



H Commands

This chapter describes the Cisco NX-OS quality of service (QoS) commands that begin with H.

hardware pq-drain

To configure the proxy-queue drain rate settings, use the **hardware pq-drain** command in global configuration mode. To disable proxy-queue drain settings, use the **no** form of this command.

hardware pq-drain 10g *10g-drain-rate* **40g** *40g-drain-rate*

no hardware pq-drain 10g *10g-drain-rate* **40g** *40g-drain-rate*

Syntax Description	10g	40g
	<i>10g-drain-rate</i>	<i>40g-drain-rate</i>
	Proxy Queue drain rate for the 10 G interface. The range is from 1 Mbps to 20000 Mbps.	Proxy Queue drain rate for the 40 G interface. The range is from 1 Mbps to 80000 Mbps.

Command Default Disabled

Command Modes Global configuration mode

Command History	Release	Modification
	7.0(0)N1(1)	This command was introduced.

Usage Guidelines



Note

This command is applicable to only Cisco Nexus 6000 switches.

When the proxy queue reaches a threshold that indicates congestion, Explicit Congestion Notification (ECN) marking is performed so that the receiver of the packet echoes the congestion indication to the sender. The proxy-queue drain rate is configured to ensure that during congestion at egress ports only a certain amount of packets are drained.

Examples

This example shows how to configure proxy-queue settings to drain 9900 Mbps of traffic from 10 Gigabit interfaces and 39900 Mbps of traffic from 40 Gigabit interfaces:

```
switch(config)# hardware pq-drain 10g 9900 40g 39900
```

Related Commands	Command	Description
	hardware random-detect	Configures ECN for a QoS group.

hardware profile latency monitor base

To specify the histogram base-value time to construct switch latency monitoring histograms, use the **hardware profile latency monitor base** command in global configuration mode. To remove switch latency monitoring base values, use the **no** form of this command.

hardware profile latency monitor base *base-value*

no hardware profile latency monitor base

Syntax Description

<i>base-value</i>	Histogram base value used to construct switch latency monitoring histograms. Valid values are multiples of 8 in the range 8 to 2147483640 nanoseconds.
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Command Default

Disabled

Command Modes

Global configuration mode

Command History

Release	Modification
7.0(0)N1(1)	This command was introduced.

Usage Guidelines



Note

This command is applicable to Cisco Nexus 6000 switches only.

If you enter a base value that is not a multiple of 8, the system automatically modifies the base value to the nearest (lower) number that is a multiple of 8.



Note

All previous histogram statistics are lost when you configure, update or delete the base value.

Examples

This example shows how to configure a histogram base value of 800 nanoseconds:

```
switch(config)# hardware profile latency monitor base 800
```

Related Commands

Command	Description
clear hardware profile latency monitor	Clears switch latency monitoring statistics.
hardware profile latency monitor	Specifies the histogram base value to construct switch latency monitoring histograms.

Command	Description
packet latency interface	Enables switch latency histogram monitoring.
show hardware profile latency monitor	Displays switch latency statistics for egress and ingress port pairs.

hardware profile tcam feature interface-qos limit

To configure the QoS TCAM limit, use the **hardware profile tcam feature interface-qos limit** command.

hardware profile tcam feature interface-qos limit *tcam-size*

Syntax Description	<i>tcam-size</i>	Interface QoS TCAM limit. The TCAM size can be from 7- 446 entries.
Command Default	None	
Command Modes	Global configuration mode	
Command History	Release	Modification
	6.0(2)N1(1)	This command was introduced.
Usage Guidelines	No interface policy entry should be present after the interface_qos limit in the QoS region of any TCAM.	
Examples	<p>This example shows how to set the interface QoS TCAM limit to 20 entries:</p> <pre>switch(config)# configure terminal switch(config)# hardware profile tcam feature interface-qos limit 20 switch(config)# show hardware profile tcam feature qos Feature Limit ----- Interface 20 vlan-qos + global-qos 428 switch(config)# copy running-config startup-config</pre>	
Related Commands	Command	Description
	show hardware profile tcam feature qos	Displays the limits of the QoS TCAMs.

hardware qos-policy-offload

To enable QoS policy offloading on a Fabric Extender (FEX), use the **hardware qos-policy-offload** command in fabric extender configuration mode. To disable QoS policy offloading, use the **no** form of this command.

hardware *card-type* **qos-policy-offload**

no hardware *card-type* **qos-policy-offload**

Syntax Description

card-type

Fabric Extender card type. The following Fabric Extender card types are supported:

- **N2224TP**—Fabric Extender 24x1G 2x10G SFP+ Module
- **N2232P**—Fabric Extender 32x10G SFP+ 8x10G SFP+ Module
- **N2232TM**—Fabric Extender 32x10GBase-T 8x10G SFP+ Module
- **N2248T**—Fabric Extender 48x1G 4x10G SFP+ Module
- **N2248TP-E**—Fabric Extender 48x1G 4x10G SFP+ Module
- **N2248PQ**—Fabric Extender 48x10G SFP+ 16x10G SFP+ Module
- **N2232TM-E**—Fabric Extender 32x10GBase-T 8x10G SFP+ Module
- **NB22IBM**—Fabric Extender 14x10G SFP+ 8x10G SFP+ Module

Command Default

Disabled

Command Modes

Fabric extender configuration mode (config-fex)#

Command History

Release	Modification
7.0(3)N1(1)	This command was introduced.

Usage Guidelines

If the existing system-level QoS policy is accepted by the FEX, the QoS policy is enforced by the FEX.

If the existing system-level QoS policy is not accepted by the FEX, an error message is displayed and the fabric ports associated with the FEX are error-disabled, which prevents the FEX from being online.

When you disable the feature, the existing system-level QoS policy is removed from the FEX and the enforcement of the existing QoS policy is changed from ACL-based to Class-of-Service (CoS) based. The TCAM entries are removed and packet classification on the FEX is done using the cos2q map in the FEX hardware.

The maximum number of access control entries (ACEs) in a policy applied on the FEX is 30 when offloaded. In Cisco NX-OS Release 7.3(x), the FEX offload capability using interface QoS policies is up to 100 ACEs and up to only 30 ACEs using system QoS policies.

Examples

This example shows how to enable QoS policy offloading on a Cisco Nexus 2248T Fabric Extender:

```
switch(config)# fex 110  
switch(config-fex)# hardware N2248T qos-policy-offload  
switch(config-fex)#
```

This example shows how to disable QoS policy offloading on a Cisco Nexus 2248T Fabric Extender:

```
switch(config)# fex 110  
switch(config-fex)# no hardware N2248T qos-policy-offload  
switch(config-fex)#
```

Related Commands

Command	Description
fex	Creates a Fabric Extender and enters fabric extender configuration mode.
show fex	Displays all configured Fabric Extender chassis connected to the switch.
show running-config	Displays the contents of the currently running configuration file, including information on FEX-based ACL classification settings.

hardware random-detect

To configure Explicit Congestion Notification (ECN) for a Quality of Service (QoS) group, use the **hardware random-detect** command in global configuration mode. To disable ECN, use the **no** form of this command.

hardware random-detect min-thresh 10g 10g-min-threshold 40g 40g-min-threshold max-thresh 10g 10g-max-threshold 40g 40g-max-threshold ecn qos-group group-number

no hardware random-detect 10g 10g-min-threshold 40g 40g-min-threshold max-thresh 10g 10g-max-threshold 40g 40g-max-threshold ecn qos-group group-number

Syntax Description		
min-thresh		Minimum threshold.
10g 10g-min-threshold		Minimum threshold for 10 Gigabit interfaces. The range is from 1 to 67108863 bytes.
40g 40g-min-threshold		Minimum threshold for 40 Gigabit interfaces. The range is from 1 to 67108863 bytes.
max-thresh		Maximum threshold.
10g 10g-max-threshold		Maximum threshold for 10 Gigabit interfaces. The range is from 1 to 67108863 bytes.
40g 40g-max-threshold		Maximum threshold for 40 Gigabit interfaces. The range is from 1 to 67108863 bytes.
ecn		Enables ECN for the specified QoS group.
qos-group group-number		Specifies the QoS group that is being configured.

Command Default Disabled

Command Modes Global configuration mode

Command History	Release	Modification
	7.0(0)N1(1)	This command was introduced.

Usage Guidelines



Note

This command is applicable to only Cisco Nexus 6000 switches.

To implement Weighted Random Early Detection (WRED) Explicit Congestion Notification (ECN) on proxy queues you use the **hardware random-detect** command to configure minimum and maximum threshold values per QoS group. Then you use the **hardware pq-drain** command to configure the proxy-queue drain rate.

Examples

This example shows how to enable ECN threshold values for the class-default QoS group:

```
switch(config)# hardware random-detect min-thresh 10g 64000 40g 4000 max-thresh 10g 128000  
40g 246000 ecn qos-group 0
```

Related Commands

Command	Description
hardware pq-drain	Configures proxy queue drain rate.

hardware unicast voq-limit

To enable the virtual output queuing (VOQ) limit for unicast traffic on a switch, use the **hardware unicast voq-limit** command. To disable the VOQ limit, use the **no** form of this command.

hardware unicast voq-limit

no hardware unicast voq-limit

Syntax Description This command has no arguments or keywords.

Command Default Disabled

Command Modes Global configuration mode

Command History	Release	Modification
	6.0(2)N1(1)	This command was introduced.

Usage Guidelines To alleviate congestion and blocking, you can use virtual output queuing (VOQ) to prevent one blocked receiver from affecting traffic that is being sent to other noncongested receivers (head-of-line blocking).

Examples This example shows how to enable the VOQ limits for unicast packets on a switch:

```
switch(config)# hardware unicast voq-limit
switch(config)#
```

Related Commands	Command	Description
	hardware multicast disable-slow-port-pruning	Disables slow port pruning on the switch.
	show running-config	Displays the running configuration on a switch.

hardware unicast voq-limit-sup

To limit the number of control packets that can be buffered on the supervisor and destined toward an egress port and a class, use the **hardware unicast voq-limit-sup** command in the global configuration mode. Use the **no** form of this command to disable it.

hardware unicast voq-limit-sup

no hardware unicast voq-limit-sup

Syntax Description This command has no arguments or keywords.

Command Default Disabled

Command Modes Global configuration

Command History	Release	Modification
	7.1(4)N1(1)	This command was introduced.

Usage Guidelines In a virtual port channel (vPC) topology, enable the command on both the vPC peers.



Note We recommend that you enable this command under the supervision of Cisco Systems Technical Assistance Center.

Examples This example shows how to limit the number of control packets that can be buffered on the supervisor:

```
switch(config)# hardware unicast voq-limit-sup
```

Related Commands	Command	Description
	hardware unicast voq-limit	Enables the VOQ limit for unicast traffic on a switch.
	show running-config	Displays the running configuration on a switch.