

# Chapter 34

## Summary of CoS Configuration Statements

The following sections explain each of the CoS configuration statements. The statements are organized alphabetically.

### bandwidth

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <code>bandwidth <i>rate</i></code> ;  |
| <b>Hierarchy Level</b>          | [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ]   |
| <b>Description</b>              | For logical interfaces on which you configure packet scheduling, configure the amount of bandwidth to be allocated to the logical interface.  |
| <b>Options</b>                  | <i>rate</i> —Peak rate, in bps. You can specify a value in bits per second either as a complete decimal number or as a decimal number followed by the abbreviation k (1000), m (1,000,000), or g (1,000,000,000).<br><b>Range:</b> 1000 through 32,000,000,000 bps. |
| <b>Usage Guidelines</b>         | See “Associate a Scheduler with a DLCI or VLAN on a Channelized QPP Interface” on page 597.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

### buffer-size

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <code>buffer-size (percent <i>percentage</i>   remainder   temporal <i>microseconds</i>)</code> ;   |
| <b>Hierarchy Level</b>          | [edit class-of-service schedulers <i>scheduler-name</i> ]   |
| <b>Description</b>              | Specify buffer size as a percentage.  |
| <b>Options</b>                  | <i>percentage</i> —Buffer size as a percentage of total buffer.<br><br>remainder—Remaining buffer available.<br><br>temporal—Buffer size as a temporal value from 1 through 200,000 microseconds. |
| <b>Usage Guidelines</b>         | See “RED Congestion Control” on page 583 and “Configure Scheduling Policy Maps” on page 596.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## class

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | class <i>class-name</i> {<br>classification-override {<br>forwarding-class <i>class-name</i> ;<br>}<br>}                |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-policy]   |
| <b>Description</b>              | Configure CoS-based forwarding class.   |
| <b>Options</b>                  | <i>class-name</i> —Name of the routing policy class.<br><br>The remaining statements are explained separately.          |
| <b>Usage Guidelines</b>         | See “CoS Configuration Guidelines” on page 585.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## class-of-service

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | class-of-service { ... }  |
| <b>Hierarchy Level</b>          | [edit]  |
| <b>Description</b>              | Configure JUNOS CoS features.   |
| <b>Default</b>                  | If you do not configure any CoS features, all packets are transmitted from output transmission queue 0.                 |
| <b>Usage Guidelines</b>         | See “CoS Configuration Guidelines” on page 585.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## classification-override

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | classification-override {<br>forwarding-class <i>class-name</i> ;<br>}   |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-policy class <i>class-name</i> ]   |
| <b>Description</b>              | For IPv4 packets, override the incoming packet classification, assigning all packets sent to a destination prefix to the same output transmission queue. |
| <b>Usage Guidelines</b>         | See “Configure CoS-Based Forwarding” on page 610.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                                  |
| <b>See Also</b>                 | policy-statement in the <i>JUNOS Internet Software Configuration Guide: Routing and Routing Protocols</i>  |

## classifiers

**classifiers (define)**

```
Syntax classifiers {
    type classifier-name {
        import (classifier-name | default);
        forwarding-class class-name {
            loss-priority (low | high) code-points [ alias | bits ];
        }
    }
}
```

**Hierarchy Level** [edit class-of-service]

**Description** Define a CoS aggregate behavior classifier for classifying packets. You can associate the classifier with a forwarding class or code-point mapping, and import a default classifier or one that is previously defined.

**Options** *classifier-name*—Name of the aggregate behavior classifier.

*type*—Traffic type.

**Values:** dscp, exp, ieee-802.1, inet-precedence

The remaining statements are explained separately.

**Usage Guidelines** See “Classify Packets by Behavior Aggregate” on page 594.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**classifiers (apply)**

```
Syntax classifiers {
    type (classifier-name | default);
}
```

**Hierarchy Level** [edit class-of-service interfaces *interface-name* unit *logical-unit-number*]

**Description** Apply a CoS aggregate behavior classifier to a logical interface. You can apply a default classifier or one that is previously defined.

**Options** *classifier-name*—Name of the aggregate behavior classifier.

*type*—Traffic type.

**Values:** dscp, exp, ieee-802.1, inet-precedence

**Usage Guidelines** See “Classify Packets by Behavior Aggregate” on page 594.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

## code-point

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | code-point [ <i>alias</i>   <i>bits</i> ];  |
| <b>Hierarchy Level</b>          | [edit class-of-service rewrite-rules <i>type</i> <i>rewrite-name</i> forwarding-class <i>class-name</i> ]               |
| <b>Description</b>              | Specify one or more DSCP code-point aliases or bit sets for association with a forwarding class.                        |
| <b>Options</b>                  | <i>alias</i> —Name of the DSCP alias.<br><br><i>bits</i> —Value of the code-point bits, in binary code.                 |
| <b>Usage Guidelines</b>         | See “Rewrite Packet Header Information” on page 602.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## code-point-aliases

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | code-point-aliases {<br><i>type</i> {<br><i>alias-name</i> <i>bits</i> ;<br>}<br>}  |
| <b>Hierarchy Level</b>          | [edit class-of-service]   |
| <b>Description</b>              | Define an alias for a DSCP bit set.   |
| <b>Options</b>                  | <i>alias-name</i> —Name of the DSCP alias.<br><br><i>bits</i> —Six-bit value of the code-point bits, in binary code.<br><br><i>type</i> —Traffic type.<br><b>Values:</b> dscp, exp, ieee-802.1, inet-precedence |
| <b>Usage Guidelines</b>         | See “Define Code-Point Aliases” on page 589.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## code-points

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | code-points [ <i>alias</i>   <i>bits</i> ];   |
| <b>Hierarchy Level</b>          | [edit class-of-service classifiers <i>type classifier-name</i> forwarding-class <i>class-name</i> ]                     |
| <b>Description</b>              | Specify one or more DSCP code-point aliases or bit sets for association with a forwarding class.                        |
| <b>Options</b>                  | <i>alias</i> —Name of the DSCP alias.<br><br><i>bits</i> —Value of the code-point bits, in binary code.                 |
| <b>Usage Guidelines</b>         | See “Classify Packets by Behavior Aggregate” on page 594.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## drop-probability

***drop-probability (percentage)***

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | drop-probability <i>percentage</i> ;   |
| <b>Hierarchy Level</b>          | [edit class-of-service drop-profiles <i>profile-name</i> ]   |
| <b>Description</b>              | Define drop probability percentage.  |
| <b>Options</b>                  | <i>percentage</i> —Probability that a packet will be dropped, expressed as a percentage. A value of 0 means that a packet will never be dropped, and a value of 100 means that all packets will be dropped.<br><b>Range:</b> 0 through 100 percent |
| <b>Usage Guidelines</b>         | See “Configure RED Drop Profiles” on page 601.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.  |

***drop-probability (interpolated value)***

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | drop-probability <i>value</i> ;   |
| <b>Hierarchy Level</b>          | [edit class-of-service drop-profile <i>profile-name</i> interpolate]  |
| <b>Description</b>              | Define up to 64 values for interpolating drop probabilities.  |
| <b>Options</b>                  | <i>value</i> —Data point for interpolated packet drop probability.<br><b>Range:</b> 0 through 100                       |
| <b>Usage Guidelines</b>         | See “Configure RED Drop Profiles” on page 601.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## drop-profile

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | drop-profile <i>profile-name</i> ;   |
| <b>Hierarchy Level</b>          | [edit class-of-service schedulers <i>scheduler-name</i> drop-profile-map loss-priority (low   high   any) protocol (any   non-tcp   tcp)]  |
| <b>Description</b>              | Define drop profiles for RED. When a packet arrives, RED checks the queue fill level. If the fill level corresponds to a nonzero drop probability, the RED algorithm determines whether to drop the arriving packet. |
| <b>Options</b>                  | <i>profile-name</i> —Name of the drop profile.   |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.  |

## drop-profile-map

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | drop-profile-map loss-priority (low   high) protocol (non-tcp   tcp   any)<br>drop-profile <i>profile-name</i> ;        |
| <b>Hierarchy Level</b>          | [edit class-of-service schedulers <i>scheduler-name</i> ]   |
| <b>Description</b>              | Define loss priority value for drop profile.<br><br>The statements are explained separately.                            |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## drop-profiles

```

Syntax drop-profiles {
            profile-name {
                fill-level percentage drop-probability percentage;
                interpolate {
                    fill-level value
                    drop-probability value;
                }
            }
        }

```

**Hierarchy Level** [edit class-of-service]

**Description** Define drop profiles for RED.

For a packet to be dropped, it must match the drop profile. When a packet arrives, RED checks the queue fill level. If the fill level corresponds to a nonzero drop probability, the RED algorithm determines whether to drop the arriving packet.

**Options** *profile-name*—Name of the drop profile.

The remaining statements are explained separately.

**Usage Guidelines** See “Configure RED Drop Profiles” on page 601.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

## exp-push-push-push

**Syntax** exp-push-push-push default;

**Hierarchy Level** [edit class-of-service interfaces *interface-name* unit *logical-unit-number* rewrite-rules]

**Description** For M-series routers, rewrite the EXP bits of all three labels of an outgoing packet, thereby maintaining CoS of an incoming non-MPLS packet.

**Options** default—Apply the default MPLS EXP rewrite table.

**Usage Guidelines** See “Rewrite the EXP Bits of All Three Labels of an Outgoing Packet” on page 607.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

**See Also** exp-swap-push-push on page 630

## exp-swap-push-push

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | exp-swap-push-push default;   |
| <b>Hierarchy Level</b>          | [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i> rewrite-rules]                                    |
| <b>Description</b>              | For M-series routers, rewrite the EXP bits of all three labels of an outgoing packet, thereby maintaining CoS of an incoming MPLS packet. |
| <b>Options</b>                  | default—Apply the default MPLS EXP rewrite table.   |
| <b>Usage Guidelines</b>         | See “Rewrite the EXP Bits of All Three Labels of an Outgoing Packet” on page 607.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.                   |
| <b>See Also</b>                 | exp-push-push-push on page 629  |

## fabric

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | <pre>fabric {     scheduler-map {         priority (low   high) scheduler <i>scheduler-name</i>;     } }</pre>             |
| <b>Hierarchy Level</b>          | [edit class-of-service]  |
| <b>Description</b>              | For T-series platforms only, associate a scheduler with a fabric priority.<br><br>The statements are explained separately. |
| <b>Usage Guidelines</b>         | See “Associate a Scheduler with a Fabric Priority” on page 600.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.    |

## fill-level

**fill-level (percentage)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | fill-level <i>percentage</i> ;  |
| <b>Hierarchy Level</b>          | [edit class-of-service drop-profiles <i>profile-name</i> ]  |
| <b>Description</b>              | When configuring RED, map the fullness of a queue to a drop probability.  |
| <b>Options</b>                  | <i>percentage</i> —How full the queue is, expressed as a percentage. To specify multiple fill levels, include multiple fill-level options. List the fill levels incrementally in increasing order.<br><b>Range:</b> 0 through 100 percent |
| <b>Usage Guidelines</b>         | See “Configure RED Drop Profiles” on page 601.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

**fill-level (interpolated value)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | fill-level <i>value</i> ;   |
| <b>Hierarchy Level</b>          | [edit class-of-service drop-profile <i>profile-name</i> interpolate]  |
| <b>Description</b>              | Define up to 64 values for interpolating queue fill level.  |
| <b>Options</b>                  | <i>value</i> —Data point for mapping queue fill percentage.<br><b>Range:</b> 0 through 100                              |
| <b>Usage Guidelines</b>         | See “Configure RED Drop Profiles” on page 601.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## forwarding-class

**forwarding-class (classifiers)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | forwarding-class <i>class-name</i> {<br>loss-priority (low   high) code-points [ <i>alias</i>   <i>bits</i> ];<br>}     |
| <b>Hierarchy Level</b>          | [edit class-of-service classifiers <i>type classifier-name</i> ]  |
| <b>Description</b>              | Define forwarding class name and option values.   |
| <b>Options</b>                  | <i>class-name</i> —Name of forwarding class.<br><br>The remaining statements are explained separately.                  |
| <b>Usage Guidelines</b>         | See “Classify Packets by Behavior Aggregate” on page 594.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

**forwarding-class (forwarding policy)**

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | forwarding-class <i>class-name</i> {<br>next-hop [ <i>next-hop-name</i> ];<br>lsp-next-hop [ <i>lsp-regular-expression</i> ];<br>} |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-policy next-hop-map <i>map-name</i> ]  |
| <b>Description</b>              | Define forwarding class name and associated next hops.   |
| <b>Options</b>                  | <i>class-name</i> —Name of forwarding class.<br><br>The remaining statement is explained separately.                               |
| <b>Usage Guidelines</b>         | See “Configure CoS-Based Forwarding” on page 610.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.            |

## forwarding-classes

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | forwarding-classes {<br>queue <i>queue-number class-name</i> priority (low   high);<br>}  |
| <b>Hierarchy Level</b>          | [edit class-of-service]   |
| <b>Description</b>              | Associate forwarding class with queue name and number. For T-series platforms only, you can configure fabric priority queueing by including the priority statement at the [edit class-of-service forwarding-classes queue <i>queue-number class-name</i> ] hierarchy level.<br><br>The statements are explained separately. |
| <b>Usage Guidelines</b>         | See “Configure Forwarding Classes” on page 592 and “Override Fabric Priority Queuing” on page 594.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## forwarding-policy

```

Syntax forwarding-policy {
    next-hop-map map-name {
        forwarding-class class-name {
            next-hop [ next-hop-name ];
            lsp-next-hop [ lsp-regular-expression ];
        }
    }
    class class-name {
        classification-override {
            forwarding-class class-name;
        }
    }
}

```

**Hierarchy Level** [edit class-of-service]

**Description** Define CoS-based forwarding policy options.

The statements are explained separately.

**Usage Guidelines** See “Configure CoS-Based Forwarding” on page 610.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

## import

***import classifiers***

**Syntax** import (*classifier-name* | default);

**Hierarchy Level** [edit class-of-service classifiers *type classifier-name*]

**Description** Specify a default or previously defined classifier to import.

**Options** *classifier-name*—Name of previously defined classifier mapping.  
default—The default classifier mapping.

**Usage Guidelines** See “Classify Packets by Behavior Aggregate” on page 594.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

## ***import rewrite-rules***

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | import ( <i>rewrite-name</i>   default);  |
| <b>Hierarchy Level</b>          | [edit class-of-service rewrite-rules <i>type</i> <i>rewrite-name</i> ]  |
| <b>Description</b>              | Specify a default or previously defined rewrite-rules mapping to import.  |
| <b>Options</b>                  | <i>rewrite-name</i> —Name of previously defined rewrite-rules mapping.<br>default—The default rewrite-rules mapping.    |
| <b>Usage Guidelines</b>         | See “Rewrite Packet Header Information” on page 602.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## interfaces

```

Syntax interfaces {
    interface-name {
        scheduler-map map-name;
        unit logical-unit-number {
            classifiers {
                type (classifier-name | default);
            }
            forwarding-class class-name;
            rewrite-rules {
                type (rewrite-name | default);
            }
        }
    }
}

```

**Hierarchy Level** [edit class-of-service]

**Description** Configure interface-specific CoS properties for incoming packets. Associate forwarding-class definition and RED mapping with an interface on the router.

**Options** *interface-name*—Name of the interface.

The remaining statements are explained separately.

**Usage Guidelines** See “Classify Packets by Behavior Aggregate” on page 594 and “Rewrite Packet Header Information” on page 602.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

## interpolate

```

Syntax interpolate {
    fill-level value;
    drop-probability value;
}

```

**Hierarchy Level** [edit class-of-service drop-profiles *profile-name*]

**Description** Specify values for interpolating relationship between queue fill level and drop probability.

The statements are explained separately.

**Usage Guidelines** See “Configure RED Drop Profiles” on page 601.

**Required Privilege Level** interface—To view this statement in the configuration.  
interface-control—To add this statement to the configuration.

## loss-priority

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | loss-priority (low   high   any);   |
| <b>Hierarchy Level</b>          | [edit class-of-service classifiers <i>type classifier-name</i> forwarding-class <i>class-name</i> ],<br>[edit class-of-service schedulers <i>scheduler-name</i> drop-profile-map] |
| <b>Description</b>              | Specify packet loss priority value.   |
| <b>Options</b>                  | any—Use any loss priority.<br><br>low—Packet has low loss priority.<br><br>high—Packet has high loss priority.  |
| <b>Usage Guidelines</b>         | See “Classify Packets by Behavior Aggregate” on page 594.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## lsp-next-hop

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | lsp-next-hop [ <i>lsp-regular-expression</i> ];   |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-policy next-hop-map <i>map-name</i> forwarding-class <i>class-name</i> ]              |
| <b>Description</b>              | Specify the LSP regular expression to which to map forwarded traffic.   |
| <b>Options</b>                  | <i>lsp-regular-expression</i> —Next-hop LSP label.  |
| <b>Usage Guidelines</b>         | See “Configure CoS-Based Forwarding” on page 610.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## next-hop

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | next-hop [ <i>next-hop-name</i> ];  |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-policy next-hop-map <i>map-name</i> forwarding-class <i>class-name</i> ]              |
| <b>Description</b>              | Specify the next-hop name or address to which to map forwarded traffic.   |
| <b>Options</b>                  | <i>next-hop-name</i> —Next-hop alias or IP address.   |
| <b>Usage Guidelines</b>         | See “Configure CoS-Based Forwarding” on page 610.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

## next-hop-map

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | next-hop-map <i>map-name</i> {<br>forwarding-class <i>class-name</i> {<br>next-hop <i>next-hop-name</i> ;<br>lsp-next-hop [ <i>lsp-regular-expression</i> ];<br>}<br>} |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-policy]  |
| <b>Description</b>              | Specify the map for CoS forwarding routes.   |
| <b>Options</b>                  | <i>map-name</i> —Map that defines next-hop routes.   |
| <b>Usage Guidelines</b>         | See “Configure CoS-Based Forwarding” on page 610.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.  |

## priority

**priority (fabric queues)**

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | priority (low   high) scheduler <i>scheduler-name</i> ;  |
| <b>Hierarchy Level</b>          | [edit class-of-service fabric scheduler-map]   |
| <b>Description</b>              | For T-series platforms only, specify the fabric priority with which a scheduler is associated.<br><br>For a scheduler that you associate with a fabric priority, you cannot include the buffer-size, transmit-rate, or priority statements at the [edit class-of-service schedulers <i>scheduler-name</i> ] hierarchy level. |
| <b>Options</b>                  | low—Scheduler has low priority.<br><br>high—Scheduler has high priority.<br><br>The remaining statements are explained separately.   |
| <b>Usage Guidelines</b>         | See “Associate a Scheduler with a Fabric Priority” on page 600.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.  |

**priority (forwarding classes)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | priority (low   high);  |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding-classes queue <i>queue-number</i> <i>class-name</i> ]                                 |
| <b>Description</b>              | For T-series platforms only, specify packet priority value.   |
| <b>Options</b>                  | low—Forwarding class’s fabric queuing has low priority.<br>high—Forwarding class’s fabric queuing has high priority.    |
| <b>Usage Guidelines</b>         | See “Override Fabric Priority Queuing” on page 594.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

**priority (schedulers)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | priority (low   high   strict-high);  |
| <b>Hierarchy Level</b>          | [edit class-of-service schedulers <i>scheduler-name</i> ]   |
| <b>Description</b>              | Specify packet-scheduling priority value.   |
| <b>Options</b>                  | low—Scheduler has low priority.<br>high—Scheduler has high priority.<br>strict-high—Scheduler has strictly high priority. The queue receives precedence over all high- and low-priority queues, as long as strictly high-priority traffic is waiting to be sent, regardless of the strictly high-priority queue’s bandwidth credit. |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## protocol

**protocol (interfaces rewrite rules)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | protocol <i>protocol-types</i> ;  |
| <b>Hierarchy Level</b>          | [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i> rewrite-rules exp <i>rewrite-name</i> ]   |
| <b>Description</b>              | Apply a rewrite rule to MPLS packets only, and write the code point value to MPLS headers only; or apply a rewrite rule to MPLS and IPv4 packets, and write the code point value to MPLS and IPv4 headers.  |
| <b>Options</b>                  | <p><i>protocol-types</i> can be one of the following:</p> <p>mpls-any—Apply the rewrite rule to MPLS packets and writes the code point value to MPLS headers.</p> <p>mpls-inet-both—Apply the rewrite rule to VPN MPLS packets with IPv4 payloads. On T-series platforms, write the code point value to the MPLS and IPv4 headers. On M-series routers, initialize all ingress MPLS LSP packets with IPv4 payloads with 000 code points for IP precedence and MPLS EXP values.</p> <p>mpls-inet-both-non-vpn—Apply the rewrite rule to non-VPN MPLS packets with IPv4 payloads. On T-series platforms, write the code point value to the MPLS and IPv4 headers. On M-series routers, initialize all ingress MPLS LSP packets with IPv4 payloads with 000 code points for IP precedence and MPLS EXP values.</p> |
| <b>Usage Guidelines</b>         | See “Rewrite MPLS and IPv4 Packet Headers” on page 605.   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>  |

**protocol (schedulers)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | protocol (non-tcp   tcp   any);   |
| <b>Hierarchy Level</b>          | [edit class-of-service schedulers <i>scheduler-name</i> drop-profile-map]   |
| <b>Description</b>              | Specify the protocol type for the specified scheduler.  |
| <b>Options</b>                  | <p>any—Accept any protocol type.</p> <p>non-tcp—Accept any protocol type other than TCP-IP.</p> <p>tcp—Accept only TCP/IP protocol.</p> |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>      |

## queue

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | <code>queue queue-number class-name;</code>  |
| <b>Hierarchy Level</b>          | [edit class-of-service forwarding classes]   |
| <b>Description</b>              | Specify the output transmission queue to which to map all input from an associated forwarding class.                                   |
| <b>Options</b>                  | <p><i>class-name</i>—Name of forwarding class.</p> <p><i>queue-number</i>—Output queue number.<br/> <b>Range:</b> 0 through 65,535</p> |
| <b>Usage Guidelines</b>         | See “Configure Forwarding Classes” on page 592.  |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>     |

## rewrite-rules

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <pre>rewrite-rules {   type rewrite-name {     import (rewrite-name   default);     forwarding-class class-name {       loss-priority (low   high) code-point (alias   bits);     }   } }</pre>         |
| <b>Hierarchy Level</b>          | [edit class-of-service]   |
| <b>Description</b>              | Specify the rewrite-rules mapping for the entire traffic stream that passes through all queues on the interface.  |
| <b>Options</b>                  | <p><i>rewrite-name</i>—Name of the rewrite-rules mapping.</p> <p><i>type</i>—Traffic type.<br/> <b>Values:</b> dscp, exp, inet-precedence</p> <p>The remaining statements are explained separately.</p> |
| <b>Usage Guidelines</b>         | See “Rewrite Packet Header Information” on page 602.  |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>  |

**rewrite-rules (interfaces)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | rewrite-rules {<br>dscp ( <i>rewrite-name</i>   default);<br>exp ( <i>rewrite-name</i>   default) protocol <i>protocol-types</i> ;<br>exp-push-push-push default;<br>exp-swap-push-push default;<br>ieee-802.1 default;<br>inet-precedence ( <i>rewrite-name</i>   default);<br>} |
| <b>Hierarchy Level</b>          | [edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ]   |
| <b>Description</b>              | Associate a rewrite-rules configuration or default mapping with a specific interface.   |
| <b>Options</b>                  | <i>rewrite-name</i> —Name of the rewrite-rules mapping.<br><br>default—The default mapping.<br><br>The remaining statements are explained separately.   |
| <b>Usage Guidelines</b>         | See “Rewrite Packet Header Information” on page 602.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## scheduler

**scheduler (scheduler map)**

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | scheduler <i>scheduler-name</i> ;   |
| <b>Hierarchy Level</b>          | [edit class-of-service scheduler-maps <i>map-name</i> ]   |
| <b>Description</b>              | Associate a scheduler with a scheduler map.   |
| <b>Options</b>                  | <i>scheduler-name</i> —Name of the scheduler configuration block.   |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration. |

***scheduler (fabric queues)***

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <code>scheduler <i>scheduler-name</i>;</code>   |
| <b>Hierarchy Level</b>          | [edit class-of-service fabric scheduler-map priority (low   high)]  |
| <b>Description</b>              | For T-series platforms only, specify a scheduler to be associated with a fabric queue. For fabric CoS configuration, schedulers are restricted to transmit rates and drop profiles. |
| <b>Options</b>                  | <i>scheduler-name</i> —Name of the scheduler configuration block.   |
| <b>Usage Guidelines</b>         | See “Associate a Scheduler with a Fabric Priority” on page 600.   |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.   |

## scheduler-map

***scheduler-map (fabric queues)***

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | <code>scheduler-map priority (low   high) scheduler <i>scheduler-name</i>;</code>  |
| <b>Hierarchy Level</b>          | [edit class-of-service fabric]   |
| <b>Description</b>              | For T-series platforms only, associate a scheduler with a fabric priority.<br><br>The statements are explained separately. |
| <b>Usage Guidelines</b>         | See “Associate a Scheduler with a Fabric Priority” on page 600.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.    |

***scheduler-map (interfaces)***

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | <code>scheduler-map <i>map-name</i>;</code>  |
| <b>Hierarchy Level</b>          | [edit class-of-service interfaces <i>interface-name</i> ],<br>[edit class-of-service interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ]  |
| <b>Description</b>              | Associate a scheduler map name with an interface.<br><br>For Channelized OC-12 QPP, Channelized T3 QPP, Channelized E1 QPP, and Gigabit Ethernet QPP interfaces only, you can associate a scheduler map name with a logical interface. |
| <b>Options</b>                  | <i>map-name</i> —Name of the scheduler map.  |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.  |
| <b>Required Privilege Level</b> | interface—To view this statement in the configuration.<br>interface-control—To add this statement to the configuration.  |

## scheduler-maps

|                                 |  |
|---------------------------------|--|
| <b>Syntax</b>                   | <pre> scheduler-maps {   map-name {     forwarding-class class-name scheduler scheduler-name;   } } </pre>                         |
| <b>Hierarchy Level</b>          | [edit class-of-service]  |
| <b>Description</b>              | Specify scheduler map name and associate it with the scheduler configuration and forwarding class.                                 |
| <b>Options</b>                  | <p><i>map-name</i>—Name of the scheduler map.</p> <p>The remaining statements are explained separately.</p>                        |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.  |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p> |

## schedulers

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <pre> schedulers {   scheduler-name {     buffer-size (seconds   percent percentage   remainder   temporal microseconds);     drop-profile-map loss-priority (low   high ) protocol (non-tcp   tcp   any)       drop-profile profile-name;     priority (low   high   strict-high);     transmit-rate (rate   percent percentage   remainder   exact);   } } </pre> |
| <b>Hierarchy Level</b>          | [edit class-of-service]   |
| <b>Description</b>              | Specify scheduler name and parameter values.  |
| <b>Options</b>                  | <p><i>scheduler-name</i>—Name of the scheduler to be configured.</p> <p>The remaining statements are explained separately.</p>  |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>  |

## transmit-rate

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | transmit-rate ( <i>rate</i>   percent <i>percentage</i>   remainder   exact);   |
| <b>Hierarchy Level</b>          | [edit class-of-service schedulers <i>scheduler-name</i> ]   |
| <b>Description</b>              | Specify the transmit rate or percentage for a scheduler.  |
| <b>Options</b>                  | <p>exact—Enforce the exact transmission rate.</p> <p><i>rate</i>—Transmission rate, in bits per second.</p> <p>remainder—Use remaining rate available.</p> <p>percent <i>percentage</i>—Transmission percentage.<br/> <b>Range:</b> 0 through 100 percent</p> |
| <b>Usage Guidelines</b>         | See “Configure Scheduling Policy Maps” on page 596.   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>  |

## unit

|                                 |   |
|---------------------------------|---|
| <b>Syntax</b>                   | <pre>unit <i>logical-unit-number</i> {   classifiers {     <i>type</i> (<i>classifier-name</i>   default);   }   forwarding-class <i>class-name</i>;   rewrite-rules {     <i>type</i> (<i>rewrite-name</i>   default);   } }</pre> |
| <b>Hierarchy Level</b>          | [edit class-of-service interfaces <i>interface-name</i> ]   |
| <b>Description</b>              | Configure a logical interface on the physical device. You must configure a logical interface to be able to use the physical device.   |
| <b>Options</b>                  | <p><i>logical-unit-number</i>—Number of the logical unit.<br/> <b>Range:</b> 0 through 16,384</p> <p>The remaining statements are explained separately.</p>   |
| <b>Usage Guidelines</b>         | See “Classify Packets by Behavior Aggregate” on page 594 and “Rewrite Packet Header Information” on page 602.   |
| <b>Required Privilege Level</b> | <p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>  |