Configuring Network QoS

About Network QoS

The network QoS policy defines the characteristics of QoS properties network wide. With a network QoS policy, you can configure the following:

- Pause behavior—You can decide whether a QoS group requires the lossless behavior. The lossless behavior is provided by using a priority flow control (PFC) mechanism that prevents packet loss during congestion. You can configure drop (frames with this value that can be dropped) and no drop (frames with this value that cannot be dropped). For the drop and no drop configuration, you also need to enable PFC per port. For more information about PFC, see the Configuring Priority Flow Control section.

Licensing Requirements for Network QoS

The following table shows the licensing requirements for this feature:

Product	License Requirement
Cisco NX-OS	The QoS feature does not a require license. Any feature not included in a license package is bundled with the NX-OS image and is provided at no extra charge to you. For a complete explanation of the Cisco NX-OS licensing scheme, see the *Cisco NX-OS Licensing Guide*.

Prerequisites for Network QoS

The network QoS policy has the following prerequisites:

- You must be familiar with using modular QoS CLI.
- You are logged on to the device.

Guidelines and Limitations

The network QoS policy has the following configuration guidelines and limitations:

- Changing the network QoS policy is a disruptive operation, and it can cause traffic drops on any or all ports.

Configuring Network QoS Policies

You can configure a network QoS policy by following one of these methods:

- Predefined policies—You can apply a predefined network QoS policy that fits your requirement. By default, default-nq-policy is configured.
- User-defined policy—You can create a network QoS policy that conforms to one of the system-defined policies.

Copying a Predefined Network QoS Policy

SUMMARY STEPS

1. **qos copy policy-map type network-qos default-nq-policy** {**prefix** *prefix* | **suffix** *suffix*}
2. **show policy-map type network-qos my_nq**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**qos copy policy-map type network-qos default-nq-policy** {**prefix** *prefix* | **suffix** *suffix*} **Example:** `switch# qos copy policy-map type network-qos default-nq-policy prefix my_nq`	Copies a predefined network QoS policy and adds a suffix or prefix to its name. A prefix or suffix name can contain alphabetic, hyphen, or underscore characters, is case sensitive, and can be up to 40 characters.

	Command or Action	Purpose
Step 2	**show policy-map type network-qos my_nq** **Example:** `switch# show policy-map type network-qos my_nq`	(Optional) Displays the type network-qos policy map.

Configuring a User-Defined Network QoS Policy

SUMMARY STEPS

1. **configure terminal**
2. **class-map type network-qos match-any** *class-name*
3. **match qos-group** *group*
4. **exit**
5. **policy-map type network-qos** *policy-map-name*
6. **class type network-qos** {*class-name* | **class-default**}
7. **pause** *group*

DETAILED STEPS

	Command or Action	Purpose

Step 1	**configure terminal**
	
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**class-map type network-qos match-any** *class-name*
	
	Example:
	`switch(config)# class-map type network-qos match-any c-nq2`
	`switch(config-cmap-nqos)#`
		Configures the class map of the type network-qos and enters class-map mode. Class network-qos names are listed in previous System-Defined Type network-qos Class Maps table.

Step 3	**match qos-group** *group* **Example:** `switch(config-cmap-nqos)# match qos-group 2`	Specifies the QoS group to match. The range is from 0 to 3.

Step 4	**exit**
	
	Example:
	`switch (config-cmap-nqos)# exit`
	`switch (config)#`
		Exits class-map mode and enters global configuration mode.

	Command or Action	Purpose
Step 5	**policy-map type network-qos** *policy-map-name* **Example:** `switch(config)# policy-map type network-qos map2`	Creates a policy map. The policy-map name can contain alphabetic, hyphen, or underscore characters, is case sensitive, and can be up to 40 characters.
Step 6	**class type network-qos** {*class-name* | **class-default**} **Example:** `switch(config-pmap-nqos)# class type network-qos c1-nq2`	Refers to the class map of type network-qos as configured in Step 2.
Step 7	**pause** *group* **Example:** `switch(config-pmap-nqos-c)# pause pfc-cos 2`	Specifies no-drop for the QoS group. **Note** The no-drop queuing configuration is not supported in the network-qos policy for the Cisco Nexus 9300 platform.

Applying a Network QoS Policy on a System

You apply a network QoS policy globally on a system. Applying a network QoS policy also automatically applies the corresponding queuing policies.

SUMMARY STEPS

1. **configure terminal**
2. **system qos**
3. **service-policy type network-qos** {*policy-map-name* | **default-nq-policy**}

DETAILED STEPS

	Command or Action	Purpose

Step 1	**configure terminal**
	
	Example:
	`switch# configure terminal`
	`switch(config)#`
		Enters global configuration mode.

Step 2	**system qos**
	
	Example:
	`switch (config)# system qos`
	`switch (config-sys-qos)#`
		Enters system qos mode.

Step 3	**service-policy type network-qos** {*policy-map-name* | **default-nq-policy**}	Specifies the policy map to use as the service policy for the system.

	Command or Action	Purpose
	Example: `switch (config-sys-qos)# service-policy type network-qos mapl`	**Note** To restore the system to the default network QoS service policy, use the **no** form of this command. **Note** All Layer 4 class-maps under the network-qos policy-map must be configured before applying it under the system qos level.

Verifying the Network QoS

To display the policing configuration information, perform one of the following tasks:

Command	Purpose
show class-map type network-qos	Displays the type network-qos class maps.
show policy-map type network-qos	Displays the type network-qos policy maps.
show policy-map system type network-qos	Displays the active type network-qos class maps.