Configuration Commands

Generic Commands

description

Syntax   **description** *description-string*
              no description

Context   cfg>qos>qgrps>egr>qgrp
              cfg>qos>qgrps>ing>qgrp
              cfg>qos>qgrps>ing>qgrp>policer

Description This command creates a text description stored in the configuration file for a configuration context. The **description** command associates a text string with a configuration context to help identify the content in the configuration file.

The **no** form of this command removes the string from the configuration.

Default   none

Parameters *string* — The description character string. Allowed values are any string up to 80 characters long composed of printable, 7-bit ASCII characters. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

Queue Group Commands

queue-group-templates

Syntax	**queue-group-templates**
Context	config>qos
Description	This command enables the context to define ingress and egress queue group templates.
Default	none

egress

Syntax	**egress**
Context	cfg>qos>qgrps
Description	This command enables the context to configure QoS egress queue groups. Egress queue group templates can be applied to egress Ethernet ports to create an egress queue group.
Default	none

queue-group

Syntax	**queue-group** *queue-group-name* [**create**] **no queue-group** *queue-group-name*
Context	cfg>qos>qgrps>egr cfg>qos>qgrps>ingr
Description	This command creates a queue group template. The system does not maintain default queue groups or queue group templates. Each queue group template used in the system must be explicitly created. The *queue-group-name* parameter is required when executing the queue-group command and identifies the name of the template to be either created or edited. Each ingress queue group template must be uniquely named within the system. Multiple ingress queue group templates may not share the same name. An ingress and egress queue group template may share the same name. The **no** form of the command removes the specified queue group template from the system. If the queue group template is currently in use by an ingress port, the command will fail. If group-name does not exist, the command has no effect and does not return an error.
Default	none
Parameters	*queue-group-name* — Specifies the name of the queue group template up to 32 characters in length.

create — Keyword used to create the queue group instance. The **create** keyword requirement can be enabled/disabled in the **environment>create** context.

policer

Syntax	**policer** *policer-id* [**create**] **no policer** *policer-id*
Context	config>qos>queue-group-templates>ingress>queue-group config>qos>queue-group-templates>egress>queue-group
Description	This command is used in ingress and egress queue-group templates to create, modify, or delete a policer.

Policers are created and used in a similar manner to queues. The policer ID space is separate from the queue ID space, allowing both a queue and a policer to share the same ID. The ingress queue-group template may have up to 32 policers (numbered 1 through 32) and may be defined, while the egress queue-group template supports a maximum of 8 (numbered 1 through 8). While a policer may be defined in a queue-group template, it is not actually created until the queue-group template is instantiated on the ingress context of a forwarding plane or on the egress context of a port.

Once a policer is created, the policer's metering rate and profiling rates may be defined, as well as the policer's maximum and committed burst sizes (MBS and CBS respectively). Unlike queues that have dedicated counters, policers allow various stat-mode settings which define the counters that will be associated with the policer. Another supported feature—packet-byte-offset—provides a policer with the ability to modify the size of each packet based on a defined number of bytes.

Once a policer is created, it cannot be deleted from the queue-group template unless any forwarding classes that are redirected to the policer are first removed.

The **no** version of this command deletes the policer.

Parameters	*policer-id* — The *policer-id* must be specified when executing the policer command. If the specified ID already exists, the system enters that policer's context to allow the policer's parameters to be modified. If the ID does not exist and is within the allowed range for the QoS policy type, a context for the policer ID will be created (depending on the system's current create keyword requirements which may require the create keyword to actually add the new policer ID to the QoS policy) and the system will enter that new policer's context for possible parameter modification.

Values	1—32 egress
Values	1—8 egress

fc

Syntax	**fc** *fc-name* [**create**] **no fc** *fc-name*
Context	config qos>queue-group-templates>egress>queue-group-template
Description	The **fc** command is used to enter the forwarding class mapping context for the given fc-name. Each forwarding class has a default mapping depending on the egress queue group template. The system created

policer-output-queue template contains queues 1 and 2 by default with queue 1 being best-effort and queue 2 expedited. Forwarding classes be, l1, af and l2 all map to queue 1 by default. Forwarding classes h1, ef, h2 and nc all map to queue 2 by default. More queues may be created within the policer-output-queues template and the default forwarding classes may be changed to any defined queue within the template.

When all other user defined egress queue group templates are created, only queue 1 (best-effort) exists and all forwarding classes are mapped to that queue. Other queues may be created and the forwarding classes may be changed to any defined queue within the template.

Besides the default mappings within the templates, the egress queue group template forwarding class queue mappings operate the same as the forwarding class mappings in a sap-egress QoS policy.

The template forwarding class mappings are the default mechanism for mapping egress policed traffic to a queue within an egress port queue group associated with the template. If a queue-id is

explicitly specified in the QoS policy forwarding class policer mapping, and that queue exists within the queue group, the template forwarding class mapping is ignored. Egress policed subscriber traffic works in a slightly different way. The subscriber and subscriber host support destination and organization strings which when exist are used to identify the egress port queue group. In this instance, the forwarding class mappings are always used and any queue overrides in the QoS policy are ignored. If neither string exists for the subscriber host, the egress queue group queue-id can be derived from either the QoS policy policer mapping or the template forwarding class queue mappings.

The **no** form of this command is used to return the specified forwarding class to its default template queue mapping.

Parameters   *fc-name* — A valid forwarding class must be specified as *fc-name* when the **fc** command is executed. When the **fc** *fc-name* command is successfully executed, the system will enter the specified forwarding class context where the **queue** *queue-id* command may be executed.

>   **Values**   **be**, **l1**, **af**, **l2**, **h1**, **ef**, **h2** or **nc**
>
>   **Default**   None

policer

Syntax   **policer** *policer-id*
no policer

Context   config>qos>queue-group-templates>ingress>queue-group
config>qos>queue-group-templates>egress>queue-group

Description   This command is used in ingress and egress queue-group templates to create, modify or delete a policer.

Policers are created and used in a similar manner to queues. The policer ID space is separate from the queue ID space, allowing both a queue and a policer to share the same ID. The ingress queue-group template may have up to 32 policers (numbered 1 through 32) may be defined while the egress queue-group template supports a maximum of 8 (numbered 1 through 8). While a policer may be defined in a queue-group template, it is not actually created until the queue-group template is instantiated on ingress context of a forwarding plane or on the egress context of a port.

Once a policer is created, the policer's metering rate and profiling rates may be defined as well as the policer's maximum and committed burst sizes (MBS and CBS respectively). Unlike queues which have dedicated counters, policers allow various stat-mode settings that define the counters that will be associated with the policer. Another supported feature—packet-byte-offset—provides a policer with the ability to modify the size of each packet based on a defined number of bytes.

Once a policer is created, it cannot be deleted from the queue-group template unless any forwarding classes that are redirected to the policer are first removed.

The **no** form of this command deletes the policer.

Parameters   *policer-id* — The policer-id must be specified when executing the policer command. If the specified ID already exists, the system enters that policer's context to allow the policer's parameters to be modified. If the ID does not exist and is within the allowed range for the QoS policy type, a context for the policer ID will be created (depending on the system's current create keyword requirements which may require the create keyword to actually add the new policer ID to the QoS policy) and the system will enter that new policer's context for possible parameter modification.

> **Values**   1—32 ingress
>
> 1—8 egress

port-redirect-group

Syntax   **port-redirect-group {queue** *queue-id* **| policer** *policer-id* **[queue** *queue-id***]}**
no port-redirect-group

Context   config>qos>network>egress>fc

Description   This command is used to redirect the FC of a packet of a PW or network IP interface to an egress port queue-group.

It defines the mapping of a FC to a queue-id or a policer-id and a queue-id and redirects the lookup of the queue or policer of the same ID in some egress port queue-group instance. However, the queue-group name and instance are explicitly provided only at the time the network QoS policy is applied to egress context of a spoke-sdp or a network IP interface.

The no version of this command removes the redirection of the FC.

Parameters   **queue** *queue-id* — The specified queue-id must exist within the queue-group template applied to the egress context of the port.

> **Values**   1—8

policer *policer-id* — The specified policer-id must exist within the queue-group template applied to the egress context of the port

> **Values**   1—8

fp-redirect-group

Syntax   **fp-redirect-group policer** *policer-id*
           no fp-redirect-group policer

Context   config>qos>network>ingress>fc

Description   This command is used to redirect the FC of a packet of a pseudowire or network IP interface to an ingress forwarding plane queue-group.

It defines the mapping of a FC to a policer-id and redirects the lookup of the policer of the same ID in some ingress forwarding plane queue-group instance. However, the queue-group name and instance are explicitly provided only at the time the network QoS policy is applied to the ingress context of a spoke-sdp or a network IP interface.

The **no** version of this command removes the redirection of the FC.

Parameters   **policer** *policer-id* — The specified policer-id must exist within the queue-group template applied to the ingress context of the forwarding plane

   Values   1—8

fp-redirect-group

Syntax   **fp-redirect-group multicast-policer** *policer-id*
           no fp-redirect-group multicast-policer

Context   config>qos>network>ingress>fc

Description   This command is used to redirect the FC of a multicast packet of a pseudowire or network IP interface to an ingress forwarding plane queue-group.

It defines the mapping of a FC to a policer-id and redirects the lookup of the policer of the same ID in some ingress forwarding plane queue-group instance. However, the queue-group name and instance are explicitly provided only at the time the network QoS policy is applied to the ingress context of a spoke-sdp or a network IP interface.

The no version of this command removes the redirection of the FC.

Parameters   **multicast-policer** *policer-id* — The specified policer-id must exist within the queue-group template applied to the ingress context of the forwarding plane

   Values   1—32

packet-byte-offset

Syntax **packet-byte-offset {add** *bytes* **| subtract** *bytes***}**
no packet-byte-offset

Context config>qos>queue-group-templates>egress>queue-group>queue>xp-specific

Description This command is used to modify the size of each packet handled by the queue by adding or subtracting a number of bytes. The actual packet size is not modified; only the size used to determine the bucket depth impact is changed.

The packet-byte-offset command is meant to be an arbitrary mechanism the can be used to either add downstream frame encapsulation or remove portions of packet headers.

When a packet-byte-offset value is applied to a queue instance, it adjusts the immediate packet size. This means that the queue rates, i.e., operational PIR and CIR, and queue bucket updates use the adjusted packet size. In addition, the queue statistics will also reflect the adjusted packet size. Scheduler policy rates, which are data rates, will use the adjusted packet size.

The port scheduler max-rate and the priority level rates and weights, if a Weighted Scheduler Group is used, are always on-the-wire rates and thus use the actual frame size. The same goes for the agg-rate-limit on a SAP, a subscriber, or a Multi-Service Site (MSS) when the queue is port-parented.

When the user enables frame-based-accounting in a scheduler policy or queue-frame-based-accounting with agg-rate-limit in a port scheduler policy, the queue rate will be capped to a user configured on-the-wire rate but the packet-byte-offset value is still in effect as explained above.

The **no** version of this command is used to remove per packet size modifications from the queue.

Parameters **add** *bytes* — The add keyword is mutually exclusive to the subtract keyword. Either add or subtract must be specified. When add is defined, the corresponding bytes parameter specifies the number of bytes that is added to the size of each packet associated with the queue for scheduling and accounting purposes

Values 0—32

Default None

subtract *bytes* — The subtract keyword is mutually exclusive to the add keyword. Either subtract or add must be specified. When subtract is defined, the corresponding bytes parameter specifies the number of bytes that is subtracted to the size of each packet associated with the queue for scheduling and accounting purposes.

Values 0—64

Default None

queue

Syntax   **queue** *queue-id* [*queue-type*] [**create**]
                  no queue *queue-id*

Context   cfg>qos>qgrps>egr>qgrp

Description   This command creates a queue for use in a queue group template. Once created, the defined queue-id acts as a repository for the default parameters for the queue. The template queue is created on each queue-group object which is created with the queue group template name. Each queue is identified within the template by a queue-id number. The template ensures that all queue groups created with the template name will have the same queue-ids providing a uniform structure for the forwarding class redirection commands in the SAP egress QoS policies. The parameters within the template queue will be used as the default settings for each queue in the actual queue group. The queue parameters may be individually changed for each queue in each queue group using per queue overrides.

                  The **no** form of the command

Default   none

adaptation-rule

Syntax   **adaptation-rule** [**pir** *adaptation-rule*] [**cir** *adaptation-rule*]
                  no adaptation-rule

Context   config>qos>qgrpid>egr>qgrp>queue
                  config>qos>qgrpid>ing>qgrp>queue
                  config>qos>qgrpid>ing>qgrp>policer

Description   This command defines the method used by the system to derive the operational CIR and PIR settings when the queue is provisioned in hardware. For the CIR and PIR parameters individually, the system attempts to find the best operational rate depending on the defined constraint.

                  The **no** form of the command removes any explicitly defined constraints used to derive the operational CIR and PIR created by the application of the policy. When a specific **adaptation-rule** is removed, the default constraints for **rate** and **cir** apply.

Default   adaptation-rule pir closest cir closest

Parameters   **pir** — Defines the constraints enforced when adapting the PIR rate defined within the **queue** *queue-id* **rate** command. The **pir** parameter requires a qualifier that defines the constraint used when deriving the operational PIR for the queue. When the **rate** command is not specified, the default applies.

                  cir — Defines the constraints enforced when adapting the CIR rate defined within the **queue** queue-id **rate** command. The **cir** parameter requires a qualifier that defines the constraint used when deriving the operational CIR for the queue. When the **cir** parameter is not specified, the default constraint applies.

adaptation-rule — Specifies the adaptation rule to be used while computing the operational CIR or PIR value.

> **Values** **max** — The **max** (maximum) option is mutually exclusive with the **min** and **closest** options. When **max** is defined, the operational PIR for the queue will be equal to or less than the administrative rate specified using the **rate** command.
>
> **min** — The **min** (minimum) option is mutually exclusive with the **max** and **closest** options. When **min** is defined, the operational PIR for the queue will be equal to or greater than the administrative rate specified using the **rate** command.
>
> **closest** — The **closest** parameter is mutually exclusive with the **min** and **max** parameter. When **closest** is defined, the operational PIR for the queue will be the rate closest to the rate specified using the **rate** command.

adv-config-policy

Syntax **adv-config-policy** *adv-config-policy-name*
no adv-config-policy

Context config>qos>qgrpid>egress>qgrp>policer
config>qos>qgrpid>ingress>qgrp>policer

Description This command specifies the name of the advanced configuration policy to be applied with this policer.

Parameters *adv-config-policy-name —* Specifies an existing advanced configuration policy up to 32 characters in length.

burst-limit

Syntax **burst-limit** {**default** | *size* [**byte** | **kilobyte**]}
no burst-limit

Context config>qos>qgrps>egr>qgrp>queue
config>qos>qgrpid>ing>qgrp>queue

Description The `queue burst-limit` command is used to define an explicit shaping burst size for a queue. The configured size defines the shaping leaky bucket threshold level that indicates the maximum burst over the queue's shaping rate.

The `burst-limit` command is supported under the sap-ingress and sap-egress QoS policy queues. The command is also supported under the ingress and egress queue-group-templates queues.

The **no** form of this command is used to restore the default burst limit to the specified queue. This is equivalent to specifying burst-limit default within the QoS policies or queue group templates. When specified within a queue-override queue context, any current burst limit override for the queue will be removed and the queue's burst limit will be controlled by its defining policy or template.

Parameters **default** — The default parameter is mutually exclusive to specifying an explicit size value. When burst-limit default is executed, the queue is returned to the system default value.

size — When a numeric value is specified (size), the system interprets the value as an explicit burst limit size. The value is expressed as an integer and by default is interpreted as the burst limit in Kilobytes. If the value is intended to be interpreted in bytes, the byte qualifier must be added following size.

> **Values** 1 to 14,000 (14,000 or 14,000,000 depending on bytes or kilobytes)

> **Default** No default for size, use the default keyword to specify default burst limit

byte — The **bytes** qualifier is used to specify that the value given for size must be interpreted as the burst limit in bytes. The byte qualifier is optional and mutually exclusive with the kilobytes qualifier.

kilobyte — The **kilobyte** qualifier is used to specify that the value given for size must be interpreted as the burst limit in Kilobytes. The kilobyte qualifier is optional and mutually exclusive with the bytes qualifier. If neither bytes nor kilobytes is specified, the default qualifier is kilobytes.

cbs

Syntax	**cbs** *size-in-kbytes* **no cbs**
Context	config>qos>qgrps>egr>qgrp>queue config>qos>qgrpid>ing>qgrp>queue config>qos>qgrpid>ing>qgrp>policer
Description	The cbs command is used to define the default committed buffer size for the template queue. Overall, the cbs command follows the same behavior and provisioning characteristics as the cbs command in the SAP ingress QoS policy. The **no** form of this command restores the default CBS size to the template queue.
Default	default
Parameters	*size-in-kbytes* — The size parameter is an integer expression of the number of kilobytes reserved for the queue. If a value of 10KBytes is desired, enter the value 10. A value of 0 specifies that no reserved buffers are required by the queue (a minimal reserved size can still be applied for scheduling purposes). > **Values** 0 — 131072 or default

high-prio-only

Syntax	**high-prio-only** *percent* **no high-prio-only**
Context	config>qos>qgrps>egr>qgrp>queue config>qos>qgrpid>ing>qgrp>queue config>qos>qgrpid>ing>qgrp>policer
Description	The **high-prio-only** command configures the percentage of buffer space for the queue, used exclusively by high priority packets. The specified value overrides the default value for the context.

The priority of a packet can only be set in the SAP ingress QoS policy and is only applicable on the ingress queues for a SAP. The **high-prio-only** parameter is used to override the default value derived from the **network-queue** command.

The **no** form of this command restores the default high priority reserved size.

Parameters   *percent —* The percentage reserved for high priority traffic on the queue. If a value of 10KBytes is desired, enter the value 10.

> **Values**   0 — 100, default

mbs

Syntax   **mbs** *size* [**bytes** | **kilobytes**]
no mbs

Context   config>qos>qgrps>egr>qgrp>queue
config>qos>qgrpid>ing>qgrp>queue
config>qos>qgrpid>ing>qgrp>policer

Description   The Maximum Burst Size (MBS) command the default maximum buffer size for the template queue. The value is given in kilobytes.

The MBS value is used by a queue to determine whether it has exhausted all of its buffers while enqueuing packets. Once the queue has exceeded the amount of buffers allowed by MBS, all packets are discarded until packets have been drained from the queue.

The sap-ingress context for mbs provides a mechanism for overriding the default maximum size for the queue.

The sum of the MBS for all queues on an ingress access port can oversubscribe the total amount of buffering available. When congestion occurs and buffers become scarce, access to buffers is controlled by the RED slope a packet is associated with. A queue that has not exceeded its MBS size is not guaranteed that a buffer will be available when needed or that the packets RED slope will not force the discard of the packet. Setting proper CBS parameters and controlling CBS oversubscription is one major safeguard to queue starvation (when a queue does not receive its fair share of buffers). Another is properly setting the RED slope parameters for the needs of services on this port or channel.

If the CBS value is larger than the MBS value, an error will occur, preventing the MBS change.

The **no** form of this command returns the MBS size assigned to the queue to the value.

Default   default

Parameters   *size* [**bytes** | **kilobytes**] — The size parameter is an integer expression of the maximum number of bytes or kilobytes of buffering allowed for the queue. For a value of 100 kbps, enter the value 100. A value of 0 causes the queue to discard all packets.

> **Values**   0 — 131072 or default

[**bytes** | **kilobytes**] — Select bytes or kilobytes. Kilobytes is the default.

parent

Syntax   **parent** *scheduler-name* [**weight** *weight*] [**level** *level*] [**cir-weight** *cir-weight*] [**cir-level** *cir-level*]
no parent

Context   config>qos>qgrps>egr>qgrp>queue
config>qos>qgrpid>ing>qgrp>queue

Description   This command defines an optional parent scheduler that further governs the available bandwidth given the queue aside from the queue's PIR setting. When multiple schedulers and/or queues share a child status with the parent scheduler, the **weight** or **level** parameters define how this queue contends with the other children for the parent's bandwidth.

Checks are not performed to see if a *scheduler-name* exists when the parent command is defined on the queue. Scheduler names are configured in the `config>qos>scheduler-policy>tier` *level* context. Multiple schedulers can exist with the *scheduler-name* and the association pertains to a scheduler that should exist on the egress SAP as the policy is applied and the queue created. When the queue is created on the egress SAP, the existence of the *scheduler-name* is dependent on a scheduler policy containing the *scheduler-name* being directly or indirectly applied (through a multi-service customer site) to the egress SAP. If the *scheduler-name* does not exist, the queue is placed in the orphaned operational state. The queue will accept packets but will not be bandwidth limited by a virtual scheduler or the scheduler hierarchy applied to the SAP. The orphaned state must generate a log entry and a trap message. The SAP which the queue belongs to must also depict an orphan queue status. The orphaned state of the queue is automatically cleared when the *scheduler-name* becomes available on the egress SAP.

The parent scheduler can be made unavailable due to the removal of a scheduler policy or scheduler. When an existing parent scheduler is removed or inoperative, the queue enters the orphaned state mentioned above and automatically return to normal operation when the parent scheduler is available again.

When a parent scheduler is defined without specifying weight or strict parameters, the default bandwidth access method is weight with a value of 1.

The **no** form of the command removes a child association with a parent scheduler. If a parent association does not currently exist, the command has no effect and returns without an error. Once a parent association has been removed, the former child queue attempts to operate based on its configured rate parameter. Removing the parent association on the queue within the policy takes effect immediately on all queues using the SAP egress QoS policy.

Parameters   *scheduler-name* — The defined *scheduler-name* conforms to the same input criteria as the schedulers defined within a scheduler policy. Scheduler names are configured in the `config>qos>scheduler-policy>tier` *level* context. There are no checks performed at the time of definition to ensure that the *scheduler-name* exists within an existing scheduler policy. For the queue to use the defined *scheduler-name*, the scheduler exists on each egress SAP the queue is eventually created on. For the duration where *scheduler-name* does not exist on the egress SAP, the queue operates in an orphaned state.

Values   Any string up to 32 characters long composed of printable, 7-bit ASCII characters. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

Default   None. Each parental association must be explicitly defined.

weight *weight* — *weight* defines the relative weight of this queue in comparison to other child schedulers and queues while vying for bandwidth on the parent *scheduler-name*. Any queues or schedulers defined

as weighted receive no parental bandwidth until all strict queues and schedulers on the parent have reached their maximum bandwidth or are idle. In this manner, weighted children are considered to be the lowest priority.

All **weight** values from all weighted active queues and schedulers with a common parent scheduler are added together. Then, each individual active weight is divided by the total, deriving the percentage of remaining bandwidth provided to the queue or scheduler after the strict children are serviced. A weight is considered to be active when the pertaining queue or scheduler has not reached its maximum rate and still has packets to transmit. All child queues and schedulers with a weight of 0 are considered to have the lowest priority level and are not serviced until all strict and non-zero weighted queues and schedulers are operating at the maximum bandwidth or are idle.

Values   0 — 100

Default   1

level *level —* The optional **level** parameter defines the level of hierarchy when compared to other schedulers and queues when vying for bandwidth on the parent *scheduler-name*. Any queues or schedulers defined as **strict** receive no parental bandwidth until all strict queues and schedulers with a higher (numerically larger) priority on the parent have reached their maximum bandwidth or are idle.

Children of the parent scheduler with a lower strict priority or that are weighted will not receive bandwidth until all children with a higher strict priority have either reached their maximum bandwidth or are idle. Children with the same strict level are serviced in a round robin fashion.

Values   1 — 100

Default   1

cir-weight *cir-weight —* Defines the weight the queue or scheduler will use at the within-cir port priority level (defined by the cir-level parameter). The weight is specified as an integer value from 0 to 100 with 100 being the highest weight. When the cir-weight parameter is set to a value of 0 (the default value), the queue or scheduler does not receive bandwidth during the port schedulers within-cir pass and the cir-level parameter is ignored. If the cir-weight parameter is 1 or greater, the cir-level parameter comes into play.

Values   0 — 100

cir-level *cir-level —* Defines the port priority the queue or scheduler will use to receive bandwidth for its within-cir offered-load. If the cir-weight parameter is set to a value of 0 (the default value), the queue or scheduler does not receive bandwidth during the port schedulers within-cir pass and the cir-level parameter is ignored. If the cir-weight parameter is 1 or greater, the cir-level parameter comes into play.

Values   0 — 8 (8 is the highest priority)

Default   0

percent-rate

Syntax   **percent-rate** *pir-percent* [**cir** *cir-percent*]
               no percent-rate

Context   config>qos>queue-group-templates>egress>queue-group-template>queue

Description   The **percent-rate** command within the egress queue group template and on the port queue group queue overrides enables support for a queue's PIR and CIR rate to be configured as a percentage of the egress port's line rate. When the rates are expressed as a percentage within the template, the actual rate used per instance of the queue group queue-id will vary based on the port speed. For example, when the same template is used to create a queue group on a 1-Gigabit and a 10-Gigabit Ethernet port, the queue's rates will be 10 times greater on the 10 Gigabit port due to the difference in port speeds. This enables the same template to be used on multiple ports without needing to use port based queue overrides to modify a queue's rate to get the same relative performance from the queue.

If the port's speed changes after the queue is created, the queue's shaping and CIR rates will be recalculated based on the defined percentage value.

The rate and percent-rate commands override one another. If the current rate for a queue is defined using the percent-rate command and the rate command is executed, the percent-rate values are deleted. In a similar fashion, the percent-rate command causes any rate command values to be deleted. A queue's rate may dynamically be changed back and forth from a percentage to an explicit rate at anytime.

Queue rate overrides can only be specified in the form as configured in the template (a port override can only be specified as a percent-rate if the associated template was also defined as percent-rate). Likewise, a port override can only be specified as a rate (kbps) if the associated template was also defined as a rate.

The **no** form of this command returns the queue to its default shaping rate and cir rate. When **no percent-rate** is defined within a port egress queue group queue override, the queue reverts to the defined shaping and CIR rates within the egress queue group template associated with the queue.

Parameters   *percent-of-line-rate* — The *percent-of-line-rate* parameter is used to express the queue's shaping rate as a percentage of line rate. The line rate associated with the queue's port may dynamically change due to configuration or auto-negotiation. The line rate may also be affected by an egress port scheduler defined max-rate.

         Values   Percentage ranging from 0.01 to 100.00. The default is 100.00.

     cir *percent-of-line-rate* — The **cir** keyword is optional and when defined the required *percent-of-line-rate* CIR parameter expresses the queue's committed scheduling rate as a percentage of line rate. The line rate associated with the queue's port may dynamically change due to configuration or auto-negotiation. The line rate may also be affected by an egress port scheduler defined max-rate.

         Values   Percentage ranging from 0.00 to 100.00. The default is 100.00.

pool

Syntax
pool *pool-name*
no pool

Context
config>qos>qgrps>egr>qgrp>queue
config>qos>qgrps>ing>qgrp>queue

Description
This command specifies a named pool for this queue. The pool command overrides the default buffer pool association for the template queue when the queue is created on an IOM with named pool mode enabled. The pool command follows the same behavior and provisioning characteristics as the pool command in the SAP ingress QoS policy.

When the template is applied as an ingress port queue group, the named pool may be either a port named pool or an MDA named pool. When the template is applied as a VPLS ingress queue group, the named pool will only match an MDA named pool. If named pool mode is not enabled where the template queue is created, the defined pool name is ignored.

The **no** form of the command removes the pool name from the configuration.

Default
none

Parameters
pool-name — The specified *pool-name* identifies a named pool where the policy will be applied. Each queue created within the system is tied to a physical port. When the policy is applied and the queue is created, the system will scan the named pools associated with the port to find the specified pool name. If the pool is not found on the port, the system will then look at named pools defined at the ports MDA level. If the pool name is not found on either the port or MDA, the queue will be marked as 'pool-orphaned' and will be mapped to the appropriate default pool. If the pool comes into existence, the queue will be moved from the default pool to the new named pool and the 'pool-orphaned' state will be cleared. The specified name must be an ASCII name string up to 32 characters long.

port-parent

Syntax
port-parent [**weight** *weight*] [**level** *level*] [**cir-weight** *cir-weight*] [**cir-level** *cir-level*]
no port-parent

Context
config>qos>qgrps>egr>qgrp>queue

Description
This command defines the port scheduling parameters used to control the queues behavior when a virtual egress port scheduling is enabled where the egress queue group template is applied. The port-parent command follows the same behavior and provisioning characteristics as the parent command in the SAP egress QoS policy. The port-parent command is mutually exclusive with the parent command.

The **no** form of the command removes the values from the configuration.

Default

Parameters   **weight** *weight* — Defines the weight the queue or scheduler will use at the above-cir port priority level (defined by the level parameter).

>   **Values**   0 — 100

>   **Default**   1

level *level* — Defines the port priority the queue or scheduler will use to receive bandwidth for its above-cir offered-load.

>   **Values**   1 — 8 (8 is the highest priority)

>   **Default**   1

cir-weight *cir-weight* — Defines the weight the queue or scheduler will use at the within-cir port priority level (defined by the cir-level parameter). The weight is specified as an integer value from 0 to 100 with 100 being the highest weight. When the cir-weight parameter is set to a value of 0 (the default value), the queue or scheduler does not receive bandwidth during the port schedulers within-cir pass and the cir-level parameter is ignored. If the cir-weight parameter is 1 or greater, the cir-level parameter comes into play.

>   **Values**   0 — 100

cir-level *cir-level* — Defines the port priority the queue or scheduler will use to receive bandwidth for its within-cir offered-load. If the cir-weight parameter is set to a value of 0 (the default value), the queue or scheduler does not receive bandwidth during the port schedulers within-cir pass and the cir-level parameter is ignored. If the cir-weight parameter is 1 or greater, the cir-level parameter comes into play.

>   **Values**   0 — 8 (8 is the highest priority)

>   **Default**   0

rate

Syntax   **rate** *pir-rate* [**cir** *cir-rate*]
no rate

Context   config>qos>qgrps>egr>qgrp>queue
config>qos>qgrps>egr>qgrp>policer

Description   This command defines the administrative Peak Information Rate (PIR) and the administrative Committed Information Rate (CIR) parameters for the queue or policer. The PIR defines the maximum rate that the queue or policer can transmit packets out an egress interface (for SAP egress queues or policer). Defining a PIR does not necessarily guarantee that the queue can transmit at the intended rate. The actual rate sustained by the queue or policer can be limited by oversubscription factors or available egress bandwidth.

The CIR defines the rate at which the system prioritizes the queue or policer over other queues or policer competing for the same bandwidth. In-profile packets are preferentially queued by the system at egress and at subsequent next hop nodes where the packet can traverse. To be properly handled as in- or out-of-profile throughout the network, the packets must be marked accordingly for profiling at each hop.

The CIR can be used by the queue or policer's parent commands *cir-level* and *cir-weight* parameters to define the amount of bandwidth considered to be committed for the child queue during bandwidth allocation by the parent scheduler.

The **rate** command can be executed at anytime, altering the PIR and CIR rates for all queues created through the association of the SAP egress QoS policy with the *queue-id* or *policer-id*.

The **no** form of the command returns all queues or policer created with the *queue-id* or *policer-id* by association with the QoS policy to the default PIR and CIR parameters (**max**, 0).

Default   **rate max cir 0 —** The **max** default specifies the amount of bandwidth in kilobits per second (thousand bits per second). The **max** value is mutually exclusive to the **pir-rate** value.

Parameters   *pir-rate —* Defines the administrative PIR rate, in kilobits, for the queue or policer. When the **rate** command is executed, a valid PIR setting must be explicitly defined. When the **rate** command has not been executed, the default PIR of **max** is assumed.
Fractional values are not allowed and must be given as a positive integer.

The actual PIR rate is dependent on the queue's **adaptation-rule** parameters and the actual hardware where the queue or policer is provisioned.

Values   1 — 100000000, **max**

Default   max

cir-rate — The **cir** parameter overrides the default administrative CIR used by the queue or policer. When the **rate** command is executed, a CIR setting is optional. When the **rate** command has not been executed or the **cir** parameter is not explicitly specified, the default CIR (0) is assumed.
Fractional values are not allowed and must be given as a positive integer.

Values   0 — 100000000, **max**

Default   0

xp-specific

Syntax   **xp-specific**

Context   config>qos>qgrps>egr>qgrp>queue

Description   This command specifies queue parameters or behavior specific to the Q2 traffic management feature set. All IOMs within the XP family utilize the Q2 for traffic management queuing functions. When the SAP egress QoS policy is applied to a SAP on an IOM3-XP any commands and parameters defined within the xp-specific context will either override or augment the generic commands and parameters defined for the specific queue ID..

In the event that the QoS policy is applied to a SAP on a non-IOM3-XP, the commands and parameters within the xp-specific node are ignored.

When the QoS policy is applied to a LAG SAP that spans XP and non-XP IOMs, the **xp-specific** commands and parameters are applied for the SAP queues created on the IOM3-XP LAG links.

packet-byte-offset

Syntax   **packet-byte-offset** {**add** *bytes* **| subtract** *bytes*}
no packet-byte-offset

Context   config>qos>queue-group-templates>egress>queue-group>queue>xp-specific

Description   This command is used to modify the size of each packet handled by the queue by adding or subtracting a number of bytes. The actual packet size is not modified; only the size used to determine the bucket depth impact is changed.

The packet-byte-offset command is meant to be an arbitrary mechanism that can be used to either add downstream frame encapsulation or remove portions of packet headers.

When a packet-byte-offset value is applied to a queue instance, it adjusts the immediate packet size. This means that the queue rates (i.e., operational PIR and CIR) and queue bucket updates use the adjusted packet size. In addition, the queue statistics will also reflect the adjusted packet size. Scheduler policy rates, which are data rates, will use the adjusted packet size.

The port scheduler **max-rate** and the priority level rates and weights, if a Weighted Scheduler Group is used, are always on-the-wire rates and thus use the actual frame size. The same goes for the agg-rate-limit on a SAP, a subscriber, or a Multi-Service Site (MSS) when the queue is port-parented.

When the user enables **frame-based-accounting** in a scheduler policy or **queue-frame-based-accounting** with agg-rate-limit in a port scheduler policy, the queue rate will be capped to a user configured on-the-wire rate, but the packet-byte-offset value is still in effect as explained above.

The **no** version of this command is used to remove per packet size modifications from the queue.

Parameters **add** *bytes* — The **add** keyword is mutually exclusive to the **subtact** keyword. Either **add** or **subtract** must be specified. When **add** is defined, the corresponding bytes parameter specifies the number of bytes that is added to the size of each packet associated with the queue for scheduling and accounting purposes.

> **Values**   0—32

subtract *bytes* — The **subtract** keyword is mututally exclusive to the **add** keyword. Either **add** or **subtract** must be specified. When **subtract** is defined, the corresponding bytes parameter specifies the number of bytes that is subtracted to the size of each packet associated with the queue for scheduling and accounting purposes.

> **Values**   0—64

wred-queue

Syntax   **wred-queue** [**policy** *slope-policy-name*]
no wred-queue

Context   config>qos>qgrps>egr>qgrp>queue>xp-specific

Description   This command alters the generic buffer pool association of the queue for the purpose of allowing queue-specific WRED slopes with minimal provisioning. When the **wred-queue** command is defined and the queue ID is created on an IOM3-XP, a buffer pool is created specifically for the queue and the queue obtains all buffers from that pool. The size of the pool is the same as the size of the queue. In this manner, the WRED slopes that operate based on the pool's buffer utilization are also reacting to the congestion depth of the queue.

The size of the buffer pool is dictated by the queue's **mbs** parameter. The size of the reserved CBS portion of the buffer pool is dictated by the queue's **cbs** parameter. The provisioning characteristics of the **mbs** and **cbs** commands have not been changed.

In the case where the QoS policy is applied to a SAP on an IOM3-XP which has WRED queue support shut down (**config>card>fp>egress>wred-queue-control>shutdown**) the WRED buffer pool is created, but the queue will continue to map to either to its default pool or the pool defined in the **pool** command. If the **no shutdown** command is executed on the IOM, the queue will at that point be automatically moved to its own WRED pool.

Each pool created for a queue using the **wred-queue** command shares buffers with all other wred-queue-enabled queues on the same IOM3-XP. The WRED pool buffer management behavior is defined within the **config>card>fp>egress>wred-queue-control** context.

The WRED slopes within the pool are defined by the slope policy associated with the queue. When a policy is not explicitly defined, the default slope policy is used. The slope policy enables, disables and defines the relative geometry of the high and low WRED slopes in the pool. The policy also specifies the time average factor (TAF) used by the pool when calculating the weighted average pool depth.

As packets attempt to enter the egress queue, they are associated with either the high or low WRED slope based on the packets profile. If the packet is in-profile, the high slope is used. The low slope is used by out-of-profile packets. Each WRED slope performs a probability discard based on the current weighted average pool depth.

When wred-queue is enabled for a SAP egress queue on an IOM3-XP, the queue's **pool** and **hi-priority-only** commands are ignored.

The number of wred-queue-enabled queues allowed per IOM3-XP is hard coded to 7500.The **no** form of the command restores the generic buffer pool behavior to the queue. The WRED pool is removed from the system.

Parameters   *slope-policy-name* — Overrides the default WRED slope policy with an explicit slope policy. The defined slope policy must exist or the command will fail.

queue

Syntax   **queue** *queue-id*
         no queue

Context   config>qos>queue-group-templates>egress>queue-group-template>fc

Description   This command is used to map the forwarding class to the specified *queue-id*. The specified *queue-id* must exist within the egress queue group template. Once a queue is defined in a forwarding class mapping, that queue cannot be deleted unless the forwarding class mapping is moved to another queue within the template. Other criteria may also exist preventing the queue from being deleted from the template such as an applied SAP egress QoS policy mapping to the queue.

Parameters   *queue-id* — The specified *queue-id* must exist within the egress queue group template.

         Values   1–8

         Default   Dependent on user or system created template.

ingress

Syntax   **ingress**

Context   config>qos>qgrps

Description   This command enables the context to create ingress queue group templates. Ingress queue group templates can be applied to ingress ports to create an ingress queue group of the same name.

An ingress template must be created for a group-name prior to creating a queue group with the same name on an ingress port.

Default   none

queue

Syntax   **queue** *queue-id* [**multipoint**] [*queue-type*] [*queue-mode*] [**create**]
            no queue *queue-id*

Context   cfg>qos>qgrps>egr>qgrp
            cfg>qos>qgrps>ing>qgrp

Description   This command creates a queue for use in a queue group template. Once created, the defined queue-id acts as a repository for the default parameters for the queue. The template queue is created on each queue-group object which is created with the queue group template name. Each queue is identified within the template by a queue-id number. The template ensures that all queue groups created with the templatem name will have the same queue-ids providing a uniform structure for the forwarding class redirection commands in the SAP ingress QoS policies. The parameters within the template queue will be used as the default settings for each queue in the actual queue group. The queue parameters may be individually changed for each queue in each queue group using per queue overrides.

Once a queue within a template is mapped by a forwarding class on any object, the queue may be edited, but not deleted.

The **no** form of the command removes a template queue from the queue group template. If the queue is specified as a forwarding class redirection target in any SAP ingress QoS policy, the command will fail.

Default   none

Parameters   *queue-id* — This required parameter identifies the queue that will either be created or edited within the queue group template.

   Values   1 — 32

multipoint **—** This optional keyword creates an ingress multipoint queue. Multipoint queues in a queue group may be used by ingress VPLS for forwarding types multicast, broadcast or unknown within a forwarding class. For ingress IES and VPRN access SAPs, only multicast is supported. Multipoint queues are only supported on ingress queue group templates

queue-type — The queue types are mutually exclusive to each other.

   Values   **expedite** — This keyword ensures that the queue is treated in an expedited manner independent of the forwarding classes mapped to the queue.
            best-effort — This keyword ensures that the queue is treated in a non-expedited manner independent of the forwarding classes mapped to the queue.

queue-mode — These keywords are optional and mutually exclusive when creating a new template queue. The keywords specify how the queue manages ingress explicitly profiled packets.

   Values   **profile-mode** — Overrides the default priority mode of the queue and allows the adoption of color-aware profiling within the queue. Forwarding classes and sub-classes may be explicitly defined as in-profile or out-of-profile. Out-of-profile classified packets bypass the CIR rate associated with the queue reserving it for the undefined or in-profile classified packets. If the template queue is not defined as profile-mode and the packet redirected

to the queue is explicitly out-of-profile based on the classification rules, the queues within CIR bandwidth may be consumed by the packet.

priority-mode — Defines that the SAP ingress QoS policy priority classification result will be honored by the queue. Priority mode is the default mode of the queue. High priority packets are allowed into the queue up to the mbs size defined for the queue. Low priority packets are discarded at the low priority MBS threshold which is derived from applying the hi-prio-only percentage to the queues MBS and subtracting that result from the mbs size defined.

create — Keyword used to create the queue ID instance. The **create** keyword requirement can be enabled/disabled in the **environment>create** context.

rate

Syntax	**rate** *pir-rate* [**cir** *cir-rate*] **rate** *pir-rate* **police** **no rate**
Context	config>qos>qgrpid>ing>qgrp>queue
Description	This command defines the administrative Peak Information Rate (PIR) and the administrative Committed Information Rate (CIR) parameters for the queue. The PIR defines the maximum rate that the queue can transmit packets through the switch fabric (for SAP ingress queues). Defining a PIR does not necessarily guarantee that the queue can transmit at the intended rate. The actual rate sustained by the queue can be limited by oversubscription factors or available egress bandwidth.

The CIR defines the rate at which the system prioritizes the queue over other queues competing for the same bandwidth. For SAP ingress, the CIR also defines the rate that packets are considered in-profile by the system. In-profile packets are preferentially queued by the system at egress and at subsequent next hop nodes where the packet can traverse. To be properly handled as in- or out-of-profile throughout the network, the packets must be marked accordingly for profiling at each hop.

The CIR can be used by the queue's parent commands *cir-level* and *cir-weight* parameters to define the amount of bandwidth considered to be committed for the child queue during bandwidth allocation by the parent scheduler.

The **rate** command can be executed at anytime, altering the PIR and CIR rates for all queues created through the association of the SAP ingress or SAP egress QoS policy with the *queue-id*.

The **no** form of the command returns all queues created with the *queue-id* by association with the QoS policy to the default PIR and CIR parameters (**max**, 0).

Default	none
Parameters	*pir-rate* — Defines the administrative PIR rate, in kilobits, for the queue. When the **rate** command is executed, a valid PIR setting must be explicitly defined. When the **rate** command has not been executed, the default PIR of **max** is assumed. Fractional values are not allowed and must be given as a positive integer.

The actual PIR rate is dependent on the queue's **adaptation-rule** parameters and the actual hardware where the queue is provisioned.

> **Values** 1 — 100000000, **max**

> **Default** max

cir-rate — The **cir** parameter overrides the default administrative CIR used by the queue. When the **rate** command is executed, a CIR setting is optional. When the **rate** command has not been executed or the **cir** parameter is not explicitly specified, the default CIR (0) is assumed.
Fractional values are not allowed and must be given as a positive integer.

> **Values** 0 — 100000000, **max**

> **Default** 0

police — Specifies that the out of profile traffic feeding into the physical queue instance should be dropped. Using this keyword will override the bandwidth specified by the SAP ingress queue's administrative CIR.

If the **police** keyword is not specified, the individual queue group overrides may override both the defined shaping rate and the cir defined profiling rate. When police is defined, only the policing rate may be overridden.

policer

> **Syntax** **policer** *policer-id* [**create**]
> **no policer**

> **Context** cfg>qos>qgrps>ing>qgrp

> **Description** This command configures a QoS ingress queue-group policer.

> **Default** none

> **Parameters** *policer-id —* This required parameter identifies the queue-group policer that will either be created or edited within the queue group template.

>> **Values** 1 — 32

> **create —** This optional keyword creates an ingress queue-group policer.

profile-capped

> **Syntax** **profile-capped**
> **no profile-capped**

> **Context** cfg>qos>qgrps>ing>qgrp>policer

> **Description** This command enables a limit on the profile.

> **Default** no profile-capped

packet-byte-offset

Syntax **packet-byte-offset** {**add** *bytes* | **subtract** *bytes*}
no packet-byte-offset

Context cfg>qos>qgrps>ing>qgrp>policer

Description This command configures a packet byte offset for the QoS ingress queue-group policer.

Default none

Parameters **add** *bytes —* Specifies an number of bytes to add as the offset amount.

> **Values** 0 — 31

subtract *bytes —* Specifies an number of bytes to add as the offset amount.

> **Values** 1 — 32

parent

Syntax **parent** {**root** | *arbiter-name*} [**level** *level*] [**weight** *weight-within-level*]
no parent

Context config>qos>qgrpid>ing>qgrp>policer

Description This command defines an optional parent scheduler that further governs the available bandwidth given the queue aside from the queue's PIR setting. When multiple schedulers and/or queues share a child status with the parent scheduler, the **weight** or **level** parameters define how this queue contends with the other children for the parent's bandwidth.

The **no** form of the command removes a child association with a parent scheduler. If a parent association does not currently exist, the command has no effect and returns without an error. Once a parent association has been removed, the former child queue attempts to operate based on its configured rate parameter. Removing the parent association on the queue within the policy takes effect immediately on all queues using the SAP egress QoS policy.

Parameters **root —** Selects the root level arbiter for the parent to the child.

arbiter-name — Specifies an arbiter for the parent to the child.

> **Values** Any string up to 32 characters long composed of printable, 7-bit ASCII characters. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

> **Default** None. Each parental association must be explicitly defined.

weight-within-level — weight defines the relative weight of this queue in comparison to other child schedulers and queues while vying for bandwidth on the parent *scheduler-name*. Any queues or schedulers defined as weighted receive no parental bandwidth until all strict queues and schedulers on the parent have reached their maximum bandwidth or are idle. In this manner, weighted children are considered to be the lowest priority.

All **weight** values from all weighted active queues and schedulers with a common parent scheduler are added together. Then, each individual active weight is divided by the total, deriving the percentage of remaining bandwidth provided to the queue or scheduler after the strict children are serviced. A weight is considered to be active when the pertaining queue or scheduler has not reached its maximum rate and still has packets to transmit. All child queues and schedulers with a weight of 0 are considered to have the lowest priority level and are not serviced until all strict and non-zero weighted queues and schedulers are operating at the maximum bandwidth or are idle.

> **Values**   0 — 100
>
> **Default**   1

level — The optional **level** parameter defines the level of hierarchy when compared to other schedulers and queues when vying for bandwidth on the parent *scheduler-name*. Any queues or schedulers defined as **strict** receive no parental bandwidth until all strict queues and schedulers with a higher (numerically larger) priority on the parent have reached their maximum bandwidth or are idle.

Children of the parent scheduler with a lower strict priority or that are weighted will not receive bandwidth until all children with a higher strict priority have either reached their maximum bandwidth or are idle. Children with the same strict level are serviced in a round robin fashion.

> **Values**   1 — 8
>
> **Default**   1

stat-mode

Syntax	**stat-mode {no-stats | minimal | offered-profile-no-cir | offered-priority-no-cir | offered-limited-profile-cir | offered-profile-cir | offered-priority-cir | offered-total-cir | offered-profile-capped-cir | offered-limited-capped-cir}**
Context	cfg>qos>qgrps>ing>qgrp>policer
Description	This command selects the statistics mode for the QoS ingress queue-group policer.
Default	none

Parameters   **no-stat** — Selects no statistics as the statistics mode.

minimal — Selects minimal statistics as the statistics mode.

offered-profile-no-cir — Selects no offered profile CIR statistics as the statistics mode.

offered-priority-no-cir — Selects no offered priority CIR statistics as the statistics mode.

offered-limited-profile-cir — Selects limited profile CIR statistics as the statistics mode.

offered-profile-cir — Selects offered profile CIR statistics as the statistics mode.

offered-priority-cir — Selects offered priority CIR statistics as the statistics mode.

offered-total-cir — Selects total statistics as the statistics mode.

offered-profile-capped-cir — Selects offered profile capped statistics as the statistics mode.

offered-limited-capped-cir — Selects offered limited capped statistics as the statistics mode.

Show Commands

queue-group

Syntax **queue-group** [*queue-group-name*] [**ingress** | **egress**] [**association** | **detail** | **summary**]
queue-group summary

Context show>qos

Description This command displays queue-group information.

Parameters *queue-group-name* — Specifies the name of an existing queue group template up to 32 characters in length.

ingress — Specifies whether the queue group name is an ingress policy.

egress — Specifies whether the queue group name is an egress policy.

associations — Displays the entities associated with the specified queue group name.

detail — Displays detailed queue group information for the specified queue group name.

summary — Displays the total number of queue-group instance per card (IOM).

Sample Output

```
*A:Dut-T>cfg>qos>qgrps>egr>qgrp# show qos queue-group egress
===============================================================================
Queue Group Egress
===============================================================================
Group-Name                     Description
-------------------------------------------------------------------------------
QG_egress_1                    Egress queue group
===============================================================================
*A:Dut-T#


*A:Dut-T# show qos queue-group egress QG_egress_1 detail
===============================================================================
QoS Queue-Group Egress
===============================================================================
-------------------------------------------------------------------------------
QoS Queue Group
-------------------------------------------------------------------------------
Group-Name     : QG_egress_1
Description    : Egress queue group
-------------------------------------------------------------------------------
Queue CIR Admin PIR Admin CBS       HiPrio PIR Lvl/Wt     Parent
      CIR Rule  PIR Rule  MBS              CIR Lvl/Wt
      Named-Buffer Pool
-------------------------------------------------------------------------------
1     0         max       def       def    1/1            None
      closest   closest   100              0/1
      (not-assigned)
2     0         max       def       def    1/1            None
```

```
        closest   closest   100          0/1
        (not-assigned)
3     0       max     def    def    1/1           None
        closest   closest   100          0/1
        (not-assigned)
4     0       max     def    def    1/1           None
        closest   closest   100          0/1
        (not-assigned)
===============================================================================
Queue Group Ports (access)
===============================================================================
Port            Sched Pol         Acctg Pol Stats   Description
-------------------------------------------------------------------------------
9/2/1                             0         No
9/2/2                             0         No
-------------------------------------------------------------------------------
===============================================================================
Queue Group Ports (network)
===============================================================================
Port            Sched Pol         Acctg Pol Stats   Description
-------------------------------------------------------------------------------
6/1/1                             0         No
-------------------------------------------------------------------------------
===============================================================================
Queue Group Sap FC Maps
===============================================================================
Sap Policy    FC Name           Queue Id
-------------------------------------------------------------------------------
10            af                2
10            be                1
10            ef                3
10            nc                4
-------------------------------------------------------------------------------
Entries found: 4
-------------------------------------------------------------------------------
===============================================================================
*A:Dut-T#


*A:Dut-T# show qos queue-group egress QG_egress_1 association
===============================================================================
QoS Queue-Group Egress
===============================================================================
-------------------------------------------------------------------------------
QoS Queue Group
-------------------------------------------------------------------------------
Group-Name    : QG_egress_1
Description    : Egress queue group
===============================================================================
Queue Group Ports (access)
===============================================================================
Port            Sched Pol         Acctg Pol Stats   Description
-------------------------------------------------------------------------------
9/2/1                             0         No
9/2/2                             0         No
-------------------------------------------------------------------------------
===============================================================================
Queue Group Ports (network)
===============================================================================
```

```
Port              Sched Pol          Acctg Pol Stats   Description
-------------------------------------------------------------------------------
6/1/1                                0         No
-------------------------------------------------------------------------------
===============================================================================
Queue Group Sap FC Maps
===============================================================================
Sap Policy      FC Name           Queue Id
-------------------------------------------------------------------------------
10              af                2
10              be                1
10              ef                3
10              nc                4
-------------------------------------------------------------------------------
Entries found: 4
-------------------------------------------------------------------------------
===============================================================================
*A:Dut-T#
*A:Dut-T# show qos queue-group summary
============================================================
card | access-ingress | access-egress | network-egress

   1 |        60      |      2047     |        0
   2 |        60      |        0      |      2047
============================================================
Total ingress QG templates per system: <num>
Total egress QG templates per system:  <num>
```

The total number of queue-group instance per card (IOM).

```
*A:Dut-T# show qos queue-group ingress
===============================================================================
Queue Group Ingress
===============================================================================
Group-Name                    Description
-------------------------------------------------------------------------------
QG_ingress_1                  Ingress queue-group
===============================================================================
*A:Dut-T#


*A:Dut-T# show qos queue-group ingress detail
===============================================================================
QoS Queue-Group Ingress
===============================================================================
-------------------------------------------------------------------------------
QoS Queue Group
-------------------------------------------------------------------------------
Group-Name    : QG_ingress_1
Description   : Ingress queue-group
-------------------------------------------------------------------------------
Queue Mode    CIR Admin PIR Admin CBS     HiPrio  PIR Lvl/Wt    Parent
              CIR Rule  PIR Rule  MBS              CIR Lvl/Wt
              Named-Buffer Pool
-------------------------------------------------------------------------------
1    Prio     0         max       def     def              1/1          None
              closest   closest 100                        0/1
```

```
                    (not-assigned)
2     Prio      0        max    def   def           1/1           None
                closest  closest 100                0/1
                    (not-assigned)
3     Prio      0        max    def   def           1/1           None
                closest  closest 100                0/1
                    (not-assigned)
4     Prio      0        max    def   def           1/1           None
                closest  closest 100                0/1
                    (not-assigned)


===============================================================================
Queue Group Ports
===============================================================================
Port            Sched Pol          Acctg Pol Stats   Description
-------------------------------------------------------------------------------
9/2/1                              0         No
9/2/2                              0         No
-------------------------------------------------------------------------------
===============================================================================
Queue Group Sap FC Maps
===============================================================================
Sap Policy    FC Name            Queue (id type)
-------------------------------------------------------------------------------
10            af                 (2 Unicast)
10            be                 (1 Unicast)
10            ef                 (3 Unicast)
10            nc                 (4 Unicast)
-------------------------------------------------------------------------------
Entries found: 4
-------------------------------------------------------------------------------
===============================================================================
*A:Dut-T#


*A:Dut-T# show qos queue-group ingress association
===============================================================================
QoS Queue-Group Ingress
===============================================================================
-------------------------------------------------------------------------------
QoS Queue Group
-------------------------------------------------------------------------------
Group-Name    : QG_ingress_1
Description   : Ingress queue-group
===============================================================================
Queue Group Ports
===============================================================================
Port            Sched Pol          Acctg Pol Stats   Description
-------------------------------------------------------------------------------
9/2/1                              0         No
9/2/2                              0         No
-------------------------------------------------------------------------------
===============================================================================
Queue Group Sap FC Maps
===============================================================================
Sap Policy    FC Name            Queue (id type)
-------------------------------------------------------------------------------
10            af                 (2 Unicast)
10            be                 (1 Unicast)
```

```
10              ef                  (3 Unicast)
10              nc                  (4 Unicast)
--------------------------------------------------------------------------------
Entries found: 4
--------------------------------------------------------------------------------
================================================================================
*A:Dut-T#


*A:Dut-T# show qos queue-group summary
================================================================================
Queue-group instances per card
================================================================================
card    port-acc-ing  port-acc-egr  port-nw-egr  fp-acc-ing   fp-nw-ing
--------------------------------------------------------------------------------
1       0             0             0            0            0
2       0             0             0            0            0
3       0             0             0            0            0
4       0             2             1000         0            500
5       0             0             0            0            0
6       0             0             0            0            0
7       0             0             0            0            0
8       0             0             0            0            0
9       0             2             1000         0            500
10      0             0             0            0            0
11      0             0             0            0            0
12      0             0             0            0            0
--------------------------------------------------------------------------------
Total ingress QG templates per system :  3
Total egress  QG templates per system :  5
================================================================================
*A:Dut-T#
```

Related queue-group command output:

```
*A:Dut-T# show card 9 fp 1 ingress queue-group "QGIng1" mode network instance 1 statistics
================================================================================
Card:9  Net.QGrp: QGIng1  Instance: 1
================================================================================
Group Name     : QGIng1
Description    : (Not Specified)
Pol Ctl Pol    : pcp                    Acct Pol     : None
Collect Stats  : disabled
--------------------------------------------------------------------------------
Statistics
--------------------------------------------------------------------------------
                     Packets                   Octets

Ing. Policer:  1  Grp: QGIng1 (Stats mode: minimal)
Off. All            :        91836202             91465530792
Dro. All            :         6678807              6649127172
For. All            :        85157395             84816403620

Ing. Policer:  2  Grp: QGIng1 (Stats mode: minimal)
Off. All            :        93584703             90933906888
Dro. All            :         8320200              6106644900
For. All            :        85264503             84827261988

Ing. Policer:  3  Grp: QGIng1 (Stats mode: minimal)
```

```
Off. All             :        93584703               90933906888
Dro. All             :         8320049                6106288404
For. All             :        85264654               84827618484

Ing. Policer:  4  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        93584703               90933906888
Dro. All             :         8326509                6110568864
For. All             :        85258194               84823338024

Ing. Policer:  5  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        93584703               90933906888
Dro. All             :        24877143               22616873028
For. All             :        68707560               68317033860

Ing. Policer:  6  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        93434643               90919501128
Dro. All             :        24727111               22602499656
For. All             :        68707532               68317001472

Ing. Policer:  7  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        93584703               90933906888
Dro. All             :        24877214               22616941944
For. All             :        68707489               68316964944

Ing. Policer:  8  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        93430663               90919119048
Dro. All             :        24723280               22602263280
For. All             :        68707383               68316855768

Ing. Policer:  9  Grp: QGIng1 (Stats mode: minimal)
Off. All             :               0                         0
Dro. All             :               0                         0
For. All             :               0                         0

Ing. Policer: 10  Grp: QGIng1 (Stats mode: minimal)
Off. All             :               0                         0
Dro. All             :               0                         0
For. All             :               0                         0

Ing. Policer: 11  Grp: QGIng1 (Stats mode: minimal)
Off. All             :               0                         0
Dro. All             :               0                         0
For. All             :               0                         0

Ing. Policer: 12  Grp: QGIng1 (Stats mode: minimal)
Off. All             :               0                         0
Dro. All             :               0                         0
For. All             :               0                         0

Ing. Policer: 13  Grp: QGIng1 (Stats mode: minimal)
Off. All             :               0                         0
Dro. All             :               0                         0
For. All             :               0                         0

Ing. Policer: 14  Grp: QGIng1 (Stats mode: minimal)
Off. All             :               0                         0
Dro. All             :               0                         0
For. All             :               0                         0
```

```
Ing. Policer: 15  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        0                      0
Dro. All             :        0                      0
For. All             :        0                      0

Ing. Policer: 16  Grp: QGIng1 (Stats mode: minimal)
Off. All             :        0                      0
Dro. All             :        0                      0
For. All             :        0                      0
===============================================================================
*A:Dut-T#


*A:Dut-T# show qos policer-hierarchy card 9 fp 1 queue-group "QGIng1" ingress instance 1
detail
===============================================================================
Policer Hierarchy - Card: 9 Queue-Group: QGIng1
===============================================================================
Ingress Policer Policy        :
-------------------------------------------------------------------------------
Legend :
(*) real-time dynamic value
(w) Wire rates
-------------------------------------------------------------------------------
root (Ing)
|
No Active Access Members Found on slot 9


|
| slot(9) (Network)
|    Profile-preferred:Disabled
|    MaxPIR:1500
|    ConsumedByChildren:1500
|    OperPIR:1500        OperFIR:1500
|
|    DepthPIR:205904 bytes
|  Priority 8
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:0
|  Priority 7
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:0
|  Priority 6
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:0
|  Priority 5
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:0
|  Priority 4
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:0
|  Priority 3
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:0
|  Priority 2
|    Oper Thresh Unfair:311296     Oper Thresh Fair:425984
|    Association count:4
|  Priority 1
|    Oper Thresh Unfair:102400     Oper Thresh Fair:204800
```

```
|    Association count:4
|
|--(A) : DATA (QGrp: QGIng1 Instance: 1 )
|   |    MaxPIR:max
|   |    ConsumedByChildren:500
|   |    OperPIR:500        OperFIR:500
|   |
|   |    [Level 1 Weight 1]
|   |    Assigned PIR:500        Offered:41603
|   |    Consumed:500
|   |
|   |    Assigned FIR:500
|   |
|   |--(P) : Policer Net-FPQG-1-T3:1->4
|   |   |    MaxPIR:max        MaxCIR:0
|   |   |    CBS:0             MBS:20480
|   |   |    HiPrio:2048
|   |   |    Depth:1184
|   |   |
|   |   |    OperPIR:128       OperCIR:0
|   |   |    OperFIR:128
|   |   |    PacketByteOffset:0
|   |   |    StatMode: minimal
|   |   |
|   |   |    [Level 1 Weight 1]
|   |   |    Assigned PIR:125        Offered:9966
|   |   |    Consumed:125
|   |   |
|   |   |    Assigned FIR:125
|   |
|   |--(P) : Policer Net-FPQG-1-T3:1->3
|   |   |    MaxPIR:max        MaxCIR:0
|   |   |    CBS:0             MBS:20480
|   |   |    HiPrio:2048
|   |   |    Depth:18256
|   |   |
|   |   |    OperPIR:128       OperCIR:0
|   |   |    OperFIR:128
|   |   |    PacketByteOffset:0
|   |   |    StatMode: minimal
|   |   |
|   |   |    [Level 1 Weight 1]
|   |   |    Assigned PIR:125        Offered:9966
|   |   |    Consumed:125
|   |   |
|   |   |    Assigned FIR:125
|   |
|   |--(P) : Policer Net-FPQG-1-T3:1->2
|   |   |    MaxPIR:max        MaxCIR:0
|   |   |    CBS:0             MBS:20480
|   |   |    HiPrio:2048
|   |   |    Depth:18944
|   |   |
|   |   |    OperPIR:128       OperCIR:0
|   |   |    OperFIR:128
|   |   |    PacketByteOffset:0
|   |   |    StatMode: minimal
|   |   |
|   |   |    [Level 1 Weight 1]
```

```
| | | Assigned PIR:125        Offered:9967
| | | Consumed:125
| | |
| | | Assigned FIR:125
| |
| |--(P) : Policer Net-FPQG-1-T3:1->1
| | | MaxPIR:max           MaxCIR:0
| | | CBS:0                MBS:20480
| | | HiPrio:2048
| | | Depth:19024
| | |
| | | OperPIR:128          OperCIR:0
| | | OperFIR:128
| | | PacketByteOffset:0
| | | StatMode: minimal
| | |
| | | [Level 1 Weight 1]
| | | Assigned PIR:125        Offered:11724
| | | Consumed:125
| | |
| | | Assigned FIR:125
|
|--(A) : HIGH (QGrp: QGIng1 Instance: 1 )
| | MaxPIR:1000
| | ConsumedByChildren:1000
| | OperPIR:1000        OperFIR:1000
| |
| | [Level 2 Weight 1]
| | Assigned PIR:1000        Offered:1000
| | Consumed:1000
| |
| | Assigned FIR:1000
| |
| |--(P) : Policer Net-FPQG-1-T3:1->8
| | | MaxPIR:max           MaxCIR:0
| | | CBS:0                MBS:20480
| | | HiPrio:2048
| | | Depth:21353
| | |
| | | OperPIR:250          OperCIR:0
| | | OperFIR:250
| | | PacketByteOffset:0
| | | StatMode: minimal
| | |
| | | [Level 1 Weight 1]
| | | Assigned PIR:250        Offered:9966
| | | Consumed:250
| | |
| | | Assigned FIR:250
| |
| |--(P) : Policer Net-FPQG-1-T3:1->7
| | | MaxPIR:max           MaxCIR:0
| | | CBS:0                MBS:20480
| | | HiPrio:2048
| | | Depth:21065
| | |
| | | OperPIR:250          OperCIR:0
| | | OperFIR:250
| | | PacketByteOffset:0
```

```
|   |   |     StatMode: minimal
|   |   |
|   |   |     [Level 1 Weight 1]
|   |   |     Assigned PIR:250      Offered:9967
|   |   |     Consumed:250
|   |   |
|   |   |     Assigned FIR:250
|   |
|   |--(P) : Policer Net-FPQG-1-T3:1->6
|   |   |     MaxPIR:max          MaxCIR:0
|   |   |     CBS:0               MBS:20480
|   |   |     HiPrio:2048
|   |   |     Depth:21353
|   |   |
|   |   |     OperPIR:250         OperCIR:0
|   |   |     OperFIR:250
|   |   |     PacketByteOffset:0
|   |   |     StatMode: minimal
|   |   |
|   |   |     [Level 1 Weight 1]
|   |   |     Assigned PIR:250      Offered:9967
|   |   |     Consumed:250
|   |   |
|   |   |     Assigned FIR:250
|   |
|   |--(P) : Policer Net-FPQG-1-T3:1->5
|   |   |     MaxPIR:max          MaxCIR:0
|   |   |     CBS:0               MBS:20480
|   |   |     HiPrio:2048
|   |   |     Depth:21065
|   |   |
|   |   |     OperPIR:250         OperCIR:0
|   |   |     OperFIR:250
|   |   |     PacketByteOffset:0
|   |   |     StatMode: minimal
|   |   |
|   |   |     [Level 1 Weight 1]
|   |   |     Assigned PIR:250      Offered:9967
|   |   |     Consumed:250
|   |   |
|   |   |     Assigned FIR:250


===============================================================================
*A:Dut-T#


*A:Dut-T# show qos policer port 9/2/4 network egress queue-group "QGEgr1" instance 1
===============================================================================
Policer Information (Summary), Slot 9
===============================================================================
-------------------------------------------------------------------------------
Name              FC-Maps      MBS       HP-Only A.PIR    A.CIR
Direction                      CBS       Depth   O.PIR    O.CIR    O.FIR
-------------------------------------------------------------------------------
Net-PQG-9/2/4-QGEgr1:1->8
Egress                         64 KB     8 KB    Max      0
                               0 KB      1026    Max      0        Max
Net-PQG-9/2/4-QGEgr1:1->7
```

```
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
Net-PQG-9/2/4-QGEgr1:1->6
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
Net-PQG-9/2/4-QGEgr1:1->5
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
Net-PQG-9/2/4-QGEgr1:1->4
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
Net-PQG-9/2/4-QGEgr1:1->3
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
Net-PQG-9/2/4-QGEgr1:1->2
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
Net-PQG-9/2/4-QGEgr1:1->1
Egress                                   64 KB    8 KB    Max     0
                                         0 KB     1026    Max     0       Max
===============================================================================
*A:Dut-T#


*A:Dut-T# show qos policer port 9/2/4 network egress queue-group "QGEgr1" instance 1 detail
===============================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->8), Slot 9
===============================================================================
Policer Name       : Net-PQG-9/2/4-QGEgr1:1->8
Direction          : Egress            Fwding Plane      : 1
Depth PIR          : 1026 Bytes        Depth CIR         : 0 Bytes
Depth FIR          : 1026 Bytes
MBS                : 64 KB             CBS               : 0 KB
Hi Prio Only       : 8 KB             Pkt Byte Offset   : 0
Admin PIR          : Max               Admin CIR         : 0 Kbps
Oper PIR           : Max               Oper CIR          : 0 Kbps
Oper FIR           : Max
Stat Mode          : minimal
Parent Arbiter Name: (Not Specified)
-------------------------------------------------------------------------------
Arbiter Member Information
-------------------------------------------------------------------------------
Offered Rate       : 0 Kbps
Level              : 0                 Weight            : 0
Parent PIR         : 0 Kbps            Parent FIR        : 0 Kbps
Consumed           : 0 Kbps
-------------------------------------------------------------------------------
===============================================================================
===============================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->7), Slot 9
===============================================================================
Policer Name       : Net-PQG-9/2/4-QGEgr1:1->7
Direction          : Egress            Fwding Plane      : 1
Depth PIR          : 1026 Bytes        Depth CIR         : 0 Bytes
Depth FIR          : 1026 Bytes
MBS                : 64 KB             CBS               : 0 KB
Hi Prio Only       : 8 KB             Pkt Byte Offset   : 0
Admin PIR          : Max               Admin CIR         : 0 Kbps
Oper PIR           : Max               Oper CIR          : 0 Kbps
```

```
Oper FIR        : Max
Stat Mode       : minimal
Parent Arbiter Name: (Not Specified)
-------------------------------------------------------------------------------
Arbiter Member Information
-------------------------------------------------------------------------------
Offered Rate    : 0 Kbps
Level           : 0                  Weight           : 0
Parent PIR      : 0 Kbps             Parent FIR       : 0 Kbps
Consumed        : 0 Kbps

-------------------------------------------------------------------------------
===============================================================================
===============================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->6), Slot 9
===============================================================================
Policer Name    : Net-PQG-9/2/4-QGEgr1:1->6
Direction       : Egress             Fwding Plane     : 1
Depth PIR       : 1026 Bytes         Depth CIR        : 0 Bytes
Depth FIR       : 1026 Bytes
MBS             : 64 KB              CBS              : 0 KB
Hi Prio Only    : 8 KB               Pkt Byte Offset  : 0
Admin PIR       : Max                Admin CIR        : 0 Kbps
Oper PIR        : Max                Oper CIR         : 0 Kbps
Oper FIR        : Max
Stat Mode       : minimal
Parent Arbiter Name: (Not Specified)
-------------------------------------------------------------------------------
Arbiter Member Information
-------------------------------------------------------------------------------
Offered Rate    : 0 Kbps
Level           : 0                  Weight           : 0
Parent PIR      : 0 Kbps             Parent FIR       : 0 Kbps
Consumed        : 0 Kbps

-------------------------------------------------------------------------------
===============================================================================
===============================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->5), Slot 9
===============================================================================
Policer Name    : Net-PQG-9/2/4-QGEgr1:1->5
Direction       : Egress             Fwding Plane     : 1
Depth PIR       : 1026 Bytes         Depth CIR        : 0 Bytes
Depth FIR       : 1026 Bytes
MBS             : 64 KB              CBS              : 0 KB
Hi Prio Only    : 8 KB               Pkt Byte Offset  : 0
Admin PIR       : Max                Admin CIR        : 0 Kbps
Oper PIR        : Max                Oper CIR         : 0 Kbps
Oper FIR        : Max
Stat Mode       : minimal
Parent Arbiter Name: (Not Specified)
-------------------------------------------------------------------------------
Arbiter Member Information
-------------------------------------------------------------------------------
Offered Rate    : 0 Kbps
Level           : 0                  Weight           : 0
Parent PIR      : 0 Kbps             Parent FIR       : 0 Kbps
Consumed        : 0 Kbps

-------------------------------------------------------------------------------
===============================================================================
```

```
================================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->4), Slot 9
================================================================================
Policer Name       : Net-PQG-9/2/4-QGEgr1:1->4
Direction          : Egress            Fwding Plane      : 1
Depth PIR          : 1026 Bytes        Depth CIR         : 0 Bytes
Depth FIR          : 1026 Bytes
MBS                : 64 KB             CBS               : 0 KB
Hi Prio Only       : 8 KB              Pkt Byte Offset   : 0
Admin PIR          : Max               Admin CIR         : 0 Kbps
Oper PIR           : Max               Oper CIR          : 0 Kbps
Oper FIR           : Max
Stat Mode          : minimal
Parent Arbiter Name: (Not Specified)
--------------------------------------------------------------------------------
Arbiter Member Information
--------------------------------------------------------------------------------
Offered Rate       : 0 Kbps
Level              : 0                 Weight            : 0
Parent PIR         : 0 Kbps            Parent FIR        : 0 Kbps
Consumed           : 0 Kbps
--------------------------------------------------------------------------------
================================================================================
================================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->3), Slot 9
================================================================================
Policer Name       : Net-PQG-9/2/4-QGEgr1:1->3
Direction          : Egress            Fwding Plane      : 1
Depth PIR          : 1026 Bytes        Depth CIR         : 0 Bytes
Depth FIR          : 1026 Bytes
MBS                : 64 KB             CBS               : 0 KB
Hi Prio Only       : 8 KB              Pkt Byte Offset   : 0
Admin PIR          : Max               Admin CIR         : 0 Kbps
Oper PIR           : Max               Oper CIR          : 0 Kbps
Oper FIR           : Max
Stat Mode          : minimal
Parent Arbiter Name: (Not Specified)
--------------------------------------------------------------------------------
Arbiter Member Information
--------------------------------------------------------------------------------
Offered Rate       : 0 Kbps
Level              : 0                 Weight            : 0
Parent PIR         : 0 Kbps            Parent FIR        : 0 Kbps
Consumed           : 0 Kbps
--------------------------------------------------------------------------------
================================================================================
================================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->2), Slot 9
================================================================================
Policer Name       : Net-PQG-9/2/4-QGEgr1:1->2
Direction          : Egress            Fwding Plane      : 1
Depth PIR          : 1026 Bytes        Depth CIR         : 0 Bytes
Depth FIR          : 1026 Bytes
MBS                : 64 KB             CBS               : 0 KB
Hi Prio Only       : 8 KB              Pkt Byte Offset   : 0
Admin PIR          : Max               Admin CIR         : 0 Kbps
Oper PIR           : Max               Oper CIR          : 0 Kbps
Oper FIR           : Max
Stat Mode          : minimal
```

```
Parent Arbiter Name: (Not Specified)
-------------------------------------------------------------------------------
Arbiter Member Information
-------------------------------------------------------------------------------
Offered Rate      : 0 Kbps
Level             : 0                   Weight              : 0
Parent PIR        : 0 Kbps             Parent FIR          : 0 Kbps
Consumed          : 0 Kbps
-------------------------------------------------------------------------------
===============================================================================
===============================================================================
Policer Info (Net-PQG-9/2/4-QGEgr1:1->1), Slot 9
===============================================================================
Policer Name       : Net-PQG-9/2/4-QGEgr1:1->1
Direction          : Egress            Fwding Plane        : 1
Depth PIR          : 1026 Bytes        Depth CIR           : 0 Bytes
Depth FIR          : 1026 Bytes
MBS                : 64 KB             CBS                 : 0 KB
Hi Prio Only       : 8 KB              Pkt Byte Offset     : 0
Admin PIR          : Max               Admin CIR           : 0 Kbps
Oper PIR           : Max               Oper CIR            : 0 Kbps
Oper FIR           : Max
Stat Mode          : minimal
Parent Arbiter Name: (Not Specified)
-------------------------------------------------------------------------------
Arbiter Member Information
-------------------------------------------------------------------------------
Offered Rate      : 0 Kbps
Level             : 0                   Weight              : 0
Parent PIR        : 0 Kbps             Parent FIR          : 0 Kbps
Consumed          : 0 Kbps
-------------------------------------------------------------------------------
===============================================================================
-------------------------------------------------------------------------------
Network Interface Association
-------------------------------------------------------------------------------
No Association Found.
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
SDP Association
-------------------------------------------------------------------------------
Policer Info (1->1:101->10), Slot 9
Policer Info (1->2:102->10), Slot 9
Policer Info (1->3:103->10), Slot 9
Policer Info (1->4:104->10), Slot 9
Policer Info (1->5:105->10), Slot 9
Policer Info (1->6:106->10), Slot 9
Policer Info (1->7:107->10), Slot 9
Policer Info (1->8:108->10), Slot 9
Policer Info (1->9:109->10), Slot 9
Policer Info (1->10:110->10), Slot 9
Policer Info (1->11:111->10), Slot 9
Policer Info (1->12:112->10), Slot 9
Policer Info (1->13:113->10), Slot 9
Policer Info (1->14:114->10), Slot 9
Policer Info (1->15:115->10), Slot 9
Policer Info (1->16:116->10), Slot 9
```

```
*A:Dut-T# show port 9/2/4 queue-group egress "QGEgr1" statistics instance 1
-------------------------------------------------------------------------------
Ethernet port 9/2/4 Network Egress queue-group
-------------------------------------------------------------------------------
                       Packets                 Octets

Egress Queue:  1   Group: QGEgr1    Instance-Id:  1
In Profile forwarded  : 0                        0
In Profile dropped    : 0                        0
Out Profile forwarded : 0                        0
Out Profile dropped   : 0                        0

Egress Policer:  1  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133354              22708821204
Dro. All          : 0                     0
For. All          : 22133354              22708821204

Egress Policer:  2  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133354              22708821204
Dro. All          : 0                     0
For. All          : 22133354              22708821204

Egress Policer:  3  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133354              22708821204
Dro. All          : 0                     0
For. All          : 22133354              22708821204

Egress Policer:  4  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133354              22708821204
Dro. All          : 0                     0
For. All          : 22133354              22708821204

Egress Policer:  5  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133355              22708822230
Dro. All          : 0                     0
For. All          : 22133355              22708822230

Egress Policer:  6  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133355              22708822230
Dro. All          : 0                     0
For. All          : 22133355              22708822230

Egress Policer:  7  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133355              22708822230
Dro. All          : 0                     0
For. All          : 22133355              22708822230

Egress Policer:  8  Group: QGEgr1  Instance-Id: 1
Stats mode: minimal
Off. All          : 22133355              22708822230
Dro. All          : 0                     0
For. All          : 22133355              22708822230
```

```
                        --------------------------------------------------------------------------------
                        *A:Dut-T#


                        *A:Dut-T# show port 9/2/4 queue-group egress "QGEgr1" network associations
                        ===============================================================================
                        Ethernet port 9/2/4 Network Egress queue-group
                        ===============================================================================
                        Queue-Group   : QGEgr1            Queue-Id : 1
                        Queue-Group   : QGEgr1            Policer-*: 1
                        Queue-Group   : QGEgr1            Policer-*: 2
                        Queue-Group   : QGEgr1            Policer-*: 3
                        Queue-Group   : QGEgr1            Policer-*: 4
                        Queue-Group   : QGEgr1            Policer-*: 5
                        Queue-Group   : QGEgr1            Policer-*: 6
                        Queue-Group   : QGEgr1            Policer-*: 7
                        Queue-Group   : QGEgr1            Policer-*: 8
                        ..
                        *A:Dut-T#

                        *A:Dut-T# show qos queue-group "QGIng1" ingress association
                        ===============================================================================
                        QoS Queue-Group Ingress
                        ===============================================================================
                        -------------------------------------------------------------------------------
                        QoS Queue Group
                        -------------------------------------------------------------------------------
                        Group-Name    : QGIng1
                        Description   : Description for Ingress queue-group QGIng1


                        ===============================================================================
                        Queue Group Ports
                        ===============================================================================
                        Port            Sched Pol          Acctg Pol Stats    Description
                        -------------------------------------------------------------------------------
                        No Matching Entries

                        ===============================================================================
                        Queue Group Sap FC Maps
                        ===============================================================================
                        Sap Policy    FC Name            Queue (id type)
                        -------------------------------------------------------------------------------
                        No Matching Entries
                        ===============================================================================
                        Queue Group FP Maps
                        ===============================================================================
                        Card Num      Fp Num             Instance           Type
                        -------------------------------------------------------------------------------
                        4             1                  1                  Network
                        4             1                  2                  Network
                        4             1                  3                  Network
                        4             1                  4                  Network
                        4             1                  5                  Network
                        4             1                  6                  Network
                        4             1                  7                  Network
                        4             1                  8                  Network
                        4             1                  9                  Network
                        4             1                  10                 Network
```

```
clear card 4 fp 1 ingress mode network queue-group "QGIng1" instance 1 statistics


*A:Dut-T# monitor card 9 fp 1 ingress queue-group "QGIng1" network instance 1 policer 1
=======================================================================
Monitor Card: 9 Ingress Network Queue-Group: QGIng1 Statistics
=======================================================================
-------------------------------------------------------------------------------
At time t = 0 sec (Base Statistics)
-------------------------------------------------------------------------------
                        Packets                    Octets

Ing. Policer:  1  Grp: QGIng1 (Stats mode: minimal)
Off. All          : 98080861               97685211156
Dro. All          : 12856083               12801694068
For. All          : 85224778               84883517088


-------------------------------------------------------------------------------
At time t = 11 sec (Mode: Delta)
-------------------------------------------------------------------------------
                        Packets                    Octets

Ing. Policer:  1  Grp: QGIng1 (Stats mode: minimal)
Off. All          : 16190                  16125240
Dro. All          : 16010                  15945960
For. All          : 180                    179280

^C
*A:Dut-T#



*A:Dut-T>config>qos>sap-ingress# show card 3 fp 1 ingress queue-group "QGIng3" instance 1
mode access detail
===============================================================================
Card:3  Acc.QGrp: QGIng3  Instance: 1
===============================================================================
Group Name    : QGIng3
Description   : (Not Specified)
Pol Ctl Pol   : None                      Acct Pol     : None
Collect Stats : disabled
-------------------------------------------------------------------------------
Queues
-------------------------------------------------------------------------------
No queues found
-------------------------------------------------------------------------------
Statistics
-------------------------------------------------------------------------------
                        Packets                    Octets

Ing. Policer:  1  Grp: QGIng3 (Stats mode: offered-profile-capped-cir)
Off. InProf          :          0                        0
Off. OutProf         :          0                        0
Off. Uncolor         :          22159073                 1506816964
Dro. InProf          :          0                        0
Dro. OutProf         :          0                        0
For. InProf          :          215642                   14663656
For. OutProf         :          21943431                 1492153308
```

```
Ing. Policer:  2  Grp: QGIng3 (Stats mode: offered-profile-capped-cir)
Off. InProf          :          0                        0
Off. OutProf         :          0                        0
Off. Uncolor         :      274898620              18693106160
Dro. InProf          :          0                        0
Dro. OutProf         :          0                        0
For. InProf          :     1640582                111559576
For. OutProf         :      273258038             18581546584

Ing. Policer:  3  Grp: QGIng3 (Stats mode: offered-profile-capped-cir)
Off. InProf          :          0                        0
Off. OutProf         :          0                        0
Off. Uncolor         :      19318482               1313656776
Dro. InProf          :          0                        0
Dro. OutProf         :          0                        0
For. InProf          :      188072                 12788896
For. OutProf         :      19130410               1300867880

Ing. Policer:  4  Grp: QGIng3 (Stats mode: offered-profile-capped-cir)
Off. InProf          :          0                        0
Off. OutProf         :          0                        0
Off. Uncolor         :      24634863               1675170684
Dro. InProf          :          0                        0
Dro. OutProf         :          0                        0
For. InProf          :      240244                 16336592
For. OutProf         :      24394619               1658834092
===============================================================================
*A:Dut-T>config>qos>sap-ingress#

*A:Dut-A# show card 9 fp 1 ingress mode access queue-group "Ingress_QG_1" instance 2838
statistics

===============================================================================
Card:9  Acc.QGrp: Ingress_QG_1  Instance: 2838
===============================================================================
Group Name    : Ingress_QG_1
Description   : (Not Specified)
Pol Ctl Pol   : None                    Acct Pol     : None
Collect Stats : disabled
-------------------------------------------------------------------------------
Statistics
-------------------------------------------------------------------------------
                    Packets                   Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All             :      53982387               6909745536
Dro. All             :      50861158               6510228224
For. All             :      3121229                399517312
===============================================================================

*A:Dut-A# show card 9 fp 1 ingress mode access queue-group "Ingress_QG_1" instance 2838

===============================================================================
Card:9  Acc.QGrp: Ingress_QG_1  Instance: 2838
===============================================================================
Group Name    : Ingress_QG_1
Description   : (Not Specified)
Pol Ctl Pol   : None                    Acct Pol     : None
```

```
Collect Stats : disabled
================================================================================
*A:Dut-A# show card 9 fp 1 ingress mode access queue-group "Ingress_QG_1" instance 2838
detail

================================================================================
Card:9  Acc.QGrp: Ingress_QG_1  Instance: 2838
================================================================================
Group Name   : Ingress_QG_1
Description  : (Not Specified)
Pol Ctl Pol  : None                    Acct Pol     : None
Collect Stats : disabled
--------------------------------------------------------------------------------
Queues
--------------------------------------------------------------------------------
No queues found
--------------------------------------------------------------------------------
Statistics
--------------------------------------------------------------------------------
                    Packets                Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All        :         65347348              8364460544
Dro. All        :         61569092              7880843776
For. All        :          3778256               483616768
================================================================================
*A:Dut-A# show card 9 fp 1 ingress mode access queue-group "Ingress_QG_1" instance 2838
statistics

================================================================================
Card:9  Acc.QGrp: Ingress_QG_1  Instance: 2838
================================================================================
Group Name   : Ingress_QG_1
Description  : (Not Specified)
Pol Ctl Pol  : None                    Acct Pol     : None
Collect Stats : disabled
--------------------------------------------------------------------------------
Statistics
--------------------------------------------------------------------------------
                    Packets                Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All        :         65347348              8364460544
Dro. All        :         61569092              7880843776
For. All        :          3778256               483616768
================================================================================

*A:Dut-A# monitor card 9 fp 1 ingress access queue-group "Ingress_QG_1" instance 2838
policer 2

===========================================================================
Monitor Card: 9 Ingress Access Queue-Group: Ingress_QG_1 Statistics
===========================================================================
--------------------------------------------------------------------------------
At time t = 0 sec (Base Statistics)
--------------------------------------------------------------------------------
                    Packets                Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
```

```
Off. All              : 133088161              17035284608
Dro. All              : 125393700              16050393600
For. All              : 7694461                984891008


-------------------------------------------------------------------------------
At time t = 11 sec (Mode: Delta)
-------------------------------------------------------------------------------
                      Packets                 Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All              : 9306452                1191225856
Dro. All              : 8768431                1122359168
For. All              : 538021                 68866688


-------------------------------------------------------------------------------
At time t = 22 sec (Mode: Delta)
-------------------------------------------------------------------------------
                      Packets                 Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All              : 9290787                1189220736
Dro. All              : 8754737                1120606336
For. All              : 536050                 68614400


-------------------------------------------------------------------------------
At time t = 33 sec (Mode: Delta)
-------------------------------------------------------------------------------
                      Packets                 Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All              : 9291993                1189375104
Dro. All              : 8753745                1120479360
For. All              : 538248                 68895744


-------------------------------------------------------------------------------
At time t = 44 sec (Mode: Delta)
-------------------------------------------------------------------------------
                      Packets                 Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All              : 9289980                1189117440
Dro. All              : 8752910                1120372480
For. All              : 537070                 68744960


-------------------------------------------------------------------------------
At time t = 55 sec (Mode: Delta)
-------------------------------------------------------------------------------
                      Packets                 Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All              : 9291543                1189317504
Dro. All              : 8754385                1120561280
For. All              : 537158                 68756224


-------------------------------------------------------------------------------
At time t = 66 sec (Mode: Delta)
-------------------------------------------------------------------------------
                      Packets                 Octets
```

```
Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All           : 9290688                1189208064
Dro. All           : 8753578                1120457984
For. All           : 537110                 68750080


-------------------------------------------------------------------------------
At time t = 77 sec (Mode: Delta)
-------------------------------------------------------------------------------
                   Packets              Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All           : 9290745                1189215360
Dro. All           : 8753631                1120464768
For. All           : 537114                 68750592


-------------------------------------------------------------------------------
At time t = 88 sec (Mode: Delta)
-------------------------------------------------------------------------------
                   Packets              Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All           : 9290723                1189212544
Dro. All           : 8753612                1120462336
For. All           : 537111                 68750208


-------------------------------------------------------------------------------
At time t = 99 sec (Mode: Delta)
-------------------------------------------------------------------------------
                   Packets              Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All           : 9290589                1189195392
Dro. All           : 8753485                1120446080
For. All           : 537104                 68749312


-------------------------------------------------------------------------------
At time t = 110 sec (Mode: Delta)
-------------------------------------------------------------------------------
                   Packets              Octets

Ing. Policer:  2  Grp: Ingress_QG_1 (Stats mode: minimal)
Off. All           : 9290735                1189214080
Dro. All           : 8753622                1120463616
For. All           : 537113                 68750464


=======================================================================


*A:Dut-A# clear card 9 fp 1 mode access ingress queue-group "Ingress_QG_1" instance 2838
statistics
```

sap-egress

Syntax   **sap-egress** [*policy-id*] [**association** | **match-criteria** | **hsmda** | **detail**]

Context   show>qos

Description   This command displays SAP egress QoS policy information. Queue group information is displayed in the FC section.

Parameters   *policy-id* — The SAP egress policy ID that uniquely identifies the policy..

association — Displays the entities associated with the specified policy ID.

match-criteria — Displays match criteria when this keyword is specified.

hsmda — Displays HSMDA properties.

detail — Displays detailed information about the specified SAP egress policy.

Sample Output

```
*A:Dut-T>config>port# show qos sap-egress 10 detail
===============================================================================
QoS Sap Egress
===============================================================================
-------------------------------------------------------------------------------
Sap Egress Policy (10)
-------------------------------------------------------------------------------
Policy-id     : 10                          Scope       : Template
Description   : (Not Specified)


-------------------------------------------------------------------------------
Queue CIR Admin PIR Admin CBS     HiPrio PIR Lvl/Wt    Parent        AvgOvrhd
      CIR Rule  PIR Rule  MBS            CIR Lvl/Wt
      Named-Buffer Pool
-------------------------------------------------------------------------------
1     0         max       def     def    1/1           None          0.00
      closest   closest   def            0/1
      (not-assigned)



-------------------------------------------------------------------------------
FC Name    Queue QGroup   Dot1p Exp/Default        DE-Mark DSCP/Prec Marking
-------------------------------------------------------------------------------
be      1     QG_egres* Default               None    default
af      2     QG_egres* Default               None    default
ef      3     QG_egres* Default               None    default
nc      4     QG_egres* Default               None    default


-------------------------------------------------------------------------------
Associations
-------------------------------------------------------------------------------
Service-Id    : 1 (VPLS)                     Customer-Id  : 1
 - SAP : 9/2/1
 - SAP : 9/2/2

-------------------------------------------------------------------------------
```

```
Mirror SAPs
-------------------------------------------------------------------------------
No Mirror SAPs Found.


-------------------------------------------------------------------------------
HSMDA CIR Admin PIR Admin Packet  Slope Policy
Queue CIR Rule  PIR Rule  Offset
-------------------------------------------------------------------------------
1    0         max        add 0   default
     closest   closest
2    0         max        add 0   default
     closest   closest
3    0         max        add 0   default
     closest   closest
4    0         max        add 0   default
     closest   closest
5    0         max        add 0   default
     closest   closest
6    0         max        add 0   default
     closest   closest
7    0         max        add 0   default
     closest   closest
8    0         max        add 0   default
     closest   closest


-------------------------------------------------------------------------------
FC              HSMDA Queue-id              HSMDA Dot1p Profiling
-------------------------------------------------------------------------------
af              def                         disabled
be              def                         disabled
ef              def                         disabled
nc              def                         disabled


-------------------------------------------------------------------------------
DSCP          Cntr Id   Profile   fc
-------------------------------------------------------------------------------
No DSCP-Map Entries Found.


-------------------------------------------------------------------------------
Prec Value    Cntr Id   Profile   fc
-------------------------------------------------------------------------------
No Prec-Map Entries Found.

-------------------------------------------------------------------------------
Match Criteria
-------------------------------------------------------------------------------
No Matching Criteria.


-------------------------------------------------------------------------------
HSMDA Associations
-------------------------------------------------------------------------------
No Associations Found.

===============================================================================
*A:Dut-T>config>port#
```

sap-ingress

Syntax   **sap-ingress** [*policy-id*] [**association** | **match-criteria** | **hsmda** | **detail**]

Context   show>qos

Description   This command displays SAP ingress QoS policy information. Queue group information is displayed in the FC section.

Parameters   *policy-id* — The SAP egress policy ID that uniquely identifies the policy..

association — Displays the entities associated with the specified policy ID.

match-criteria — Displays match criteria when this keyword is specified.

hsmda — Displays HSMDA properties.

detail — Displays detailed information about the specified SAP egress policy.

Sample Output

```
*A:Dut-T>config>port# show qos sap-ingress 10 detail
===============================================================================
QoS Sap Ingress
===============================================================================
-------------------------------------------------------------------------------
Sap Ingress Policy (10)
-------------------------------------------------------------------------------
Policy-id    : 10                        Scope       : Template
Default FC   : be                        Priority    : Low
Criteria-type : None
Description  : (Not Specified)


-------------------------------------------------------------------------------
Queue Mode     CIR Admin PIR Admin CBS    HiPrio  PIR Lvl/Wt     Parent
               CIR Rule  PIR Rule  MBS             CIR Lvl/Wt
               Named-Buffer Pool
-------------------------------------------------------------------------------
1    Prio      0         max       def    def           1/1            None
               closest   closest def                    0/1
               (not-assigned)
11   Prio      0         max       def    def           1/1            None
               closest   closest def                    0/1
               (not-assigned)


-------------------------------------------------------------------------------
FC   UCastQ/QGrp   MCastQ/QGrp    BCastQ/QGrp   UnknownQ/QGrp
-------------------------------------------------------------------------------
be            1/QG_ingress_1 def/          def/          def/
af            2/QG_ingress_1 def/          def/          def/
ef            3/QG_ingress_1 def/          def/          def/
nc            4/QG_ingress_1 def/          def/          def/


-------------------------------------------------------------------------------
FC           DE-1-out-profile Profile      In-Remark     Out-Remark
-------------------------------------------------------------------------------
af              No             None         None          None
```

```
be              No              None            None            None
ef              No              None            None            None
nc              No              None            None            None


-------------------------------------------------------------------------------
Dot1p           FC                              Priority        Cntr Id
-------------------------------------------------------------------------------
0               be                              Default         Default
2               af                              Default         Default
4               ef                              Default         Default
6               nc                              Default         Default


-------------------------------------------------------------------------------
DSCP            FC                              Priority        Cntr Id
-------------------------------------------------------------------------------
No DSCP-Map Entries Found.


-------------------------------------------------------------------------------
Prec Value      FC                              Priority        Cntr Id
-------------------------------------------------------------------------------
No Prec-Map Entries Found.


-------------------------------------------------------------------------------
Match Criteria
-------------------------------------------------------------------------------
No Matching Criteria.


-------------------------------------------------------------------------------
Associations
-------------------------------------------------------------------------------
Service-Id    : 1 (VPLS)                 Customer-Id  : 1
 - SAP : 9/2/1
 - SAP : 9/2/2


-------------------------------------------------------------------------------
HSMDA CIR Admin PIR Admin Packet  Slope Policy
Queue CIR Rule  PIR Rule  Offset
-------------------------------------------------------------------------------
1     0         max       add 0   default
      closest   closest
2     0         max       add 0   default
      closest   closest
3     0         max       add 0   default
      closest   closest
4     0         max       add 0   default
      closest   closest
5     0         max       add 0   default
      closest   closest
6     0         max       add 0   default
      closest   closest
7     0         max       add 0   default
      closest   closest
8     0         max       add 0   default
      closest   closest


-------------------------------------------------------------------------------
FC              HSMDA UCastQ   HSMDA MCastQ   HSMDA BCastQ
-------------------------------------------------------------------------------
```

```
af              def          def          def
be              def          def          def
ef              def          def          def
nc              def          def          def
-------------------------------------------------------------------------------
HSMDA Associations
-------------------------------------------------------------------------------
No Associations Found.
===============================================================================
*A:Dut-T>config>port#
```

pools

Syntax   **pools** *mda-id*[/*port*] [*access-app* [*pool-name* | **service** *service-id* | **queue-group** *queue-group-name*]]
pools *mda-id*[/*port*] [**network-app** [*pool-name* | **queue-group** *queue-group-name*]]
pools *mda-id*[/*port*] [**direction** [*pool-name*|**service** *service-id* | **queue-group** *queue-group-name*]]

Context   show

Description This command displays queue group pool information.

Parameters *mda-id*[/*port*] — Displays the pool information of the specified MDA.

access-app pool-name — Displays the pool information of the specified QoS policy.

> **Values**   access-ingress, access-egress

service *service-id* **—** Displays pool information for the specified service.

> **Values**   1 — 2147483647

queue-group *queue-group-name* **—** Display information for the specified queue group.

direction — Specifies to display information for the ingress or egress direction.

> **Values**   ingress, egress

Sample Output

```
*A:Dut-T>config>port# show pools 9/2/1 access-egress  queue-group QG_egress_1

===============================================================================
Pool Information
===============================================================================
Port              : 9/2/1
Application        : Acc-Egr          Pool Name         : default
Resv CBS          : Sum
-------------------------------------------------------------------------------
Queue-Groups
-------------------------------------------------------------------------------
QG_egress_1
-------------------------------------------------------------------------------
Utilization                  State     Start-Avg   Max-Avg   Max-Prob
```

```
--------------------------------------------------------------------------------
High-Slope                      Down            70%         90%        80%
Low-Slope                       Down            50%         75%        80%

Time Avg Factor    : 7
Pool Total         : 6336 KB
Pool Shared        : 4416 KB          Pool Resv        : 1920 KB

Pool Total In Use  : 0 KB
Pool Shared In Use : 0 KB             Pool Resv In Use  : 0 KB
WA Shared In Use   : 0 KB

Hi-Slope Drop Prob  : 0               Lo-Slope Drop Prob : 0
--------------------------------------------------------------------------------
Name                    FC-Maps      MBS       HP-Only A.PIR    A.CIR
                                     CBS       Depth   O.PIR    O.CIR
--------------------------------------------------------------------------------
QGrp->QG_egress_1(9/2/1)->1
                        n/a          102       9       1000000  0
                                     0         0       Max      0
QGrp->QG_egress_1(9/2/1)->2
                        n/a          102       9       1000000  0
                                     0         0       Max      0
QGrp->QG_egress_1(9/2/1)->3
                        n/a          102       9       1000000  0
                                     0         0       Max      0
QGrp->QG_egress_1(9/2/1)->4
                        n/a          102       9       1000000  0
                                     0         0       Max      0
================================================================================
*A:Dut-T>config>port#


*A:Dut-T>config>port# show pools 9/2/1 access-ingress queue-group QG_ingress_1
================================================================================
Pool Information
================================================================================
Port               : 9/2/1
Application         : Acc-Ing         Pool Name         : default
Resv CBS            : Sum
--------------------------------------------------------------------------------
Queue-Groups
--------------------------------------------------------------------------------
QG_ingress_1
--------------------------------------------------------------------------------
Utilization                     State      Start-Avg   Max-Avg   Max-Prob
--------------------------------------------------------------------------------
High-Slope                      Down            70%         90%        80%
Low-Slope                       Down            50%         75%        80%

Time Avg Factor    : 7
Pool Total         : 168960 KB
Pool Shared        : 116736 KB        Pool Resv        : 52224 KB

Pool Total In Use  : 0 KB
Pool Shared In Use : 0 KB             Pool Resv In Use  : 0 KB
WA Shared In Use   : 0 KB

Hi-Slope Drop Prob  : 0               Lo-Slope Drop Prob : 0
```

```
-------------------------------------------------------------------------------
Name                       FC-Maps     MBS       HP-Only A.PIR   A.CIR
                                       CBS       Depth   O.PIR   O.CIR
-------------------------------------------------------------------------------
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
                           n/a         102       9       1000000 0
                                       0         0       Max     0
QGrp->QG_ingress_1(9/2/1)->1
```

```
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->1
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                            n/a             102      9        1000000  0
                                            0        0        Max      0
```

```
QGrp->QG_ingress_1(9/2/1)->2
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->2
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
                                          0          0        Max      0
QGrp->QG_ingress_1(9/2/1)->3
                           n/a            102        9        1000000  0
```

```
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->3
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->3
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
                              n/a          102        9       1000000  0
                                            0          0       Max      0
QGrp->QG_ingress_1(9/2/1)->4
```

```
                                  n/a             102       9      1000000  0
                                  0               0         Max        0
QGrp->QG_ingress_1(9/2/1)->4
                                  n/a             102       9      1000000  0
                                  0               0         Max        0
QGrp->QG_ingress_1(9/2/1)->4
                                  n/a             102       9      1000000  0
                                  0               0         Max        0
===============================================================================
*A:Dut-T>config>port#
```

port

Syntax   **port** *port-id* **queue-group** [**ingress** | **egress**] [*queue-group-name*][{**statistics** | **associations**}]

Context   show>port

Description   This command displays physical port information for the port's queue group.

Parameters   *port-id* — Specifies the port ID to display information abou the port's queue group.

queue-group ingress — Specifies whether the queue group name is an ingress policy.

queue-group egress — Specifies whether the queue group name is an egress policy.

queue-group-name — Specifies the name of an existing queue group template up to 32 characters in length.

statistics — Displays statistical information for the queue group.

associations — Displays the entities associated with the specified queue group name.

Sample Output

```
*A:Dut-T>config>port# show port 9/2/1 queue-group ingress
===============================================================================
Ethernet port 9/2/1 Access Ingress queue-group
===============================================================================
Group Name    : QG_ingress_1
Description   : (Not Specified)
Sched Policy  : None               Acct Pol : None
Collect Stats : disabled

Queues
-------------------------------------------------------------------------------
Ing. QGroup   : QG_ingress_1       Queue-Id : 1 (Unicast) (Priority)
Description   : Ingress queue-group
Admin PIR     : max*               Admin CIR: 0*
PIR Rule      : closest*           CIR Rule : closest*
CBS           : def*               MBS      : 100*
Hi Prio       : def*

Ing. QGroup   : QG_ingress_1       Queue-Id : 2 (Unicast) (Priority)
Description   : Ingress queue-group
Admin PIR     : 800000             Admin CIR: 20000
PIR Rule      : closest*           CIR Rule : closest*
CBS           : def*               MBS      : 100*
Hi Prio       : def*

Ing. QGroup   : QG_ingress_1       Queue-Id : 3 (Unicast) (Priority)
Description   : Ingress queue-group
Admin PIR     : max*               Admin CIR: 0*
PIR Rule      : closest*           CIR Rule : closest*
CBS           : def*               MBS      : 100*
Hi Prio       : def*

Ing. QGroup   : QG_ingress_1       Queue-Id : 4 (Unicast) (Priority)
```

```
Description   : Ingress queue-group
Admin PIR     : max*                Admin CIR: 0*
PIR Rule      : closest*            CIR Rule : closest*
CBS           : def*                MBS      : 100*
Hi Prio       : def*


* means the value is inherited
===============================================================================
*A:Dut-T>config>port#


*A:Dut-T>config>port# show port 9/2/2 queue-group egress
===============================================================================
Ethernet port 9/2/2 Access Egress queue-group
===============================================================================
Group Name    : QG_egress_1
Description   : (Not Specified)
Sched Policy  : None                Acct Pol : None
Collect Stats : disabled


Queues
-------------------------------------------------------------------------------
Egr. QGroup   : QG_egress_1         Queue-Id : 1
Description   : Egress queue group
Admin PIR     : max*                Admin CIR: 0*
PIR Rule      : closest*            CIR Rule : closest*
CBS           : def*                MBS      : 100*
Hi Prio       : def*


Egr. QGroup   : QG_egress_1         Queue-Id : 2
Description   : Egress queue group
Admin PIR     : max*                Admin CIR: 0*
PIR Rule      : closest*            CIR Rule : closest*
CBS           : def*                MBS      : 100*
Hi Prio       : def*


Egr. QGroup   : QG_egress_1         Queue-Id : 3
Description   : Egress queue group
Admin PIR     : 1500000             Admin CIR: 2000
PIR Rule      : closest*            CIR Rule : closest*
CBS           : def*                MBS      : 100*
Hi Prio       : def*


Egr. QGroup   : QG_egress_1         Queue-Id : 4
Description   : Egress queue group
Admin PIR     : max*                Admin CIR: 0*
PIR Rule      : closest*            CIR Rule : closest*
CBS           : def*                MBS      : 100*
Hi Prio       : def*


* means the value is inherited
===============================================================================
*A:Dut-T>config>port#


*A:Dut-T>config>port# show port 9/2/2 egress queue-group QG_egress_1 statistics
-------------------------------------------------------------------------------
Ethernet port 9/2/2 Access Egress queue-group
-------------------------------------------------------------------------------
                        Packets                 Octets
```

```
Egress Queue: 1 Group: QG_egress_1
For. InProf          : 0                      0
For. OutProf         : 228091788              14959815064
Dro. InProf          : 0                      0
Dro. OutProf         : 0                      0


Egress Queue: 2 Group: QG_egress_1
For. InProf          : 0                      0
For. OutProf         : 40661626               2764990568
Dro. InProf          : 0                      0
Dro. OutProf         : 0                      0


Egress Queue: 3 Group: QG_egress_1
For. InProf          : 0                      0
For. OutProf         : 40661628               2764990704
Dro. InProf          : 0                      0
Dro. OutProf         : 0                      0


Egress Queue: 4 Group: QG_egress_1
For. InProf          : 0                      0
For. OutProf         : 40661629               2764990772
Dro. InProf          : 0                      0
Dro. OutProf         : 0                      0
-------------------------------------------------------------------------------
*A:Dut-T>config>port#
```

Monitor Commands

card

Syntax   **card** *slot-number* **fp** *fp-number* **ingress** {**access** | **network**} **queue-group** *queue-group-name*
instance *instance-id* [**ingress**] [**access** | **networks**] [**interval** *seconds*] [**repeat** *repeat***]** [**absolute**
| **rate**] [**arbiter** *root* | *name*]

Context   monitorqos>qos>arbiter-stats

Description   This command monitors card parameters.

port

Syntax   **port** *port-id* **egress** *network* **queue-group** *queue-group-name* **instance** *instance-id* [**interval**
seconds] [**repeat** *repeat*] [**absolute** | **rate**] [**arbiter** *root* | *name*]

Context   monitor>qos>arbiter-stats

Description   This command enables port traffic monitoring.

port

Syntax   **port** *port-id* **queue-group** *queue-group-name* [**ingress** | **egress**] [**interval** *seconds*] [**repeat**
repeat] [**absolute | rate**] [**access** | **network**] **[instance** *instance-id*]

Context   monitor>qos>scheduler-stats

Description   This command enables port traffic monitoring.