Forwarding Policy Options on EX9200 Switches

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Supported Platforms

For the features described in this document, the following platforms are supported:

- EX Series

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

   For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

   ```
   system {
     scripts {
       commit {
         file ex-script.xsl;
       }
     }
   }
   interfaces {
     fxp0 {
       disable;
       unit 0 {
         family inet {
           address 10.0.0.1/24;
         }
       }
     }
   }
   ```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

   ```
   [edit]
   user@host# load merge /var/tmp/ex-script.conf
   load complete
   ```

Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

   For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

   ```
   commit {
     file ex-script-snippet.xsl; }
   ```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:

```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see the CLI User Guide.

Documentation Conventions

Table 1 on page xi defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.

Table 2 on page xi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the**configure** command: **user@host> configure**
`Fixed-width text like this`	Represents output that appears on the terminal screen.	`user@host>` **show chassis alarms** `No alarms currently active`

Table 2: Text and Syntax Conventions *(continued)*

Convention	Description	Examples
Italic text like this	• Introduces or emphasizes important new terms. • Identifies book names. • Identifies RFC and Internet draft titles.	• A policy *term* is a named structure that defines match conditions and actions. • *Junos OS System Basics Configuration Guide* • RFC 1997, *BGP Communities Attribute*
Italic text like this	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# **set system domain-name** *domain-name*
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	• To configure a stub area, include the **stub** statement at the **[edit protocols ospf area area-id]** hierarchy level. • The console port is labeled **CONSOLE**.
< > (angle brackets)	Enclose optional keywords or variables.	**stub <default-metric** ***metric*****>;**
| (pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	**broadcast | multicast** **(*string1* | *string2* | *string3*)**
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	**rsvp { # Required for dynamic MPLS only**
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	**community name members [** ***community-ids*** **]**

Indention and braces ({ })	Identify a level in the configuration hierarchy.	[edit]
		routing-options {
		  static {
		  route default {
		  nexthop *address*;
		  retain;
		  }
		  }
		}

; (semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	• In the Logical Interfaces box, select **All Interfaces**. • To cancel the configuration, click **Cancel**.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select **Protocols>Ospf**.

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For international or direct-dial options in countries without toll-free numbers, see http://www.juniper.net/support/requesting-support.html.

PART 1

Overview

CHAPTER 1

Forwarding Policy

Forwarding Policy Options Overview

Class-of-service (CoS)-based forwarding (CBF) enables you to control next-hop selection based on a packet's class of service and, in particular, the value of the IP packet's precedence bits.

For example, you might want to specify a particular interface or next hop to carry high-priority traffic while all best-effort traffic takes some other path. When a routing protocol discovers equal-cost paths, it can pick a path at random or load-balance across the paths through either hash selection or round robin. CBF allows path selection based on class.

To configure CBF properties, include the following statements at the **[edit class-of-service]** hierarchy level:

```
[edit class-of-service]
forwarding-policy {
  next-hop-map map-name {
    forwarding-class class-name {
      next-hop [ next-hop-name ];
      lsp-next-hop [ lsp-regular-expression ];
      non-lsp-next-hop;
      discard;
    }
  }
  class class-name {
    classification-override {
      forwarding-class class-name;
    }
  }
}
```

PART 2

Configuration

CHAPTER 2

Configuration Tasks

Configuring CoS-Based Forwarding

You can apply CoS-based forwarding (CBF) only to a defined set of routes. Therefore you must configure a policy statement as in the following example:

```
[edit policy-options]
policy-statement my-cos-forwarding {
   from {
      route-filter destination-prefix match-type;
   }
   then {
      cos-next-hop-map map-name;
   }
}
```

This configuration specifies that routes matching the route filter are subject to the CoS next-hop mapping specified by ***map-name***. For more information about configuring policy statements, see the Routing Policy Configuration Guide.

NOTE: On M Series routers (except the M120 and M320 routers), forwarding-class-based matching and CBF do not work as expected if the forwarding class has been set with a multifield filter on an input interface.

You can configure CBF on a routing device with eight or less than eight forwarding classes only. Under this condition, the forwarding class to queue mapping can be either one-to-one or one-to-many. However, you cannot configure CBF when the number of forwarding classes configured exceeds eight. Similarly, with CBF configured, you cannot configure more than eight forwarding classes.

To specify a CoS next-hop map, include the **forwarding-policy** statement at the **[edit class-of-service]** hierarchy level:

```
[edit class-of-service]
forwarding-policy {
```

```
    next-hop-map map-name {
      forwarding-class class-name {
        next-hop [ next-hop-name ];
        lsp-next-hop [ lsp-regular-expression ];
        discard;
      }
    }
  }
```

When you configure CBF with OSPF as the interior gateway protocol (IGP), you must specify the next hop as an interface name or next-hop alias, not as an IP address. This is true because OSPF adds routes with the interface as the next hop for point-to-point interfaces; the next hop does not contain the IP address. For an example configuration, see Example: Configuring CoS-Based Forwarding.

For Layer 3 VPNs, when you use class-based forwarding for the routes received from the far-end provider-edge (PE) router within a VRF instance, the software can match the routes based on the attributes that come with the received route only. In other words, the matching can be based on the route within RIB-in. In this case, the **route-filter** statement you include at the **[edit policy-options policy-statement my-cos-forwarding from]** hierarchy level has no effect because the policy checks the **bgp.l3vpn.0** table, not the ***vrf*.inet.0** table.

The Junos OS applies the CoS next-hop map to the set of next hops previously defined; the next hops themselves can be located across any outgoing interfaces on the routing device. For example, the following configuration associates a set of forwarding classes and next-hop identifiers:

```
[edit class-of-service forwarding-policy]
next-hop-map map1 {
  forwarding-class expedited-forwarding {
    next-hop next-hop1;
    next-hop next-hop2;
  }
  forwarding-class best-effort {
    next-hop next-hop3;
    lsp-next-hop lsp-next-hop4;
  }
}
```

In this example, **next-hop *N*** is either an IP address or an egress interface for some next hop, and **lsp-next-hop4** is a regular expression corresponding to any next hop with that label. Q1 through *QN* are a set of forwarding classes that map to the specific next hop. That is, when a packet is switched with Q1 through *QN*, it is forwarded out the interface associated with the associated next hop.

This configuration has the following implications:

- A single forwarding class can map to multiple standard next hops or LSP next hops. This implies that load sharing is done across standard next hops or LSP next hops servicing the same class value. To make this work properly, the Junos OS creates a list of the equal-cost next hops and forwards packets according to standard load-sharing rules for that forwarding class.
- If a forwarding class configuration includes LSP next hops and standard next hops, the LSP next hops are preferred over the standard next hops. In the preceding example, if both **next-hop3** and **lsp-next-hop4** are valid next hops for a route to which **map1** is applied, the forwarding table includes entry **lsp-next-hop4** only.
- If **next-hop-map** does not specify all possible forwarding classes, the default forwarding class is selected as the default. If the default forwarding class is not specified in the next-hop map, a default is designated randomly. The default forwarding class is the class associated with queue 0.
- For LSP next hops, the Junos OS uses UNIX **regex(3)**-style regular expressions. For example, if the following labels exist: **lsp**, **lsp1**, **lsp2**, **lsp3**, the statement **lsp-next-hop lsp** matches **lsp**, **lsp1**, **lsp2**, and **lsp3**. If you do not desire this behavior, you must use the anchor characters **lsp-next-hop " ^lsp$"**, which match **lsp** only.
- The route filter does not work because the policy checks against the **bgp.l3vpn.0** table instead of the ***vrf*.inet.0** table.

The final step is to apply the route filter to routes exported to the forwarding engine. This is shown in the following example:

```
routing-options {
   forwarding-table {
      export my-cos-forwarding;
   }
}
```

This configuration instructs the routing process to insert routes to the forwarding engine matching **my-cos-forwarding** with the associated next-hop CBF rules.

The following algorithm is used when you apply a configuration to a route:

- If the route is a single next-hop route, all traffic goes to that route; that is, no CBF takes effect.
- For each next hop, associate the proper forwarding class. If a next hop appears in the route but not in the **cos-next-hop** map, it does not appear in the forwarding table entry.
- The default forwarding class is used if all forwarding classes are not specified in the next-hop map. If the default is not specified, one is chosen randomly.

Overriding the Input Classification

For IPv4 or IPv6 packets, you can override the incoming classification, assigning them to the same forwarding class based on their input interface, input precedence bits, or destination address. You do so by defining a policy class when configuring CoS properties and referencing this class when configuring a routing policy.

When you override the classification of incoming packets, any mappings you configured for associated precedence bits or incoming interfaces to output transmission queues are ignored. Also, if the packet loss priority (PLP) bit was set in the packet by the incoming interface, the PLP bit is cleared.

To override the input packet classification, do the following:

1. Define the policy class by including the **class** statement at the **[edit class-of-service policy]** hierarchy level:

   ```
   [edit class-of-service]
   forwarding-policy {
     class class-name {
       classification-override {
         forwarding-class class-name;
       }
     }
   }
   ```

   class-name is a name that identifies the class.

2. Associate the policy class with a routing policy by including it in a **policy-statement** statement at the **[edit policy-options]** hierarchy level. Specify the destination prefixes in the **route-filter** statement and the CoS policy class name in the **then** statement.

   ```
   [edit policy-options]
   policy-statement policy-name {
     term term-name {
       from {
         route-filter destination-prefix match-type <class class-name>
       }
       then class class-name;
     }
   }
   ```

3. Apply the policy by including the **export** statement at the **[edit routing-options]** hierarchy level:

   ```
   [edit routing-options]
   forwarding-table {
     export policy-name;
   }
   ```

CHAPTER 3

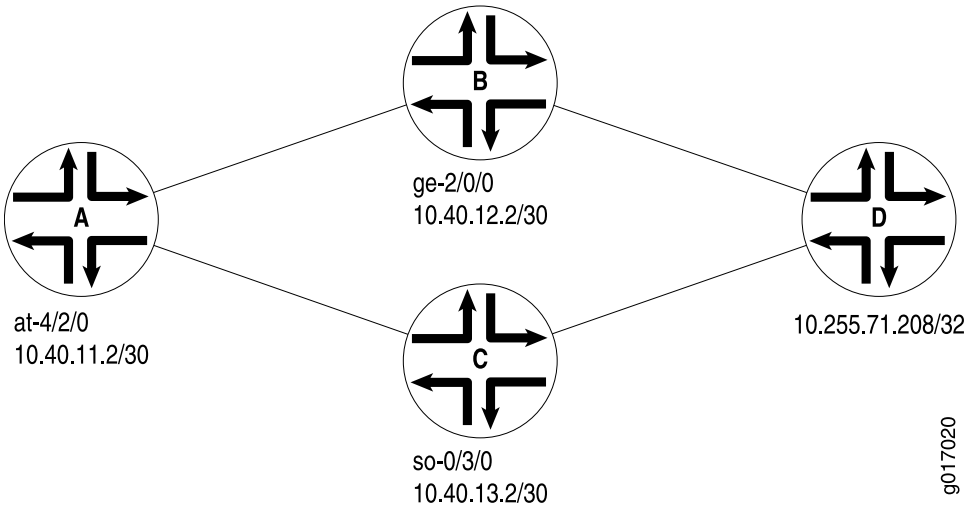
Examples

Example: Configuring CoS-Based Forwarding

Router A has two routes to destination **10.255.71.208** on Router D. One route goes through Router B, and the other goes through Router C, as shown in Figure 1 on page 11.

Configure Router A with CBF to select Router B for queue 0 and queue 2, and Router C for queue 1 and queue 3.

Figure 1: Sample CoS-Based Forwarding



When you configure CBF with OSPF as the IGP, you must specify the next hop as an interface name, not as an IP address. The next hops in this example are specified as **ge-2/0/0.0** and **ge-0/3/0.0**.

```
[edit class-of-service]
forwarding-policy {
  next-hop-map my_cbf {
    forwarding-class be {
      next-hop ge-2/0/0.0;
```

```
      }
      forwarding-class ef {
        next-hop ge-0/3/0.0;
      }
      forwarding-class af {
        next-hop ge-2/0/0.0;
      }
      forwarding-class nc {
        next-hop ge-0/3/0.0;
      }
    }
}
classifiers {
    inet-precedence inet {
      forwarding-class be {
        loss-priority low code-points [ 000 100 ];
      }
      forwarding-class ef {
        loss-priority low code-points [ 001 101 ];
      }
      forwarding-class af {
        loss-priority low code-points [ 010 110 ];
      }
      forwarding-class nc {
        loss-priority low code-points [ 011 111 ];
      }
    }
}
forwarding-classes {
    queue 0 be;
    queue 1 ef;
    queue 2 af;
    queue 3 nc;
}
interfaces {
    at-4/2/0 {
      unit 0 {
        classifiers {
          inet-precedence inet;
        }
      }
    }
}

[edit policy-options]
policy-statement cbf {
    from {
      route-filter 10.255.71.208/32 exact;
    }
    then cos-next-hop-map my_cbf;
}

[edit routing-options]
graceful-restart;
forwarding-table {
    export cbf;
```

```
}

[edit interfaces]
traceoptions {
   file trace-intf size 5m world-readable;
   flag all;
}
ge-0/3/0 {
   unit 0 {
      family inet {
         address 10.40.13.1/30;
      }
      family iso;
      family mpls;
   }
}
ge-2/0/0 {
   unit 0 {
      family inet {
         address 10.40.12.1/30;
      }
      family iso;
      family mpls;
   }
}
at-4/2/0 {
   atm-options {
      vpi 1 {
         maximum-vcs 1200;
      }
   }
   unit 0 {
      vci 1.100;
      family inet {
         address 10.40.11.2/30;
      }
      family iso;
      family mpls;
   }
}
```

Example: Configuring CoS-Based Forwarding for Different Traffic Types

One common use for CoS-based forwarding and next-hop maps is to enforce different handling for different traffic types, such as voice and video. For example, an LSP-based next hop can be used for voice and video, and a non-LSP next-hop can be used for best effort traffic.

Only the forwarding policy is shown in this example:

```
[edit class-of-service]
forwarding-policy {
   next-hop-map ldp-map {
      forwarding-class expedited-forwarding {
         lsp-next-hop voice;
```

```
        non-lsp-next-hop;
      }
      forwarding-class assured-forwarding {
        lsp-next-hop video;
        non-lsp-next-hop;
      }
      forwarding-class best-effort {
        non-lsp-next-hop;
        discard;
      }
    }
  }
```

Example: Configuring CoS-Based Forwarding for IPv6

This example configures CoS-based forwarding (CBF) next-hop maps and CBF LSP next-hop maps for IPv6 addresses.

You can configure a next-hop map with both IPv4 and IPv6 addresses, or you can configure separate next-hop maps for IPv4 and IPv6 addresses and include the **from family (inet | inet6)** statements at the **[edit policy-options policy-options policy-statement *policy-name* term *term-name*]** hierarchy level to ensure that only next-hop maps of a specified protocol are applied to a specified route.

If you do not configure separate next-hop maps and include the **from family (inet | inet6)** statements in the configuration, when a route uses two next hops (whether IPv4, IPv6, interface, or LSP next hop) in at least two of the specified forwarding classes, CBF is used for the route; otherwise, the CBF policy is ignored.

1. Define the CBF next-hop map:

```
[edit class-of-service]
forwarding-policy {
  next-hop-map cbf-map {
    forwarding-class best-effort {
      next-hop [ ::192.168.139.38 192.168.139.38 ];
    }
    forwarding-class expedited-forwarding {
      next-hop [ ::192.168.140.5 192.168.140.5 ];
    }
    forwarding-class assured-forwarding {
      next-hop [ ::192.168.145.5 192.168.145.5 ];
    }
    forwarding-class network-control {
      next-hop [ ::192.168.141.2 192.168.141.2 ];
    }
  }
}
```

2. Define the CBF forwarding policy:

```
[edit policy-options]
policy-statement ls {
  then cos-next-hop-map cbf-map;
}
```

3. Export the CBF forwarding policy:

```
[edit routing-options]
forwarding-table {
  export ls;
}
```

CHAPTER 4

Configuration Statements

[edit class-of-service] Hierarchy Level

```
class-of-service {
  classifiers {
    type classifier-name {
      forwarding-class class-name {
        loss-priority (high | low | medium-high | medium-low) code-points [ aliases bits ];
      }
      import (classifier-name | default);
    }
  }
  code-point-aliases {
    (dscp | dscp-ipv6 | exp | ieee-802.1 | ieee-802.1ad | inet-precedence) {
      alias-name bits;
    }
  }
  drop-profiles {
    profile-name {
      fill-level percentage drop-probability percentage;
      interpolate {
        drop-probability value;
        fill-level value;
      }
    }
  }
  fabric {
    scheduler-map {
      priority (high | low) scheduler scheduler-name;
    }
  }
  forwarding-class-map {
    map-name {
      class class-name queue-num queue-number <restricted-queue queue-number>;
    }
  }
  forwarding-classes {
    class class-name policing-priority (normal | premium) queue-num queue-number
      priority (high | low);
```

```
    queue queue-number class-name policing-priority (normal | premium) priority (high |
      low);
}
forwarding-policy {
  class class-name {
    classification-override {
      forwarding-class class-name;
    }
  }
  next-hop-map map-name {
    forwarding-class class-name {
      discard;
      lsp-next-hop [ lsp-regular-expressions ];
      next-hop [ next-hop-names ];
      non-lsp-next-hop;
    }
  }
}
fragmentation-maps {
  map-name {
    forwarding-class class-name {
      drop-timeout milliseconds;
      fragment-threshold bytes;
      multilink-class number;
      no-fragmentation;
    }
  }
}
host-outbound-traffic {
  dscp-code-point value;
  forwarding-class class-name;
  ieee-802.1 {
    default value;
    rewrite-rules;
  }
  tcp {
    raise-internet-control-priority;
  }
}
interfaces {
  ... the interfaces subhierarchy appears after the main [edit class-of-service] hierarchy
    ...
}
}
restricted-queues {
  forwarding-class class-name queue-number;
}
rewrite-rules {
  (dscp | dscp-ipv6 | exp |frame-relay-de | ieee-802.1 | ieee-802.1ad | inet-precedence)
    rewrite-rule {
    forwarding-class class-name {
      loss-priority level code-point (alias | bits);
    }
    import (rewrite-rule | default);
  }
}
```

```
    routing-instances routing-instance-name {
      classifiers {
        dscp (classifier-name | default);
        dscp-ipv6 (classifier-name | default);
        exp (classifier-name | default);
        ieee-208.1 (classifier-name | default | encapsulated | vlan-tag (inner | outer));
      }
    }
    scheduler-maps {
      map-name {
        forwarding-class class-name scheduler scheduler-name;
      }
    }
    schedulers {
      scheduler-name {
        adjust-minimum value;
        adjust-percent value;
        buffer-size (exact | percent percentage | remainder);
        drop-profile-map loss-priority (any | high | low | medium-high | medium-low)
          protocol any;
        excess-priority (high | low | medium-high | medium-low);
        excess-rate (percent percentage | proportion proportion);
        priority (high | low | medium-high | medium-low | strict-high);
        shaping-rate (bps | percent percentage | burst-size size);
        transmit-rate (bps | percent percentage | remainder) <exact | rate-limit>;
      }
    }
    traceoptions {
      file <files number> <match regular-expression> <size maximum-file-size>
        <world-readable | no-world-readable>;
      flag flag;
      no-remote-trace;
    }
    traffic-control-profiles {
      profile-name {
        adjust-minimum rate;
        delay-buffer-rate (bps | cps cps | percent percentage);
        excess-rate (percent percentage | proportion value);
        guaranteed-rate (bps | percent percentage) <burst-size bytes>;
        overhead-accounting (frame-mode | cell-mode) <bytes byte-value>;
        scheduler-map map-name;
        shaping-rate (bps | percent percentage) <burst-size bytes>;
      }
    }
    tri-color;
  }

  class-of-service {
    interfaces {
      interface-name {
        excess-bandwith-share (equal | proportional value);
        input-excess-bandwith-share (equal | proportional value);
        input-scheduler-map map-name;
        input-shaping-rate bps;
        input-traffic-control-profile profile-name;
        output-forwarding-class-map map-name;
```

```
    output-traffic-control-profile profile-name;
    scheduler-map map-name;
    scheduler-map-chassis (map-name | derived);
    shaping-rate bps;
    unit (logical-unit-number | *){
      classifiers {
        dscp (classifier-name | default) {
          family [ inet mpls ];
        }
        dscp-ipv6 (classifier-name | default) {
          family [ inet mpls ];
        }
        exp (classifier-name | default);
        ieee-208.1 (classifier-name | default)  <vlan-tag (inner | outer)>;
        ieee-208.1ad (classifier-name | default);
        inet-precedence (classifier-name | default);
      }
      forwarding-class class-name;
      input-scheduler-map map-name;
      input-shaping-rate bps;
      input-traffic-control-profile profile-name shared-instance instance-name;
      loss-priority-maps {
        (map-name | default);
      }
      loss-priority-rewrites {
        (map-name | default);
      }
      output-forwarding-class-map map-name;
      output-traffic-control-profile profile-name shared-instance instance-name;
      rewrite-rules {
        dscp (rule-name | default) <protocol mpls>;
        dscp-ipv6 (rule-name | default);
        exp (rule-name | default) <protocol [ mpls-any | mpls-inet-both |
          mpls-inet-both-non-vpn ]>;
        exp-push-push-push default;
        exp-swap-push-push default;
        ieee-802.1 (rewrite-name | default) <vlan-tag (outer | outer-and-inner)>;
        ieee-802.1ad (rewrite-name | default) <vlan-tag (outer | outer-and-inner)>;
        inet-precedence (rewrite-name | default) <protocol mpls>;
      }
      scheduler-map map-name;
      shaping-rate bps;
      translation-table (to-dscp-from-dscp | to-dscp-ipv6-from-dscp-ipv6 |
        to-exp-from-exp | to-inet-precedence-from-inet-precedence) table-name;
    }
  }
  interface-set interface-set-name {
    excess-bandwith-share (equal | proportional value);
    input-excess-bandwith-share (equal | proportional value);
    input-traffic-control-profile profile-name;
    input-traffic-control-profile-remaining profile-name;
    internal-node;
    output-traffic-control-profile profile-name;
    output-traffic-control-profile-remaining profile-name;
  }
}
```

```
}
```

Related Documentation
- Notational Conventions Used in Junos OS Configuration Hierarchies

class (CoS-Based Forwarding)

Syntax

```
class class-name {
  classification-override {
    forwarding-class class-name;
  }
}
```

Hierarchy Level [edit class-of-service forwarding-policy]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure CoS-based forwarding class.

Options *class-name*—Name of the routing policy class.

The remaining statements are explained separately.

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

Related Documentation
- Overriding the Input Classification on page 9

classification-override

Syntax

```
classification-override {
  forwarding-class class-name;
}
```

Hierarchy Level [edit class-of-service forwarding-policy class *class-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description For IPv4 packets, override the incoming packet classification, assigning all packets sent to a destination prefix to the same output transmission queue.

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

Related Documentation
- Overriding the Input Classification on page 9
- **policy-statement** in the Junos OS Routing Protocols Configuration Guide

discard (Forwarding Class)

Syntax discard;

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map *map-name* forwarding-class *class-name*]

Release Information Statement introduced in Junos OS Release 9.1.

Description Discard traffic sent to this forwarding class for the next-hop map referenced by this forwarding policy.

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

Related Documentation
- Configuring CoS-Based Forwarding on page 7
- non-lsp-next-hop on page 25

forwarding-class (Forwarding Policy)

Syntax
```
forwarding-class class-name {
  next-hop [ next-hop-name];
  lsp-next-hop [ lsp-regular-expression ];
  non-lsp-next-hop;
  discard;
}
```

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map *map-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Define forwarding class name and associated next hops.

Options ***class-name***—Name of the forwarding class.

The remaining statement is explained separately.

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

Related Documentation
- Overriding the Input Classification on page 9

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 ];
      non-lsp-next-hop;
      discard;
    }
  }
  class class-name {
    classification-override {
      forwarding-class class-name;
    }
  }
}
```

Hierarchy Level [edit class-of-service]

Release Information Statement introduced before Junos OS Release 7.4.

Description Define CoS-based forwarding policy options.

The statements are explained separately.

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

Related Documentation
- Configuring CoS-Based Forwarding on page 7

lsp-next-hop (CoS-Based Forwarding)

Syntax lsp-next-hop [*lsp-regular-expression*];

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map *map-name* forwarding-class *class-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Specify the LSP regular expression to which to map forwarded traffic.

Options ***lsp-regular-expression***—Next-hop LSP label.

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

Related Documentation
- Configuring CoS-Based Forwarding on page 7

next-hop (Class-Of-Service)

Syntax next-hop [*next-hop-name*];

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map *map-name* forwarding-class *class-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Specify the next-hop name or address to which to map forwarded traffic.

Options ***next-hop-name***—Next-hop alias or IP address.

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

Related Documentation
- Configuring CoS-Based Forwarding on page 7

next-hop-map

Syntax
```
next-hop-map map-name {
  forwarding-class class-name {
    next-hop next-hop-name;
    lsp-next-hop [ lsp-regular-expression ];
    non-lsp-next-hop;
    discard;
  }
}
```

Hierarchy Level [edit class-of-service forwarding-policy]

Release Information Statement introduced before Junos OS Release 7.4.

Description Specify the map for CoS forwarding routes.

Options ***map-name***—Map that defines next-hop routes.

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

Related Documentation
- Configuring CoS-Based Forwarding on page 7

non-lsp-next-hop

Syntax non-lsp-next-hop;

Hierarchy Level [edit class-of-service forwarding-policy next-hop-map *map-name* forwarding-class *class-name*]

Release Information Statement introduced before Junos OS Release 9.0.

Description Use a non-LSP next hop for traffic sent to this forwarding class next-hop map of this forwarding policy.

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

Related Documentation

- Configuring CoS-Based Forwarding on page 7