE5	Enabled	
○	6	FE6	Enabled	
○	7	FE7	Enabled	
○	8	FE8	Enabled	
○	9	FE9	Enabled	
○	10	FE10	Enabled	
○	11	FE11	Enabled	
○	12	FE12	Enabled	
○	13	FE13	Enabled	
○	14	FE14	Enabled	
○	15	FE15	Enabled	
○	16	FE16	Enabled	
○	17	FE17	Enabled	
○	18	FE18	Enabled	
○	19	FE19	Enabled	
○	20	FE20	Enabled	
○	21	FE21	Enabled	
○	22	FE22	Enabled	
○	23	FE23	Enabled	
○	24	FE24	Enabled	
○	25	GE1	Enabled	
○	26	GE2	Enabled	

Copy Settings | Edit

Step 2. Choose an interface from the Interface Type drop-down list.

Step 3. Click **Go** to bring up a list of ports or LAGs.

Step 4. Click the radio button of the port or LAG you want to edit.

Step 5. Click **Edit** to configure the specified interface. The *Edit QoS Interface Settings* window appears.

Step 6. (Optional) Click the radio button that corresponds to the desired Interface.

• Port — From the Port drop-down list choose the port to configure. This will only affect the single port chosen.

• LAG — From the LAG drop-down list choose the LAG to configure. This will affect the group of ports defined in the LAG configuration.

Step 7. Check **Enable** in the QoS State field. This prioritizes inbound traffic on the interface based on the configured QoS trust mode. In this case, CoS/802.1p trust mode. If QoS State is disabled, all inbound traffic on the interface is mapped to the best effort queue and no prioritization takes place.

Step 8. Click **Apply**. The Interface Settings are configured.

QoS Queue

The *Queue* page is used to configure the priority of the egress queues.

Step 1. Log in to the web configuration utility and choose **Quality of Service > General > Queue**. The *Queue* page opens:

Step 2. Click the radio button that corresponds to the desired scheduling method of each queue. This determines how traffic is handled.

• Strict Priority — Egress traffic from a higher priority queue is sent first. Traffic from a lower

priority queue is processed after all the higher priority queue traffic is sent.

• WRR — Weighted Round Robin (WRR) sends traffic to queues in proportion to the weight of the queue. This means that more packets are sent from a queue with a higher weight. A queue is serviced until the quota of that queue is met and then the next queue is serviced.
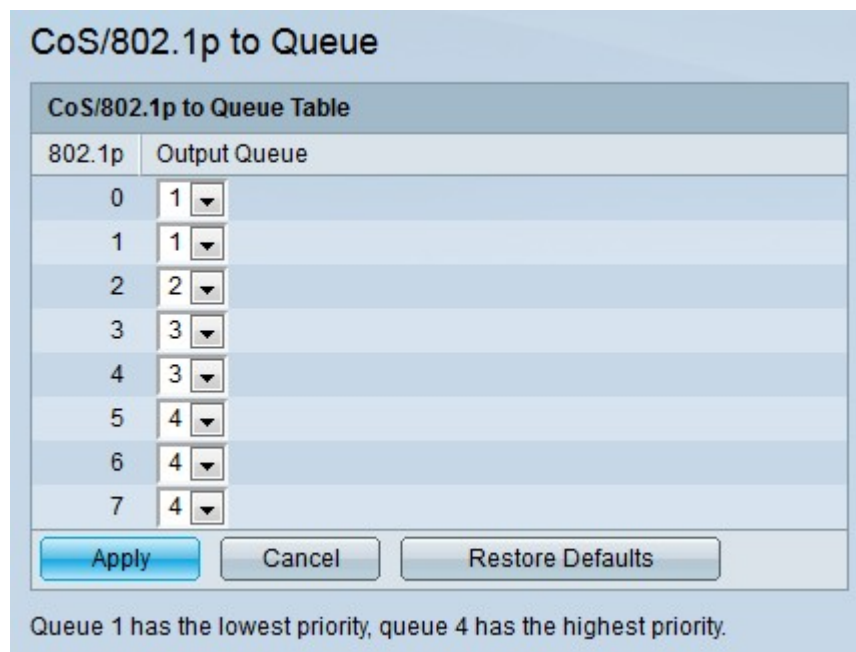
Step 3. If the scheduling method is configured as WRR, enter the weight value for each queue in the WRR Weight field. Queues with a higher weight are given more bandwidth. The percentage of bandwidth that is given to the queue is displayed in the % of WRR Bandwidth field.

Step 4. Click **Apply**. The queue settings are configured.

CoS/802.1p to Queue

The *CoS/802.1p to Queue* page is used to map packets with 802.1p priority tags to egress queues.

Step 1. Log in to the web configuration utility and choose **Quality of Service > General > CoS/802.1p to Queue**. The *CoS/802.1p to Queue* page opens:

CoS/802.1p to Queue

802.1p	Output Queue
0	1
1	1
2	2
3	3
4	3
5	4
6	4
7	4

Apply   Cancel   Restore Defaults

Queue 1 has the lowest priority, queue 4 has the highest priority.

The following fields display information about the egress queues.

• 802.1p — The 802.1p priority tag of ingress packets. Packets with the 802.1p tag will be mapped to the corresponding egress queue.

• Output Queue — The egress queue that is mapped to the corresponding 802.1p tag.

Note: Packets without a priority tag are given a priority tag based on the configured default CoS value on the *QoS Properties* page.

Step 2. From the Output Queue drop-down list, choose the output queue to which packets, with the corresponding 802.1 priority tag, will be sent.

Note: Click **Restore Defaults** to restore the default CoS to queue configuration.

Step 3. Click **Apply**. The CoS to queue settings are configured.

Bandwidth

Bandwidth is the transmission rate of packets on an interface. The *Bandwidth* page is used to configure ingress and egress bandwidth on a per interface basis.

Step 1. Log in to the web configuration utility and choose **Quality of Service > General > Bandwidth**. The *Bandwidth* page opens:

Step 2. Choose an interface from the Interface Type drop-down list.

Step 3. Click **Go** to bring up a list of ports or LAGs.

Step 4. Click the radio button of the port or LAG you want to edit.

Step 5. Click **Edit** to configure the specified interface. The *Edit QoS Interface Settings*

window appears.

Step 6. (Optional) Click the radio button that corresponds to the desired Interface.

• Port — From the Port drop-down list choose the port to configure. This will only affect the single port chosen.

• LAG — From the LAG drop-down list choose the LAG to configure. This will affect the group of ports defined in the LAG configuration.

Step 7. (Optional) Check **Enable** in the Ingress Rate Limit field to configure ingress bandwidth on the interface. This is the bandwidth for packets that are received on the interface. If this option is disabled the default value of 100 kilobits is used.

Step 8. If Ingress Rate Limit is enabled, enter the bandwidth allowed for the ingress of the interface.

Step 9. (Optional) Check **Enable** in the Egress Shaping Rate field to configure egress bandwidth on the interface. This is the bandwidth for packets that are transmitted from the interface. If this option is disabled the default value of 64 kilobits is used.

Step 10. If Egress Shaping Rate is enabled, enter the following fields.

• Committed Information Rate (CIR) — The bandwidth allowed for the egress of the interface.

• Committed Burst Size (CBS) — The amount of data that can be sent in a burst on the interface.

Step 11. Click **Apply**. The bandwidth settings are configured.

Egress Shaping Per Queue

The *Egress Shaping Per Queue* page is used to configure egress bandwidth on a per queue basis.

Step 1. Log in to the web configuration utility and choose **Quality of Service > General > Egress Shaping Per Queue**. The *Egress Shaping Per Queue* page opens:

Egress Shaping Per Queue

	Entry No.	Interface	Queue 1 Egress Shaping			Queue 2 Egress Shaping			Queue 3 Egress Shaping			Queue 4 Egress Shaping		
			Status	CIR	CBS	Status	CIR	CBS	Status	CIR	CBS	Status	CIR	CBS
○	1	LAG 1	Disabled			Disabled			Disabled			Disabled		
○	2	LAG 2	Disabled			Disabled			Disabled			Disabled		
○	3	LAG 3	Disabled			Disabled			Disabled			Disabled		
○	4	LAG 4	Disabled			Disabled			Disabled			Disabled		

Step 2. Choose an interface from the Interface Type drop-down list.

Step 3. Click **Go** to bring up a list of ports or LAGs.

Step 4. Click the radio button of the port or LAG you want to edit.

Step 5. Click **Edit** to configure the specified interface. The *Edit Egress Shaping Per Queue* window appears.

Step 6. (Optional) Click the radio button that corresponds to the desired Interface.

• Port — From the Port drop-down list choose the port to configure. This will only affect the single port chosen.

• LAG — From the LAG drop-down list choose the LAG to configure. This will affect the group of ports defined in the LAG configuration.

Step 7. Check **Enable** in the Queue field to configure the egress bandwidth of the queue.

Step 8. If the Queue field is enabled, enter the following fields.

• Committed Information Rate (CIR) — The bandwidth allowed for the egress of the interface. The default value is 64 kilobits per second.

• Committed Burst Size (CBS) — The amount of data that can be sent in a burst on the interface. The default value is 128000 bytes.

Step 9. Click **Apply**. The egress shaping per queue settings are configured.