

Hierarchical Modular QoS Commands

Note All commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router that is introduced from Cisco IOS XR Release 6.3.2. References to earlier releases in Command History tables apply to only the Cisco NCS 5500 Series Router.

Note

- Starting with Cisco IOS XR Release 6.6.25, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 560 Series Routers.
- Starting with Cisco IOS XR Release 6.3.2, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router.
- References to releases before Cisco IOS XR Release 6.3.2 apply to only the Cisco NCS 5500 Series Router.
- Cisco IOS XR Software Release 7.0.1 specific updates are not applicable for the following variants of Cisco NCS 540 Series Routers:
  - N540-28Z4C-SYS-A
  - N540-28Z4C-SYS-D
  - N540X-16Z4G8Q2C-A
  - N540X-16Z4G8Q2C-D
  - N540X-16Z8Q2C-D
  - N540-12Z20G-SYS-A
  - N540-12Z20G-SYS-D
  - N540X-12Z16G-SYS-A
  - N540X-12Z16G-SYS-D



Note If you try to configure a **hw-module** command in a hardware variant or line card that does not support it, an appropriate error message is logged.

This chapter describes the commands used to manage hierarchical modular QoS.

- hw-module profile qos conform-aware-policer , on page 3
- hw-module profile qos hqos-enable, on page 4
- hw-module profile qos hqos-enable-without-l2acl, on page 5
- hw-module profile qos max-trunks (hw-module profile bundle-scale), on page 7
- hw-module profile qos physical-hqos-enable, on page 8

hw-module profile qos conform-aware-policer

To enable the conform-aware hierarchical policy feature, use the **hw-module profile qos conform-aware-policer** command in the XR Config mode. To disable this feature, use the no form of this command.

This configuration allows conform traffic from the child level policy to prioritize exceed or violate traffic at the parent level policy. There was no way for the conform traffic belonging to a child policy to get priority over the parent level policy in earlier releases. When this profile is enabled, the entire system is in color-aware mode compared to the default color-blind mode. There is no effect on other features or resources.

hw-module profile qos conform-aware-policer

Syntax Description

conform-aware-policer	Enables conform traffic from the child level policy to prioritize exceed or violate traffic at the parent level policy.

Command Default

The conform-aware hierarchical policy feature is disabled by default, unless enabled by this command.

Command History

Release	Modification
Release 7.2.1	This command was introduced.

Usage Guidelines

- You must reload the affected line card to enable the conform-aware hierarchical policy feature.
- On your router with dual-rate three-color (2R3C) policer:
  - committed information rate (CIR) value is marked as GREEN, with discard-class=0 and drop precedence=0
  - excess information rate (EIR) is marked as YELLOW, with discard-class=1 and drop precedence=1

  This is the default hardware behavior that allows the color-aware parent policer to differentiate between CIR and EIR. It's not possible to modify this behavior.
- For details on this feature, see Conform Aware Hierarchical Policy Overview.

Task ID

Task ID	Operation
qos	read, write

Example

The following example shows how to enable the conform-aware hierarchical policy feature.

```
RP/0/RP0/CPU0:router#config
RP/0/RP0/CPU0:router(config)#hw-module profile qos conform-aware-policer
RP/0/RP0/CPU0:router(config)#commit
RP/0/RP0/CPU0:router#reload
```

hw-module profile qos hqos-enable

To enable H-QoS profile with ingress Layer 2 Access Control List (L2 ACL) functionality, but without egress bridging service EVPN ethernet LAN (ELAN) QoS functionality, use the hw-module profile qos hqos-enable command in XR Config mode. To remove the H-QoS profile, use the no form of the command.

hw-module profile qos hqos-enable

no hw-module profile qos hqos-enable

Syntax Description

This command has no keywords or arguments.

Command Default

H-QoS is disabled by default.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.3.1	This command was introduced.

Usage Guidelines

- H-QoS on EVPN ELAN and L2 ACL cannot be enabled simultaneously on an interface. You can either use the hw-module profile qos hqos-enable-without-l2acl command to enable H-QoS on EVPN ELAN or the hw-module profile qos hqos-enable command to enable H-QoS on L2 ACL.
- After enabling H-QoS profile, the router must be reloaded.

Task ID

Task ID	Operation
qos	read, write

The following example shows how to enable the H-QoS profile on the router.

```
RP/0/RP0/CPU0:router#config
RP/0/RP0/CPU0:router(config)# hw-module profile qos hqos-enable
RP/0/RP0/CPU0:router(config)# commit
RP/0/RP0/CPU0:router# reload
```

hw-module profile qos hqos-enable-without-l2acl

To enable H-QoS profile with egress bridging service EVPN ethernet LAN (ELAN) QoS functionality, but without ingress Layer 2 Access Control List (L2 ACL) functionality, use the hw-module profile qos hqos-enable-without-l2acl command in XR Config mode. To remove the H-QoS profile, use the no form of the command.

Note This command is applicable for Release 6.5.2.

hw-module profile qos hqos-enable-without-l2acl

no hw-module profile qos hqos-enable-without-l2acl

Syntax Description

This command has no keywords or arguments.

Command Default

H-QoS is disabled by default.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.5.2	This command was introduced.

Usage Guidelines

- H-QoS on EVPN ELAN and L2 ACL cannot be enabled simultaneously on an interface. You can either use the hw-module profile qos hqos-enable-without-l2acl command to enable H-QoS on EVPN ELAN or the hw-module profile qos hqos-enable command to enable H-QoS on L2 ACL.
- Even though L2 ACL functionality is not supported if you create an H-QoS profile using the hw-module profile qos hqos-enable-without-l2acl command, L2 ACL user profiles are not explicitly blocked in this profile.
- Bridged Virtual Interface (BVI) and Integrated Routing and Bridging (IRB) are not supported in this profile.
- Ensure that you remove the hw-module profile qos hqos-enable command before using this command.
- After enabling H-QoS profile, the router must be reloaded.

Task ID

Task ID	Operation
qos	read, write

The following example shows how to enable the H-QoS profile on the router.

```
RP/0/RP0/CPU0:router#config
RP/0/RP0/CPU0:router(config)# hw-module profile qos hqos-enable-without-l2acl
RP/0/RP0/CPU0:router(config)# commit
RP/0/RP0/CPU0:router# reload
```

hw-module profile qos max-trunks (hw-module profile bundle-scale)

To control the scale of bundle sub-interfaces and the number of members per bundle, use the **hw-module profile qos max-trunks** or **hw-module profile bundle-scale** (only from Release 6.5.1) command in XR Config mode.

hw-module profile qos max-trunks {256|512|1024}

hw-module profile bundle-scale {256|512|1024}

Syntax Description

256	Permits up to 128 bundle sub-interfaces, each containing up to 64 member-links
512	Permits up to 384 bundle sub-interfaces, each containing up to 32 member-links.
1024	Permits up to 896 bundle sub-interfaces, each containing up to 16 member-links.

Command Default

hw-module profile qos max-trunks 256, that is, permits up to 128 bundle sub-interfaces, each containing up to 64 member-links.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.3.1	This command was introduced.
Release 6.5.1	The **hw-module profile qos max-trunks <256/512/1024>** command is replaced with the **hw-module profile bundle-scale <256/512/1024>** command

Usage Guidelines

The router must be reloaded for the hw-module command to be functional.

Task ID

Task ID	Operation
qos	read, write

The following example shows how to change the scale of bundle interfaces to 256.

```
RP/0/RP0/CPU0:router#config
RP/0/RP0/CPU0:router(config)# hw-module profile qos hqos-enable
RP/0/RP0/CPU0:router(config)#hw-module profile qos max-trunks 256
RP/0/RP0/CPU0:router(config)# commit
RP/0/RP0/CPU0:router# reload
```

hw-module profile qos physical-hqos-enable

To enable hierarchical egress policies on the physical or on the virtual main interfaces, use the hw-module profile qos physical-hqos-enable command in XR Config mode. To remove the H-QoS profile, use the no form of the command.

hw-module profile qos physical-hqos-enable

no hw-module profile qos physical-hqos-enable

Syntax Description

This command has no keywords or arguments.

Command Default

Physical-H-QoS is disabled by default.

Command Modes

XR Config mode

Command History

Release	Modification
Release 7.2.2	This command was introduced.

Usage Guidelines

- H-QoS enable and physical H-QoS enable profiles are mutually exclusive, so both cannot be applied together. You can either use the hw-module profile qos hqos-enable command to enable H-QoS on virtual interface or the hw-module profile qos physical-hqos-enable command to enable H-QoS on physical interface. If you apply both, then the configuration is rejected.
- No egress policy-map is supported on any type of sub-interface.
- The parent traffic policy, only supports the traffic class of type class-default.
- The parent traffic policy, only supports the class-action shape and no other queuing action can be configured in it.
- A maximum of only 4-priority levels are supported in this mode, unlike the default mode where up to 7-priority levels are supported.
- Bandwidth and bandwidth remaining configurations are not supported simultaneously within the same policy-map. If a class has bandwidth (CIR), other classes must also have only bandwidth configuration. If a class-map has bandwidth remaining percent or ratio (EIR), other classes must also have only the bandwidth remaining configuration. Shaping is applied on any class.
- The granularity of bandwidth or bandwidth remaining ration (BRR) is 1:64 as compared to 1:4096 for non-hqos mode.

Task ID

Task ID	Operation
qos	read, write

The following example shows how to enable the physical H-QoS profile on the router.

```
RP/0/RP0/CPU0:router#config
RP/0/RP0/CPU0:router(config)# hw-module profile qos physical-hqos-enable
RP/0/RP0/CPU0:router(config)# commit
RP/0/RP0/CPU0:router# reload
```