



# Configuring QoS

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The QoS feature available on the ME 1200 Web GUI allows you to do the following:

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## QoS Ingress Port Classification

This option allows you to configure the basic QoS Ingress Classification settings for all switch ports. The displayed settings are:

Port	CoS	DPL	PCP	DEI	Tag Class.	DSCP Based	Key Type	Address Mode
*	<>	<>	<>	<>		<input type="checkbox"/>	<>	<>
1	0	0	0	0	Disabled	<input type="checkbox"/>	Normal	Source
2	0	0	0	0	Disabled	<input type="checkbox"/>	Normal	Source
3	0	0	0	0	Disabled	<input type="checkbox"/>	Normal	Source
4	0	0	0	0	Disabled	<input type="checkbox"/>	Normal	Source
5	0	0	0	0	Disabled	<input type="checkbox"/>	Normal	Source
6	0	0	0	0	Disabled	<input type="checkbox"/>	Normal	Source

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- **Port:** The port number for which the configuration below applies.
- **CoS:** Controls the default class of service. All frames are classified to a CoS. There is a one to one mapping between CoS, queue and priority. A CoS of 0 (zero) has the lowest priority.

If the port is VLAN aware, the frame is tagged and Tag Class. is enabled, then the frame is classified to a CoS that is mapped from the PCP and DEI value in the tag. Otherwise the frame is classified to the default CoS. The classified CoS can be overruled by a QCL entry.



**Note** If the default CoS has been dynamically changed, then the actual default CoS is shown in parentheses after the configured default CoS.

- **DPL:** Controls the default drop precedence level. All frames are classified to a drop precedence level. If the port is VLAN aware, the frame is tagged and Tag Class. is enabled. Then, the frame is classified to a DPL that is mapped from the PCP and DEI value in the tag. Otherwise the frame is classified to the default DPL. The classified DPL can be overruled by a QCL entry.
- **PCP:** Controls the default PCP value. All frames are classified to a PCP value. If the port is VLAN aware and the frame is tagged, then the frame is classified to the PCP value in the tag. Otherwise the frame is classified to the default PCP value.
- **DEI:** Controls the default DEI value. All frames are classified to a DEI value. If the port is VLAN aware and the frame is tagged, then the frame is classified to the DEI value in the tag. Otherwise the frame is classified to the default DEI value.
- **Tag Class:** Shows the classification mode for tagged frames on this port.
  - *Disabled:* Uses default CoS and DPL for tagged frames.
  - *Enabled:* Uses mapped versions of PCP and DEI for tagged frames.
 Click on the mode in order to configure the mode and/or mapping.



**Note** This setting has no effect if the port is VLAN unaware. Tagged frames received on VLAN unaware ports are always classified to the default CoS and DPL.

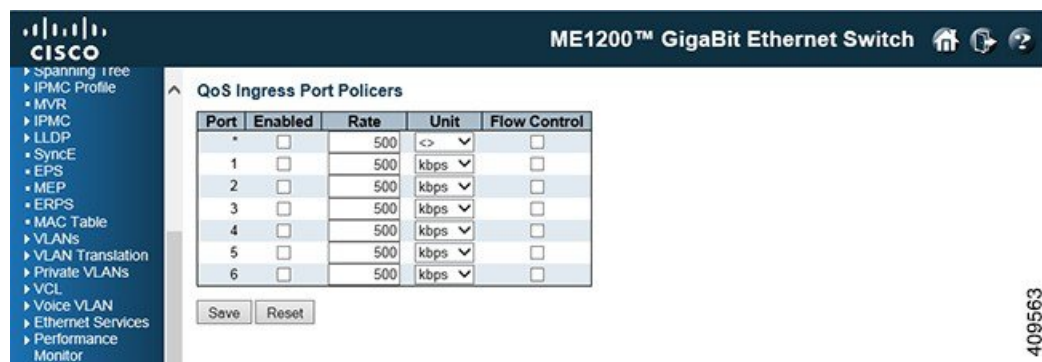
- **DSCP Based:** Check this check box to enable DSCP Based QoS Ingress Port Classification.
- **Key Type:** The key type specifying the key generated for frames received on the port. The allowed values are:
  - *Normal:* Half key, match outer tag, SIP/DIP and SMAC/DMAC.
  - *Double Tag:* Quarter key, match inner and outer tag.
  - *IP Address:* Half key, match inner and outer tag, SIP and DIP. For non-IP frames, match outer tag only.
  - *MAC and IP Address:* Full key, match inner and outer tag, SMAC, DMAC, SIP and DIP.

Filtering on DMAC type (unicast/multicast/broadcast) is supported for any key type.

- **Address Mode:** The IP/MAC address mode specifying whether the QCL classification must be based on source (SMAC/SIP) or destination (DMAC/DIP) addresses on this port. This parameter is only used when the key type is Normal. The allowed values are:
  - *Source:* Enables SMAC/SIP matching.
  - *Destination:* Enables DMAC/DIP matching.

## QoS Ingress Port Policer Configuration

This option allows you to configure the Policer settings for all switch ports. The displayed settings are:



Port	Enabled	Rate	Unit	Flow Control
*	<input type="checkbox"/>	500	<>	<input type="checkbox"/>
1	<input type="checkbox"/>	500	kbps	<input type="checkbox"/>
2	<input type="checkbox"/>	500	kbps	<input type="checkbox"/>
3	<input type="checkbox"/>	500	kbps	<input type="checkbox"/>
4	<input type="checkbox"/>	500	kbps	<input type="checkbox"/>
5	<input type="checkbox"/>	500	kbps	<input type="checkbox"/>
6	<input type="checkbox"/>	500	kbps	<input type="checkbox"/>

Save Reset

- **Port:** The port number for which the configuration below applies.
- **Enabled:** Controls whether the policer is enabled on this switch port.
- **Rate:** Controls the rate for the policer. The default value is 500. This value is restricted to 100-1000000 when the **Unit** is **kbps** or **fps**, and it is restricted to 1-3300 when the **Unit** is **Mbps** or **kfps**.
- **Unit:** Controls the unit of measure for the policer rate as kbps, Mbps, fps or kfps. The default value is **kbps**.
- **Flow Control:** If flow control is enabled and the port is in flow control mode, then pause frames are sent instead of discarding frames.

## QoS Ingress Queue Policer Configuration

This option allows you to configure the Queue Policer settings for all switch ports. The displayed settings are:

Port	Queue 0 Enable	Queue 1 Enable	Queue 2 Enable	Queue 3 Enable	Queue 4 Enable	Queue 5 Enable	Queue 6 Enable	Queue 7 Enable
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

- **Port:** The port number for which the configuration below applies.
- **Enable (E):** Controls whether the queue policer is enabled on this switch port.
- **Rate:** Controls the rate for the queue policer. The default value is 500. This value is restricted to 100-1000000 when the **Unit** is **kbps**, and it is restricted to 1-3300 when the **Unit** is **Mbps**.  
This field is only shown if at least one of the queue policers is enabled.
- **Unit:** Controls the unit of measure for the queue policer rate as kbps or Mbps. The default value is **kbps**.  
This field is only shown if at least one of the queue policers is enabled.

## QoS Egress Port Schedulers

This option provides an overview of QoS Egress Port Schedulers for all switch ports. The displayed settings are:

Port	Mode	Weight					
		Q0	Q1	Q2	Q3	Q4	Q5
1	Strict Priority	-	-	-	-	-	-
2	Strict Priority	-	-	-	-	-	-
3	Strict Priority	-	-	-	-	-	-
4	Strict Priority	-	-	-	-	-	-
5	Strict Priority	-	-	-	-	-	-
6	Strict Priority	-	-	-	-	-	-

- **Port:** The logical port for the settings contained in the same row.  
Click the port number to configure the schedulers.

- **Mode:** Shows the scheduling mode for this port.
- **Qn:** Shows the weight for this queue and port.

## QoS Egress Port Shapers

This option provides an overview of QoS Egress Port Shapers for all switch ports.

Port	Shapers								Port	
	Q0	Q1	Q2	Q3	Q4	Q5	Q6	Q7		
1	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
2	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
3	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
4	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
5	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled
6	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled	disabled

The displayed settings are:

- **Port:** The logical port for the settings contained in the same row.  
Click the port number to configure the shapers.
- **Qn:** Shows *disabled* or actual queue shaper rate, for example 800 Mbps.
- **Port:** Shows *disabled* or actual port shaper rate, for example 800 Mbps.

## QoS Egress Port Tag Remarking

This option provides an overview of QoS Egress Port Tag Remarking for all switch ports. The displayed settings are:

Port	Mode
1	Classified
2	Classified
3	Classified
4	Classified
5	Classified
6	Classified

- **Port:** The logical port for the settings contained in the same row.  
Click the port number to configure tag remarking.
- **Mode:** Shows the tag remarking mode for this port.
  - *Classified:* Use classified PCP/DEI values.

- *Default*: Use default PCP/DEI values.
- *Mapped*: Use mapped versions of QoS class and DP level.

## Port DSCP Configuration

This option allows you to configure the basic QoS Port DSCP Configuration settings for all switch ports. The displayed settings are:

Port	Ingress		Egress
	Translate	Classify	Rewrite
*	<input type="checkbox"/>	<>	<>
1	<input type="checkbox"/>	Disable	Disable
2	<input type="checkbox"/>	Disable	Disable
3	<input type="checkbox"/>	Disable	Disable
4	<input type="checkbox"/>	Disable	Disable
5	<input type="checkbox"/>	Disable	Disable
6	<input type="checkbox"/>	Disable	Disable

Save Reset

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- **Port**: The Port column shows the list of ports for which you can configure dscp ingress and egress settings.
- **Ingress**: In Ingress settings, you can change Ingress translation and classification settings for individual ports.

There are two configuration parameters available in Ingress:

- **Translate**: To enable the Ingress Translation, check this check box.
- **Classify**: Classification for a port has four different values.
  - *Disable*: No Ingress DSCP Classification.
  - *DSCP=0*: Classify if incoming (or translated if enabled) DSCP is 0.
  - *Selected*: Classify only selected DSCP for which classification is enabled as specified in DSCP Translation window for the specific DSCP.
  - *All*: Classify all DSCP.
- **Egress**: Port Egress rewriting can have one of the following values:
  - *Disable*: No Egress rewrite.
  - *Enable*: Rewrite enabled without remapping.
  - *Remap DP Unaware*: DSCP from analyzer is remapped and frame is remarked with remapped DSCP value. The remapped DSCP value is always taken from the **DSCP Translation > Egress Remap DP0** table.

- *Remap DP Aware*: DSCP from analyzer is remapped and frame is remarked with remapped DSCP value. Depending on the DP level of the frame, the remapped DSCP value is either taken from the **DSCP Translation > Egress Remap DP0** table or from the **DSCP Translation > Egress Remap DP1** table.

## DSCP-based QoS Ingress Classification

This option allows you to configure the basic QoS DSCP based QoS Ingress Classification settings for all switches.

DSCP	Trust	QoS Class	DPL
*	<input type="checkbox"/>	<>	<>
0 (BE)	<input type="checkbox"/>	0	0
1	<input type="checkbox"/>	0	0
2	<input type="checkbox"/>	0	0
3	<input type="checkbox"/>	0	0
4	<input type="checkbox"/>	0	0
5	<input type="checkbox"/>	0	0
6	<input type="checkbox"/>	0	0
7	<input type="checkbox"/>	0	0
8 (CS1)	<input type="checkbox"/>	0	0
9	<input type="checkbox"/>	0	0
10 (AF11)	<input type="checkbox"/>	0	0
11	<input type="checkbox"/>	0	0
12 (AF12)	<input type="checkbox"/>	0	0
13	<input type="checkbox"/>	0	0
14 (AF13)	<input type="checkbox"/>	0	0
15	<input type="checkbox"/>	0	0
16 (CS2)	<input type="checkbox"/>	0	0
17	<input type="checkbox"/>	0	0
18 (AF21)	<input type="checkbox"/>	0	0
19	<input type="checkbox"/>	0	0
20 (AF22)	<input type="checkbox"/>	0	0
21	<input type="checkbox"/>	0	0
22 (AF23)	<input type="checkbox"/>	0	0
23	<input type="checkbox"/>	0	0
24 (CS3)	<input type="checkbox"/>	0	0

The displayed settings are:

- **DSCP**: Maximum number of supported DSCP values are 64.
- **Trust**: Controls whether a specific DSCP value is trusted. Only frames with trusted DSCP values are mapped to a specific QoS class and Drop Precedence Level. Frames with untrusted DSCP values are treated as a non-IP frame.
- **QoS Class**: QoS class can be any value in the range 0-7.
- **DPL**: Drop Precedence Level (0-1).

# DSCP Translation

This option allows you to configure the basic QoS DSCP Translation settings for all switches. DSCP translation can be done in Ingress or Egress.

DSCP	Ingress		Egress	
	Translate	Classify	Remap DP0	Remap DP1
*	<>	<input type="checkbox"/>	<>	<>
0 (BE)	0 (BE)	<input type="checkbox"/>	0 (BE)	0 (BE)
1	1	<input type="checkbox"/>	1	1
2	2	<input type="checkbox"/>	2	2
3	3	<input type="checkbox"/>	3	3
4	4	<input type="checkbox"/>	4	4
5	5	<input type="checkbox"/>	5	5
6	6	<input type="checkbox"/>	6	6
7	7	<input type="checkbox"/>	7	7
8 (CS1)	8 (CS1)	<input type="checkbox"/>	8 (CS1)	8 (CS1)
9	9	<input type="checkbox"/>	9	9
10 (AF11)	10 (AF11)	<input type="checkbox"/>	10 (AF11)	10 (AF11)
11	11	<input type="checkbox"/>	11	11
12 (AF12)	12 (AF12)	<input type="checkbox"/>	12 (AF12)	12 (AF12)
13	13	<input type="checkbox"/>	13	13
14 (AF13)	14 (AF13)	<input type="checkbox"/>	14 (AF13)	14 (AF13)
15	15	<input type="checkbox"/>	15	15
16 (CS2)	16 (CS2)	<input type="checkbox"/>	16 (CS2)	16 (CS2)
17	17	<input type="checkbox"/>	17	17
18 (AF21)	18 (AF21)	<input type="checkbox"/>	18 (AF21)	18 (AF21)
19	19	<input type="checkbox"/>	19	19
20 (AF22)	20 (AF22)	<input type="checkbox"/>	20 (AF22)	20 (AF22)
21	21	<input type="checkbox"/>	21	21
22 (AF23)	22 (AF23)	<input type="checkbox"/>	22 (AF23)	22 (AF23)
23	23	<input type="checkbox"/>	23	23
24 (CS3)	24 (CS3)	<input type="checkbox"/>	24 (CS3)	24 (CS3)
25	25	<input type="checkbox"/>	25	25
26 (AF31)	26 (AF31)	<input type="checkbox"/>	26 (AF31)	26 (AF31)
27	27	<input type="checkbox"/>	27	27
28 (AF32)	28 (AF32)	<input type="checkbox"/>	28 (AF32)	28 (AF32)

The displayed settings are:

- **DSCP:** Maximum number of supported DSCP values are 64 and valid DSCP value ranges from 0 to 63.
- **Ingress:** Ingress side DSCP can be first translated to new DSCP before using the DSCP for QoS class and DPL map.

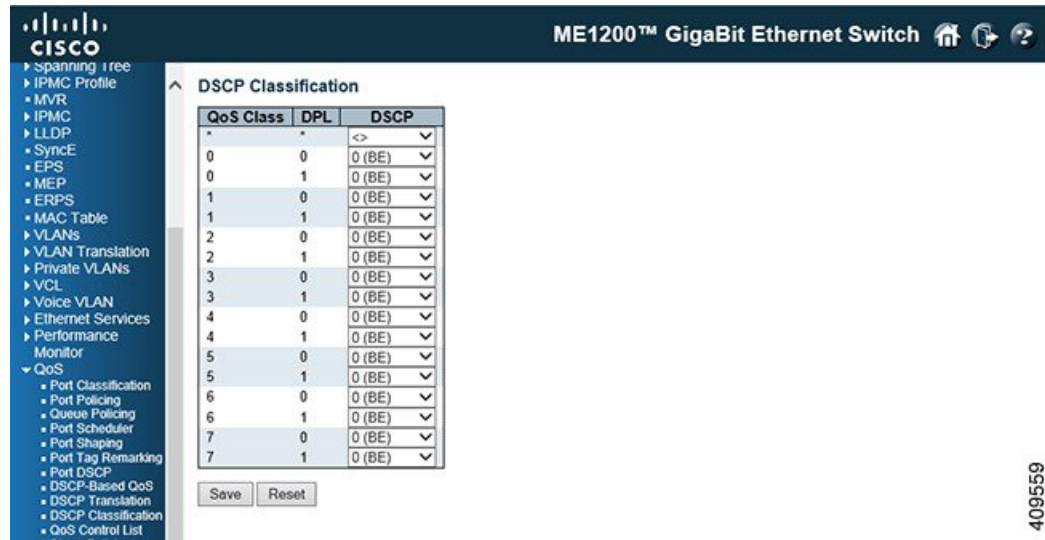
There are two configuration parameters for DSCP Translation:

- **Translate:** DSCP at Ingress side can be translated to any of the DSCP values in the range 0-63.
- **Classify:** Check this check box to enable classification at Ingress side.
- **Egress:** The following parameters are configurable for Egress side:
  - **Remap DP0:** Controls the remapping for frames with DP level 0. Select the DSCP value from select menu to which you want to remap. DSCP value ranges form 0 to 63.
  - **Remap DP1:** Controls the remapping for frames with DP level 1. Select the DSCP value from select menu to which you want to remap. DSCP value ranges form 0 to 63.



# DSCP Classification

This option allows you to configure the mapping of QoS class and Drop Precedence Level to DSCP value. The displayed settings are:

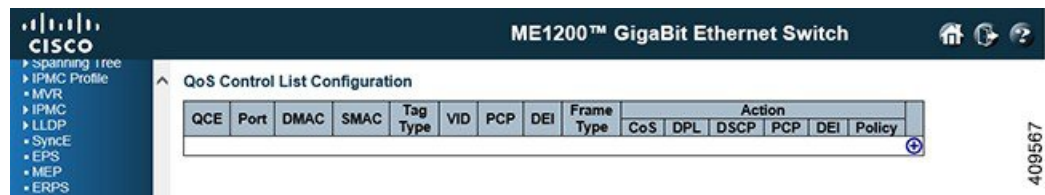


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- **QoS Class:** Actual QoS class.
- **DPL:** Actual Drop Precedence Level.
- **DSCP:** Select the classified DSCP value (0-63).

# QoS Control List Configuration

This option shows the QoS Control List (QCL) which is made up of the QoS Control Entries (QCEs). Each row describes a QCE that is defined. The maximum number of QCEs is 1024 on each switch.



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Click the **Add QCE to end of list** icon to add a new QCE to the list.

- **QCE:** Indicates the QCE ID.
- **Port:** Indicates the list of ports configured with the QCE or Any.
- **DMAC:** Indicates the destination MAC address. Possible values are:

- *Any*: Match any DMAC.
- *Unicast*: Match unicast DMAC.
- *Multicast*: Match multicast DMAC.
- *Broadcast*: Match broadcast DMAC.
- *<MAC>*: Match specific DMAC.

The default value is **Any**.

- **SMAC**: Match specific source MAC address or **Any**. If a port is configured to match on destination addresses, this field indicates the DMAC.
- **Tag Type**: Indicates tag type. Possible values are:
  - *Any*: Match tagged and untagged frames.
  - *Untagged*: Match untagged frames.
  - *Tagged*: Match tagged frames.
  - *C-Tagged*: Match C-tagged frames.
  - *S-Tagged*: Match S-tagged frames.

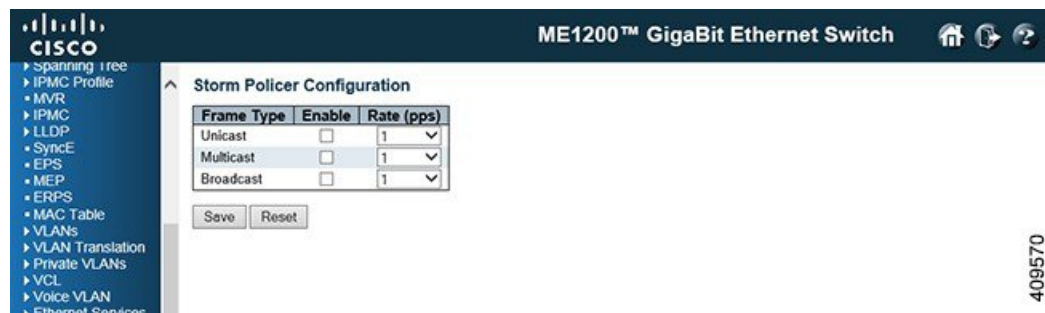
The default value is **Any**.

- **VID**: Indicates VLAN ID, either a specific VID or range of VIDs. VID can be in the range 1-4095 or **Any**.
- **PCP**: Priority Code Point: Valid values of PCP are specific(0, 1, 2, 3, 4, 5, 6, 7) or range(0-1, 2-3, 4-5, 6-7, 0-3, 4-7) or **Any**.
- Drop Eligible Indicator (**DEI**): Valid value of DEI are 0, 1 or **Any**.
- **Frame Type**: Indicates the type of frame. Possible values are:
  - *Any*: Match any frame type.
  - *Ethernet*: Match EtherType frames.
  - *LLC*: Match (LLC) frames.
  - *SNAP*: Match (SNAP) frames.
  - *IPv4*: Match IPv4 frames.
  - *IPv6*: Match IPv6 frames.
- **Action**: Indicates the classification action taken on ingress frame if parameters configured are matched with the frame's content. Possible actions are:
  - **CoS**: Classify Class of Service.
  - **DPL**: Classify Drop Precedence Level.
  - **DSCP**: Classify DSCP value.
  - **PCP**: Classify PCP value.
  - **DEI**: Classify DEI value.

- **Policy:** Classify ACL Policy number.
- **Modification icons:** You can modify each QCE in the table using the following buttons:
  - **Insert QCE before this QCE icon:** Inserts a new QCE before the current row.
  - **Edit QCE icon:** Edits the QCE.
  - **Move QCE up icon:** Moves the QCE up the list.
  - **Move QCE down icon:** Moves the QCE down the list.
  - **Delete QCE icon:** Deletes the QCE.
  - **Add QCE to end of list icon:** The lowest plus sign adds a new entry at the bottom of the QCE listings.

## Storm Policer Configuration

This option allows you to configure the Storm policers for the switch.



There is a unicast storm policer, multicast storm policer, and a broadcast storm policer. These only affect flooded frames, that is, frames with a (VLAN ID, DMAC) pair not present on the MAC address table. The configuration indicates the permitted packet rate for unicast, multicast or broadcast traffic across the switch.

- **Frame Type:** The settings in a particular row apply to the frame type listed here: Unicast, Multicast or Broadcast.
- **Enable:** Enable or disable the storm policer for the given frame type.
- **Rate:** The rate unit is packets per second (pps). Valid values are: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1K, 2K, 4K, 8K, 16K, 32K, 64K, 128K, 256K, 512K or 1024K.

## QoS Weighted Random Early Detection

This option allows you to configure the Random Early Detection (RED) settings for queue 0 to 5.

ME1200™ GigaBit Ethernet Switch

Weighted Random Early Detection Configuration

Queue	Enable	Min. Threshold	Max. Threshold	Max. Unit
0	<input type="checkbox"/>	0	50	Drop Probability ▼
1	<input type="checkbox"/>	0	50	Drop Probability ▼
2	<input type="checkbox"/>	0	50	Drop Probability ▼
3	<input type="checkbox"/>	0	50	Drop Probability ▼
4	<input type="checkbox"/>	0	50	Drop Probability ▼
5	<input type="checkbox"/>	0	50	Drop Probability ▼

Save Reset

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RED cannot be applied to queue 6 and 7.

Through different RED configuration for the queues (QoS classes), it is possible to obtain Weighted Random Early Detection (WRED) operation between queues.

The settings are global for all ports in the switch. The displayed settings are:

- **Queue:** The queue number (QoS class) for which the configuration below applies.
- **Enable:** Controls whether RED is enabled for this queue.
- **Min. Threshold:** Controls the lower RED fill level threshold. If the queue filling level is below this threshold, the drop probability is zero. This value is restricted to 0-100%.
- **Max. Threshold:** Controls the upper RED drop probability or fill level threshold for frames marked with Drop Precedence Level 1 (yellow frames). This value is restricted to 1-100% Max.
- **Max. Unit:** Selects the unit for **Max. Threshold**. Possible values are:
  - *Drop Probability:* **Max. Threshold** controls the drop probability just below 100% fill level.
  - *Fill Level:* **Max. Threshold** controls the fill level where drop probability reaches 100%.