Network Queue QoS Policies

In This Section

This section provides information to configure network queue QoS policies using the command line interface.

Topics in this section include:

Overview

Network queue policies define the ingress network queuing at the XMAMDA network node level. Network queue policies are also used at the Ethernet port and SONET/SDH path level to define network egress queuing.

There is one default network queue policy. Each policy can have up to 16 queues (unicast and multicast)**.** The default policies can be copied but they cannot be deleted or modified. The default policy is identified as **network-queue default**. Default network queue policies are applied to XMA/MDA network ingress ports. You must explicitly create and then associate other network queue QoS policies.

For information about the tasks and commands necessary to access the command line interface and to configure and maintain your devices, refer to CLI Usage chapter in the Basic System Configuration Guide.

Network Queue Parent Scheduler

Network queues support port scheduler parent priority-level associations. Using a port scheduler policy definition and mapping network queues to a port parent priority level, HQoS functionality is supported providing eight levels of strict priority and weights within the same priority. A network queue's bandwidth is allocated using the "within-cir" and "above-cir" scheme normal for port schedulers.

Queue CIR and PIR percentages when port-based schedulers are in effect will be based on frame-offered-load calculations.

A network queue with a port parent association exists on a port without a scheduler policy defined will be considered to be orphaned.

Refer to QoS Scheduler Policies on page 541 for more information about queue parental association scope.

Basic Configurations

A basic network queue QoS policy must conform to the following:

- Each network queue QoS policy must have a unique policy name.
- Queue parameters can be modified, but cannot be deleted.

Create a Network Queue QoS Policy

Configuring and applying QoS policies other than the default policy is optional. A default network queue policy is applied to MDA network ingress ports.

To create an network queue policy, define the following:

- Enter a network queue policy name. The system will not dynamically assign a name.
- Include a description. The description provides a brief overview of policy features.
- Forwarding class — You can assign a forwarding class to a specific queue.

Use the following CLI syntax to create a network queue QoS policy:

CLI Syntax:
```
config>qos
  network-queue policy-name
     description description-string
     fc fc-name
           multicast-queue queue-id
           queue queue-id
     queue queue-id [multipoint] [queue-type]
        cbs percent
        high-prio-only percent
        mbs percent
        port-parent [weight weight] [level level] [cir-weight
           cir-weight] [cir-level cir-level]
        rate percent [cir percent]
```

```
A:ALA-1>config>qos# network-queue default
A:ALA-1>config>qos>network-queue# info detail
---------------------------------------------
        description "Default network queue QoS policy."
        queue 1 create
           mbs 50
           cbs 1
           high-prio-only 10
        exit
        queue 2 create
           rate 100 cir 25
           mbs 50
```

```
                                        cbs 3
                                        high-prio-only 10
                                    exit
                                    queue 3 create
                                        rate 100 cir 25
                                        mbs 50
                                        cbs 1
                                        high-prio-only 10
                                    exit
                                    queue 4 create
                                        rate 100 cir 25
                                        mbs 25
                                        cbs 3
                                        high-prio-only 10
                                    exit
                                    queue 5 create
                                        rate 100 cir 100
                                        mbs 50
                                        cbs 1
                                        high-prio-only 10
                                    exit
                                    queue 6 create
                                        rate 100 cir 100
                                        mbs 50
                                        cbs 1
                                        high-prio-only 10
                                    exit
                                    queue 7 create
                                        rate 100 cir 10
                                        mbs 25
                                        cbs 3
                                        high-prio-only 10
                                    exit
                                    queue 8 create
                                        rate 100 cir 10
                                        mbs 25
                                        cbs 3
                                        high-prio-only 10
                                    exit
                                    queue 9 multipoint create
                                        mbs 50
                                        cbs 1
                                        high-prio-only 10
                                    exit
                                    queue 10 multipoint create
                                        rate 100 cir 5
                                        mbs 50
                                        cbs 1
                                        high-prio-only 10
                                    exit
                                    queue 11 multipoint create
                                        rate 100 cir 5
                                        mbs 50
                                        cbs 1
                                        high-prio-only 10
                                    exit
                                    queue 12 multipoint create
                                        rate 100 cir 5
                                        mbs 25
```

```
                cbs 1
                high-prio-only 10
            exit
            queue 13 multipoint create
                rate 100 cir 100
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 14 multipoint create
                rate 100 cir 100
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 15 multipoint create
                rate 100 cir 10
                mbs 25
                cbs 1
                high-prio-only 10
            exit
            queue 16 multipoint create
                rate 100 cir 10
                mbs 25
                cbs 1
                high-prio-only 10
            exit
            fc af create
                multicast-queue 11
                queue 3
            exit
            fc be create
                multicast-queue 9
                queue 1
            exit
            fc ef create
                multicast-queue 14
                queue 6
            exit
            fc h1 create
                multicast-queue 15
                queue 7
            exit
            fc h2 create
                multicast-queue 13
                queue 5
            exit
            fc l1 create
                multicast-queue 12
                queue 4
            exit
            fc l2 create
                multicast-queue 10
                queue 2
            exit
            fc nc create
                multicast-queue 16
                queue 8
            exit
```

Applying Network Queue Policies

Apply network queue policies to the following entities:

- MDAs
- Ethernet Ports
- SONET/SDH Ports

MDAs

Use the following CLI syntax to apply a network queue policy to an MDA network ingress port:

CLI Syntax: `config>card`
    `mda` *mda-slot*
       `network`
          `ingress`
            `queue-policy` *name*

The following output displays MDA network ingress queue policy reverted to the default policy.

```
A:ALA-7>config>card>mda# info
---------------------------------------------
        mda-type m60-10/100eth-tx
        network
            ingress
                pool default
                    resv-cbs sum
                    slope-policy "default"
                exit
                queue-policy "default"
            exit
            egress
                pool default
                    resv-cbs sum
                    slope-policy "default"
                exit
            exit
        exit
        access
            ingress
                pool default
                    resv-cbs sum
                    slope-policy "default"
                exit
            exit
            egress
                pool default
                    resv-cbs sum
```

```
                          slope-policy "default"
                    exit
                exit
            exit
            no shutdown
    ---------------------------------------------
    A:ALA-7>config>card>mda#
```

Ethernet Ports

Use the following CLI syntax to apply a network queue policy to an Ethernet port.

CLI Syntax: config>port#
       ethernet
         network
           queue-policy *name*

```
A:ALA-49>config>port# info
---------------------------------------------
    ethernet
        network
            queue-policy "nq1"
        exit
    exit
    no shutdown
---------------------------------------------
A:ALA-49>config>port#
```

SONET/SDH Ports

Use the following CLI syntax to apply a network queue policy to a SONET/SDH port:

CLI Syntax: `config>port#`
```
    sonet-sdh
        path path
            network
                queue-policy name
```

The following output displays the port configuration.

```
A:ALA-48>config>port# info
----------------------------------------------
        description "OC-12 SONET/SDH"
        sonet-sdh
            path sts3
                network
                    queue-policy "nq1"
                exit
                no shutdown
            exit
        exit
        no shutdown
----------------------------------------------
A:ALA-48>config>port#
```

Default Network Queue Policy Values

The default network queue policies are identified as policy-id **default**. The default policies cannot be modified or deleted. The following displays default policy parameters:

Table 23: Network Queue Policy Defaults

Field	Default
description	"Default network queue QoS policy."
queue 1	
pir	100
cir	0
mbs	50
cbs	1
high-prio-only	10
queue 2	
pir	100
cir	25
mbs	50
cbs	3
high-prio-only	10
queue 3	
pir	100
cir	25
mbs	50
cbs	1
high-prio-only	10
queue 4	
pir	100
cir	25

Table 23: Network Queue Policy Defaults (Continued)

Field	Default
mbs	25
cbs	3
high-prio-only	10
queue 5	
pir	100
cir	100
mbs	50
cbs	1
high-prio-only	10
queue 6	
pir	100
cir	100
mbs	50
cbs	1
high-prio-only	10
queue 7	
pir	100
cir	10
mbs	25
cbs	3
high-prio-only	10
queue 8	
pir	100
cir	10
mbs	50
cbs	3

Table 23: Network Queue Policy Defaults (Continued)

Field	Default
high-prio-only	10
fc af	queue 3
	multicast-queue 11
fc be	queue 1
	multicast-queue 9
fc ef	queue 6
	multicast-queue 14
fc h1	queue 67
	multicast-queue 15
fc h2	queue 5
	multicast-queue 13
fc l1	queue 7
	multicast-queue 12
fc l2	queue 2
	multicast-queue 10
fc nc	queue 8
	multicast-queue 16

```
A:ALA-7>config>qos>network-queue# info detail
----------------------------------------------
        description "Default network queue QoS policy."
        queue 1 auto-expedite create
            rate 100 cir 0
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 2 auto-expedite create
            rate 100 cir 25
            mbs 50
            cbs 3
            high-prio-only 10
        exit
        queue 3 auto-expedite create
            rate 100 cir 25
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 4 auto-expedite create
            rate 100 cir 25
            mbs 25
            cbs 3
            high-prio-only 10
        exit
        queue 5 auto-expedite create
            rate 100 cir 100
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 6 auto-expedite create
            rate 100 cir 100
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 7 auto-expedite create
            rate 100 cir 10
            mbs 25
            cbs 3
            high-prio-only 10
        exit
        queue 8 auto-expedite create
            rate 100 cir 10
            mbs 25
            cbs 3
            high-prio-only 10
        exit
        queue 9 multipoint auto-expedite create
            rate 100 cir 0
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 10 multipoint auto-expedite create
            rate 100 cir 5
```

```
                    mbs 50
                    cbs 1
                    high-prio-only 10
            exit
            queue 11 multipoint auto-expedite create
                    rate 100 cir 5
                    mbs 50
                    cbs 1
                    high-prio-only 10
            exit
            queue 12 multipoint auto-expedite create
                    rate 100 cir 5
                    mbs 25
                    cbs 1
                    high-prio-only 10
            exit
            queue 13 multipoint auto-expedite create
                    rate 100 cir 100
                    mbs 50
                    cbs 1
                    high-prio-only 10
            exit
            queue 14 multipoint auto-expedite create
                    rate 100 cir 100
                    mbs 50
                    cbs 1
                    high-prio-only 10
            exit
            queue 15 multipoint auto-expedite create
                    rate 100 cir 10
                    mbs 25
                    cbs 1
                    high-prio-only 10
            exit
            queue 16 multipoint auto-expedite create
                    rate 100 cir 10
                    mbs 25
                    cbs 1
                    high-prio-only 10
            exit
            fc af create
                    multicast-queue 11
                    queue 3
            exit
            fc be create
                    multicast-queue 9
                    queue 1
            exit
            fc ef create
                    multicast-queue 14
                    queue 6
            exit
            fc h1 create
                    multicast-queue 15
                    queue 7
            exit
            fc h2 create
                    multicast-queue 13
                    queue 5
```

```
            exit
            fc l1 create
                multicast-queue 12
                queue 4
            exit
            fc l2 create
                multicast-queue 10
                queue 2
            exit
            fc nc create
                multicast-queue 16
                queue 8
            exit
---------------------------------------------
A:ALA-7>config>qos>network-queue#
exit
```

Service Management Tasks

This section discusses the following service management tasks:

Deleting QoS Policies

A network queue policy is associated by default with MDA network ingress ports. You can replace the default policy with a customer-configured policy, but you cannot entirely remove a QoS policy. When you remove a QoS policy, the policy association reverts to the default network-queue policy **default**.

To delete a user-created network queue policy, enter the following commands:

CLI Syntax: `config>qos# no network-queue` *policy-name*

Example: `config>qos# no network-queue` **nq1**

Remove a Policy from the QoS Configuration

To delete a network policy, enter the following commands:

CLI Syntax: `config>qos# no network-queue` *policy-name*

Example: `config>qos# no network-queue` *test*

Copying and Overwriting QoS Policies

You can copy an existing network queue policy, rename it with a new policy ID name, or overwrite an existing network queue policy. The `overwrite` option must be specified or an error occurs if the destination policy ID exists.

CLI Syntax: `config>qos# copy network-queue` *`source-policy-id dest-policy-id`*
`[overwrite]`

Example:`config>qos# copy network-queue` **`nq1 nq2`**

The following output displays the copied policies:

```
A:ALA-12>config>qos# info
#----------------------------------------
echo "QoS Slope/Queue Policies Configuration"
#----------------------------------------
...
        network-queue "nq1" create
            description "Default network queue QoS policy."
            queue 1 create
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 2 create
                rate 100 cir 25
                mbs 50
                cbs 3
                high-prio-only 10
            exit
            queue 3 create
                rate 100 cir 25
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 4 create
                rate 100 cir 25
                mbs 25
                cbs 3
                high-prio-only 10
            exit
            queue 5 create
                rate 100 cir 100
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 6 create
                rate 100 cir 100
                mbs 50
                cbs 1
                high-prio-only 10
            exit
```

```
queue 7 create
    rate 100 cir 10
    mbs 25
    cbs 3
    high-prio-only 10
exit
queue 8 create
    rate 100 cir 10
    mbs 25
    cbs 3
    high-prio-only 10
exit
queue 9 multipoint create
    mbs 50
    cbs 1
    high-prio-only 10
exit
queue 10 multipoint create
    rate 100 cir 5
    mbs 50
    cbs 1
    high-prio-only 10
exit
queue 11 multipoint create
    rate 100 cir 5
    mbs 50
    cbs 1
    high-prio-only 10
exit
queue 12 multipoint create
    rate 100 cir 5
    mbs 25
    cbs 1
    high-prio-only 10
exit
queue 13 multipoint create
    rate 100 cir 100
    mbs 50
    cbs 1
    high-prio-only 10
exit
queue 14 multipoint create
    rate 100 cir 100
    mbs 50
    cbs 1
    high-prio-only 10
exit
queue 15 multipoint create
    rate 100 cir 10
    mbs 25
    cbs 1
    high-prio-only 10
exit
queue 16 multipoint create
    rate 100 cir 10
    mbs 25
    cbs 1
    high-prio-only 10
exit
```

```
            fc af create
                multicast-queue 11
                queue 3
            exit
            fc be create
                multicast-queue 9
                queue 1
            exit
            fc ef create
                multicast-queue 14
                queue 6
            exit
            fc h1 create
                multicast-queue 15
                queue 7
            exit
            fc h2 create
                multicast-queue 13
                queue 5
            exit
            fc l1 create
                multicast-queue 12
                queue 4
            exit
            fc l2 create
                multicast-queue 10
                queue 2
            exit
            fc nc create
                multicast-queue 16
                queue 8
            exit
        exit
        network-queue "nq2" create
            description "Default network queue QoS policy."
            queue 1 create
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 2 create
                rate 100 cir 25
                mbs 50
                cbs 3
                high-prio-only 10
            exit
            queue 3 create
                rate 100 cir 25
                mbs 50
                cbs 1
                high-prio-only 10
            exit
            queue 4 create
                rate 100 cir 25
                mbs 25
                cbs 3
                high-prio-only 10
            exit
            queue 5 create
```

```
            rate 100 cir 100
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 6 create
            rate 100 cir 100
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 7 create
            rate 100 cir 10
            mbs 25
            cbs 3
            high-prio-only 10
        exit
        queue 8 create
            rate 100 cir 10
            mbs 25
            cbs 5
            high-prio-only 10
        exit
        queue 9 multipoint create
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 10 multipoint create
            rate 100 cir 5
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 11 multipoint create
            rate 100 cir 5
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 12 multipoint create
            rate 100 cir 5
            mbs 25
            cbs 1
            high-prio-only 10
        exit
        queue 13 multipoint create
            rate 100 cir 100
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 14 multipoint create
            rate 100 cir 100
            mbs 50
            cbs 1
            high-prio-only 10
        exit
        queue 15 multipoint create
```

```
                                rate 100 cir 10
                                mbs 25
                                cbs 1
                                high-prio-only 10
                        exit
                        queue 16 multipoint create
                                rate 100 cir 10
                                mbs 25
                                cbs 1
                                high-prio-only 10
                        exit
                        fc af create
                                multicast-queue 11
                                queue 3
                        exit
                        fc be create
                                multicast-queue 9
                                queue 1
                        exit
                        fc ef create
                                multicast-queue 14
                                queue 6
                        exit
                        fc h1 create
                                multicast-queue 15
                                queue 7
                        exit
                        fc h2 create
                                multicast-queue 13
                                queue 5
                        exit
                        fc l1 create
                                multicast-queue 12
                                queue 4
                        exit
                        fc l2 create
                                multicast-queue 10
                                queue 2
                        exit
                        fc nc create
                                multicast-queue 16
                                queue 8
                        exit
                exit
        ...
        ----------------------------------------------
        A:ALA-12>config>qos#
```

Editing QoS Policies

You can change existing policies, except the default policies, and entries in the CLI. The changes are applied immediately to all interfaces where the policy is applied. To prevent configuration errors use the copy command to make a duplicate of the original policy to a work area, make the edits, and then overwrite the original policy.