

# Routing Options on the QFX Series

Release  
**13.2X52**



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*Routing Options on the QFX Series*

13.2X52

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## Documentation and Release Notes

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## Supported Platforms

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

- QFabric System

## Using the Examples in This Manual

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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.xml;
    }
  }
}
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.xml; }
```

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 xv 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.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>

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

Convention	Description	Examples
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"><li>Introduces or emphasizes important new terms.</li><li>Identifies guide names.</li><li>Identifies RFC and Internet draft titles.</li></ul>	<ul style="list-style-type: none"><li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li><li><i>Junos OS CLI User Guide</i></li><li>RFC 1997, <i>BGP Communities Attribute</i></li></ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"><li>To configure a stub area, include the <b>stub</b> statement at the [edit protocols ospf area area-id] hierarchy level.</li><li>The console port is labeled <b>CONSOLE</b>.</li></ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric <i>metric</i>&gt;;</b>
(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.	<b>broadcast   multicast</b>  <b>(<i>string1</i>   <i>string2</i>   <i>string3</i>)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [</b> <b><i>community-ids</i> ]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; 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.	<ul style="list-style-type: none"><li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li><li>To cancel the configuration, click <b>Cancel</b>.</li></ul>



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

Convention	Description	Examples
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

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## Requesting Technical Support

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- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

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For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>

- Download the latest versions of software and review release notes:  
<http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications:  
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:  
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

## Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

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

## PART 1

# Overview

- [Routing Options Overview on page 3](#)



## CHAPTER 1

# Routing Options Overview

- [Overview of Routing Options on page 3](#)
- [Understanding Virtual Router Routing Instances on page 4](#)
- [Understanding Distributed Periodic Packet Management on page 4](#)
- [Understanding Bidirectional Forwarding Detection \(BFD\) on page 5](#)
- [Understanding the Unified Forwarding Table on page 5](#)

## Overview of Routing Options

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In addition to dynamic routing protocols, you can configure static routing on QFX Series switches. You can also configure a variety of protocol-independent routing properties, such as

- Per-packet load balancing (equal cost multipath routing)
- Autonomous system numbers
- Autonomous system confederation members
- Router identifiers
- Routing table groups
- Multicast scoping

### **Related Documentation**

- [Understanding Distributed Periodic Packet Management on page 4](#)
- [Understanding Virtual Router Routing Instances on page 4](#)

## Understanding Virtual Router Routing Instances

---

Virtual router routing instances allow administrators to divide a QFX Series switch into multiple independent virtual routers, each with its own routing table. Virtual router routing instances enable you to isolate traffic without using multiple devices to segment your network. You can create routing instances for unicast routing protocols and PIM sparse mode.

Each virtual router routing instance consists of sets of the following:

- Routing tables
- Interfaces that belong to these routing tables
- Routing protocol configurations
- Routing option configurations

You can use virtual router routing instances to isolate customer traffic on a network and to bind customer-specific routing instances to customer-owned interfaces. Each interface can belong to only one routing instance. QFX 3500 and QFX3600 switches and QFabric systems support as many as 256 virtual router routing instances. QFX 5100 switches support as many as 512 virtual router routing instances.

**Related Documentation**

- [Configuring Virtual Router Routing Instances on page 15](#)

## Understanding Distributed Periodic Packet Management

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Periodic packet management (PPM) is responsible for processing a variety of time-sensitive periodic tasks for particular processes so that other processes on the QFX Series can more optimally direct their resources. PPM is responsible for the periodic transmission of packets on behalf of its various client processes, which include the processes that control the Link Aggregation Control Protocol (LACP) and Bidirectional Forwarding Detection (BFD) protocol, and also for receiving packets on behalf of these client processes. PPM also gathers some statistics and sends process-specific packets. PPM cannot be disabled and is always running on any operational switch.

The responsibility for PPM processing on the switch is distributed between the Routing Engine and the access interfaces for all protocols that use PPM by default. This distributed model provides a faster response time for protocols that use PPM than the response time provided by the nondistributed model.

If distributed PPM is disabled, the PPM process runs on the Routing Engine only.

You can disable distributed PPM for all protocols that use PPM. You can also disable distributed PPM for LACP packets only.



**BEST PRACTICE:** We generally recommend that you disable distributed PPM only if Juniper Networks Customer Service advises you to do so. You should disable distributed PPM only if you have a compelling reason to disable it.

**Related  
Documentation**

- [Configuring Distributed Periodic Packet Management on page 14](#)

## Understanding Bidirectional Forwarding Detection (BFD)

The Bidirectional Forwarding Detection (BFD) protocol is a simple mechanism that detects failures in a network and works in a wide variety of network environments and topologies. In BFD operation, switches exchange BFD hello packets at a specified interval and detect a neighbor failure if they do not receive a reply after a specified interval. The BFD failure detection timers support shorter time limits than the static route failure detection mechanisms, so they can provide faster detection of failures.

To configure faster failure detection, use lower BFD timer values. The timers can automatically adapt to a higher value if an adjacency fails, and they also adapt to a higher value when a BFD session flap occurs more than three times in a span of 15 seconds. In this case, a back-off algorithm increases the receive interval by two if the local BFD instance is the reason for the session flap and increases the transmission interval by two if the remote BFD instance is the reason for the session flap.

You can use the **clear bfd adaptation** command to return BFD interval timers to their configured values. This command is hitless, meaning that it does not affect traffic flow.



**NOTE:** QFX switches do not support BFD timer values of less than 1 second.

**Related  
Documentation**

- [Examples: Configuring BFD for Static Routes on page 22](#)
- [Example: Configuring BFD Authentication for Static Routes on page 37](#)

## Understanding the Unified Forwarding Table

- [Using the Unified Forwarding Table to Optimize Address Storage on page 5](#)
- [MAC Address and Host Address Memory Allocation on page 6](#)
- [LPM Table Memory Allocation on page 7](#)

### Using the Unified Forwarding Table to Optimize Address Storage

On the QFX5100 switch, you can control the allocation of forwarding table memory available to store the following:

- MAC addresses.
- Layer 3 host entries.

- Longest prefix match (LPM) table entries.



**NOTE:** Starting with Junos OS 13.2X51-D15, you can allocate more memory to store prefixes in the range /65 to /127 range.

This feature gives you the flexibility to configure your QFX5100 to match the needs of your particular network environment.

## MAC Address and Host Address Memory Allocation

There are several profiles that allocate memory differently for MAC addresses and host addresses. You configure the mix that best meets your needs by choosing the appropriate profile. [Table 3 on page 6](#) lists the profiles you can choose and the associated maximum values for the MAC address and host table entries.

**Table 3: Unified Forwarding Table Profiles**

Profile Name	MAC Table	Host Table (unicast and multicast addresses)					
	MAC Addresses	IPv4 unicast	IPv6 unicast	IPv4 (*, G)	IPv4 (S, G)	IPv6 (*, G)	IPv6 (S, G)
<b>l2-profile-one</b>	288K	16K	8K	8K	8K	4K	4K
<b>l2-profile-two</b>	224K	80K	40K	40K	40K	20K	20K
<b>l2-profile-three (default)</b>	160K	144K	72K	72K	72K	36K	36K
<b>l3-profile</b>	96K	208K	104K	104K	104K	52K	52K
<b>lpm-profile</b>	32K	16K	8K	8K	8K	4K	4K

Note that all entries in the host table share the same memory space. If the host table stores the maximum number of entries for any given type, the entire shared table is full and is unable to accommodate *any* entries of any other type. As you can see, different entry types occupy different amounts of memory. For example, an IPv6 unicast address occupies twice as much memory as an IPv4 unicast address, and an IPv6 multicast address occupies four times as much memory as an IPv4 unicast address.

[Table 4 on page 6](#) lists various valid combinations that the host table can store if you use the **l2-profile-one** profile. Each row in the table represents a case in which the host table is full and cannot accommodate any more entries. .

**Table 4: Example Host Table Combinations Using l2-profile-one**

IPv4 unicast	IPv6 unicast	IPv4 multicast (*, G)	IPv4 multicast (S, G)	IPv6 multicast (*, G)	IPv6 multicast (S, G)
16K	0	0	0	0	0
12K	2K	0	0	0	0



Table 4: Example Host Table Combinations Using l2-profile-one (*continued*)

IPv4 unicast	IPv6 unicast	IPv4 multicast (*, G)	IPv4 multicast (S, G)	IPv6 multicast (*, G)	IPv6 multicast (S, G)
12K	0	2K	2K	0	0
8K	4K	0	0	0	0
4K	2K	2K	2K	0	0
0	4K	0	0	1K	1K

### LPM Table Memory Allocation

You configure the memory allocation for LPM table entries differently depending on which version of Junos OS you use. To learn how to configure memory allocation for LPM table entries see [“Configuring the Unified Forwarding Table” on page 16](#).

- Related Documentation**
- [Configuring the Unified Forwarding Table on page 16](#)



## PART 2

# Configuration

- [Configuration Tasks on page 11](#)
- [Configuration Examples on page 21](#)
- [Configuration Statements on page 47](#)



## CHAPTER 2

# Configuration Tasks

- [Configuring Static Routing on page 12](#)
- [Configuring Per-Packet Load Balancing on page 12](#)
- [Configuring Distributed Periodic Packet Management on page 14](#)
- [Configuring Virtual Router Routing Instances on page 15](#)
- [Configuring the Unified Forwarding Table on page 16](#)

## Configuring Static Routing

---

Static routes are routes that are manually configured and entered into the routing table.

The switch uses static routes:

- When the switch does not have a route to a destination that has a better (lower) *preference* value. The preference is an arbitrary value in the range from 0 through 255 that the software uses to rank routes received from different protocols, interfaces, or remote systems. The routing protocol process generally determines the active route by selecting the route with the lowest preference value. In the given range, **0** is the lowest and **255** is the highest.
- When the switch cannot determine the route to a destination.
- When the switch is forwarding unroutable packets.

To configure basic static route options using the CLI:

- To configure the switch's default gateway:

```
[edit]
user@switch# set routing-options static route 0.0.0.0/0 next-hop 10.0.1.1
```

- To configure a static route and specify the next address to be used when routing traffic to the static route:

```
[edit]
user@switch# set routing-options static route 20.0.0.0/24 next-hop 10.0.0.2.1
```

- To always keep the static route in the forwarding table:

```
[edit]
user@switch# set routing-options static route 20.0.0.0/24 retain
```

- To prevent the static route from being readvertised:

```
[edit]
user@switch# set routing-options static route 20.0.0.0/24 no-readvertise
```

- To remove inactive routes from the forwarding table:

```
[edit]
user@switch# set routing-options static route 20.0.0.0/24 active
```

### Related Documentation

- [Monitoring Routing Information on page 155](#)

## Configuring Per-Packet Load Balancing

---

When there are multiple equal-cost paths to the same destination for the active route, Junos OS chooses one of the next-hop addresses to install into the forwarding table in a random fashion by default. Whenever the set of next hops for a destination changes in any way, the next-hop address is chosen again, also in a random fashion.

You can configure Junos OS so that, for the active route, all next-hop addresses for a destination are installed in the forwarding table. This is called per-packet load balancing. You can use this feature to spread traffic across multiple paths.

When per-packet load balancing is configured, traffic is divided into individual flows (up to a maximum of 16). Packets for an individual flow are sent out a single interface. To determine flows, the switch examines each of the following packet fields:

- Source IP address
- Destination IP address
- Protocol
- Source port number
- Destination port number
- Source interface index
- Type of service (ToS)

The switch recognizes packets in which all of these parameters are identical and ensures that these packets are sent out through the same interface. This prevents problems that might otherwise occur with packets arriving at their destination out of their original sequence.



**NOTE:** Load balancing is not supported on management interfaces.

The following steps show how to configure per-packet load balancing:

1. Define a load-balancing routing policy by including one or more **policy-statement** statements at the **[edit policy-options]** hierarchy level, defining an action of **load-balance per-packet**:

```
policy-statement policy-name {
  from {
    match-conditions;
    route-filter destination-prefix match-type <actions>;
    prefix-list name;
  }
  then {
    load-balance per-packet;
  }
}
```

2. Apply the policy to routes exported from the routing table to the forwarding table. To do this, include the **forwarding-table** and **export** statements:

```
forwarding-table {
  export policy-name;
}
```

When you enable per-packet load balancing on a QFabric system, packets might be switched across the fabric even though there is a local port with a same-cost route to the destination. For example, if per-packet load balancing is enabled and a packet arrives at network Node device A, it might be switched to network Node device B and forwarded from there even if there is a same-cost route through a port on Node device A to the destination. In this case, traffic transits the fabric needlessly. You can configure a QFabric

system to choose a locally switched route if one is available. To enable this feature, include the **ecmp-do-local-lookup** statement at the **[edit forwarding-options]** hierarchy level.

**Related Documentation**

- [Examples: Configuring Per-Packet Load Balancing on page 21](#)

---

## Configuring Distributed Periodic Packet Management

Periodic packet management (PPM) is responsible for processing a variety of time-sensitive periodic tasks so that other processes on the QFX Series can more optimally direct their resources.

The responsibility for PPM processing on the switch is distributed between the Routing Engine and the access interfaces for all protocols that use PPM by default. This distributed model provides a faster response time for protocols that use PPM than the response time provided by the nondistributed model.

If distributed PPM is disabled, the PPM process runs on the Routing Engine only.

You can disable distributed PPM for all protocols that use PPM. You can also disable distributed PPM for Link Aggregation Control Protocol (LACP) packets only.



.....

**BEST PRACTICE:** We generally recommend that you disable distributed PPM only if Juniper Networks Customer Service advises you to do so. You should disable distributed PPM only if you have a compelling reason to disable it.

.....

This topic describes:

- [Disabling or Enabling Distributed Periodic Packet Management Globally on page 14](#)
- [Disabling or Enabling Distributed Periodic Packet Management for LACP Packets on page 14](#)

### Disabling or Enabling Distributed Periodic Packet Management Globally

Distributed PPM is enabled by default. Disable distributed PPM if you need to move all PPM processing to the Routing Engine. Enable distributed PPM if it was previously disabled and you need to run distributed PPM.

To disable distributed PPM:

```
[edit routing-options]  
user@switch# set ppm no-delegate-processing
```

To enable distributed PPM if it was previously disabled:

```
[edit routing-options]  
user@switch# delete ppm no-delegate-processing
```

### Disabling or Enabling Distributed Periodic Packet Management for LACP Packets

Distributed PPM is enabled by default. Disable distributed PPM for only LACP packets if you need to move all PPM processing for LACP packets to the Routing Engine.



To disable distributed PPM for LACP packets:

```
[edit protocols]
user@switch# set lacp ppm centralized
```

To enable distributed PPM for LACP packets if it was previously disabled:

```
[edit protocols]
user@switch# delete lacp ppm centralized
```

**Related  
Documentation**

- [Understanding Distributed Periodic Packet Management on page 4](#)
- [Understanding Aggregated Ethernet Interfaces and LACP](#)

## Configuring Virtual Router Routing Instances

Use virtual router routing instances to divide a QFX Series switch into multiple independent virtual routers, each with its own routing table. Virtual router routing instances enable you to isolate traffic without using multiple devices to segment your network. You can create routing instances for unicast routing protocols and PIM sparse mode.

To configure virtual router routing instances:

1. Create a routing instance:

```
[edit routing-instances]user@switch# set routing-instance-name instance-type virtual-router
```



**NOTE:** The default routing instance, **master**, refers to the main **inet.0** routing table. The master routing instance is reserved and cannot be specified as a routing instance.

2. Bind each routing instance to the corresponding interfaces:

```
[edit routing-instances]user@switch# set routing-instance-name interface
device-name:type-fpc/pic/port.logical-unit-number
```



**NOTE:**

- You must bind routing instances to interfaces from the Node devices assigned to the network Node group only. If you try to bind routing instances to interfaces from the Node devices assigned to server Node groups, the configuration does not commit.
- You can bind an interface to one routing instance only.

3. Create each of the logical interfaces bound to each routing instance:

```
[edit interfaces]user@switch# set device-name:type-fpc/pic/port unit logical-unit-number
family inet address ip-address
```



**NOTE:** Do not create a logical interface using the **family ethernet-switching** option in this step. Binding an interface using the **family ethernet-switching** option to a routing instance can cause the interface to shut down.

4. (Optional) Configure routing protocols for the routing instance at the **[edit routing-instances *routing-instance-name* protocols]** hierarchy level.
5. (Optional) Configure routing options for the routing instance at the **[edit routing-instances *routing-instance-name* routing-options]** hierarchy level.

#### Related Documentation

- [Understanding Virtual Router Routing Instances on page 4](#)
- [Understanding Interfaces on the QFabric System](#)
- [Understanding Node Groups](#)
- [Verifying That Virtual Router Routing Instances Are Working on page 156](#)

## Configuring the Unified Forwarding Table

To optimize the way your switch allocates memory for different types of addresses, you can choose a unified forwarding table profile. In addition to choosing this profile, you can also decide how you want memory allocated for longest prefix match (LPM) entries.

- [Configuring an Address-Storage Profile on page 16](#)
- [Configuring the LPM Allocation on page 17](#)

### Configuring an Address-Storage Profile

On the QFX5100 switch, you can control the allocation of memory available to store the following:

- MAC addresses
- Layer 3 host entries
- Longest prefix match (LPM) table entries

You configure the mix that best meets your needs by choosing the appropriate profile. [Table 5 on page 16](#) lists the profiles you can choose and the maximum values for the MAC address and host table entries.

**Table 5: Unified Forwarding Table Profiles**

Profile Name	MAC Table	Host Table (unicast and multicast addresses)					
	MAC Addresses	IPv4 unicast	IPv6 unicast	IPv4 (*, G)	IPv4 (S, G)	IPv6 (*, G)	IPv6 (S, G)
<b>l2-profile-one</b>	288K	16K	8K	8K	8K	4K	4K
<b>l2-profile-two</b>	224K	80K	40K	40K	40K	20K	20K
<b>l2-profile-three (default)</b>	160K	144K	72K	72K	72K	36K	36K
<b>l3-profile</b>	96K	208K	104K	104K	104K	52K	52K

Table 5: Unified Forwarding Table Profiles (*continued*)

Profile Name	MAC Table	Host Table (unicast and multicast addresses)					
lpm-profile*	32K	16K	8K	8K	8K	4K	4K

Note that if the host table stores the maximum number of entries for any given type, the entire table is full and is unable to accommodate *any* entries of any other type. For example, an IPv6 unicast address occupies twice as much memory as an IPv4 unicast address, and an IPv6 multicast address occupies four times as much memory as an IPv4 unicast address. For more information about valid combinations of table entries see *Understanding the Unified Forwarding Table*.

To configure the profile that you want, enter and commit the following statement:

[edit]

```
user@switch# set chassis forwarding-options profile-name
```



**NOTE:** When you configure and commit a profile, the PFE process restarts and all the data interfaces on the switch go down and come back up.

The settings for **l2-profile-three** are configured by default. That is, if you do not enter a **set forwarding-options chassis profile-name** statement, these settings are configured.

## Configuring the LPM Allocation

In addition to choosing a profile, you can further optimize memory allocation for LPM table entries by configuring how many IPv6 prefixes in the range /65 through /127 you want the switch to store. The switch uses LPM entries during address lookup to match addresses to the most-specific (longest) applicable prefix. The procedures for configuring the LPM table are different depending on which version of Junos OS you are using.

- [Configuring the LPM Table With Junos OS 13.2X51-D10 and 13.2X52-D10 on page 17](#)
- [Configuring the LPM Table With Junos OS 13.2x51-D15 on page 19](#)

### Configuring the LPM Table With Junos OS 13.2X51-D10 and 13.2X52-D10

With Junos OS 13.2x51-D10 and 13.2X52-D10, the switch allocates memory for 16 IPv6 prefixes in the range /65 through /127 by default. If you want to use more than 16 IPv6 prefixes in this range, you must enter and commit the following statement:

```
user@switch# set chassis forwarding-options profile-name num-65-127-prefix [1-128]
```

Each increment adds support for 16 IPv6 prefixes between /65 and /127, for a maximum of 2048 such prefixes (16 x 128 = 2048). The system supports 16 of these prefixes by default, so to increase the number of supported prefixes, you must enter a value of 2 or greater. For example, if you enter **2**, the system will support 32 IPv6 prefixes in the range /65 through /127.



**NOTE:** When you configure and commit the `num-65-127-prefix` value, all the data interfaces on the switch restart. The management interfaces are unaffected.

The LPM table is shared, and each increment that you add for IPv6 prefixes in the range /65 through /127 reduces the number of table entries that are available for IPv4 prefixes and IPv6 prefixes shorter than /65. Note that IPv6 prefixes /65 and longer consume twice as much memory as shorter IPv6 prefixes and four times as much memory as IPv4 prefixes. So, for example, entering the following statement

```
user@switch# set chassis forwarding-options l2-profile-one num-65-127-prefix 2
```

provides for 16 additional IPv6 prefixes /65 or longer (for a total of 32 such prefixes) and reduces the numbers of other prefixes that can be stored, as indicated:

- 32 fewer IPv6 prefixes shorter than /65 (16 IPv6 prefixes /65 or longer consume the same amount of memory as 32 IPv6 prefixes shorter than /65), or
- 64 fewer IPv4 prefixes (16 IPv6 prefixes /65 or longer consume the same amount of memory as 64 IPv4 prefixes)

[Table 6 on page 18](#) provides examples of valid combinations that the LPM table can store using the **l2** and **l3** profiles. Once again, each row in the table represents a case in which the table is full and cannot accommodate any more entries.

**Table 6: Example LPM Table Combinations Using l2-and l3 Profiles With Junos OS 13.2X51-D10 and 13.2X52-D10**

num-65-127-prefix Value	IPv4 Entries	IPv6 Entries (Prefix <= 64)	IPv6 Entries (Prefix >= 65)
1 (default)	16K-16	0K	16
1 (default)	0K	8K-16	16
1 (default)	8K-16	4K	16
64	4K	4K	1K
64	2K	5K	1K
64	0K	6K	1K
128	4K	2K	2K
128	2K	3K	2K
128	0K	4K	2K



**NOTE:** With Junos OS 13.2X51-D10 and 13.2X52-D10, the `lpm-profile` does not support IPv6 prefixes. If you use this version of Junos OS and also use the `lpm-profile`, do not configure the `num-65-127-prefix` statement. That is, leave it at its default value of 1, which allows for as many as 128K IPv4 prefixes (the maximum possible).

### Configuring the LPM Table With Junos OS 13.2x51-D15

With Junos OS 13.2X51-D15, you can configure the memory allocation for the LPM table for the `lpm-profile` profile independently of the other profiles. In addition, Junos OS 13.2x51-D15 offers twice as much storage for IPv6 prefixes /65 through /127 (4K instead of 2K) for the `l2` and `l3` profiles.

- [Configuring the l2 and l3 profiles With Junos OS 13.2x51-D15 on page 19](#)
- [Configuring The lpm-profile With Junos OS 13.2x51-D15 on page 20](#)

#### Configuring the l2 and l3 profiles With Junos OS 13.2x51-D15

With Junos OS 13.2x51-D15, you can configure the switch to support as many as 4K IPv6 prefixes /65 through /127 if you are using any profile other than the `lpm-profile` profile. To do so, enter and commit the following statement:

```
user@switch# set chassis forwarding-options profile-name num-65-127-prefix [0-4]
```

Each increment adds support for 1K IPv6 prefixes between /65 and /127, for a maximum of 4K such prefixes. The default value is 1, which allocates memory for 1K of IPv6 prefixes in this range. Each increment that you add for IPv6 prefixes in the range /65 through /127 reduces the number of table entries that are available for IPv6 prefixes shorter than /65 and IPv4 prefixes. [Table 7 on page 19](#) shows the numbers of entries that you can allocate by using the `num-65-127-prefix` statement with Junos OS 13.2X51-D15. Once again, each row represents a case in which the table is full and cannot accommodate any more entries.

**Table 7: LPM Table Combinations for l2 and l3 profiles With Junos OS 13.2X51-D15**

num-65-127-prefix Value	IPv4 Entries	IPv6 Entries (Prefix <= 64)	IPv6 Entries (Prefix >= 65)
0	16K	8K	0K
1 (default)	12K	6K	1K
2	8K	4K	2K
3	4K	2K	3K
4	0K	0K	4K



**NOTE:** When you configure the `num-65-127-prefix` value, the PFE process restarts and all the data interfaces on the switch go down and come back up. The management interfaces are unaffected.

### ***Configuring The lpm-profile With Junos OS 13.2x51-D15***

If you use the **lpm-profile** profile with Junos OS 13.2x51-D15, you can control whether the switch allocates any memory for IPv6 prefixes /65 through /127. By default, the switch supports the following with this profile:

- 128K IPv4 prefixes
- 16K IPv6 prefixes (all lengths)

You can disable support for IPv6 prefixes /65 through /127 with the **lpm-profile** profile so that there is more memory for IPv6 prefixes shorter than /65. To do so, enter and commit the following statement:

```
user@switch# set chassis forwarding-options profile-name prefix-65-127-disable
```

If you enter this statement, the switch allocates memory for the following:

- 128K IPv4 and IPv6 prefixes shorter than /65
- 0K IPv6 prefixes /65 through /127

For example, if you use the **prefix-65-127-disable** statement, each of the following combinations are valid:

- 100K IPv4 and 28K IPv6 /64 prefixes
- 64K IPv4 and 64K IPv6 /64 prefixes
- 128K IPv4 and 0K IPv6 /64 prefixes
- 0K IPv4 and 128K IPv6 /64 prefixes

#### **Related Documentation**

- [Understanding the Unified Forwarding Table on page 5](#)

## CHAPTER 3

# Configuration Examples

- [Examples: Configuring Per-Packet Load Balancing on page 21](#)
- [Examples: Configuring BFD for Static Routes on page 22](#)
- [Example: Configuring BFD Authentication for Static Routes on page 37](#)

### Examples: Configuring Per-Packet Load Balancing

---

Perform per-packet load balancing for all routes:

```
[edit]
policy-options {
  policy-statement load-balancing-policy {
    then {
      load-balance per-packet;
    }
  }
}
routing-options {
  forwarding-table {
    export load-balancing-policy;
  }
}
```

Perform per-packet load balancing for a limited set of routes:

```
[edit]
policy-options {
  policy-statement load-balancing-policy {
    from {
      route-filter 192.168.10/24 orlonger;
      route-filter 9.114/16 orlonger;
    }
    then {
      load-balance per-packet;
    }
  }
}
routing-options {
  forwarding-table {
    export load-balancing-policy;
  }
}
```

- Related Documentation**
- [Configuring Per-Packet Load Balancing on page 12](#)

## Examples: Configuring BFD for Static Routes

---

- [Understanding BFD for Static Routes on page 22](#)
- [Example: Configuring BFD for Static Routes on page 26](#)
- [Example: Enabling BFD on Qualified Next Hops in Static Routes on page 31](#)

### Understanding BFD for Static Routes

The Bidirectional Forwarding Detection (BFD) protocol is a simple hello mechanism that detects failures in a network. BFD works with a wide variety of network environments and topologies. A pair of routing devices exchanges BFD packets. Hello packets are sent at a specified, regular interval. A neighbor failure is detected when the routing device stops receiving a reply after a specified interval. The BFD failure detection timers have shorter time limits than the static route failure detection mechanisms, so they provide faster detection.

The BFD failure detection timers are adaptive and can be adjusted to be faster or slower. The lower the BFD failure detection timer value, the faster the failure detection and vice versa. For example, the timers can adapt to a higher value if the adjacency fails (that is, the timer detects failures more slowly). Or a neighbor can negotiate a higher value for a timer than the configured value. The timers adapt to a higher value when a BFD session flap occurs more than three times in a span of 15 seconds. A back-off algorithm increases the receive (Rx) interval by two if the local BFD instance is the reason for the session flap. The transmission (Tx) interval is increased by two if the remote BFD instance is the reason for the session flap. You can use the **clear bfd adaptation** command to return BFD interval timers to their configured values. The **clear bfd adaptation** command is hitless, meaning that the command does not affect traffic flow on the routing device.

By default, BFD is supported on single-hop static routes. In Junos OS Release 8.2 and later, BFD also supports multihop static routes.

To enable failure detection, include the **bfd-liveness-detection** statement in the static route configuration.

In Junos OS Release 9.1 and later, the BFD protocol is supported for IPv6 static routes. Global unicast and link-local IPv6 addresses are supported for static routes. The BFD protocol is not supported on multicast or anycast IPv6 addresses. For IPv6, the BFD protocol supports only static routes and only in Junos OS Release 9.3 and later. IPv6 for BFD is not supported for any other protocol.

To configure the BFD protocol for IPv6 static routes, include the **bfd-liveness-detection** statement at the **[edit routing-options rib inet6.0 static route destination-prefix]** hierarchy level.

In Junos OS Release 8.5 and later, you can configure a hold-down interval to specify how long the BFD session must remain up before a state change notification is sent.



To specify the hold-down interval, include the **holddown-interval** statement in the BFD configuration.

You can configure a number in the range from 0 through 255,000 milliseconds. The default is 0. If the BFD session goes down and then comes back up during the hold-down interval, the timer is restarted.



**NOTE:** If a single BFD session includes multiple static routes, the hold-down interval with the highest value is used.

To specify the minimum transmit and receive intervals for failure detection, include the **minimum-interval** statement in the BFD configuration.

This value represents both the minimum interval after which the local routing device transmits hello packets and the minimum interval after which the routing device expects to receive a reply from the neighbor with which it has established a BFD session. You can configure a number in the range from 1 through 255,000 milliseconds. Optionally, instead of using this statement, you can configure the minimum transmit and receive intervals separately using the **transmit-interval**, **minimum-interval**, and **minimum-receive-interval** statements.



**NOTE:** BFD is an intensive protocol that consumes system resources. Specifying a minimum interval for BFD of less than 100 ms for Routing Engine-based sessions and 10 ms for distributed BFD sessions can cause undesired BFD flapping.

Depending on your network environment, these additional recommendations might apply:

- For large-scale network deployments with a large number of BFD sessions, specify a minimum interval of 300 ms for Routing Engine-based sessions and 100 ms for distributed BFD sessions.
- For very large-scale network deployments with a large number of BFD sessions, contact Juniper Networks customer support for more information.
- For BFD sessions to remain up during a Routing Engine switchover event when nonstop active routing (NSR) is configured, specify a minimum interval of 2500 ms for Routing Engine-based sessions. For distributed BFD sessions with NSR configured, the minimum interval recommendations are unchanged and depend only on your network deployment.



**NOTE:** SRX Series devices do not support distributed BFD.

To specify the minimum receive interval for failure detection, include the **minimum-receive-interval** statement in the BFD configuration. This value represents the minimum interval after which the routing device expects to receive a reply from a neighbor

with which it has established a BFD session. You can configure a number in the range from 1 through 255,000 milliseconds. Optionally, instead of using this statement, you can configure the minimum receive interval using the **minimum-interval** statement at the **[edit routing-options static route destination-prefix bfd-liveness-detection]** hierarchy level.

To specify the number of hello packets not received by the neighbor that causes the originating interface to be declared down, include the **multiplier** statement in the BFD configuration.

The default value is 3. You can configure a number in the range from 1 through 255.

To specify a threshold for detecting the adaptation of the detection time, include the **threshold** statement in the BFD configuration.

When the BFD session detection time adapts to a value equal to or higher than the threshold, a single trap and a system log message are sent. The detection time is based on the multiplier of the **minimum-interval** or the **minimum-receive-interval** value. The threshold must be a higher value than the multiplier for either of these configured values. For example if the **minimum-receive-interval** is 300 ms and the **multiplier** is 3, the total detection time is 900 ms. Therefore, the detection time threshold must have a value higher than 900.

To specify the minimum transmit interval for failure detection, include the **transmit-interval** **minimum-interval** statement in the BFD configuration.

This value represents the minimum interval after which the local routing device transmits hello packets to the neighbor with which it has established a BFD session. You can configure a value in the range from 1 through 255,000 milliseconds. Optionally, instead of using this statement, you can configure the minimum transmit interval using the **minimum-interval** statement at the **[edit routing-options static route destination-prefix bfd-liveness-detection]** hierarchy level.

To specify the threshold for the adaptation of the transmit interval, include the **transmit-interval threshold** statement in the BFD configuration.

The threshold value must be greater than the transmit interval. When the BFD session transmit time adapts to a value greater than the threshold, a single trap and a system log message are sent. The detection time is based on the multiplier of the value for the **minimum-interval** or the **minimum-receive-interval** statement at the **[edit routing-options static route destination-prefix bfd-liveness-detection]** hierarchy level. The threshold must be a higher value than the multiplier for either of these configured values.

To specify the BFD version, include the **version** statement in the BFD configuration. The default is to have the version detected automatically.

To include an IP address for the next hop of the BFD session, include the **neighbor** statement in the BFD configuration.



**NOTE:** You must configure the **neighbor** statement if the next hop specified is an interface name. If you specify an IP address as the next hop, that address is used as the neighbor address for the BFD session.

In Junos OS Release 9.0 and later, you can configure BFD sessions not to adapt to changing network conditions.

To disable BFD adaptation, include the **no-adaptation** statement in the BFD configuration.



**NOTE:** We recommend that you not disable BFD adaptation unless it is preferable not to have BFD adaptation in your network.



**NOTE:** If BFD is configured only on one end of a static route, the route is removed from the routing table. BFD establishes a session when BFD is configured on both ends of the static route.

BFD is not supported on ISO address families in static routes. BFD does support IS-IS.

If you configure graceful Routing Engine switchover (GRES) at the same time as BFD, GRES does not preserve the BFD state information during a failover.

Junos OS also supports BFD over multihop static routes. For example, you can configure BFD over a Layer 3 path to provide path integrity over that path. You can limit the number of hops by specifying the time to live (TTL).

To configure BFD over multihop static routes, include the following statements:

```
static route destination-prefix {
  bfd-liveness-detection {
    local-address ip-address;
    minimum-receive-ttl number;
  }
}
```

To specify the source address for the multihop static route and to enable multihop BFD support, include the **local-address** statement.

To specify the number of hops, include the **minimum-receive-ttl** statement. You must configure this statement for a multihop BFD session. You can configure a value in the range from 1 through 255. It is optional for a single-hop BFD session. If you configure the **minimum-receive-ttl** statement for a single-hop session, the value must be 255.

On M Series and T Series platforms only, starting in Junos OS Release 12.3, multihop BFD runs on the CPU in the FPC, DPC, or MPC. This is referred to as *distributed BFD*. Previously, multihop BFD ran from the Routing Engine.

## Example: Configuring BFD for Static Routes

This example shows how to configure Bidirectional Forwarding Detection (BFD) for static routes.

- [Requirements on page 26](#)
- [Overview on page 26](#)
- [Configuration on page 27](#)
- [Verification on page 30](#)

---

### Requirements

In this example, no special configuration beyond device initialization is required.

---

### Overview

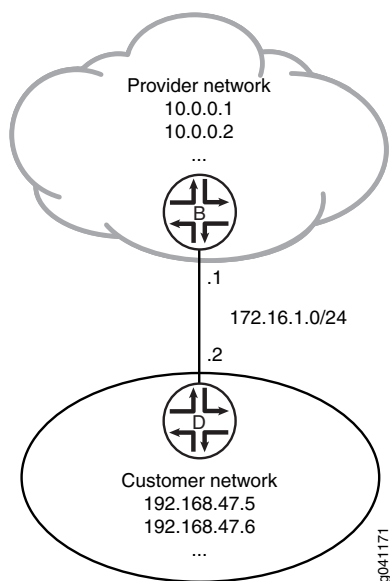
There are many practical applications for static routes. Static routing is often used at the network edge to support attachment to stub networks, which, given their single point of entry and egress, are well suited to the simplicity of a static route. In Junos OS, static routes have a global preference of 5. Static routes are activated if the specified next hop is reachable.

In this example, you configure the static route 192.168.47.0/24 from the provider network to the customer network, using the next-hop address of 172.16.1.2. You also configure a static default route of 0.0.0.0/0 from the customer network to the provider network, using a next-hop address of 172.16.1.1.

For demonstration purposes, some loopback interfaces are configured on Device B and Device D. These loopback interfaces provide addresses to ping and thus verify that the static routes are working.

[Figure 1 on page 27](#) shows the sample network.

Figure 1: Customer Routes Connected to a Service Provider



### Configuration

#### CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

#### Device B

```
set interfaces ge-1/2/0 unit 0 description B->D
set interfaces ge-1/2/0 unit 0 family inet address 172.16.1.1/24
set interfaces lo0 unit 57 family inet address 10.0.0.1/32
set interfaces lo0 unit 57 family inet address 10.0.0.2/32
set routing-options static route 192.168.47.0/24 next-hop 172.16.1.2
set routing-options static route 192.168.47.0/24 bfd-liveness-detection minimum-interval 1000
set protocols bfd traceoptions file bfd-trace
set protocols bfd traceoptions flag all
```

#### Device D

```
set interfaces ge-1/2/0 unit 1 description D->B
set interfaces ge-1/2/0 unit 1 family inet address 172.16.1.2/24
set interfaces lo0 unit 2 family inet address 192.168.47.5/32
set interfaces lo0 unit 2 family inet address 192.168.47.6/32
set routing-options static route 0.0.0.0/0 next-hop 172.16.1.1
set routing-options static route 0.0.0.0/0 bfd-liveness-detection minimum-interval 1000
set protocols bfd traceoptions file bfd-trace
set protocols bfd traceoptions flag all
```

#### Step-by-Step Procedure

The following example requires that you navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure BFD for static routes:

1. On Device B, configure the interfaces.

- ```
[edit interfaces]
user@B# set ge-1/2/0 unit 0 description B->D
user@B# set ge-1/2/0 unit 0 family inet address 172.16.1.1/24
user@B# set lo0 unit 57 family inet address 10.0.0.1/32
user@B# set lo0 unit 57 family inet address 10.0.0.2/32
```
2. On Device B, create a static route and set the next-hop address.

```
[edit routing-options]
user@B# set static route 192.168.47.0/24 next-hop 172.16.1.2
```
  3. On Device B, configure BFD for the static route.

```
[edit routing-options]
user@B# set static route 192.168.47.0/24 bfd-liveness-detection minimum-interval
1000
```
  4. On Device B, configure tracing operations for BFD.

```
[edit protocols]
user@B# set bfd traceoptions file bfd-trace
user@B# set bfd traceoptions flag all
```
  5. If you are done configuring Device B, commit the configuration.

```
[edit]
user@B# commit
```
  6. On Device D, configure the interfaces.

```
[edit interfaces]
user@D# set ge-1/2/0 unit 1 description D->B
user@D# set ge-1/2/0 unit 1 family inet address 172.16.1.2/24
user@D# set lo0 unit 2 family inet address 192.168.47.5/32
user@D# set lo0 unit 2 family inet address 192.168.47.6/32
```
  7. On Device D, create a static route and set the next-hop address.

```
[edit routing-options]
user@D# set static route 0.0.0.0/0 next-hop 172.16.1.1
```
  8. On Device D, configure BFD for the static route.

```
[edit routing-options]
user@D# set static route 0.0.0.0/0 bfd-liveness-detection minimum-interval 1000
```
  9. On Device D, configure tracing operations for BFD.

```
[edit protocols]
user@D# set bfd traceoptions file bfd-trace
user@D# set bfd traceoptions flag all
```
  10. If you are done configuring Device D, commit the configuration.

```
[edit]
user@D# commit
```

### Results

Confirm your configuration by issuing the **show interfaces**, **show protocols**, and **show routing-options** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```

Device B user@B# show interfaces
ge-1/2/0 {
  unit 0 {
    description B->D;
    family inet {
      address 172.16.1.1/24;
    }
  }
}
lo0 {
  unit 57 {
    family inet {
      address 10.0.0.1/32;
      address 10.0.0.2/32;
    }
  }
}

user@D# show protocols
bfd {
  traceoptions {
    file bfd-trace;
    flag all;
  }
}

user@B# show routing-options
static {
  route 192.168.47.0/24 {
    next-hop 172.16.1.2;
    bfd-liveness-detection {
      minimum-interval 1000;
    }
  }
}

Device D user@D# show interfaces
ge-1/2/0 {
  unit 1 {
    description D->B;
    family inet {
      address 172.16.1.2/24;
    }
  }
}
lo0 {
  unit 2 {
    family inet {
      address 192.168.47.5/32;
      address 192.168.47.6/32;
    }
  }
}

user@D# show routing-options
static {

```

```

route 0.0.0.0/0 {
  next-hop 172.16.1.1;
  bfd-liveness-detection {
    minimum-interval 1000;
  }
}

```

## Verification

Confirm that the configuration is working properly.

- [Verifying That BFD Sessions Are Up on page 30](#)
- [Viewing Detailed BFD Events on page 31](#)

### Verifying That BFD Sessions Are Up

**Purpose** Verify that the BFD sessions are up, and view details about the BFD sessions.

**Action** From operational mode, enter the **show bfd session extensive** command.

```
user@B> show bfd session extensive
```

| Address    | State | Interface  | Detect Time | Transmit Interval | Multiplier |
|------------|-------|------------|-------------|-------------------|------------|
| 172.16.1.2 | Up    | lt-1/2/0.0 | 3.000       | 1.000             | 3          |

Client Static, TX interval 1.000, RX interval 1.000  
 Session up time 00:14:30  
 Local diagnostic None, remote diagnostic None  
 Remote state Up, version 1  
 Replicated, routing table index 172  
 Min async interval 1.000, min slow interval 1.000  
 Adaptive async TX interval 1.000, RX interval 1.000  
 Local min TX interval 1.000, minimum RX interval 1.000, multiplier 3  
 Remote min TX interval 1.000, min RX interval 1.000, multiplier 3  
 Local discriminator 2, remote discriminator 1  
 Echo mode disabled/inactive

1 sessions, 1 clients

Cumulative transmit rate 1.0 pps, cumulative receive rate 1.0 pps

```
user@D> show bfd session extensive
```

| Address    | State | Interface  | Detect Time | Transmit Interval | Multiplier |
|------------|-------|------------|-------------|-------------------|------------|
| 172.16.1.1 | Up    | lt-1/2/0.1 | 3.000       | 1.000             | 3          |

Client Static, TX interval 1.000, RX interval 1.000  
 Session up time 00:14:35  
 Local diagnostic None, remote diagnostic None  
 Remote state Up, version 1  
 Replicated, routing table index 170  
 Min async interval 1.000, min slow interval 1.000  
 Adaptive async TX interval 1.000, RX interval 1.000  
 Local min TX interval 1.000, minimum RX interval 1.000, multiplier 3  
 Remote min TX interval 1.000, min RX interval 1.000, multiplier 3  
 Local discriminator 1, remote discriminator 2  
 Echo mode disabled/inactive

1 sessions, 1 clients

Cumulative transmit rate 1.0 pps, cumulative receive rate 1.0 pps



**Meaning** The TX interval 1.000, RX interval 1.000 output represents the setting configured with the **minimum-interval** statement. All of the other output represents the default settings for BFD. To modify the default settings, include the optional statements under the **bfd-liveness-detection** statement.

#### *Viewing Detailed BFD Events*

**Purpose** View the contents of the BFD trace file to assist in troubleshooting, if needed.

**Action** From operational mode, enter the **file show /var/log/bfd-trace** command.

```
user@B> file show /var/log/bfd-trace
Nov 23 14:26:55 Data (9) len 35: (hex) 42 46 44 20 70 65 72 69 6f 64 69 63 20
78 6d 69 74 20 72
Nov 23 14:26:55 PPM Trace: BFD periodic xmit rt tbl index 172
Nov 23 14:26:55 Received Downstream TraceMsg (22) len 108:
Nov 23 14:26:55 IfIndex (3) len 4: 0
Nov 23 14:26:55 Protocol (1) len 1: BFD
Nov 23 14:26:55 Data (9) len 83: (hex) 70 70 6d 64 5f 62 66 64 5f 73 65 6e 64
6d 73 67 20 3a 20
Nov 23 14:26:55 PPM Trace: ppm_bfd_sendmsg : socket 12 len 24, ifl 78 src
172.16.1.1 dst 172.16.1.2 errno 65
Nov 23 14:26:55 Received Downstream TraceMsg (22) len 93:
Nov 23 14:26:55 IfIndex (3) len 4: 0
Nov 23 14:26:55 Protocol (1) len 1: BFD
Nov 23 14:26:55 Data (9) len 68: (hex) 42 46 44 20 70 65 72 69 6f 64 69 63 20
78 6d 69 74 20 74
```

**Meaning** BFD messages are being written to the trace file.

### Example: Enabling BFD on Qualified Next Hops in Static Routes

This example shows how to configure a static route with multiple possible next hops. Each next hop has Bidirectional Forwarding Detection (BFD) enabled.

- [Requirements on page 31](#)
- [Overview on page 31](#)
- [Configuration on page 32](#)
- [Verification on page 35](#)

#### Requirements

In this example, no special configuration beyond device initialization is required.

#### Overview

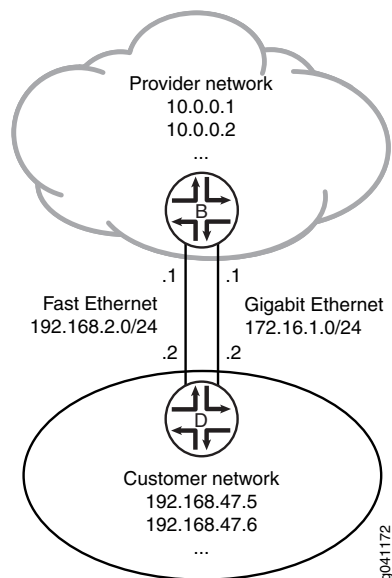
In this example, Device B has the static route **192.168.47.0/24** with two possible next hops. The two next hops are defined using two **qualified-next-hop** statements. Each next hop has BFD enabled.

BFD is also enabled on Device D because BFD must be enabled on both ends of the connection.

A next hop is included in the routing table if the BFD session is up. The next hop is removed from the routing table if the BFD session is down.

See [Figure 2 on page 32](#).

**Figure 2: BFD Enabled on Qualified Next Hops**



### Configuration

**CLI Quick Configuration** To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

**Device B**

```
set interfaces fe-0/1/0 unit 2 description secondary-B->D
set interfaces fe-0/1/0 unit 2 family inet address 192.168.2.1/24
set interfaces ge-1/2/0 unit 0 description B->D
set interfaces ge-1/2/0 unit 0 family inet address 172.16.1.1/24
set routing-options static route 192.168.47.0/24 qualified-next-hop 192.168.2.2
  bfd-liveness-detection minimum-interval 60
set routing-options static route 192.168.47.0/24 qualified-next-hop 172.16.1.2
  bfd-liveness-detection minimum-interval 60
```

**Device D**

```
set interfaces fe-0/1/0 unit 3 description secondary-D->B
set interfaces fe-0/1/0 unit 3 family inet address 192.168.2.2/24
set interfaces ge-1/2/0 unit 1 description D->B
set interfaces ge-1/2/0 unit 1 family inet address 172.16.1.2/24
set routing-options static route 0.0.0.0/0 qualified-next-hop 192.168.2.1
set routing-options static route 0.0.0.0/0 qualified-next-hop 172.16.1.1
set routing-options static route 0.0.0.0/0 bfd-liveness-detection minimum-interval 60
```

**Step-by-Step Procedure** The following example requires that you navigate various levels in the configuration hierarchy. For instructions on how to do that, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure a static route with two possible next hops, both with BFD enabled:

1. On Device B, configure the interfaces.

```
[edit interfaces fe-0/1/0]
user@B# set unit 2 description secondary-B->D
user@B# set unit 2 family inet address 192.168.2.1/24
```

```
[edit interfaces ge-1/2/0]
user@B# set unit 0 description B->D
user@B# set unit 0 family inet address 172.16.1.1/24
```

2. On Device B, configure the static route with two next hops, both with BFD enabled.

```
[edit routing-options static route 192.168.47.0/24]
user@B# set qualified-next-hop 192.168.2.2 bfd-liveness-detection minimum-interval
60
user@B# set qualified-next-hop 172.16.1.2 bfd-liveness-detection minimum-interval
60
```

3. On Device D, configure the interfaces.

```
[edit interfaces fe-0/1/0]
user@D# set unit 3 description secondary-D->B
user@D# set unit 3 family inet address 192.168.2.2/24
```

```
[edit interfaces ge-1/2/0]
user@D# set unit 1 description D->B
user@D# set unit 1 family inet address 172.16.1.2/24
```

4. On Device D, configure a BFD-enabled default static route with two next hops to the provider network.

In this case, BFD is enabled on the route, not on the next hops.

```
[edit routing-options static route 0.0.0.0/0]
user@D# set qualified-next-hop 192.168.2.1
user@D# set qualified-next-hop 172.16.1.1
user@D# set bfd-liveness-detection minimum-interval 60
```

**Results** Confirm your configuration by issuing the **show interfaces** and **show routing-options** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@B# show interfaces
fe-0/1/0 {
  unit 2 {
    description secondary-B->D;
    family inet {
      address 192.168.2.1/24;
    }
  }
}
```

```
ge-1/2/0 {
  unit 0 {
    description B->D;
    family inet {
      address 172.16.1.1/24;
    }
  }
}

user@B# show routing-options
static {
  route 192.168.47.0/24 {
    qualified-next-hop 192.168.2.2 {
      bfd-liveness-detection {
        minimum-interval 60;
      }
    }
    qualified-next-hop 172.16.1.2 {
      bfd-liveness-detection {
        minimum-interval 60;
      }
    }
  }
}

user@D# show interfaces
fe-0/1/0 {
  unit 3 {
    description secondary-D->B;
    family inet {
      address 192.168.2.2/24;
    }
  }
}
ge-1/2/0 {
  unit 1 {
    description D->B;
    family inet {
      address 172.16.1.2/24;
    }
  }
}

user@D# show routing-options
static {
  route 0.0.0.0/0 {
    qualified-next-hop 192.168.2.1;
    qualified-next-hop 172.16.1.1;
    bfd-liveness-detection {
      minimum-interval 60;
    }
  }
}
```

If you are done configuring the devices, enter **commit** from configuration mode.

## Verification

Confirm that the configuration is working properly.

- [Checking the Routing Tables on page 35](#)
- [Verifying the BFD Sessions on page 35](#)
- [Removing BFD from Device D on page 35](#)
- [Removing BFD from One Next Hop on page 36](#)

### Checking the Routing Tables

**Purpose** Make sure that the static route appears in the routing table on Device B with two possible next hops.

**Action** user@B> show route 192.168.47.0 extensive  
 inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)  
 192.168.47.0/24 (1 entry, 1 announced)  
 TSI:  
 KRT in-kernel 192.168.47.0/24 -> {192.168.2.2}  
     \*Static Preference: 5  
         Next hop type: Router  
         Address: 0x9334010  
         Next-hop reference count: 1  
         Next hop: 172.16.1.2 via ge-1/2/0.0  
         Next hop: 192.168.2.2 via fe-0/1/0.2, selected  
         State: <Active Int Ext>  
         Age: 9  
         Task: RT  
         Announcement bits (1): 3-KRT  
         AS path: I

**Meaning** Both next hops are listed. The next hop 192.168.2.2 is the selected route.

### Verifying the BFD Sessions

**Purpose** Make sure that the BFD sessions are up.

**Action** user@B> show bfd session

| Address     | State | Interface  | Detect Time | Transmit Interval | Multiplier |
|-------------|-------|------------|-------------|-------------------|------------|
| 172.16.1.2  | Up    | ge-1/2/0.0 | 0.720       | 0.240             | 3          |
| 192.168.2.2 | Up    | fe-0/1/0.2 | 0.720       | 0.240             | 3          |

2 sessions, 2 clients  
 Cumulative transmit rate 8.3 pps, cumulative receive rate 8.3 pps

**Meaning** The output shows that the BFD sessions are up.

### Removing BFD from Device D

**Purpose** Demonstrate what happens when the BFD session is down for both next hops.

- Action** 1. Deactivate BFD on Device D.

```
[edit routing-options static route 0.0.0.0/0]
user@D# deactivate bfd-liveness-detection
user@D# commit
```

2. Rerun the **show bfd session** command on Device B.

```
user@B> show bfd session
```

| Address     | State | Interface  | Detect Time | Transmit Interval | Multiplier |
|-------------|-------|------------|-------------|-------------------|------------|
| 172.16.1.2  | Down  | ge-1/2/0.0 | 3.000       | 1.000             | 3          |
| 192.168.2.2 | Down  | fe-0/1/0.2 | 3.000       | 1.000             | 3          |

```
2 sessions, 2 clients
```

```
Cumulative transmit rate 2.0 pps, cumulative receive rate 2.0 pps
```

3. Rerun the **show route 192.168.47.0** command on Device B.

```
user@B> show route 192.168.47.0
```

**Meaning** As expected, when the BFD sessions are down, the static route is removed from the routing table.

### *Removing BFD from One Next Hop*

**Purpose** Demonstrate what happens when only one next hop has BFD enabled.

- Action** 1. If it is not already deactivated, deactivate BFD on Device D.

```
[edit routing-options static route 0.0.0.0/0]
user@D# deactivate bfd-liveness-detection
user@D# commit
```

2. Deactivate BFD on one of the next hops on Device B.

```
[edit routing-options static route 192.168.47.0/24 qualified-next-hop 172.16.1.2]
user@B# deactivate bfd-liveness-detection
user@B# commit
```

3. Rerun the **show bfd session** command on Device B.

```
user@B> show bfd session
```

| Address     | State | Interface  | Detect Time | Transmit Interval | Multiplier |
|-------------|-------|------------|-------------|-------------------|------------|
| 192.168.2.2 | Down  | fe-0/1/0.2 | 3.000       | 1.000             | 3          |

4. Rerun the **show route 192.168.47.0 extensive** command on Device B.

```
user@B> show route 192.168.47.0 extensive
```

```
inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
```

```
192.168.47.0/24 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 192.168.47.0/24 -> {172.16.1.2}
```

```
*Static Preference: 5
```

```
Next hop type: Router, Next hop index: 624
```

```
Address: 0x92f0178
```

```
Next-hop reference count: 3
```

```

Next hop: 172.16.1.2 via ge-1/2/0.0, selected
State: <Active Int Ext>
Age: 2:36
Task: RT
Announcement bits (1): 3-KRT
AS path: I

```

**Meaning** As expected, the BFD session is down for the 192.168.2.2 next hop. The 172.16.1.2 next hop remains in the routing table, and the route remains active, because BFD is not a condition for this next hop to remain valid.

- Related Documentation**
- [Example: Configuring BFD Authentication for Static Routes on page 37](#)
  - [Example: Configuring BFD for OSPF](#)
  - [Example: Configuring BFD for BGP](#)
  - [Example: Configuring BFD for IS-IS](#)
  - [Configuring PIM and the Bidirectional Forwarding Detection \(BFD\) Protocol](#)

## Example: Configuring BFD Authentication for Static Routes

- [Understanding BFD Authentication for Static Routes on page 37](#)
- [Example: Configuring BFD Authentication for Static Routes on page 39](#)

### Understanding BFD Authentication for Static Routes

Bidirectional Forwarding Detection (BFD) enables rapid detection of communication failures between adjacent systems. By default, authentication for BFD sessions is disabled. However, when you run BFD over Network Layer protocols, the risk of service attacks can be significant.



**NOTE:** We strongly recommend using authentication if you are running BFD over multiple hops or through insecure tunnels.

Beginning with Junos OS Release 9.6, Junos OS supports authentication for BFD sessions running over IPv4 and IPv6 static routes. BFD authentication is not supported on MPLS OAM sessions. BFD authentication is only supported in the Canada and United States version of the Junos OS image and is not available in the export version.

You authenticate BFD sessions by specifying an authentication algorithm and keychain, and then associating that configuration information with a security authentication keychain using the keychain name.

The following sections describe the supported authentication algorithms, security keychains, and level of authentication that can be configured:

- [BFD Authentication Algorithms on page 38](#)
- [Security Authentication Keychains on page 39](#)
- [Strict Versus Loose Authentication on page 39](#)

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### BFD Authentication Algorithms

---

Junos OS supports the following algorithms for BFD authentication:

- **simple-password**—Plain-text password. One to 16 bytes of plain text are used to authenticate the BFD session. One or more passwords can be configured. This method is the least secure and should be used only when BFD sessions are not subject to packet interception.
- **keyed-md5**—Keyed Message Digest 5 hash algorithm for sessions with transmit and receive intervals greater than 100 ms. To authenticate the BFD session, keyed MD5 uses one or more secret keys (generated by the algorithm) and a sequence number that is updated periodically. With this method, packets are accepted at the receiving end of the session if one of the keys matches and the sequence number is greater than or equal to the last sequence number received. Although more secure than a simple password, this method is vulnerable to replay attacks. Increasing the rate at which the sequence number is updated can reduce this risk.
- **meticulous-keyed-md5**—Meticulous keyed Message Digest 5 hash algorithm. This method works in the same manner as keyed MD5, but the sequence number is updated with every packet. Although more secure than keyed MD5 and simple passwords, this method might take additional time to authenticate the session.
- **keyed-sha-1**—Keyed Secure Hash Algorithm I for sessions with transmit and receive intervals greater than 100 ms. To authenticate the BFD session, keyed SHA uses one or more secret keys (generated by the algorithm) and a sequence number that is updated periodically. The key is not carried within the packets. With this method, packets are accepted at the receiving end of the session if one of the keys matches and the sequence number is greater than the last sequence number received.
- **meticulous-keyed-sha-1**—Meticulous keyed Secure Hash Algorithm I. This method works in the same manner as keyed SHA, but the sequence number is updated with every packet. Although more secure than keyed SHA and simple passwords, this method might take additional time to authenticate the session.



**NOTE:** Nonstop active routing (NSR) is not supported with meticulous-keyed-md5 and meticulous-keyed-sha-1 authentication algorithms. BFD sessions using these algorithms might go down after a switchover.

---



### Security Authentication Keychains

---

The security authentication keychain defines the authentication attributes used for authentication key updates. When the security authentication keychain is configured and associated with a protocol through the keychain name, authentication key updates can occur without interrupting routing and signaling protocols.

The authentication keychain contains one or more keychains. Each keychain contains one or more keys. Each key holds the secret data and the time at which the key becomes valid. The algorithm and keychain must be configured on both ends of the BFD session, and they must match. Any mismatch in configuration prevents the BFD session from being created.

BFD allows multiple clients per session, and each client can have its own keychain and algorithm defined. To avoid confusion, we recommend specifying only one security authentication keychain.

### Strict Versus Loose Authentication

---

By default, strict authentication is enabled, and authentication is checked at both ends of each BFD session. Optionally, to smooth migration from nonauthenticated sessions to authenticated sessions, you can configure *loose checking*. When loose checking is configured, packets are accepted without authentication being checked at each end of the session. This feature is intended for transitional periods only.

## Example: Configuring BFD Authentication for Static Routes

This example shows how to configure Bidirectional Forwarding Detection (BFD) authentication for static routes.

- [Requirements on page 39](#)
- [Overview on page 39](#)
- [Configuration on page 40](#)
- [Verification on page 43](#)

### Requirements

---

Junos OS Release 9.6 or later (Canda and United States version).

BFD authentication is only supported in the Canada and United States version of the Junos OS image and is not available in the export version.

### Overview

---

You can configure authentication for BFD sessions running over IPv4 and IPv6 static routes. Routing instances and logical systems are also supported.

The following steps are needed to configure authentication on a BFD session:

1. Specify the BFD authentication algorithm for the static route.
2. Associate the authentication keychain with the static route.

3. Configure the related security authentication keychain. This must be configured on the main router.



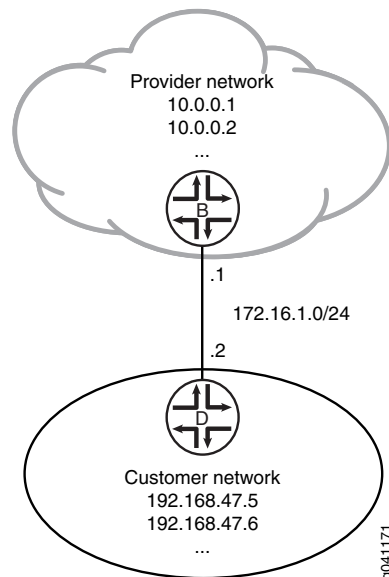
**TIP:** We recommend that you specify loose authentication checking if you are transitioning from nonauthenticated sessions to authenticated sessions.

[edit]

```
user@host> set routing-options static route ipv4 bfd-liveness-detection
authentication loose-check
```

Figure 3 on page 40 shows the sample network.

**Figure 3: Customer Routes Connected to a Service Provider**



### Configuration

#### CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the **[edit]** hierarchy level.

#### Device B

```
set interfaces ge-1/2/0 unit 0 description B->D
set interfaces ge-1/2/0 unit 0 family inet address 172.16.1.1/24
set interfaces lo0 unit 57 family inet address 10.0.0.1/32
set interfaces lo0 unit 57 family inet address 10.0.0.2/32
set routing-options static route 192.168.47.0/24 next-hop 172.16.1.2
set routing-options static route 192.168.47.0/24 bfd-liveness-detection minimum-interval
1000
set routing-options static route 192.168.47.0/24 bfd-liveness-detection authentication
key-chain bfd-kc4
set routing-options static route 192.168.47.0/24 bfd-liveness-detection authentication
algorithm keyed-sha-1
```

```

set security authentication-key-chains key-chain bfd-kc4 key 5 secret
"$9$JhZHmn6Ap0In/9ApOcSs24oaZikPfT3wY24ZG.mz36AtOIEyMWxSrlKvM-dbs2a
DkP5FtOIQFclv7N"
set security authentication-key-chains key-chain bfd-kc4 key 5 start-time
"2011-1-1.12:00:00 -0800"

```

**Device D**

```

set interfaces ge-1/2/0 unit 1 description D->B
set interfaces ge-1/2/0 unit 1 family inet address 172.16.1.2/24
set interfaces lo0 unit 2 family inet address 192.168.47.5/32
set interfaces lo0 unit 2 family inet address 192.168.47.6/32
set routing-options static route 0.0.0.0/0 next-hop 172.16.1.1
set routing-options static route 0.0.0.0/0 bfd-liveness-detection minimum-interval 1000
set routing-options static route 0.0.0.0/0 bfd-liveness-detection authentication key-chain
bfd-kc4
set routing-options static route 0.0.0.0/0 bfd-liveness-detection authentication algorithm
keyed-sha-1
set security authentication-key-chains key-chain bfd-kc4 key 5 secret
"$9$JhZHmn6Ap0In/9ApOcSs24oaZikPfT3wY24ZG.mz36AtOIEyMWxSrlKvM-dbs2a
DkP5FtOIQFclv7N"
set security authentication-key-chains key-chain bfd-kc4 key 5 start-time
"2011-1-1.12:00:00 -0800"

```

**Step-by-Step Procedure** The following example requires that you navigate various levels in the configuration hierarchy. For information about navigating the CLI, see *Using the CLI Editor in Configuration Mode* in the *CLI User Guide*.

To configure BFD for static routes:

1. On Device B, configure the interfaces.
 

```

[edit interfaces]
user@B# set ge-1/2/0 unit 0 description B->D
user@B# set ge-1/2/0 unit 0 family inet address 172.16.1.1/24

user@B# set lo0 unit 57 family inet address 10.0.0.1/32
user@B# set lo0 unit 57 family inet address 10.0.0.2/32

```
2. On Device B, create a static route and set the next-hop address.
 

```

[edit routing-options]
user@B# set static route 192.168.47.0/24 next-hop 172.16.1.2

```
3. On Device B, configure BFD for the static route.
 

```

[edit routing-options]
user@B# set static route 192.168.47.0/24 bfd-liveness-detection minimum-interval
1000

```
4. On Device B, specify the algorithm (**keyed-md5**, **keyed-sha-1**, **meticulous-keyed-md5**, **meticulous-keyed-sha-1**, or **simple-password**) to use for BFD authentication on the static route.
 

```

[edit routing-options]
user@B# set static route 192.168.47.0/24 bfd-liveness-detection authentication
algorithm keyed-sha-1

```



**NOTE:** Nonstop active routing (NSR) is not supported with the meticulous-keyed-md5 and meticulous-keyed-sha-1 authentication algorithms. BFD sessions using these algorithms might go down after a switchover.

5. On Device B, specify the keychain to be used to associate BFD sessions on the specified route with the unique security authentication keychain attributes.

This should match the keychain name configured at the **[edit security authentication key-chains]** hierarchy level.

```
[edit routing-options]
user@B# set static route 192.168.47.0/24 bfd-liveness-detection authentication
key-chain bfd-kc4
```

6. On Device B, specify the unique security authentication information for BFD sessions:

- The matching keychain name as specified in Step 5.
- At least one key, a unique integer between 0 and 63. Creating multiple keys allows multiple clients to use the BFD session.
- The secret data used to allow access to the session.
- The time at which the authentication key becomes active, in the format *yyy-mm-dd.hh:mm:ss*.

```
[edit security authentication-key-chains key-chain bfd-kc4]
user@B# set key 5 secret
"$9$JhZHmn6Ap0In/9ApOcSs24oaZikPfT3wY24ZG.mz36AtOIEyMWxSrlKvM-dbs2a
DkP5Ft0IQFclev7N"
user@B# set key 5 start-time "2011-1-1.12:00:00 -0800"
```

7. If you are done configuring Device B, commit the configuration.

```
[edit]
user@B# commit
```

8. Repeat the configuration on Device D.

The algorithm and keychain must be configured on both ends of the BFD session, and they must match. Any mismatch in configuration prevents the BFD session from being created.

### Results

Confirm your configuration by issuing the **show interfaces**, **show routing-options**, and **show security** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
Device B user@B# show interfaces
ge-1/2/0 {
  unit 0 {
    description B->D;
    family inet {
```

```

        address 172.16.1.1/24;
    }
}
}
lo0 {
    unit 57 {
        family inet {
            address 10.0.0.1/32;
            address 10.0.0.2/32;
        }
    }
}

user@B# show routing-options
static {
    route 192.168.47.0/24 {
        next-hop 172.16.1.2;
        bfd-liveness-detection {
            minimum-interval 1000;
            authentication {
                key-chain bfd-kc4;
                algorithm keyed-sha-1;
            }
        }
    }
}

user@B# show security
authentication-key-chains {
    key-chain bfd-kc4 {
        key 5 {
            secret
            "$9$JhZHmn6Ap0ln/9ApOcSs24oaZikPfT3wY24ZG.mz36AtOIEyMWxSrlKvM-dbs2a
            DkP5FtOIQFclev7N"; ## SECRET-DATA
            start-time "2011-1-1.12:00:00 -0800";
        }
    }
}

```

### Verification

Confirm that the configuration is working properly.

- [Verifying That BFD Sessions Are Up on page 43](#)
- [Viewing Details About the BFD Session on page 44](#)
- [Viewing Extensive BFD Session Information on page 44](#)

#### *Verifying That BFD Sessions Are Up*

**Purpose** Verify that the BFD sessions are up.

**Action** From operational mode, enter the **show bfd session** command.

```
user@B> show bfd session
```

| Address | State | Interface | Detect<br>Time | Transmit<br>Interval | Multiplier |
|---------|-------|-----------|----------------|----------------------|------------|
|---------|-------|-----------|----------------|----------------------|------------|

```
172.16.1.2          Up          ge-1/2/0.0      3.000      1.000      3
```

```
1 sessions, 1 clients
```

```
Cumulative transmit rate 1.0 pps, cumulative receive rate 1.0 pps
```

**Meaning** The command output shows that the BFD session is up.

### *Viewing Details About the BFD Session*

**Purpose** View details about the BFD sessions and make sure that authentication is configured.

**Action** From operational mode, enter the **show bfd session detail** command.

```
user@B> show bfd session detail
```

```

Address          State      Interface    Detect   Transmit
172.16.1.2       Up        ge-1/2/0.0   Time    Interval Multiplier
3.000           1.000      3
Client Static, TX interval 1.000, RX interval 1.000, Authenticate
Session up time 00:53:58
Local diagnostic NbrSignal, remote diagnostic None
Remote state Up, version 1
Logical system 9, routing table index 22
```

```
1 sessions, 1 clients
```

```
Cumulative transmit rate 1.0 pps, cumulative receive rate 1.0 pps
```

**Meaning** In the command output, **Authenticate** is displayed to indicate that BFD authentication is configured.

### *Viewing Extensive BFD Session Information*

**Purpose** View more detailed information about the BFD sessions.

**Action** From operational mode, enter the **show bfd session extensive** command.

```
user@B> show bfd session extensive
```

```

Address          State      Interface    Time    Interval Multiplier
172.16.1.2       Up        ge-1/2/0.0   3.000    1.000      3
Client Static, TX interval 1.000, RX interval 1.000, Authenticate
keychain bfd-kc4, algo keyed-sha-1, mode strict
Session up time 01:39:45
Local diagnostic NbrSignal, remote diagnostic None
Remote state Up, version 1
Logical system 9, routing table index 22
Min async interval 1.000, min slow interval 1.000
Adaptive async TX interval 1.000, RX interval 1.000
Local min TX interval 1.000, minimum RX interval 1.000, multiplier 3
Remote min TX interval 1.000, min RX interval 1.000, multiplier 3
Local discriminator 3, remote discriminator 4
Echo mode disabled/inactive
Authentication enabled/active, keychain bfd-kc4, algo keyed-sha-1, mode strict
```

```
1 sessions, 1 clients
```

```
Cumulative transmit rate 1.0 pps, cumulative receive rate 1.0 pps
```

**Meaning** In the command output, **Authenticate** is displayed to indicate that BFD authentication is configured. The output for the **extensive** command provides the keychain name, the authentication algorithm, and the mode for each client in the session.

**Related Documentation**

- [Examples: Configuring BFD for Static Routes on page 22](#)





## CHAPTER 4

# Configuration Statements

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## active

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (active   passive);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | <p>Determine whether static, aggregate, or generated routes are removed from the routing and forwarding tables when they become inactive. Static routes are only removed from the routing table if the next hop becomes unreachable. This can occur if the local or neighbor interface goes down. Routes that have been configured to remain continually installed in the routing and forwarding tables are marked with <b>reject</b> next hops when they are inactive.</p> <ul style="list-style-type: none"> <li>• <b>active</b>—Remove a route from the routing and forwarding tables when it becomes inactive.</li> <li>• <b>passive</b>—Have a route remain continually installed in the routing and forwarding tables even when it becomes inactive.</li> </ul> <p>Include the <b>active</b> statement when configuring an individual route in the <b>route</b> portion of the <b>static</b> statement to override a <b>passive</b> option specified in the <b>defaults</b> portion of the statement.</p>                                                                                                                                                                                                                                                                                |
| <b>Default</b>                  | <b>active</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Examples: Configuring Static Routes</i></li> <li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li> <li>• <i>Example: Conditionally Generating Static Routes</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## aggregate (Routing)

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax              | <pre> aggregate {   defaults {     ... aggregate-options ...   }   route destination-prefix {     policy policy-name;     ... aggregate-options ...   } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Hierarchy Level     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit routing-options],</p> <p>[edit routing-options <b>rib</b> <i>routing-table-name</i>]</p>                                                                                                                                                                                                                                                                                                                                                          |
| Release Information | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Description         | Configure aggregate routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Options             | <p><b>aggregate-options</b>—Additional information about aggregate routes that is included with the route when it is installed in the routing table. Specify zero or more of the following options in <b>aggregate-options</b>. Each option is explained separately.</p> <ul style="list-style-type: none"> <li>• (<b>active</b>   <b>passive</b>);</li> <li>• <b>as-path</b> &lt;<i>as-path</i>&gt; &lt;origin (egp   igp   incomplete)&gt; &lt;atomic-aggregate&gt; &lt;aggregator <i>as-number ip-address</i>&gt;;</li> <li>• (<b>brief</b>   <b>full</b>);</li> <li>• <b>community</b> [ <i>community-ids</i> ];</li> <li>• <b>discard</b>;</li> <li>• (<b>metric</b>   <b>metric2</b>   <b>metric3</b>   <b>metric4</b>) <i>value</i> &lt;type <i>type</i>&gt;;</li> <li>• (<b>preference</b>   <b>preference2</b>   <b>color</b>   <b>color2</b>) <i>preference</i> &lt;type <i>type</i>&gt;;</li> <li>• <b>tag string</b>;</li> </ul> <p><b>defaults</b>—Specify global aggregate route options. These options only set default attributes inherited by all newly created aggregate routes. These are treated as global defaults</p> |

and apply to all the aggregate routes you configure in the **aggregate** statement. This part of the **aggregate** statement is optional.

**route *destination-prefix***—Configure a nondefault aggregate route:

- **default**—For the default route to the destination. This is equivalent to specifying an IP address of **0.0.0.0/0**.
- ***destination-prefix/prefix-length***—***destination-prefix*** is the network portion of the IP address, and ***prefix-length*** is the destination prefix length.

The **policy** statement is explained separately.

|                                 |                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.                                                           |
|                                 | routing-control—To add this statement to the configuration.                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li></ul> |

## as-path (Routing Options)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>as-path &lt;as-path&gt; &lt;aggregator as-number ip-address&gt; &lt;atomic-aggregate&gt; &lt;origin (egp   igp   incomplete)&gt;;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)]</p> |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>         | <p>Associate BGP autonomous system (AS) path information with a static, aggregate, or generated route.</p> <p>In Junos OS Release 9.1 and later, the numeric range for the AS number is extended to provide BGP support for 4-byte AS numbers as defined in RFC 4893, <i>BGP Support for Four-octet AS Number Space</i>. RFC 4893 introduces two new optional transitive BGP attributes, AS4_PATH and AS4_AGGREGATOR. These new attributes are used to propagate 4-byte AS path information across BGP speakers that do not support 4-byte AS numbers. RFC 4893 also introduces a reserved, well-known, 2-byte AS number, AS 23456. This reserved AS number is called AS_TRANS in RFC 4893. All releases of Junos OS support 2-byte AS numbers.</p> <p>In Junos OS Release 9.2 and later, you can also configure a 4-byte AS number using the AS-dot notation format of two integer values joined by a period: <i>&lt;16-bit high-order value in decimal&gt;.&lt;16-bit low-order value in decimal&gt;</i>. For example, the 4-byte AS number of 65,546 in plain-number format is represented as 1.10 in the AS-dot notation format. You can specify a value in the range from 0.0 through 65535.65535 in AS-dot notation format.</p>                                                          |
| <b>Default</b>             | No AS path information is associated with static routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>             | <p><b>aggregator</b>—(Optional) Attach the BGP <b>aggregator</b> path attribute to the aggregate route. You must specify the last AS number that formed the aggregate route (encoded as two octets) for <b>as-number</b>, followed by the IP address of the BGP system that formed the aggregate route for <b>ip-address</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**as-path**—(Optional) AS path to include with the route. It can include a combination of individual AS path numbers and AS sets. Enclose sets in brackets ( [ ] ). The first AS number in the path represents the AS immediately adjacent to the local AS. Each subsequent number represents an AS that is progressively farther from the local AS, heading toward the origin of the path. You cannot specify a regular expression for **as-path**. You must use a complete, valid AS path.

**atomic-aggregate**—(Optional) Attach the BGP **atomic-aggregate** path attribute to the aggregate route. This path attribute indicates that the local system selected a less specific route instead of a more specific route.

**origin egp**—(Optional) BGP origin attribute that indicates that the path information originated in another AS.

**origin igp**—(Optional) BGP origin attribute that indicates that the path information originated within the local AS.

**origin incomplete**—(Optional) BGP origin attribute that indicates that the path information was learned by some other means.

|                           |                                                             |
|---------------------------|-------------------------------------------------------------|
| <b>Required Privilege</b> | routing—To view this statement in the configuration.        |
| <b>Level</b>              | routing-control—To add this statement to the configuration. |

|                              |                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <i>Examples: Configuring Static Routes</i></li><li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li><li>• <i>Example: Conditionally Generating Static Routes</i></li><li>• <i>Using 4-Byte Autonomous System Numbers in BGP Networks Technology Overview</i></li></ul> |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## autonomous-system

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre>autonomous-system <i>autonomous-system</i> &lt;asdot-notation&gt; &lt;loops <i>number</i>&gt; {     independent-domain &lt;no-attrset&gt;; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-options]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>asdot-notation</b> option introduced in Junos OS Release 9.3.</p> <p><b>asdot-notation</b> option introduced in Junos OS Release 9.3 for EX Series switches.</p> <p><b>no-attrset</b> option introduced in Junos OS Release 10.4.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>         | <p>Specify the routing device's AS number.</p> <p>An autonomous system (AS) is a set of routing devices that are under a single technical administration and that generally use a single interior gateway protocol (IGP) and metrics to propagate routing information within the set of routing devices. An AS appears to other ASs to have a single, coherent interior routing plan and presents a consistent picture of what destinations are reachable through it. ASs are identified by a number that is assigned by the Network Information Center (NIC) in the United States (<a href="http://www.isi.edu">http://www.isi.edu</a>).</p> <p>If you are using BGP on the routing device, you must configure an AS number.</p> <p>The AS path attribute is modified when a route is advertised to an EBGP peer. Each time a route is advertised to an EBGP peer, the local routing device prepends its AS number to the existing path attribute, and a value of 1 is added to the AS number.</p> <p>In Junos OS Release 9.1 and later, the numeric range is extended to provide BGP support for 4-byte AS numbers as defined in RFC 4893, <i>BGP Support for Four-octet AS Number Space</i>. RFC 4893 introduces two new optional transitive BGP attributes, AS4_PATH and AS4_AGGREGATOR. These new attributes are used to propagate 4-byte AS path information across BGP speakers that do not support 4-byte AS numbers. RFC 4893 also introduces a reserved, well-known, 2-byte AS number, AS 23456. This reserved AS number is called AS_TRANS in RFC 4893. All releases of Junos OS support 2-byte AS numbers.</p> <p>In Junos OS Release 9.3 and later, you can also configure a 4-byte AS number using the AS-dot notation format of two integer values joined by a period: <i>&lt;16-bit high-order value in decimal&gt;.&lt;16-bit low-order value in decimal&gt;</i>. For example, the 4-byte AS number of 65,546 in plain-number format is represented as 1.10 in the AS-dot notation format.</p> |
| <b>Options</b>             | <p><b><i>autonomous-system</i></b>—AS number. Use a number assigned to you by the NIC.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Range:** 1 through 4,294,967,295 ( $2^{32} - 1$ ) in plain-number format for 4-byte AS numbers

In this example, the 4-byte AS number 65,546 is represented in plain-number format:

```
[edit]
routing-options {
  autonomous-system 65546;
}
```

**Range:** 0.0 through 65535.65535 in AS-dot notation format for 4-byte numbers

In this example, 1.10 is the AS-dot notation format for 65,546:

```
[edit]
routing-options {
  autonomous-system 1.10;
}
```

**Range:** 1 through 65,535 in plain-number format for 2-byte AS numbers (this is a subset of the 4-byte range)

In this example, the 2-byte AS number 60,000 is represented in plain-number format:

```
[edit]
routing-options {
  autonomous-system 60000;
}
```

**asdot-notation**—(Optional) Display the configured 4-byte autonomous system number in the AS-dot notation format.

**Default:** Even if a 4-byte AS number is configured in the AS-dot notation format, the default is to display the AS number in the plain-number format.

**loops number**—(Optional) Specify the number of times detection of the AS number in the AS\_PATH attribute causes the route to be discarded or hidden. For example, if you configure **loops 1**, the route is hidden if the AS number is detected in the path one or more times. This is the default behavior. If you configure **loops 2**, the route is hidden if the AS number is detected in the path two or more times.

**Range:** 1 through 10

**Default:** 1



**NOTE:** When you specify the same AS number in more than one routing instance on the local routing device, you must configure the same number of loops for the AS number in each instance. For example, if you configure a value of 3 for the loops statement in a VRF routing instance that uses the same AS number as that of the master instance, you must also configure a value of 3 loops for the AS number in the master instance.

Use the **independent-domain** option if the loops statement must be enabled only on a subset of routing instances.

---

The remaining statement is explained separately.

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

**Related Documentation**

- *Examples: Configuring External BGP Peering*
- *Examples: Configuring Internal BGP Peering*

## backup-pe-group

**Syntax** `backup-pe-group group-name {  
    backups [ addresses ];  
    local-address address;  
}`

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options multicast],  
[edit logical-systems *logical-system-name* routing-options multicast],  
[edit routing-instances *routing-instance-name* routing-options multicast],  
[edit routing-options multicast]

**Release Information** Statement introduced in Junos OS Release 9.0.  
Statement introduced in Junos OS Release 9.5 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.  
Statement introduced in Junos OS Release 12.3 for ACX Series routers.

**Description** Configure a backup provider edge (PE) group for ingress PE redundancy when point-to-multipoint label-switched paths (LSPs) are used for multicast distribution.

**Options** **backups *addresses***—Specify the address of backup PE routers for ingress PE redundancy when point-to-multipoint LSPs are used for multicast distribution.

**local-address *address***—Specify the address of the local PE router for ingress PE redundancy when point-to-multipoint LSPs are used for multicast distribution.

**pe-group-name**—Specify the name for the group of PE routers that provide ingress PE router redundancy for point-to-multipoint LSPs.

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

**Related Documentation**

- *Example: Configuring Ingress PE Redundancy*
- *Configuring Ingress PE Router Redundancy for Point-to-Multipoint LSPs*

## backups

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>backups [ <i>addresses</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <b>backup-pe-group</b> <i>group-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <b>backup-pe-group</b> <i>group-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <b>backup-pe-group</b> <i>group-name</i> ],<br>[edit routing-options multicast <b>backup-pe-group</b> <i>group-name</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.0.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | Configure the address of backup PEs for ingress PE redundancy when point-to-multipoint label-switched paths (LSPs) are used for multicast distribution.                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <b><i>addresses</i></b> —Addresses of other PEs in the backup group.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring Ingress PE Redundancy</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                         |

## bandwidth (Multicast Flow Map)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>bandwidth ( <i>bps</i>   adaptive );</code>                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">flow-map</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">flow-map</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">flow-map</a>],</p> <p>[edit routing-options multicast <a href="#">flow-map</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                     |
| <b>Description</b>              | Configure the bandwidth property for multicast flow maps.                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                  | <p><b>adaptive</b>—Specify that the bandwidth is measured for the flows that are matched by the flow map.</p> <p><b><i>bps</i></b>—Bandwidth, in bits per second, for the flow map.</p> <p><b>Range:</b> 0 through any amount of bandwidth</p> <p><b>Default:</b> 2 Mbps</p>                                                                                                                                                                               |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring a Multicast Flow Map</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                       |

## bfd-liveness-detection (Routing Options Static Route)

**Syntax** `bfd-liveness-detection {`  
     `authentication {`  
         `algorithm` *algorithm-name*;  
         `key-chain` *key-chain-name*;  
         `loose-check`;  
     `}`  
     `detection-time {`  
         `threshold` *milliseconds*;  
     `}`  
     `holddown-interval` *milliseconds*;  
     `local-address` *ip-address*;  
     `minimum-interval` *milliseconds*;  
     `minimum-receive-interval` *milliseconds*;  
     `minimum-receive-ttl` *number*;  
     `multiplier` *number*;  
     `neighbor` *address*;  
     `no-adaptation`;  
     `transmit-interval {`  
         `minimum-interval` *milliseconds*;  
         `threshold` *milliseconds*;  
     `}`  
     `version` (1 | automatic);  
`}`

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options rib *routing-table-name* static route *destination-prefix*],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options rib *routing-table-name* static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options static route *destination-prefix*],  
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit logical-systems *logical-system-name* routing-options rib *routing-table-name* static route *destination-prefix*],  
 [edit logical-systems *logical-system-name* routing-options rib *routing-table-name* static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit logical-systems *logical-system-name* routing-options static route *destination-prefix*],  
 [edit logical-systems *logical-system-name* routing-options static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit routing-instances *routing-instance-name* routing-options rib *routing-table-name* static route *destination-prefix*],  
 [edit routing-instances *routing-instance-name* routing-options rib *routing-table-name* static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit routing-instances *routing-instance-name* routing-options static route *destination-prefix*],  
 [edit routing-instances *routing-instance-name* routing-options static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit routing-options rib *routing-table-name* static route *destination-prefix*],  
 [edit routing-options rib *routing-table-name* static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)],  
 [edit routing-options static route *destination-prefix*],

[edit routing-options static route *destination-prefix* qualified-next-hop (*interface-name* | *address*)]

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p><b>detection-time threshold</b> and <b>transmit-interval threshold</b> options introduced in Junos OS Release 8.2.</p> <p><b>local-address</b> statement introduced in Junos OS Release 8.2.</p> <p><b>minimum-receive-ttl</b> statement introduced in Junos OS Release 8.2.</p> <p>Support for logical routers introduced in Junos OS Release 8.3.</p> <p><b>holddown-interval</b> statement introduced in Junos OS Release 8.5.</p> <p><b>no-adaptation</b> statement introduced in Junos OS Release 9.0.</p> <p>Support for IPv6 static routes introduced in Junos OS Release 9.1.</p> <p><b>authentication algorithm</b>, <b>authentication key-chain</b>, and <b>authentication loose-check</b> statements introduced in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p> |
| <b>Description</b>         | <p>Configure bidirectional failure detection timers and authentication criteria for static routes.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

- Options**    **authentication algorithm** *algorithm-name* —Configure the algorithm used to authenticate the specified BFD session: **simple-password**, **keyed-md5**, **keyed-sha-1**, **meticulous-keyed-md5**, or **meticulous-keyed-sha-1**.
- authentication key-chain** *key-chain-name* —Associate a security key with the specified BFD session using the name of the security keychain. The name you specify must match one of the keychains configured in the **authentication-key-chains key-chain** statement at the **[edit security]** hierarchy level.
- authentication loose-check**—(Optional) Configure loose authentication checking on the BFD session. Use only for transitional periods when authentication may not be configured at both ends of the BFD session.
- detection-time threshold** *milliseconds*—Configure a threshold for the adaptation of the BFD session detection time. When the detection time adapts to a value equal to or greater than the threshold, a single trap and a single system log message are sent.
- holddown-interval** *milliseconds*—Configure an interval specifying how long a BFD session must remain up before a state change notification is sent. If the BFD session goes down and then comes back up during the hold-down interval, the timer is restarted.
- Range:** 0 through 255,000  
**Default:** 0
- local-address** *ip-address*—Enable a multihop BFD session and configure the source address for the BFD session.
- minimum-interval** *milliseconds*—Configure the minimum interval after which the local routing device transmits a hello packet and then expects to receive a reply from the neighbor with which it has established a BFD session. Optionally, instead of using this statement, you can configure the minimum transmit and receive intervals separately using the **transmit-interval**, **minimum-interval**, and **minimum-receive-interval** statements.
- Range:** 1 through 255,000
- minimum-receive-interval** *milliseconds*—Configure the minimum interval after which the routing device expects to receive a reply from a neighbor with which it has established a BFD session. Optionally, instead of using this statement, you can configure the minimum receive interval using the **minimum-interval** statement at the **[edit routing-options static route destination-prefix bfd-liveness-detection]** hierarchy level.
- Range:** 1 through 255,000
- minimum-receive-ttl** *number*—Configure the time to live (TTL) for the multihop BFD session.
- Range:** 1 through 255  
**Default:** 255
- multiplier** *number*—Configure number of hello packets not received by the neighbor that causes the originating interface to be declared down.
- Range:** 1 through 255  
**Default:** 3



**neighbor *address***—Configure a next-hop address for the BFD session for a next hop specified as an interface name.

**no-adaptation**—Specify for BFD sessions not to adapt to changing network conditions. We recommend that you not disable BFD adaptation unless it is preferable not to have BFD adaptation enabled in your network.

**transmit-interval threshold *milliseconds***—Configure the threshold for the adaptation of the BFD session transmit interval. When the transmit interval adapts to a value greater than the threshold, a single trap and a single system message are sent. The interval threshold must be greater than the minimum transmit interval.

**Range:** 0 through 4,294,967,295

**transmit-interval minimum-interval *milliseconds***—Configure the minimum interval at which the routing device transmits hello packets to a neighbor with which it has established a BFD session. Optionally, instead of using this statement, you can configure the minimum transmit interval using the **minimum-interval** statement at the **[edit routing-options static route *destination-prefix* bfd-liveness-detection]** hierarchy level.

**Range:** 1 through 255,000


**version**—Configure the BFD version to detect: **1** (BFD version 1) or **automatic** (autodetect the BFD version).

**Default:** automatic

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration. |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|

|                              |                                                                                                                                                                                                                        |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <a href="#">Example: Configuring BFD for Static Routes on page 26</a></li><li>• <a href="#">Example: Configuring BFD Authentication for Static Routes on page 39</a></li></ul> |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## bgp-orf-cisco-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>bgp-orf-cisco-mode;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> protocols bgp outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols bgp group <i>group-name</i> outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols bgp group <i>group-name</i> neighbor <i>address</i> outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols bgp outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols bgp group <i>group-name</i> outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols bgp group <i>group-name</i> neighbor <i>address</i> outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options outbound-route-filter],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options outbound-route-filter],</p> <p>[edit protocols bgp outbound-route-filter],</p> <p>[edit protocols bgp group <i>group-name</i> outbound-route-filter],</p> <p>[edit protocols bgp group <i>group-name</i> neighbor <i>address</i> outbound-route-filter],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols bgp outbound-route-filter],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols bgp group <i>group-name</i> outbound-route-filter],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols bgp group <i>group-name</i> neighbor <i>address</i> outbound-route-filter],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options outbound-route-filter],</p> <p>[edit routing-options outbound-route-filter]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.2.</p> <p>Statement introduced in Junos OS Release 9.2 for EX Series switches.</p> <p>Support for the BGP group and neighbor hierarchy levels introduced in Junos OS Release 9.2.</p> <p>Support for the BGP group and neighbor hierarchy levels introduced in Junos OS Release 9.3 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Enable interoperability with routing devices that use the vendor-specific outbound route filter compatibility code of 130 and code type of 128.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                                 | <p> <b>NOTE:</b> To enable interoperability for all BGP peers configured on the routing device, include the statement at the [edit routing-options outbound-route-filter] hierarchy level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default</b>                  | Disabled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

- Related Documentation**
- *Example: Configuring BGP Prefix-Based Outbound Route Filtering*


## bmp

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> bmp {     memory limit <i>bytes</i>;     station-address (<i>ip-address</i>   <i>name</i>);     station-port <i>port-number</i>;     statistics-timeout <i>seconds</i>; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | [edit routing-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Statement introduced in Junos OS Release 9.5 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Configure the BGP Monitoring Protocol (BMP), which enables the routing device to collect data from the BGP <b>Adjacency-RIB-In</b> routing tables and periodically send that data to a monitoring station.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                  | <p><b>memory-limit <i>bytes</i></b>—(Optional) Specify a threshold at which to stop collecting BMP data if the limit is exceeded.</p> <p><b>Default:</b> 10 MB</p> <p><b>Range:</b> 1,048,576 through 52,428,800</p> <p><b>station-address (<i>ip-address</i>   <i>name</i>)</b>—Specify the IP address or a valid URL for the monitoring where BMP data should be sent.</p> <p><b>station-port <i>port-number</i></b>—Specify the port number of the monitoring station to use when sending BMP data.</p> <p><b>statistics-timeout <i>seconds</i></b>—(Optional) Specify how often to send BMP data to the monitoring station.</p> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring the BGP Monitoring Protocol</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## brief

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (brief   full);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | <pre>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults   route)], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults   route)], [edit logical-systems <i>logical-system-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults     route)], [edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults   route)], [edit routing-instances <i>routing-instance-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>)   (defaults   route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i>   (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults   route)], [edit routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults   route)], [edit routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>) (defaults   route)]</pre> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | <p>Configure all AS numbers from all contributing paths to be included in the aggregate or generated route's path.</p> <ul style="list-style-type: none"> <li>• <b>brief</b>—Include only the longest common leading sequences from the contributing AS paths. If this results in AS numbers being omitted from the aggregate route, the BGP <b>ATOMIC_ATTRIBUTE</b> path attribute is included with the aggregate route.</li> <li>• <b>full</b>—Include all AS numbers from all contributing paths in the aggregate or generated route's path. Include this option when configuring an individual route in the <b>route</b> portion of the <b>generate</b> statement to override a <b>retain</b> option specified in the <b>defaults</b> portion of the statement.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Default</b>                  | full                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li> <li>• <i>Example: Conditionally Generating Static Routes</i></li> <li>• <a href="#">aggregate on page 51</a></li> <li>• <a href="#">generate on page 83</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## centralized

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | centralized;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | [edit protocols lacp <a href="#">ppm</a> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 10.2 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p>Disable distributed periodic packet management (PPM) processing for Link Aggregation Control Protocol (LACP) packets and run all PPM processing for LACP packets on the Routing Engine.</p> <p>This statement disables distributed PPM processing for only LACP packets. You can disable distributed PPM processing for all packets that use PPM and run all PPM processing on the Routing Engine by configuring the <b>no-delegate-processing</b> statement in the [edit routing-options <a href="#">ppm</a>] hierarchy.</p> |
|                                 | <div>  <p><b>BEST PRACTICE:</b> We generally recommend that you disable distributed PPM only if Juniper Networks Customer Service advises you to do so. You should disable distributed PPM only if you have a compelling reason to disable it.</p> </div>                                                                                                                                                                                       |
| <b>Default</b>                  | Distributed PPM processing is enabled for all packets that use PPM.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring Distributed Periodic Packet Management on an EX Series Switch (CLI Procedure)</i></li> <li>• <i>Configuring Aggregated Ethernet LACP (CLI Procedure)</i></li> <li>• <a href="#">Configuring Distributed Periodic Packet Management on page 14</a></li> <li>• <i>Configuring Link Aggregation</i></li> </ul>                                                                                                                                                              |

## community (Routing Options)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>community ([ <i>community-ids</i> ]   no-advertise   no-export   no-export-subconfed   none);</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-options (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>   static) (defaults   route)]</p>                                                                                                                                                       |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>         | Associate BGP community information with a static, aggregate, or generated route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Default</b>             | No BGP community information is associated with static routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>             | <p><b><i>community-ids</i></b>—One or more community identifiers. The <b><i>community-ids</i></b> format varies according to the type of attribute that you use.</p> <p>The BGP community attribute format is <b><i>as-number:community-value</i></b>:</p> <ul style="list-style-type: none"> <li>• <b><i>as-number</i></b>—AS number of the community member. It can be a value from 1 through 65,535. The AS number can be a decimal or hexadecimal value.</li> <li>• <b><i>community-value</i></b>—Identifier of the community member. It can be a number from 0 through 65,535.</li> </ul> <p>For more information about BGP community attributes, see the “Configuring the Extended Communities Attribute” section in the <i>Routing Policy Feature Guide for Routing Devices</i>.</p> <p>For specifying the BGP community attribute only, you also can specify <b><i>community-ids</i></b> as one of the following well-known community names defined in RFC 1997:</p> <ul style="list-style-type: none"> <li>• <b>no-advertise</b>—Routes containing this community name are not advertised to other BGP peers.</li> <li>• <b>no-export</b>—Routes containing this community name are not advertised outside a BGP confederation boundary.</li> <li>• <b>no-export-subconfed</b>—Routes containing this community name are not advertised to external BGP peers, including peers in other members’ ASs inside a BGP confederation.</li> </ul> |



**NOTE:** Extended community attributes are not supported at the [edit routing-options] hierarchy level. You must configure extended communities at the [edit policy-options] hierarchy level. For information about configuring extended communities, see the *Routing Policy Feature Guide for Routing Devices*.

|                                 |                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Examples: Configuring Static Routes</i></li><li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li><li>• <i>Example: Conditionally Generating Static Routes</i></li><li>• <a href="#">aggregate on page 51</a></li><li>• <a href="#">generate on page 83</a></li><li>• <i>static</i></li></ul> |

## confederation

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>confederation <i>confederation-autonomous-system</i> members [ <i>autonomous-systems</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit routing-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | <p>Specify the routing device's confederation AS number.</p> <p>If you administer multiple ASs that contain a very large number of BGP systems, you can group them into one or more <i>confederations</i>. Each confederation is identified by its own AS number, which is called a <i>confederation AS number</i>. To external ASs, a confederation appears to be a single AS. Thus, the internal topology of the ASs making up the confederation is hidden.</p> <p>The BGP path attributes <b>NEXT_HOP</b>, <b>LOCAL_PREF</b>, and <b>MULTI_EXIT_DISC</b>, which normally are restricted to a single AS, are allowed to be propagated throughout the ASs that are members of the same confederation.</p> <p>Because each confederation is treated as if it were a single AS, you can apply the same routing policy to all the ASs that make up the confederation.</p> <p>Grouping ASs into confederations reduces the number of BGP connections required to interconnect ASs.</p> <p>If you are using BGP, you can enable the local routing device to participate as a member of an AS confederation. To do this, include the <b>confederation</b> statement.</p> <p>Specify the AS confederation identifier, along with the peer AS numbers that are members of the confederation.</p> <p>Note that peer adjacencies do not form if two BGP neighbors disagree about whether an adjacency falls within a particular confederation.</p> |
| <b>Options</b>                  | <p><b><i>autonomous-systems</i></b>—AS numbers of the confederation members.<br/><b>Range:</b> 1 through 65,535</p> <p><b><i>confederation-autonomous-system</i></b>—Confederation AS number. Use one of the numbers assigned to you by the NIC.<br/><b>Range:</b> 1 through 65,535</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |




**Related Documentation** • *Example: Configuring BGP Confederations*

## description (Routing Instances)

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|                                 |                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | description text;                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> ]                                                                                                                                                |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 11.1 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                    |
| <b>Description</b>              | Provide a text description for the routing instance. If the text includes one or more spaces, enclose it in quotation marks (" "). Any descriptive text you include is displayed in the output of the <b>show route instance detail</b> command and has no effect on the operation of the routing instance. |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                         |
| <b>Related Documentation</b>    | • <i>Configuring Routing Instances on PE Routers in VPNs</i><br>• <a href="#">show route instance on page 262</a>                                                                                                                                                                                           |

## discard

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | discard;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | <p>Do not forward packets addressed to this destination. Instead, drop the packets, do not send ICMP unreachable messages to the packets' originators, and install a reject route for this destination into the routing table.</p> <p>To propagate static routes into the routing protocols, include the <b>discard</b> statement when you define the route, along with a routing policy.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                                 | <p> <b>NOTE:</b> In other vendors' software, a common way to propagate static routes into routing protocols is to configure the routes so that the next-hop routing device is the loopback address (commonly, 127.0.0.1). However, configuring static routes in this way (by including a statement such as <b>route <i>address/mask-length</i> next-hop 127.0.0.1</b>) does not propagate the static routes, because the forwarding table ignores static routes whose next-hop routing device is the loopback address.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default</b>                  | When an aggregate route becomes active, it is installed in the routing table with a reject next hop, which means that ICMP unreachable messages are sent.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li> <li>• <i>Example: Conditionally Generating Static Routes</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

- [aggregate on page 51](#)
- [generate on page 83](#)

## export (Routing Options)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>export [ <i>policy-name</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options forwarding-table],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options forwarding-table],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options forwarding-table],</p> <p>[edit routing-options forwarding-table]</p>                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <p>Apply one or more policies to routes being exported from the routing table into the forwarding table.</p> <p>In the <b>export</b> statement, list the name of the routing policy to be evaluated when routes are being exported from the routing table into the forwarding table. Only active routes are exported from the routing table.</p> <p>You can reference the same routing policy one or more times in the same or a different <b>export</b> statement.</p> <p>You can apply export policies to routes being exported from the routing table into the forwarding table for the following features:</p> <ul style="list-style-type: none"> <li>• Per-packet load balancing</li> <li>• Class of service (CoS)</li> </ul> |
| <b>Options</b>                  | <i>policy-name</i> —Name of one or more policies.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Load Balancing BGP Traffic</i></li> <li>• <i>Routing Policy Feature Guide for Routing Devices</i></li> <li>• <i>How a Routing Policy Is Evaluated</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## export-rib

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>export-rib <i>routing-table-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>rib-groups</b> <i>group-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options <b>rib-groups</b> <i>group-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options <b>rib-groups</b> <i>group-name</i> ],<br>[edit routing-options <b>rib-groups</b> <i>group-name</i> ] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Specify the name of the routing table from which Junos OS should export routing information.                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                  | <i>routing-table-name</i> —Routing table group name.                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Exporting Specific Routes from One Routing Table Into Another Routing Table</i></li><li>• <a href="#">import-rib on page 86</a></li><li>• <i>passive</i></li></ul>                                                                                                                                                                                                                          |

## fate-sharing

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>fate-sharing {   group <i>group-name</i> {     cost <i>value</i>;     from <i>address</i> &lt;to <i>address</i>&gt;;   } }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],<br>[edit routing-options],<br>[edit routing-instances <i>routing-instance-name</i> routing-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | <p>Specify a backup path in case the primary path becomes unusable.</p> <p>You specify one or more objects with common characteristics within a group. All objects are treated as /32 host addresses. The objects can be a LAN interface, a router ID, or a point-to-point link. Sequence is insignificant.</p> <p>Changing the fate-sharing database does not affect existing established LSPs until the next CSPF reoptimization. The fate-sharing database does affect fast-reroute detour path computations.</p>                                                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <p><b>cost <i>value</i></b>—Cost assigned to the group.<br/> <b>Range:</b> 1 through 65,535<br/> <b>Default:</b> 1</p> <p><b>from <i>address</i></b>—Address of the router or address of the LAN/NBMA interface. For example, an Ethernet network with four hosts in the same fate-sharing group would require you to list all four of the separate <b>from</b> addresses in the group.</p> <p><b>group <i>group-name</i></b>—Each fate-sharing group must have a name, which can have a maximum of 32 characters, including letters, numbers, periods (.), and hyphens (-). You can define up to 512 groups.</p> <p><b>to <i>address</i></b>—(Optional) Address of egress router. For point-to-point link objects, you must specify both a <b>from</b> and a <b>to</b> address.</p> |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring the Ingress Router for MPLS-Signaled LSPs</i></li> <li>• <i>Junos OS MPLS Applications Library for Routing Devices</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## flow

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> flow {     route <i>name</i> {         match {             <i>match-conditions</i>;         }         term-order (legacy   standard);         then {             <i>actions</i>;         }     }     firewall-install-disable;     term-order (legacy   standard);     validation {         traceoptions {             file <i>filename</i> &lt;files <i>number</i>&gt; &lt;size <i>size</i>&gt; &lt;world-readable   no-world-readable&gt;;             flag <i>flag</i> &lt;flag-modifier&gt; &lt;disable&gt;;         }     } } </pre>                                                                                                   |
| <b>Hierarchy Level</b>     | <p>[edit routing-options],<br/> [edit logical-systems <i>logical-system-name</i> routing-options],<br/> [edit routing-instances <i>routing-instance-name</i> routing-options],<br/> [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options]</p>                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.<br/> Statement introduced in Junos OS Release 9.0 for EX Series switches.<br/> <b>term-order</b> statement introduced in Junos OS Release 10.0<br/> Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>         | Configure a flow route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Default</b>             | legacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>             | <p><b>actions</b>—An action to take if conditions match.</p> <p><b>match-conditions</b>—Match packets to these conditions.</p> <p><b>route <i>name</i></b>—Name of the flow route.</p> <p><b>standard</b>—Specify to use version 7 or later of the flow-specification algorithm.</p> <p><b>term-order (legacy   standard)</b>—Specify the version of the flow-specification algorithm.</p> <ul style="list-style-type: none"> <li><b>legacy</b>—Use version 6 of the flow-specification algorithm.</li> <li><b>standard</b>—Use version 7 of the flow-specification algorithm.</li> </ul> <p><b>then</b>—Actions to take on matching packets.</p> |

The remaining statements are explained separately.

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration. |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Flow Routes</i></li> </ul>                         |

## flow-map

|                                 |                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>flow-map flow-map-name {   bandwidth (bps   adaptive);   forwarding-cache {     timeout (never non-discard-entry-only   minutes);   }   policy [ policy-names ];   redundant-sources [ addresses ]; }</pre>                                                                                            |
| <b>Hierarchy Level</b>          | <pre>[edit logical-systems logical-system-name routing-instances routing-instance-name   routing-options multicast], [edit logical-systems logical-system-name routing-options multicast], [edit routing-instances routing-instance-name routing-options multicast], [edit routing-options multicast]</pre> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.2.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                   |
| <b>Description</b>              | Configure multicast flow maps.                                                                                                                                                                                                                                                                              |
| <b>Options</b>                  | <p><i>flow-map-name</i>—Name of the flow-map.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring a Multicast Flow Map</i></li> </ul>                                                                                                                                                                                                        |

## forwarding-cache (Flow Maps)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | forwarding-cache {<br>timeout (minutes   never non-discard-entry-only );<br>}                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ],<br>[edit routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | Configure multicast forwarding cache properties for the flow map.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                         |



## forwarding-cache (Multicast)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> forwarding-cache {   allow-maximum;   family (inet   inet6) {     threshold {       log-warning value;       suppress value &lt;reuse value&gt;;     }   }   threshold {     log-warning value;     suppress value &lt;reuse value&gt;;   }   timeout minutes; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast],</p> <p>[edit routing-options multicast]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>         | <p>Configure multicast forwarding cache properties. These properties include threshold suppression and reuse limits, the threshold at which a warning message is logged, and timeout values.</p> <p>Specify a value for the threshold at which to suppress new multicast forwarding cache entries and an optional reuse value for the threshold at which the router begins to create new multicast forwarding cache entries. The range for both is from 1 through 200,000. If configured, the reuse value should be less than the suppression threshold value. The suppression value is mandatory. If you do not specify the optional reuse value, then the number of multicast forwarding cache entries is limited to the suppression value. A new entry is created as soon as the number of multicast forwarding cache entries falls below the suppression value.</p> <p>You can configure the thresholds globally for the multicast forwarding cache or individually for the IPv4 and IPv6 multicast forwarding caches. Configuring the <b>threshold</b> statement globally for the multicast forwarding cache or including the <b>family</b> statement to configure the thresholds for the IPv4 and IPv6 multicast forwarding caches are mutually exclusive.</p> |
| <b>Default</b>             | By default, there are no limits on the number of multicast forwarding cache entries.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>             | <p><b>family (inet   inet6)</b>—(Optional) Apply the configured thresholds to either IPv4 or IPv6 multicast forwarding cache entries.</p> <p><b>Default:</b> By default, the configured thresholds are applied to both IPv4 and IPv6 multicast forwarding cache entries.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

The remaining statements are explained separately.

|                              |                                                                                                              |
|------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege</b>    | routing—To view this statement in the configuration.                                                         |
| <b>Level</b>                 | routing-control—To add this statement to the configuration.                                                  |
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <i>Example: Configuring the Multicast Forwarding Cache</i></li></ul> |

## forwarding-options (chassis)

**Syntax** forwarding options *profile-name* {  
     num-65-127-prefix *value*  
     lpm-profile *prefix-65-127-disable*  
 }

**Hierarchy Level** [edit chassis]

**Release Information** Statement introduced in Junos 13.2 for the QFX Series.

**Description** Configure a unified forwarding table profile to allocate the amount a memory available for the following:

- MAC addresses
- Layer 3 host entries
- Longest prefix match table entries

**Options** *profile-name*—name of the profile to use for memory allocation in the unified forwarding table. [Table 8 on page 81](#) lists the profiles you can choose and the associated values for each type of entry.

**Table 8: Unified Forwarding Table Profiles**

| Profile Name               | MAC Table     | Host Table (unicast and multicast addresses) |              |             |             |             |             |
|----------------------------|---------------|----------------------------------------------|--------------|-------------|-------------|-------------|-------------|
|                            | MAC Addresses | IPv4 unicast                                 | IPv6 unicast | IPv4 (*, G) | IPv4 (S, G) | IPv6 (*, G) | IPv6 (S, G) |
| l2-profile-one             | 288K          | 16K                                          | 8K           | 8K          | 8K          | 4K          | 4K          |
| l2-profile-two             | 224K          | 80K                                          | 40K          | 40K         | 40K         | 20K         | 20K         |
| l2-profile-three (default) | 160K          | 144K                                         | 72K          | 72K         | 72K         | 36K         | 36K         |
| l3-profile                 | 96K           | 208K                                         | 104K         | 104K        | 104K        | 52K         | 52K         |
| lpm-profile*               | 32K           | 16K                                          | 8K           | 8K          | 8K          | 4K          | 4K          |

\* This profile supports only IPv4 in Junos OS 13.2X51-D10. With Junos OS 13.2X51-D15 it supports IPv4 and IPv6.

Note that if the host stores the maximum number of entries for any given type, the entire table is full and is unable to accommodate *any* entries of any other type. For information about valid combinations of table entries see [“Understanding the Unified Forwarding Table” on page 5](#).

You configure the memory allocation for LPM table entries differently depending on whether you use Junos OS 13.2X51-D10 or Junos OS 13.2X51-D15 and later. To learn

how to configure memory allocation for LPM table entries see [“Configuring the Unified Forwarding Table” on page 16](#).

**Required Privilege  
Level**

- Related  
Documentation**
- [Understanding the Unified Forwarding Table on page 5](#)
  - [Configuring the Unified Forwarding Table on page 16](#)

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## forwarding-table

---

|                                     |                                                                                                                                         |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                       | <pre>forwarding-table {<br/>    export [ <i>policy--names</i> ];<br/>    (<i>indirect-next-hop</i>   no-indirect-next-hop);<br/>}</pre> |
| <b>Hierarchy Level</b>              | [edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit routing-options]                                            |
| <b>Release Information</b>          | Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                       |
| <b>Description</b>                  | Configure information about the routing device's forwarding table.<br><br>The remaining statements are explained separately.            |
| <b>Required Privilege<br/>Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                     |
| <b>Related<br/>Documentation</b>    | • <a href="#">Configuring Per-Packet Load Balancing on page 12</a>                                                                      |

## generate

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax              | <pre> generate {   defaults {     generate-options;   }   route destination-prefix {     policy policy-name;     generate-options;   } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Hierarchy Level     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit routing-options],</p> <p>[edit routing-options <b>rib</b> <i>routing-table-name</i>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Release Information | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Description         | Configure generated routes, which are used as routes of last resort.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Options             | <p><b>defaults</b>—(Optional) Specify global generated route options. These options only set default attributes inherited by all newly created generated routes. These are treated as global defaults and apply to all the generated routes you configure in the <b>generate</b> statement.</p> <p><b>generate-options</b>—Additional information about generated routes, which is included with the route when it is installed in the routing table. Specify zero or more of the following options in <b>generate-options</b>. Each option is explained separately.</p> <ul style="list-style-type: none"> <li>• (<b>active</b>   <b>passive</b>);</li> <li>• <b>as-path</b> <i>&lt;as-path&gt;</i> <i>&lt;origin (egp   igp   incomplete)&gt;</i> <i>&lt;atomic-aggregate&gt;</i> <i>&lt;aggregator as-number in-address&gt;</i>;</li> <li>• (<b>brief</b>   <b>full</b>);</li> <li>• <b>community</b> [ <i>community-ids</i> ];</li> <li>• <b>discard</b>;</li> <li>• (<b>metric</b>   <i>metric2</i>   <i>metric3</i>   <i>metric4</i>) <i>value</i> <i>&lt;type type&gt;</i>;</li> <li>• (<b>preference</b>   <i>preference2</i>   <b>color</b>   <i>color2</i>) <i>preference</i> <i>&lt;type type&gt;</i>;</li> <li>• <b>tag</b> <i>string</i>;</li> </ul> <p><b>route destination-prefix</b>—Configure a non-default generated route:</p> <ul style="list-style-type: none"> <li>• <b>default</b>—For the default route to the destination. This is equivalent to specifying an IP address of 0.0.0.0/0.</li> </ul> |

- ***destination-prefix/prefix-length—/destination-prefix*** is the network portion of the IP address, and ***prefix-length*** is the destination prefix length.

The **policy** statement is explained separately.

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

**Related Documentation**

- *Example: Conditionally Generating Static Routes*

---

## import (Routing Options)

---

**Syntax** import [ *policy-names* ];

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options resolution **rib**],  
[edit logical-systems *logical-system-name* routing-options resolution **rib**],  
[edit routing-instances *routing-instance-name* routing-options resolution **rib**],  
[edit routing-options resolution **rib**]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Specify one or more import policies to use for route resolution.


**Options** ***policy-names***—Name of one or more import policies.

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


**Related Documentation**

- *Example: Configuring Route Resolution on PE Routers*

## import-policy


|                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                      | <code>import-policy [ <i>policy-names</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>                                                                                                                                                                                                             | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>rib-groups</b> <i>group-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options <b>rib-groups</b> <i>group-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <b>rib-groups</b> <i>group-name</i>],</p> <p>[edit routing-options <b>rib-groups</b> <i>group-name</i>]</p> |
| <b>Release Information</b>                                                                                                                                                                                                         | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                  |
| <b>Description</b>                                                                                                                                                                                                                 | <p>Apply one or more policies to routes imported into the routing table group. The <b>import-policy</b> statement complements the <b>import-rib</b> statement and cannot be used unless you first specify the routing tables to which routes are being imported.</p>                                                                                                                                                                                           |
| <div>  <p><b>NOTE:</b> On EX Series switches, only dynamically learned routes can be imported from one routing table group to another.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>                                                                                                                                                                                                                     | <i>policy-names</i> —Name of one or more policies.                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b>                                                                                                                                                                                                    | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>• <i>Example: Exporting Specific Routes from One Routing Table Into Another Routing Table</i></li> <li>• <a href="#">export-rib on page 74</a></li> <li>• <i>passive</i></li> </ul>                                                                                                                                                                                                                                     |

## import-rib

|                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                        | <code>import-rib [ <i>routing-table-names</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>                                                                                                                                                                                                               | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>rib-groups</b> <i>group-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options <b>rib-groups</b> <i>group-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <b>rib-groups</b> <i>group-name</i>],</p> <p>[edit routing-options <b>rib-groups</b> <i>group-name</i>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b>                                                                                                                                                                                                           | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>                                                                                                                                                                                                                   | <p>Specify the name of the routing table into which Junos OS should import routing information. The first routing table name you enter is the primary routing table. Any additional names you enter identify secondary routing tables. When a protocol imports routes, it imports them into the primary and any secondary routing tables. If the primary route is deleted, the secondary route also is deleted. For IPv4 import routing tables, the primary routing table must be <b>inet.0</b> or <b>routing-instance-name.inet.0</b>. For IPv6 import routing tables, the primary routing table must be <b>inet6.0</b>.</p> <p>In Junos OS Release 9.5 and later, you can configure an IPv4 import routing table that includes both IPv4 and IPv6 routing tables. Including both types of routing tables permits you, for example, to populate an IPv6 routing table with IPv6 addresses that are compatible with IPv4. In releases prior to Junos OS Release 9.5, you could configure an import routing table with only either IPv4 or IPv6 routing tables.</p> |
| <div>  <p><b>NOTE:</b> On EX Series switches, only dynamically learned routes can be imported from one routing table group to another.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                                                                                                                                                                                                                       | <i>routing-table-names</i> —Name of one or more routing tables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b>                                                                                                                                                                                                      | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• <i>Example: Exporting Specific Routes from One Routing Table Into Another Routing Table</i></li> <li>• <a href="#">export-rib on page 74</a></li> <li>• <i>passive</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



## indirect-next-hop

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | (indirect-next-hop   no-indirect-next-hop);                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | [edit logical-systems <i>logical-system-name</i> routing-options forwarding-table],<br>[edit routing-options forwarding-table]                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                 |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Enable indirectly connected next hops for route convergence. This statement is implemented on the Packet Forward Engine to speed up forwarding information base (FIB) updates. Configuring this statement significantly speeds convergence times. The only downside of configuring this statement is that some additional FIB memory overhead is required. Unless routes have an extremely high number of next hops, this increased memory usage should not be noticeable. |
| <div>  <b>NOTE:</b> <ul style="list-style-type: none"> <li>When virtual private LAN service (VPLS) is configured on the routing device, the <b>indirect-next-hop</b> statement is configurable at the [edit routing-options forwarding-table] hierarchy level. However, this configuration is not applicable to indirect nexthops specific to VPLS routing instances.</li> <li>By default, the Junos Trio Modular Port Concentrator (MPC) chipset on MX Series routers is enabled with indirectly connected next hops, and this cannot be disabled using the <b>no-indirect-next-hop</b> statement.</li> </ul> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Default</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Disabled.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>indirect-next-hop</b> —Enable indirectly connected next hops.<br><br><b>no-indirect-next-hop</b> —Explicitly disable indirect next hops.                                                                                                                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                        |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li><i>Example: Optimizing Route Reconvergence by Enabling Indirect Next Hops on the Packet Forwarding Engine</i></li> </ul>                                                                                                                                                                                                                                                                                                            |

## install (Routing Options)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (install   no-install);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit logical-systems <i>logical-system-name</i> routing-options static (defaults   route)],<br>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)],<br>[edit routing-options rib <i>routing-table-name</i> static (defaults   route)]<br>[edit routing-options static (defaults   route)] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | Configure whether Junos OS installs all static routes into the forwarding table. Even if you configure a route so it is not installed in the forwarding table, the route is still eligible to be exported from the routing table to other protocols.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Options</b>                  | <b>install</b> —Explicitly install all static routes into the forwarding table. Include this statement when configuring an individual route in the <b>route</b> portion of the <b>static</b> statement to override a <b>no-install</b> option specified in the <b>defaults</b> portion of the statement.<br><br><b>no-install</b> —Do not install the route into the forwarding table, even if it is the route with the lowest preference.<br><br><b>Default:</b> install                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Examples: Configuring Static Routes</i></li><li>• <i>static</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## instance-type

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|                                 |                                                                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | instance-type virtual-router                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit <a href="#">routing-instances</a> ]                                                                                                                                                                                                                                                             |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.2 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                             |
| <b>Description</b>              | Specify the type of routing instance.                                                                                                                                                                                                                                                                 |
| <b>Options</b>                  | <b>virtual-router</b> —Virtual router routing instance.                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Using Virtual Routing Instances to Route Among VLANs on EX Series Switches</i></li><li>• <i>Configuring Virtual Routing Instances (CLI Procedure)</i></li><li>• <a href="#">Configuring Virtual Router Routing Instances on page 15</a></li></ul> |

## interface (Multicast Static Routes)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> interface <i>interface-names</i> {     disable;     maximum-bandwidth <i>bps</i>;     no-qos-adjust;     reverse-oif-mapping {         no-qos-adjust;     }     subscriber-leave-timer <i>seconds</i>; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <a href="#">multicast</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options <a href="#">multicast</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <a href="#">multicast</a>],</p> <p>[edit routing-options <a href="#">multicast</a>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.1.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Description</b>              | <p>Enable multicast traffic on an interface.</p> <p>By default, multicast packets are forwarded by enabling Protocol Independent Multicast (PIM) on an interface. PIM adds multicast routes into the routing table.</p> <p>You can also configure multicast packets to be forwarded over a static route, such as a static route associated with an LSP next hop. Multicast packets are accepted on an interface and forwarded over a static route in the forwarding table. This is useful when you want to enable multicast traffic on a specific interface without configuring PIM on the interface.</p> <p>You cannot enable multicast traffic on an interface and configure PIM on the same interface simultaneously.</p> <p>Static routes must be configured before you can enable multicast on an interface. Configuring the <b>interface</b> statement alone does not install any routes into the routing table. This feature relies on the static route configuration.</p> |
| <b>Options</b>                  | <p><b><i>interface-names</i></b>—Name of one or more interfaces on which to enable multicast traffic.</p> <p>The remaining statements are explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Defining Interface Bandwidth Maximums</i></li> <li>• <i>Example: Configuring Multicast with Subscriber VLANs</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## interface (Routing Instances)

|                            |                                                                   |
|----------------------------|-------------------------------------------------------------------|
| <b>Syntax</b>              | <code>interface <i>interface-name</i>;</code>                     |
| <b>Hierarchy Level</b>     | [edit <a href="#">routing-instances</a> ]                         |
| <b>Release Information</b> | Statement introduced in Junos OS Release 11.3 for the QFX Series. |
| <b>Description</b>         | For virtual router routing instances, configure an interface.     |



### NOTE:

- You must configure only interfaces from the Node devices assigned to the network Node group. If you try to configure interfaces from the Node devices assigned to server Node groups, the configuration does not commit.
- You can configure an interface for one routing instance only.

|                                 |                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b>                  | <i>interface-name</i> —Name of an interface.                                                                                |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Virtual Router Routing Instances on page 15</a></li> </ul> |

## interface (Routing Options)

|                            |                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre>interface <i>interface-names</i> {     <b>maximum-bandwidth</b> <i>bps</i>;     <b>no-qos-adjust</b>;     <b>reverse-oif-mapping</b> {         <b>no-qos-adjust</b>;     }     <b>subscriber-leave-timer</b> <i>seconds</i>; }</pre>                                                                                               |
| <b>Hierarchy Level</b>     | <pre>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   routing-options multicast], [edit logical-systems <i>logical-system-name</i> routing-options multicast], [edit routing-instances <i>routing-instance-name</i> routing-options multicast], [edit routing-options multicast]</pre> |
| <b>Release Information</b> | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                               |
| <b>Description</b>         | Enable multicast traffic on an interface.                                                                                                                                                                                                                                                                                               |



**TIP:** You cannot enable multicast traffic on an interface by using the **routing-options multicast interface** statement and configure PIM on the interface.

|                                 |                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b>                  | <p><b><i>interface-name</i></b>—Names of the physical or logical interface.</p> <p>The remaining statements are explained separately.</p>                                        |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Defining Interface Bandwidth Maximums</i></li> <li>• <i>Example: Configuring Multicast with Subscriber VLANs</i></li> </ul> |

## interface-routes

**Syntax**

```
interface-routes {
    family (inet | inet6) {
        export {
            lan;
            point-to-point;
        }
    }
    rib-group group-name;
}
```

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options],  
[edit logical-systems *logical-system-name* routing-options],  
[edit routing-instances *routing-instance-name* routing-options],  
[edit routing-options]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.



**NOTE:** On EX Series switches, only dynamically learned routes can be imported from one routing table group to another.

**Description** Associate a routing table group with the routing device's interfaces, and specify routing table groups into which interface routes are imported.

By default, IPv4 interface routes (also called direct routes) are imported into routing table **inet.0**, and IPv6 interface routes are imported into routing table **inet6.0**. If you are configuring alternate routing tables for use by some routing protocols, it might be necessary to import the interface routes into the alternate routing tables. To define the routing tables into which interface routes are imported, you create a routing table group and associate it with the routing device's interfaces.

To create the routing table groups, include the **passive** statement at the **[edit routing-options]** hierarchy level.

If you have configured a routing table, configure the OSPF primary instance at the **[edit protocols ospf]** hierarchy level with the statements needed for your network so that routes are installed in **inet.0** and in the forwarding table. Make sure to include the routing table group.

To export local routes, include the **export** statement.

To export LAN routes, include the **lan** option. To export point-to-point routes, include the **point-to-point** option.

Only local routes on point-to-point interfaces configured with a destination address are exportable.

**Options** **inet**—Specify the IPv4 address family.

**inet6**—Specify the IPv6 address family.

**lan**—Export LAN routes.

**point-to-point**—Export point-to-point routes.

The remaining statements are explained separately.

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

**Related Documentation**

- *Example: Importing Direct and Static Routes Into a Routing Instance*
- *Example: Configuring Multiple Routing Instances of OSPF*
- *passive*

---

## local-address (Routing Options)

---

**Syntax** local-address *address*;

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options multicast **backup-pe-group** *group-name*],  
[edit logical-systems *logical-system-name* routing-options multicast **backup-pe-group** *group-name*],  
[edit routing-instances *routing-instance-name* routing-options multicast **backup-pe-group** *group-name*],  
[edit routing-options multicast **backup-pe-group** *group-name*]

**Release Information** Statement introduced in Junos OS Release 9.0.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Configure the address of the local PE for ingress PE redundancy when point-to-multipoint LSPs are used for multicast distribution.

**Options** **address**—Address of local PEs in the backup group.

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

**Related Documentation**

- *Example: Configuring Ingress PE Redundancy*



## martians

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>martians {     destination-prefix match-type &lt;allow&gt;; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <b>rib</b> <i>routing-table-name</i>],</p> <p>[edit routing-options],</p> <p>[edit routing-options <b>rib</b> <i>routing-table-name</i>]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Description</b>              | Configure martian addresses.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                  | <p><b>allow</b>—(Optional) Explicitly allow a subset of a range of addresses that has been disallowed. The <b>allow</b> option is the only supported action.</p> <p><b>destination-prefix</b>—Destination route you are configuring:</p> <ul style="list-style-type: none"> <li><b>destination-prefix/prefix-length—destination-prefix</b> is the network portion of the IP address, and <b>prefix-length</b> is the destination prefix length.</li> <li><b>default</b>—Default route to use when routing packets do not match a network or host in the routing table. This is equivalent to specifying the IP address <b>0.0.0.0/0</b>.</li> </ul> <p><b>match-type</b>—Criteria that the destination must match:</p> <ul style="list-style-type: none"> <li><b>exact</b>—Exactly match the route's mask length.</li> <li><b>longer</b>—The route's mask length is greater than the specified mask length.</li> <li><b>orlonger</b>—The route's mask length is equal to or greater than the specified mask length.</li> <li><b>through destination-prefix</b>—The route matches the first prefix, the route matches the second prefix for the number of bits in the route, and the number of bits in the route is less than or equal to the number of bits in the second prefix.</li> <li><b>upto prefix-length</b>—The route's mask length falls between the two destination prefix lengths, inclusive.</li> </ul> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**Related Documentation**     • *Example: Configuring Martian Addresses*

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## maximum-bandwidth (Routing Options)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>maximum-bandwidth <i>bps</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | <code>[edit dynamic-profiles <i>profile-name</i> routing-instances <i>instance-name</i> routing-options multicast interface <i>interface-name</i>],</code><br><code>[edit dynamic-profiles <i>profile-name</i> routing-options multicast interface <i>interface-name</i>]</code><br><code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast interface <i>interface-name</i>],</code><br><code>[edit logical-systems <i>logical-system-name</i> routing-options multicast interface <i>interface-name</i>],</code><br><code>[edit routing-instances <i>routing-instance-name</i> routing-options multicast interface <i>interface-name</i>],</code><br><code>[edit routing-options multicast interface <i>interface-name</i>]</code> |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.3.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br><b>dynamic-profiles</b> hierarchy level added in Junos OS Release 11.2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Description</b>              | Configure the multicast bandwidth for the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <b><i>bps</i></b> —Bandwidth rate, in bits per second, for the multicast interface.<br><b>Range:</b> 0 through any amount of bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | <code>routing</code> —To view this statement in the configuration.<br><code>routing-control</code> —To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | • <i>Example: Defining Interface Bandwidth Maximums</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## maximum-paths

|                            |                                                                                                                                                                                                                                                                                             |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>maximum-paths <i>path-limit</i> &lt;log-interval <i>seconds</i>&gt; &lt;log-only   threshold <i>value</i>&gt;;</code>                                                                                                                                                                 |
| <b>Hierarchy Level</b>     | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],<br>[edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit routing-instances <i>routing-instance-name</i> routing-options],<br>[edit routing-options] |
| <b>Release Information</b> | Statement introduced in Junos OS Release 8.0.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                  |
| <b>Description</b>         | Configure a limit for the number of routes installed in a routing table based upon the route path.                                                                                                                                                                                          |



**NOTE:** The `maximum-paths` statement is similar to the `maximum-prefixes` statement. The `maximum-prefixes` statement limits the number of unique destinations in a routing instance. For example, suppose a routing instance has the following routes:

```
OSPF 10.10.10.0/24
ISIS 10.10.10.0/24
```

These are two routes, but only one destination (prefix). The `maximum-paths` limit applies the total number of routes (two). The `maximum-prefixes` limit applies to the total number of unique prefixes (one).

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b> | <p><code>log-interval <i>seconds</i></code>—(Optional) Minimum time interval (in seconds) between log messages.<br/> <b>Range:</b> 5 through 86,400</p> <p><code>log-only</code>—(Optional) Sets the route limit as an advisory limit. An advisory limit triggers only a warning, and additional routes are not rejected.</p> <p><code><i>path-limit</i></code>—Maximum number of routes. If this limit is reached, a warning is triggered and additional routes are rejected.<br/> <b>Range:</b> 1 through 4,294,967,295 (<math>2^{32} - 1</math>)<br/> <b>Default:</b> No default</p> <p><code>threshold <i>value</i></code>—(Optional) Percentage of the maximum number of routes that starts triggering a warning. You can configure a percentage of the <code><i>path-limit</i></code> value that starts triggering the warnings.<br/> <b>Range:</b> 1 through 100</p> |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**NOTE:** When the number of routes reaches the **threshold** value, routes are still installed into the routing table while warning messages are sent. When the number of routes reaches the *path-limit* value, then additional routes are rejected.

|                           |                                                             |
|---------------------------|-------------------------------------------------------------|
| <b>Required Privilege</b> | routing—To view this statement in the configuration.        |
| <b>Level</b>              | routing-control—To add this statement to the configuration. |

|                              |                                                                                                                                               |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related Documentation</b> | <ul style="list-style-type: none"> <li>• <i>Limiting the Number of Paths and Prefixes Accepted from CE Routers in Layer 3 VPNs</i></li> </ul> |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|

## maximum-prefixes

|                            |                                                                                                                                                                                                                                                                                                                          |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>maximum-prefixes <i>prefix-limit</i> &lt;log-interval <i>seconds</i>&gt; &lt;log-only   threshold <i>percentage</i>&gt;;</code>                                                                                                                                                                                    |
| <b>Hierarchy Level</b>     | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],<br>[edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit routing-instances <i>routing-instance-name</i> routing-options],<br>[edit routing-options]                              |
| <b>Release Information</b> | Statement introduced in Junos OS Release 8.0.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                               |
| <b>Description</b>         | Configure a limit for the number of routes installed in a routing table based upon the route prefix.<br><br>Using a prefix limit, you can curtail the number of prefixes received from a CE router in a VPN. Prefix limits apply only to dynamic routing protocols and are not applicable to static or interface routes. |



**NOTE:** The `maximum-prefixes` statement is similar to the `maximum-paths` statement. The `maximum-prefixes` statement limits the number of unique destinations in a routing instance. For example, suppose a routing instance has the following routes:

```
OSPF 10.10.10.0/24
ISIS 10.10.10.0/24
```

These are two routes, but only one destination (prefix). The `maximum-paths` limit applies the total number of routes (two). The `maximum-prefixes` limit applies to the total number of unique prefixes (one).

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b> | <p><b>log-interval <i>seconds</i></b>—(Optional) Minimum time interval (in seconds) between log messages.</p> <p><b>Range:</b> 5 through 86,400</p> <p><b>log-only</b>—(Optional) Sets the prefix limit as an advisory limit. An advisory limit triggers only a warning, and additional routes are not rejected.</p> <p><b><i>prefix-limit</i></b>—Maximum number of route prefixes. If this limit is reached, a warning is triggered and any additional routes are rejected.</p> <p><b>Range:</b> 1 through 4,294,967,295</p> <p><b>Default:</b> No default</p> <p><b>threshold <i>value</i></b>—(Optional) Percentage of the maximum number of prefixes that starts triggering a warning. You can configure a percentage of the <b><i>prefix-limit</i></b> value that starts triggering the warnings.</p> |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Range:** 1 through 100



**NOTE:** When the number of routes reaches the threshold value, routes are still installed into the routing table while warning messages are sent. When the number of routes reaches the *prefix-limit* value, then additional routes are rejected.

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

**Related Documentation**

- *Limiting the Number of Paths and Prefixes Accepted from CE Routers in Layer 3 VPNs*

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## med-igp-update-interval

---

**Syntax** med-igp-update-interval *minutes*;

**Hierarchy Level** [edit routing-options]

**Release Information** Statement introduced in Junos OS Release 9.0  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Configure a timer for how long to delay updates for the multiple exit discriminator (MED) path attribute for BGP groups and peers configured with the **metric-out igp offset delay-med-update** statement. The timer delays MED updates for the interval configured unless the MED is lower than the previously advertised attribute or another attribute associated with the route has changed or if the BGP peer is responding to a refresh route request.

**Options** *minutes*—Interval to delay MED updates.  
**Range:** 10 through 600  
**Default:** 10 minutes

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

**Related Documentation**

- *Example: Associating the MED Path Attribute with the IGP Metric and Delaying MED Updates*
- *metric-out*

## metric (Aggregate, Generated, or Static Route)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (metric   metric2   metric3   metric4) <i>metric</i> <type type>;                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-options ( <a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],<br>[edit routing-options ( <a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)]                                                                                                                                                                     |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                  |
| <b>Description</b>              | Specify the metric value for an aggregate, generated, or static route. You can specify up to four metric values, starting with <b>metric</b> (for the first metric value) and continuing with <b>metric2</b> , <b>metric3</b> , and <b>metric4</b> .                                                                                                                                                                                     |
| <b>Options</b>                  | <b>metric</b> —Metric value.<br><b>Range:</b> 0 through 4,294,967,295 ( $2^{32} - 1$ )<br><br><b>type type</b> —(Optional) Type of route.<br><br>When routes are exported to OSPF, type 1 routes are advertised in type 1 externals, and routes of any other type are advertised in type 2 externals. Note that if a qualified-next-hop metric value is configured, this value overrides the route metric.<br><b>Range:</b> 1 through 16 |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Summarizing Static Routes Through Route Aggregation</i></li> <li>• <i>Example: Conditionally Generating Static Routes</i></li> <li>• <a href="#">aggregate on page 51</a></li> <li>• <a href="#">generate on page 83</a></li> <li>• <i>static</i></li> </ul>                                                                                                                        |

## multicast (Routing Options)

```
Syntax  multicast {
        forwarding-cache {
            threshold suppress value <reuse value>;
        }
        interface interface-name {
            enable;
        }
        scope scope-name {
            interface [ interface-names ];
            prefix destination-prefix;
        }
        ssm-groups {
            address;
        }
    }
```

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options],  
[edit logical-systems *logical-system-name* routing-options],  
[edit routing-instances *routing-instance-name* routing-options],  
[edit routing-options]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.  
Statement introduced in Junos OS Release 12.3 for ACX Series routers.

**Description** Configure generic multicast properties.



**NOTE:** You cannot apply a scoping policy to a specific routing instance. All scoping policies are applied to all routing instances. However, you can apply the `scope` statement to a specific routing instance.

The remaining statements are explained separately.

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

**Related Documentation**

- *Examples: Configuring Administrative Scoping*
- *Example: Configuring Source-Specific Multicast Groups with Any-Source Override*
- *Examples: Configuring the Multicast Forwarding Cache*
- *Multicast Protocols Feature Guide for Routing Devices*
- ([indirect-next-hop on page 87](#) | no-indirect-next-hop)



## no-qos-adjust

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | no-qos-adjust;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i> <a href="#">reverse-oif-mapping</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i> <a href="#">reverse-oif-mapping</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i> <a href="#">reverse-oif-mapping</a>],</p> <p>[edit routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit routing-options multicast <a href="#">interface</a> <i>interface-name</i> <a href="#">reverse-oif-mapping</a>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.5.</p> <p>Statement introduced in Junos OS Release 9.5 for EX Series switches.</p> <p>Statement added to [edit routing-instances <i>routing-instance-name</i> routing-options multicast interface <i>interface-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast interface <i>interface-name</i>], and [edit routing-options multicast interface <i>interface-name</i>] hierarchy levels in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | Disable hierarchical bandwidth adjustment for all subscriber interfaces that are identified by their MLD or IGMP request from a specific multicast interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Multicast with Subscriber VLANs</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## num-65-127-prefix

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | num-65-127-prefix <i>value</i>                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | [edit chassis <a href="#">forwarding-options</a> <i>profile-name</i> ]                                                                                                                                                                                                                                                                                                                                                                |
| <b>Release Information</b>      | Statement introduced in Junos 13.2 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>              | Configure the number of supported IPv6 prefixes in the range /65 through /127.                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <p><b>value</b>—With Junos OS 13.2X51D10: Value in the range 1 through 128. Each increment adds support for 16 IPv6 addresses with prefixes between /65 and /127, for a maximum of 2048 such addresses (16 x 128 = 2048).</p> <p><b>value</b>—With Junos OS 13.2X51D15: Value in the range 0 through 4. Each increment adds support for 1K IPv6 addresses with prefixes between /65 and /127, for a maximum of 4K such addresses.</p> |
| <b>Required Privilege Level</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring the Unified Forwarding Table on page 16</a></li></ul>                                                                                                                                                                                                                                                                                                                 |

## options (Routing Options)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>options {   syslog (level <i>level</i>   upto level <i>level</i>); }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-options]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>              | <p>Configure the types of system logging messages sent about the routing protocols process to the system message logging file. These messages are also displayed on the system console. You can log messages at a particular level, or up to and including a particular level.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <p><b>level <i>level</i></b>—Severity of the message. It can be one or more of the following levels, in order of decreasing urgency:</p> <ul style="list-style-type: none"> <li>• <b>alert</b>—Conditions that should be corrected immediately, such as a corrupted system database.</li> <li>• <b>critical</b>—Critical conditions, such as hard drive errors.</li> <li>• <b>debug</b>—Software debugging messages.</li> <li>• <b>emergency</b>—Panic or other conditions that cause the system to become unusable.</li> <li>• <b>error</b>—Standard error conditions.</li> <li>• <b>info</b>—Informational messages.</li> <li>• <b>notice</b>—Conditions that are not error conditions, but might warrant special handling.</li> <li>• <b>warning</b>—System warning messages.</li> </ul> <p><b>upto level <i>level</i></b>—Log all messages up to a particular level.</p> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <b>syslog</b> in the <i>Junos OS Administration Library for Routing Devices</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## pim-to-igmp-proxy

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>pim-to-igmp-proxy {<br/>  upstream-interface [ interface-names ];<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast],<br>[edit routing-options multicast]                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.6.<br>Statement introduced in Junos OS Release 9.6 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <p>Configure the rendezvous point (RP) routing device that resides between a customer edge-facing Protocol Independent Multicast (PIM) domain and a core-facing PIM domain to translate PIM join or prune messages into corresponding Internet Group Management Protocol (IGMP) report or leave messages. The routing device then transmits the report or leave messages by proxying them to one or two upstream interfaces that you configure on the RP routing device. Including the <b>pim-to-igmp-proxy</b> statement enables you to use IGMP to forward IPv4 multicast traffic across the PIM sparse mode domains.</p> <p>The remaining statement is explained separately.</p> |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring PIM-to-IGMP Message Translation</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## policy (Aggregate and Generated Routes)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>policy <i>policy-name</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Hierarchy Level</b>     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-options (<b>aggregate</b>   <b>generate</b>) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<b>aggregate</b>   <b>generate</b>) (defaults   route)]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>         | <p>Associate a routing policy when configuring an aggregate or generated route's destination prefix in the <b>routes</b> part of the <b>aggregate</b> or <b>generate</b> statement. This provides the equivalent of an import routing policy filter for the destination prefix. That is, each potential contributor to an aggregate route, along with any aggregate options, is passed through the policy filter. The policy then can accept or reject the route as a contributor to the aggregate route.</p> <p>If the contributor is accepted, the policy can modify the default preferences. The contributor with the numerically smallest prefix becomes the most preferred, or <i>primary</i>, contributor. A rejected contributor still can contribute to a less specific aggregate route. If you do not specify a policy filter, all candidate routes contribute to an aggregate route.</p> <p>The following algorithm is used to compare two generated contributing routes in order to determine which one is the primary or preferred contributor:</p> <ol style="list-style-type: none"> <li>1. Compare the protocol's <b>preference</b> of the contributing routes. The lower the preference, the better the route. This is similar to the comparison that is done while determining the best route for the routing table.</li> <li>2. Compare the protocol's <b>preference2</b> of the contributing routes. The lower <b>preference2</b> value is better. If only one route has <b>preference2</b>, then this route is preferred.</li> <li>3. The preference values are the same. Proceed with a numerical comparison of the prefixes' values. <ol style="list-style-type: none"> <li>a. The primary contributor is the numerically smallest prefix value.</li> <li>b. If the two prefixes are numerically equal, the primary contributor is the route that has the smallest prefix length value.</li> </ol> </li> </ol> |

At this point, the two routes are the same. The primary contributor does not change. An additional next hop is available for the existing primary contributor.

A rejected contributor still can contribute to less specific generated route. If you do not specify a policy filter, all candidate routes contribute to a generated route.

|                                 |                                                                                                                                                                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Options</b>                  | <i>policy-name</i> —Name of a routing policy.                                                                                                                                                                                                                                |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                          |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li><li>• <i>Example: Conditionally Generating Static Routes</i></li><li>• <a href="#">aggregate on page 51</a></li><li>• <a href="#">generate on page 83</a></li></ul> |

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## policy (Flow Maps)

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>policy [ <i>policy-names</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">flow-map</a> <i>flow-map-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">flow-map</a> <i>flow-map-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">flow-map</a> <i>flow-map-name</i> ],<br>[edit routing-options multicast <a href="#">flow-map</a> <i>flow-map-name</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | Configure a flow map policy.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                  | <i>policy-names</i> —Name of one or more policies for flow mapping.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## policy-options

```
Syntax  policy-options
        application-maps application-map-name {
            application application-name {
                code-points [ aliases ] [ bit-patterns ];
            }
        }
        policy-statement policy-name {
            term term-name {
                from {
                    family family-name;
                    match-conditions;
                    policy subroutine-policy-name;
                    prefix-list prefix-list-name;
                    prefix-list-filter prefix-list-name match-type <actions>;
                    route-filter destination-prefix match-type <actions>;
                    source-address-filter source-prefix match-type <actions>;
                }
                to {
                    match-conditions;
                    policy subroutine-policy-name;
                }
                then actions;
            }
        }
```

Hierarchy Level [edit]

**Release Information** Statement introduced in Junos OS Release 12.1 for the QFX Series.  
Statement introduced in Junos OS Release 12.1 for the EX Series.

**Description** Configure options such as application maps for DCBX application protocol exchange and policy statements.

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

**Related Documentation**

- *Defining an Application for DCBX Application Protocol TLV Exchange*
- *Example: Configuring DCBX Application Protocol TLV Exchange*
- *Example: Configuring DCBX to Support an iSCSI Application*
- *Understanding DCBX Application Protocol TLV Exchange*
- *Understanding DCBX Application Protocol TLV Exchange on EX Series Switches*

## policy-statement

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> policy-statement <i>policy-name</i> {   term <i>term-name</i> {     from {       family <i>family-name</i>;       match-conditions;       policy <i>subroutine-policy-name</i>;       prefix-list <i>prefix-list-name</i>;       prefix-list-filter <i>prefix-list-name</i> match-type &lt;actions&gt;;       route-filter <i>destination-prefix</i> match-type &lt;actions&gt;;       source-address-filter <i>source-prefix</i> match-type &lt;actions&gt;;     }     to {       match-conditions;       policy <i>subroutine-policy-name</i>;     }     then <i>actions</i>;   } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>     | <p>[edit dynamic policy-options],</p> <p>[edit logical-systems <i>logical-system-name</i> policy-options],</p> <p>[edit policy-options]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Support for configuration in the dynamic database introduced in Junos OS Release 9.5.</p> <p>Support for configuration in the dynamic database introduced in Junos OS Release 9.5 for EX Series switches.</p> <p><b>inet-mdt</b> option introduced in Junos OS Release 10.0R2.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p><b>route-target</b> option introduced in Junos OS Release 12.2.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>         | <p>Define a routing policy, including subroutine policies.</p> <p>A <i>term</i> is a named structure in which match conditions and actions are defined. Routing policies are made up of one or more terms. Each routing policy term is identified by a term name. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose the entire name in double quotation marks.</p> <p>Each term contains a set of match conditions and a set of actions:</p> <ul style="list-style-type: none"> <li>Match conditions are criteria that a route must match before the actions can be applied. If a route matches all criteria, one or more actions are applied to the route.</li> <li>Actions specify whether to accept or reject the route, control how a series of policies are evaluated, and manipulate the characteristics associated with a route.</li> </ul> <p>Generally, a router compares a route against the match conditions of each term in a routing policy, starting with the first and moving through the terms in the order in which they are defined, until a match is made and an explicitly configured or default action of</p> |



**accept** or **reject** is taken. If none of the terms in the policy match the route, the router compares the route against the next policy, and so on, until either an action is taken or the default policy is evaluated.

If none of the match conditions of each term evaluates to true, the final action is executed. The final action is defined in an unnamed term. Additionally, you can define a default action (either **accept** or **reject**) that overrides any action intrinsic to the protocol.

The order of match conditions in a term is not relevant, because a route must match all match conditions in a term for an action to be taken.

To list the routing policies under the **[edit policy-options]** hierarchy level by **policy-statement *policy-name*** in alphabetical order, enter the **show policy-options** configuration command.

**Options** *actions*—(Optional) One or more actions to take if the conditions match. The actions are described in *Configuring Flow Control Actions*.

**family** *family-name*—(Optional) Specify an address family protocol. Specify **inet** for IPv4. Specify **inet6** for 128-bit IPv6, and to enable interpretation of IPv6 router filter addresses. For IS-IS traffic, specify **iso**. For IPv4 multicast VPN traffic, specify **inet-mvpn**. For IPv6 multicast VPN traffic, specify **inet6-mvpn**. For multicast-distribution-tree (MDT) IPv4 traffic, specify **inet-mdt**. For BGP route target VPN traffic, specify **route-target**.



**NOTE:** When family is not specified, the routing device or routing instance uses the address family or families carried by BGP. If multiprotocol BGP (MP-BGP) is enabled, the policy defaults to the protocol family or families carried in the network layer reachability information (NLRI) as configured in the *family* statement for BGP. If MP-BGP is not enabled, the policy uses the default BGP address family unicast IPv4.

**from**—(Optional) Match a route based on its source address.

**match-conditions**—(Optional in **from** statement; required in **to** statement) One or more conditions to use to make a match. The qualifiers are described in *Routing Policy Match Conditions*.

**policy** *subroutine-policy-name*—Use another policy as a match condition within this policy. The name identifying the subroutine policy can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (" "). Policy names cannot take the form **\_\_.\*-internal\_\_**, as this form is reserved. For information about how to configure subroutines, see *Understanding Policy Subroutines in Routing Policy Match Conditions*.

**policy-name**—Name that identifies the policy. The name can contain letters, numbers, and hyphens (-) and can be up to 255 characters long. To include spaces in the name, enclose it in quotation marks (" ").

**prefix-list** *prefix-list-name* —Name of a list of IPv4 or IPv6 prefixes.

**prefix-list-filter** *prefix-list-name*—Name of a prefix list to evaluate using qualifiers; *match-type* is the type of match (see *Configuring Prefix List Filters*), and *actions* is the action to take if the prefixes match.

**route-filter** *destination-prefix match-type <actions>*—(Optional) List of routes on which to perform an immediate match; *destination-prefix* is the IPv4 or IPv6 route prefix to match, *match-type* is the type of match (see *Configuring Route Lists*), and *actions* is the action to take if the *destination-prefix* matches.

**source-address-filter** *source-prefix match-type <actions>*—(Optional) Unicast source addresses in multiprotocol BGP (MBGP) and Multicast Source Discovery Protocol (MSDP) environments on which to perform an immediate match. *source-prefix* is

the IPv4 or IPv6 route prefix to match, **match-type** is the type of match (see *Configuring Route Lists*), and **actions** is the action to take if the **source-prefix** matches.

**term term-name**—Name that identifies the term. The term name must be unique in the policy. It can contain letters, numbers, and hyphens (-) and can be up to 64 characters long. To include spaces in the name, enclose the entire name in quotation marks (" "). A policy statement can include multiple terms. We recommend that you name all terms. However, you do have the option to include an unnamed term which must be the final term in the policy. To configure an unnamed term, omit the **term** statement when defining match conditions and actions.

**to**—(Optional) Match a route based on its destination address or the protocols into which the route is being advertised.

**then**—(Optional) Actions to take on matching routes. The actions are described in *Configuring Flow Control Actions* and *Configuring Actions That Manipulate Route Characteristics*.

|                                 |                                                                     |
|---------------------------------|---------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.                |
|                                 | routing-control—To add this statement to the configuration.         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>dynamic-db</i></li></ul> |

## ppm

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>ppm {<br/>    no-delegate-processing;<br/>}</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit routing-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.4.<br>Statement introduced in Junos OS Release 10.2 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | <p>(M120, M320, MX Series, T Series, TX Matrix routers, M7i and M10i routers with Enhanced CFEB [CFEB-E], EX Series switches, and QFX Series only) Disable distributed periodic packet management (PPM) to the Packet Forwarding Engine (on routers), to access ports (on EX3200 and EX4200 switches, and QFX Series), or to line cards (on EX6200 and EX8200 switches).</p> <p>After you disable PPM, PPM processing continues to run on the Routing Engine.</p> <p>In Junos OS Release 8.2, PPM was moved from the Routing Engine to the Packet Forwarding Engine, access ports, or line cards. The <b>no-delegate-processing</b> statement disables the default behavior and restores the legacy behavior.</p> |
| <b>Default</b>                  | Distributed PPM processing is enabled for all protocols that use PPM.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Options</b>                  | <b>no-delegate-processing</b> —Disable PPM to the Packet Forwarding Engine, access ports, or line cards. Distributed PPM is enabled by default.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Configuring Distributed Periodic Packet Management on an EX Series Switch (CLI Procedure)</i></li><li>• <a href="#">Configuring Distributed Periodic Packet Management on page 14</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## ppm (Ethernet Switching)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | ppm {<br>centralized;<br>}                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | [edit protocols lacp]                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 10.2 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.1 for T Series devices.                                                                                                                                                                                                                |
| <b>Description</b>              | Configure PPM processing options for Link Aggregation Control Protocol (LACP) packets.<br><br>This command configures the PPM processing options for LACP packets only. You can disable distributed PPM processing for all packets that use PPM and run all PPM processing on the Routing Engine by configuring the <b>no-delegate-processing</b> configuration statement in the [edit routing-options ppm] statement hierarchy. |
| <b>Default</b>                  | Distributed PPM processing is enabled for all packets that use PPM.                                                                                                                                                                                                                                                                                                                                                              |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Configuring Distributed Periodic Packet Management on an EX Series Switch (CLI Procedure)</i></li> <li>• <a href="#">Configuring Distributed Periodic Packet Management on page 14</a></li> </ul>                                                                                                                                                                                    |

## preference (Routing Options)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>(preference   preference2   color   color2) preference &lt;type type&gt;;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | <p>Preference value for a static, aggregate, or generated route. You also can specify a secondary preference value (<b>preference2</b>), as well as colors, which are even finer-grained preference values (<b>color</b> and <b>color2</b>).</p> <p>If the Junos OS routing table contains a dynamic route to a destination that has a better (lower) preference value than the static, aggregate, or generated route, the dynamic route is chosen as the active route and is installed in the forwarding table.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <p><b>preference</b>—Preference value. A lower number indicates a more preferred route.</p> <p><b>Range:</b> 0 through 4,294,967,295 (<math>2^{32} - 1</math>)</p> <p><b>Default:</b> 5 (for static routes), 130 (for aggregate and generated routes)</p> <p><b>type type</b>—(Optional) Type of route.</p> <p><b>Range:</b> 1 through 16</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Examples: Configuring Static Routes</i></li> <li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li> <li>• <i>Example: Conditionally Generating Static Routes</i></li> <li>• <a href="#">aggregate on page 51</a></li> <li>• <a href="#">generate on page 83</a></li> <li>• <i>static</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## prefix

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>prefix destination-prefix;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">scope scope-name</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">scope scope-name</a> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">scope scope-name</a> ],<br>[edit routing-options multicast <a href="#">scope scope-name</a> ] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                     |
| <b>Description</b>              | Configure the prefix for multicast scopes.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                  | <i>destination-prefix</i> —Address range for the multicast scope.                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Examples: Configuring Administrative Scoping</i></li> <li>• <i>Example: Creating a Named Scope for Multicast Scoping</i></li> <li>• <i>multicast</i></li> </ul>                                                                                                                                                                                                                                                                 |

## prefix-65-127-disable

|                                 |                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>prefix-65-127-disable</code>                                                                                      |
| <b>Hierarchy Level</b>          | [edit chassis <a href="#">forwarding-options</a> lpm-profile]                                                           |
| <b>Release Information</b>      | Statement introduced in Junos 13.2X51-D15 for the QFX Series.                                                           |
| <b>Description</b>              | Disable support in the longest prefix match (LPM) table for IPv6 prefixes in the range /65 through /127.                |
| <b>Required Privilege Level</b> |                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring the Unified Forwarding Table on page 16</a></li> </ul> |

## protocols

```

Syntax protocols {
    bgp {
        ... bgp-configuration ...
    }
    isis {
        ... isis-configuration ...
    }
    ldp {
        ... ldp-configuration ...
    }
    msdp {
        ... msdp-configuration ...
    }
    mstp {
        ... mstp-configuration ...
    }
    ospf {
        domain-id domain-id;
        domain-vpn-tag number;
        route-type-community (iana | vendor);
        ... ospf-configuration ...
    }
    ospf3 {
        domain-id domain-id;
        domain-vpn-tag number;
        route-type-community (iana | vendor);
        ... ospf3-configuration ...
    }
    pim {
        ... pim-configuration ...
    }
    rip {
        ... rip-configuration ...
    }
    ripng {
        ... ripng-configuration ...
    }
    rstp {
        rstp-configuration;
    }
    vstp {
        vstp configuration;
    }
    vpls {
        vpls configuration;
    }
}

```

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name*],  
[edit routing-instances *routing-instance-name*]

**Release Information** Statement introduced before Junos OS Release 7.4.



Support for RIPv6 introduced in Junos OS Release 9.0.  
 Statement introduced in Junos OS Release 11.1 for EX Series switches.  
 Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Specify the protocol for a routing instance. You can configure multiple instances of many protocol types. Not all protocols are supported on the switches. See the switch CLI.

**Options** **bgp**—Specify BGP as the protocol for a routing instance.

**isis**—Specify IS-IS as the protocol for a routing instance.

**ldp**—Specify LDP as the protocol for a routing instance.

**l2vpn**—Specify Layer 2 VPN as the protocol for a routing instance.

**msdp**—Specify the Multicast Source Discovery Protocol (MSDP) for a routing instance.

**mstp**—Specify the Multiple Spanning Tree Protocol (MSTP) for a virtual switch routing instance.

**ospf**—Specify OSPF as the protocol for a routing instance.

**ospf3**—Specify OSPF version 3 (OSPFv3) as the protocol for a routing instance.



**NOTE:** OSPFv3 supports the **no-forwarding**, **virtual-router**, and **vrf** routing instance types only.

**pim**—Specify the Protocol Independent Multicast (PIM) protocol for a routing instance.

**rip**—Specify RIP as the protocol for a routing instance.

**ripng**—Specify RIP next generation (RIPv6) as the protocol for a routing instance.

**rstp**—Specify the Rapid Spanning Tree Protocol (RSTP) for a virtual switch routing instance.

**vstp**—Specify the VLAN Spanning Tree Protocol (VSTP) for a virtual switch routing instance.

**vpls**—Specify VPLS as the protocol for a routing instance.

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

**Related Documentation**

- *Example: Configuring Multiple Routing Instances of OSPF*

## qualified-next-hop (Static Routes)

**Syntax** `qualified-next-hop (address | interface-name) {  
     bfd-liveness-detection {  
         authentication {  
             algorithm (keyed-md5 | keyed-sha-1 | meticulous-keyed-md5 | meticulous-keyed-sha-1 |  
                 simple-password);  
             key-chain key-chain-name;  
             loose-check;  
         }  
         detection-time {  
             threshold milliseconds;  
         }  
         holddown-interval milliseconds;  
         minimum-interval milliseconds;  
         minimum-receive-interval milliseconds;  
         multiplier number;  
         no-adaptation;  
         transmit-interval {  
             minimum-interval milliseconds;  
             threshold milliseconds;  
         }  
         version (1 | automatic);  
     }  
     interface interface-name;  
     metric metric;  
     preference preference;  
}`

**Hierarchy Level** `[edit logical-systems logical-system-name routing-instances routing-instance-name  
     routing-options static route destination-prefix],  
     [edit logical-systems logical-system-name routing-options rib inet6.0 static route  
         destination-prefix],  
     [edit logical-systems logical-system-name routing-options static route destination-prefix],  
     [edit routing-instances routing-instance-name routing-options static route destination-prefix],  
     [edit routing-options rib inet6.0 static route destination-prefix],  
     [edit routing-options static route destination-prefix]`

**Release Information** Statement introduced before Junos OS Release 7.4.  
 Statement introduced in Junos OS Release 9.0 for EX Series switches.  
 Statement introduced in Junos OS Release 11.3 for the QFX Series.  
 Statement introduced in Junos OS Release 12.3 for ACX Series routers.

**Description** Configure a static route with multiple possible next hops, each of which can have its own preference value, IGP metric that is used when the route is exported into an IGP, and Bidirectional Forwarding Detection (BFD) settings. If multiple links are operational, the one with the most preferred next hop is used. The most preferred next hop is the one with the lowest preference value.

**Options** *address*—IPv4, IPv6, or ISO network address of the next hop.  
*interface-name*—Name of the interface on which to configure an independent metric or preference for a static route. To configure an unnumbered interface as the next-hop

interface for a static route, specify **qualified-next-hop *interface-name***, where *interface-name* is the name of the IPv4 or IPv6 unnumbered interface.



**NOTE:** For an Ethernet interface to be configured as the qualified next hop for a static route, it must be an unnumbered interface.

To configure an Ethernet interface as an unnumbered interface, configure the `unnumbered-address <interface-name>` statement at the `[edit interfaces <interface-name> unit <logical-unit-number> family <family-name>]` hierarchy level as described in *Configuring an Unnumbered Interface*.

The remaining statements are explained separately.

|                                 |                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring Static Route Preferences and Qualified Next Hops</a></li> <li>• <a href="#">Example: Enabling BFD on Qualified Next Hops in Static Routes on page 31</a></li> </ul> |

## readvertise


|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (readvertise   no-readvertise);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options static (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> static (defaults   route)],</p> <p>[edit routing-options static (defaults   route)]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>              | Configure whether static routes are eligible to be readvertised by routing protocols:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Default</b>                  | Static routes are eligible to be readvertised (that is, exported from the routing table into dynamic routing protocols) if a policy to do so is configured. To mark an IPv4 static route as being ineligible for readvertisement, include the <b>no-readvertise</b> statement.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                  | <p><b>readvertise</b>—Readvertise static routes. Include the <b>readvertise</b> statement when configuring an individual route in the <b>route</b> portion of the <b>static</b> statement to override a <b>no-readvertise</b> option specified in the <b>defaults</b> portion of the statement.</p> <p><b>no-readvertise</b>—Mark a static route as being ineligible for readvertisement. Include the <b>no-readvertise</b> option when configuring the route.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Controlling Static Routes in Routing and Forwarding Tables</i></li> <li>• <i>static</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## redundant-sources

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>redundant-sources [ <i>addresses</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i>],</p> <p>[edit routing-options multicast <b>flow-map</b> <i>flow-map-name</i>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.3.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | Configure a list of redundant sources for multicast flows defined by a flow map.                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <b><i>addresses</i></b> —List of IPv4 or IPv6 addresses for use as redundant (backup) sources for multicast flows defined by a flow map.                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring a Multicast Flow Map</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                       |

## resolution

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> resolution {     rib routing-table-name {         import [ policy-names ];         resolution-ribs [ routing-table-names ];     } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-options]</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | <p>Configure the router to perform custom route resolution on protocol next hops of routes in a certain routing table. The protocol next hop is used to determine the forwarding next-hop.</p> <p>For example, you might want to direct <b>inet.2</b> route resolution to use topology routing tables <b>:red.inet.0</b> and <b>:blue.inet.0</b> for protocol next-hop IP address lookups. Or you might want to direct <b>bgp.l3vpn.0</b> to use the information in <b>inet.0</b> to resolve routes, thus overriding the default behavior, which is to use <b>inet.3</b>.</p> <p>You can specify up to two routing tables in the <b>resolution-ribs</b> statement. The route resolution scheme first checks the first-listed routing table for the protocol next-hop address. If the address is found, it uses this entry. If it is not found, the resolution scheme checks second-listed routing table. Hence, only one routing table is used for each protocol nexthop address. For example, if you configure <b>resolution rib bgp.l3vpn.0 resolution-ribs [inet.0 inet.3]</b>, <b>inet.0</b> is checked first and then <b>inet.3</b> is checked.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 20px;"> <p> <b>NOTE:</b> Customizing route resolution might cause the routing protocol process (rpd) to consume more memory resources than it ordinarily would. When you customize route resolution, we recommend that you check the memory resources by running the <b>show system processes</b> and the <b>show task memory</b> commands. For more information, see <i>Routing Protocol Process Memory FAQs</i>.</p> </div> <p>The remaining statements are explained separately.</p> |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

- Related Documentation**
- *Example: Configuring Route Resolution on PE Routers*
  - *Example: Configuring Route Resolution on Route Reflectors*
  - *Example: Configuring Multitopology Routing Based on a Multicast Source*

## resolution-ribs

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>resolution-ribs [ <i>routing-table-names</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options resolution <a href="#">rib</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options resolution <a href="#">rib</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options resolution <a href="#">rib</a>],</p> <p>[edit routing-options resolution <a href="#">rib</a>]</p>                                                                                 |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>              | <p>Specify one or more routing tables to use for route resolution.</p> <p>This statement enables you to override the default routing tables that Junos OS uses for route resolution. For example, suppose that the resolution routing table is <b>inet.3</b>, but you want to allow fallback resolution through <b>inet.0</b>. One example use case is overriding the <b>bgp.rtarget.0 (family route-target)</b> routing table resolution from using only <b>inet.3</b> to using both <b>inet.3</b> and <b>inet.0</b>.</p> |
| <b>Options</b>                  | <b><i>routing-table-names</i></b> —Name of one or more routing tables.                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Route Resolution on PE Routers</i></li> <li>• <i>Example: Configuring Multitopology Routing Based on a Multicast Source</i></li> </ul>                                                                                                                                                                                                                                                                                                                    |

## resolve

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | resolve;                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)],<br>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit logical-systems <i>logical-system-name</i> routing-options static (defaults   route)],<br>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)],<br>[edit routing-options rib <i>routing-table-name</i> static (defaults   route)],<br>[edit routing-options static (defaults   route)] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | Statically configure routes to be resolved to a next hop that is not directly connected. The route is resolved through the <b>inet.0</b> and <b>inet.3</b> routing tables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Default</b>                  | Static routes can point only to a directly connected next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>static</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



## retain

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | (no-retain   retain);                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | <pre>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   routing-options rib <i>routing-table-name</i> static (defaults   route)], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i>   routing-options static (defaults   route)], [edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> static   (defaults   route)], [edit logical-systems <i>logical-system-name</i> routing-options static (defaults   route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static   (defaults   route)], [edit routing-instances <i>routing-instance-name</i> routing-options static (defaults   route)], [edit routing-options rib <i>routing-table-name</i> static (defaults   route)], [edit routing-options static (defaults   route)]</pre> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | Configure statically configured routes to be deleted from or retained in the forwarding table when the routing protocol process shuts down normally:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Default</b>                  | Statically configured routes are deleted from the forwarding table when the routing protocol process shuts down normally. Doing this greatly reduces the time required to restart a system that has a large number of routes in its routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>                  | <p><b>no-retain</b>—Delete statically configured routes from the forwarding table when the routing protocol process shuts down normally. To explicitly specify that routes be deleted from the forwarding table, include the <b>no-retain</b> statement. Include this statement when configuring an individual route in the <b>route</b> portion of the <b>static</b> statement to override a <b>retain</b> option specified in the <b>defaults</b> portion of the statement.</p> <p><b>retain</b>—Have a static route remain in the forwarding table when the routing protocol process shuts down normally. Doing this greatly reduces the time required to restart a system that has a large number of routes in its routing table.</p>                                                                                                                                                                                         |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Examples: Configuring Static Routes</i></li> <li>• <i>static</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## reverse-oif-mapping

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>reverse-oif-mapping {<br/>    no-qos-adjust;<br/>}</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i> ],<br>[edit routing-options multicast <a href="#">interface</a> <i>interface-name</i> ] |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 9.2.<br>Statement introduced in Junos OS Release 9.2 for EX Series switches.<br>The <b>no-qos-adjust</b> statement added in Junos OS Release 9.5.<br>The <b>no-qos-adjust</b> statement introduced in Junos OS Release 9.5 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                        |
| <b>Description</b>              | Enable the routing device to identify a subscriber VLAN or interface based on an IGMP or MLD request it receives over the multicast VLAN.<br><br>The remaining statement is explained separately.                                                                                                                                                                                                                                                                                                                                       |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring Multicast with Subscriber VLANs</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                           |

## rpf-check-policy (Routing Options RPF)

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|                                 |                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>rpf-check-policy [ <i>policy-names</i> ];</code>                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast],</p> <p>[edit routing-options multicast]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 8.1.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                 |
| <b>Description</b>              | Apply policies for disabling RPF checks on arriving multicast packets. The policies must be correctly configured.                                                                                                                                                                                                                                      |
| <b>Options</b>                  | <i>policy-names</i> —Name of one or more multicast RPF check policies.                                                                                                                                                                                                                                                                                 |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring RPF Policies</i></li> </ul>                                                                                                                                                                                                                                                           |

## rib (General)

```
Syntax  rib routing-table-name {
        aggregate {
            defaults {
                ... aggregate-options ...
            }
            route destination-prefix {
                policy policy-name;
                ... aggregate-options ...
            }
        }
        generate {
            defaults {
                generate-options;
            }
            route destination-prefix {
                policy policy-name;
                generate-options;
            }
        }
        martians {
            destination-prefix match-type <allow>;
        }
    }
    static {
        defaults {
            static-options;
        }
        rib-group group-name;
        route destination-prefix {
            next-hop;
            static-options;
        }
    }
}
```

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* routing-options],  
[edit logical-systems *logical-system-name* routing-options],  
[edit routing-instances *routing-instance-name* routing-options],  
[edit routing-options]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Create a routing table.

Explicitly creating a routing table with ***routing-table-name*** is optional if you are not adding any static, martian, aggregate, or generated routes to the routing table and if you also are creating a routing table group.



**NOTE:** The IPv4 multicast routing table (`inet.1`) and the IPv6 multicast routing table (`inet6.1`) are not supported for this statement.

**Default** If you do not specify a routing table name with the *routing-table-name* option, the software uses the default routing tables, which are `inet.0` for unicast routes and `inet.1` for the multicast cache.

**Options** *routing-table-name*—Name of the routing table, in the following format:  
*protocol [.identifier]*.

In a routing instance, the routing table name must include the routing instance name.

For example, if the routing instance name is `link0`, the routing table name might be `link0.inet6.0`.

- *protocol* is the protocol family. It can be `inet6` for the IPv6 family, `inet` for the IPv4 family, `iso` for the ISO protocol family, or *instance-name.iso.0* for an ISO routing instance.
- *identifier* is a positive integer that specifies the instance of the routing table.

**Default:** `inet.0`

The remaining statements are explained separately.

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

**Related Documentation**

- *Example: Creating Routing Tables*
- *passive*

## rib (Route Resolution)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>rib <i>routing-table-name</i> {<br/>    <b>import</b> [ <i>policy-names</i> ];<br/>    <b>resolution-ribs</b> [ <i>routing-table-names</i> ];<br/>}</pre>                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <b>resolution</b> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options <b>resolution</b> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options <b>resolution</b> ],<br>[edit routing-options <b>resolution</b> ] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                          |
| <b>Description</b>              | Specify a routing table name for route resolution.<br><br>The remaining statements are explained separately.                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring Route Resolution on PE Routers</i></li></ul>                                                                                                                                                                                                                                                            |

## rib-group (Routing Options)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>rib-group group-name;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options <a href="#">interface-routes</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options <a href="#">interface-routes</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> static],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options static],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <a href="#">interface-routes</a>],</p> <p>[edit routing-options <a href="#">interface-routes</a>],</p> <p>[edit routing-options rib <i>routing-table-name</i> static],</p> <p>[edit routing-options static]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Description</b>              | Configure which routing table groups interface routes are imported into.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Options</b>                  | <p><b><i>group-name</i></b>—Name of the routing table group. The name must start with a letter and can include letters, numbers, and hyphens. It generally does not make sense to specify more than a single routing table group.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Importing Direct and Static Routes Into a Routing Instance</i></li> <li>• <i>Example: Exporting Specific Routes from One Routing Table Into Another Routing Table</i></li> <li>• <a href="#">interface-routes on page 93</a></li> <li>• <a href="#">rib-groups on page 134</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               |

## rib-groups

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> rib-groups {     group-name {         export-rib group-name;         import-policy [ policy-names ];         import-rib [ group-names ];     } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>     | [edit logical-systems <i>logical-system-name</i> routing-options],<br>[edit routing-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>         | <p>Group one or more routing tables to form a routing table group. A routing protocol can import routes into all the routing tables in the group and can export routes from a single routing table.</p> <p>Each routing table group must contain one or more routing tables that Junos OS uses when importing routes (specified in the <b>import-rib</b> statement) and optionally can contain one routing table group that Junos OS uses when exporting routes to the routing protocols (specified in the <b>export-rib</b> statement).</p> <p>The first routing table you specify is the <i>primary routing table</i>, and any additional routing tables are the <i>secondary routing tables</i>.</p> <p>The primary routing table determines the address family of the routing table group. To configure an IP version 4 (IPv4) routing table group, specify <b>inet.0</b> as the primary routing table. To configure an IP version 6 (IPv6) routing table group, specify <b>inet6.0</b> as the primary routing table. If you configure an IPv6 routing table group, the primary and all secondary routing tables must be IPv6 routing tables (<b>inet6.x</b>).</p> <p>In Junos OS Release 9.5 and later, you can include both IPv4 and IPv6 routing tables in an IPv4 import routing table group using the <b>import-rib</b> statement. In releases prior to Junos OS Release 9.5, you can only include either IPv4 or IPv6 routing tables in the same <b>import-rib</b> statement. The ability to configure an import routing table group with both IPv4 and IPv6 routing tables enables you, for example, to populate the <b>inet6.3</b> routing table with IPv6 addresses that are compatible with IPv4. Specify <b>inet.0</b> as the primary routing table, and specify <b>inet6.3</b> as a secondary routing table.</p> |



**NOTE:** On EX Series switches, only dynamically learned routes can be imported from one routing table group to another.





**NOTE:** If you configure an import routing table group that includes both IPv4 and IPv6 routing tables, any corresponding export routing table group must include only IPv4 routing tables.

If you have configured a routing table, configure the OSPF primary instance at the **[edit protocols ospf]** hierarchy level with the statements needed for your network so that routes are installed in **inet.0** and in the forwarding table. Make sure to include the routing table group. For more information, see *Example: Configuring Multiple Routing Instances of OSPF*.

After specifying the routing table from which to import routes, you can apply one or more policies to control which routes are installed in the routing table group. To apply a policy to routes being imported into the routing table group, include the **import-policy** statement.

**Options** *group-name*—Name of the routing table group. The name must start with a letter and can include letters, numbers, and hyphens.

The remaining statements are explained separately.

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

**Related Documentation**

- *Example: Exporting Specific Routes from One Routing Table Into Another Routing Table*
- [rib-group on page 133](#)

## route-record

**Syntax** route-record;

**Hierarchy Level** [edit logical-systems *logical-system-name* routing-options],  
[edit routing-options]

**Release Information** Statement introduced before Junos OS Release 7.4.  
Statement introduced in Junos OS Release 9.0 for EX Series switches.  
Statement introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Export the AS path and routing information to the traffic sampling process.


Before you can perform flow aggregation, the routing protocol process must export the AS path and routing information to the sampling process.

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

**Related Documentation**

- *Enabling Flow Aggregation*
- *Junos OS Services Interfaces Library for Routing Devices*

## router-id

|                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                  | <code>router-id address;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                         | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-options]</p>                                                                                                                                                          |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                     | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                              |
| <b>Description</b>                                                                                                                                                                                                                                                                                                             | <p>Specify the routing device's IP address.</p> <p>The router identifier is used by BGP and OSPF to identify the routing device from which a packet originated. The router identifier usually is the IP address of the local routing device. If you do not configure a router identifier, the IP address of the first interface to come online is used. This is usually the loopback interface. Otherwise, the first hardware interface with an IP address is used.</p> |
| <div>  <p><b>NOTE:</b> We strongly recommend that you configure the router identifier under the [edit routing-options] hierarchy level to avoid unpredictable behavior if the interface address on a loopback interface changes.</p> </div> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>For more information about the router identifier in OSPF, see <i>Example: Configuring an OSPF Router Identifier</i>.</p>                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                 | <p><b>address</b>—IP address of the routing device.</p> <p><b>Default:</b> Address of the first interface encountered by Junos OS</p>                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                          |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• <i>Examples: Configuring External BGP Peering</i></li> <li>• <i>Examples: Configuring Internal BGP Peering</i></li> </ul>                                                                                                                                                                                                                                                                                                      |

## routing-instances

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|                                 |                                                                                                                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> routing-instances <i>routing-instance-name</i> {   <i>description</i>;   instance-type virtual-router;   <i>interface</i> <i>interface-name</i>;   <i>protocols</i>;   <i>routing-options</i> }</pre> |
| <b>Hierarchy Level</b>          | [edit]                                                                                                                                                                                                      |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                           |
| <b>Description</b>              | (QFabric switches only) Configure a virtual router routing instance.                                                                                                                                        |
| <b>Options</b>                  | <p><i>routing-instance-name</i>—Name of this routing instance.</p> <p>The remaining statements are explained separately.</p>                                                                                |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                              |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring Virtual Router Routing Instances on page 15</a></li> </ul>                                                                                 |

## routing-options

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|                                 |                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre> routing-options { ... }</pre>                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | [edit],<br>[edit routing-instances <i>routing-instance-name</i> ]                                                                                                                                                                                                                                      |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                      |
| <b>Description</b>              | Configure protocol-independent routing properties.                                                                                                                                                                                                                                                     |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Overview of Routing Options on page 3</a></li> <li>• <a href="#">Understanding Distributed Periodic Packet Management on page 4</a></li> <li>• <a href="#">Example: Configuring SSM Maps for Different Groups to Different Sources</a></li> </ul> |

## scope

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|                                 |                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>scope scope-name {<br/>    interface [ <i>interface-names</i> ];<br/>    <b>prefix</b> <i>destination-prefix</i>;<br/>}</pre>                                                                                                                                                                                                  |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast],<br>[edit routing-options multicast] |
| <b>Release Information</b>      | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                             |
| <b>Description</b>              | Configure multicast scoping.                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <b><i>scope-name</i></b> —Name of the multicast scope.<br><br>The remaining statements are explained separately.                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                 |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Creating a Named Scope for Multicast Scoping</i></li></ul>                                                                                                                                                                                                                      |

## scope-policy

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <code>scope-policy [ <i>policy-names</i> ];</code>                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | [edit logical-systems <i>logical-system-name</i> routing-options multicast],<br>[edit routing-options multicast]                                                                                                                                                        |
| <div>  <p><b>NOTE:</b> You can configure a scope policy at these two hierarchy levels only. You cannot apply a scope policy to a specific routing instance, because all scoping policies are applied to all routing instances. However, you can apply the <code>scope</code> statement to a specific routing instance at the [edit routing-instances <i>routing-instance-name</i> routing-options multicast] or [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast] hierarchy level.</p> </div> |                                                                                                                                                                                                                                                                         |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Statement introduced before Junos OS Release 7.4.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers. |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Apply policies for scoping. The policy must be correctly configured at the <b>edit policy-options policy-statement</b> hierarchy level.                                                                                                                                 |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>policy-names</i> —Name of one or more multicast scope policies.                                                                                                                                                                                                      |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                     |
| <b>Related Documentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>• <a href="#">scope on page 138</a></li> <li>• <i>Example: Using a Scope Policy for Multicast Scoping</i></li> </ul>                                                                                                             |

## source-routing

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|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | source-routing {<br>(ip   ipv6)<br>}                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Hierarchy Level</b>          | [edit routing-options]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>      | Statement for IPv6 introduced in Junos OS Release 8.2.<br>Statement for IPv4 introduced in Junos OS Release 8.5.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | <p>Enable source routing.</p> <p>Source routing allows a sender of a packet to partially or completely specify the route the packet takes through the network. In contrast, in non-source routing protocols, routers in the network determine the path based on the packet's destination.</p> <div> <b>NOTE:</b> We recommend that you not use source routing. Instead, we recommend that you use policy-based routing or filter-based forwarding to route packets based on source addresses.</div> |
| <b>Default</b>                  | Disabled                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <i>Example: Configuring Filter-Based Forwarding on the Source Address</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## static (Routes)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> static {   defaults {     <i>static-options</i>;   }   rib-group <i>group-name</i>;   route <i>destination-prefix</i> {     next-hop <i>address</i>;     <i>next-hop options</i>;     qualified-next-hop <i>address</i> {       metric <i>metric</i>;       preference <i>preference</i>;     }     <i>static-options</i>;   } } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>     | [edit routing-options],<br>[edit routing-options rib <i>routing-table-name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Release Information</b> | Statement introduced in Junos OS Release 11.1 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>         | Configure static routes to be installed in the routing table. You can specify any number of routes within a single <b>static</b> statement, and you can specify any number of <b>static</b> options in the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>             | <p><b>defaults</b>—Specify global static route options. These options only set default attributes inherited by all newly created static routes. These are treated as global defaults and apply to all the static routes you configure in the <b>static</b> statement. This part of the <b>static</b> statement is optional.</p> <p><b>route <i>destination-prefix</i></b>—Destination of the static route.</p> <ul style="list-style-type: none"> <li><b>defaults</b>—For the default route to the destination. This is equivalent to specifying an IP address of <b>0.0.0.0/0</b>.</li> <li><b><i>destination-prefix/prefix-length</i></b>—<b><i>destination-prefix</i></b> is the network portion of the IP address, and <b><i>prefix-length</i></b> is the destination prefix length.</li> <li><b><i>next-hop address</i></b>—Reach the next-hop routing device by specifying an IP address, an interface name, or an ISO network entity title (NET).</li> <li><b><i>nsap-prefix</i></b>—<b><i>nsap-prefix</i></b> is the network service access point (NSAP) address for ISO.</li> </ul> <p><b><i>next-hop options</i></b>—Additional information for how to manage forwarding of packets to the next hop.</p> <ul style="list-style-type: none"> <li><b>discard</b>—Do not forward packets addressed to this destination. Instead, drop the packets, do not send ICMP unreachable messages to the packets' originators, and install a reject route for this destination into the routing table.</li> </ul> |

- **iso-net**—Reach the next-hop routing device by specifying an ISO NSAP.
- **next-table *routing-table-name***—Name of the next routing table to the destination.
- **receive**—Install a receive route for this destination into the routing table.
- **reject**—Do not forward packets addressed to this destination. Instead, drop the packets, send ICMP unreachable messages to the packets' originators, and install a reject route for this destination into the routing table.

**static-options**—(Optional under **route**) Additional information about static routes, which is included with the route when it is installed in the routing table.

You can specify one or more of the following in **static-options**. Each of the options is explained separately.

- **(active | passive);**
- **(install | no-install);**
- **(metric | metric2 | metric3 | metric4) *value* <type type>;**
- **(preference | preference2 | color | color2) *preference* <type type>;**
- **(resolve | no-resolve);**
- **(no-retain | retain);**

The remaining statements are explained separately.

|                                 |                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.                                                    |
|                                 | routing-control—To add this statement to the configuration.                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">Configuring Static Routing on page 12</a></li></ul> |



## subscriber-leave-timer

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>subscriber-leave-timer seconds;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">interface</a> <i>interface-name</i>],</p> <p>[edit routing-options multicast <a href="#">interface</a> <i>interface-name</i>]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.2.</p> <p>Statement introduced in Junos OS Release 9.2 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Length of time before the multicast VLAN updates QoS data (for example, available bandwidth) for subscriber interfaces after it receives an IGMP leave message.                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                  | <p><b>seconds</b>—Length of time before the multicast VLAN updates QoS data (for example, available bandwidth) for subscriber interfaces after it receives an IGMP leave message. Specifying a value of 0 results in an immediate update. This is the same as if the statement were not configured.</p> <p><b>Range:</b> 0 through 30</p> <p><b>Default:</b> 0 seconds</p>                                                                                                                                                                             |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring Multicast with Subscriber VLANs</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## tag (Routing Options)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>tag metric type number;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options <a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-options (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)],</p> <p>[edit routing-options rib <i>routing-table-name</i> (<a href="#">aggregate</a>   <a href="#">generate</a>   static) (defaults   route)]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Associate a tag with a static, aggregate, or generated route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Default</b>                  | No tag strings are associated with routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                  | <p><i>metric</i>—Tag metric.</p> <p><b>Range:</b> 0 through 4,294,967,295</p> <p><i>type number</i>—Tag type.</p> <p><b>Range:</b> 1 through 16</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Examples: Configuring Static Routes</i></li> <li>• <i>Example: Summarizing Routes Through Route Aggregation</i></li> <li>• <i>Example: Conditionally Generating Static Routes</i></li> <li>• <a href="#">aggregate on page 51</a></li> <li>• <a href="#">generate on page 83</a></li> <li>• <i>static</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## threshold (Multicast Forwarding Cache)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>threshold {     log-warning <i>value</i>;     suppress <i>value</i> &lt;reuse <i>value</i>&gt;; }</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <b>forwarding-cache</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <b>forwarding-cache</b> family (inet   inet6)],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <b>forwarding-cache</b>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <b>forwarding-cache</b> family (inet   inet6)],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <b>forwarding-cache</b>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <b>forwarding-cache</b> (inet   inet6)],</p> <p>[edit routing-options multicast <b>forwarding-cache</b>],</p> <p>[edit routing-options multicast <b>forwarding-cache</b> family (inet   inet6)]</p> |
| <b>Release Information</b>      | <p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.2 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>              | <p>Configure the global suppression, reuse, and warning log message thresholds for multicast forwarding cache limits. You can configure the thresholds globally for the multicast forwarding cache or individually for the IPv4 and IPv6 multicast forwarding caches. Configuring the <b>threshold</b> statement globally for the multicast forwarding cache or including the <b>family</b> statement to configure the thresholds for the IPv4 and IPv6 multicast forwarding caches are mutually exclusive.</p> <p>To confirm the configured threshold values, use the <b>show multicast forwarding-cache statistics</b> command.</p>                                                                                                                                                                                                                                                                                                                                                           |
| <b>Options</b>                  | <p><b>reuse <i>value</i></b>—(Optional) Value at which to begin creating new multicast forwarding cache entries. If configured, this number should be less than the <b>suppress</b> value.</p> <p><b>Range:</b> 1 through 200,000</p> <p><b>suppress <i>value</i></b>—Value at which to begin suppressing new multicast forwarding cache entries. This value is mandatory. This number should be greater than the <b>reuse</b> value.</p> <p><b>Range:</b> 1 through 200,000</p> <p>The remaining statement is explained separately.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><i>Examples: Configuring the Multicast Forwarding Cache</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## timeout (Flow Maps)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | timeout (never non-discard-entry-only   <i>minutes</i> );                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ],<br>[edit routing-options multicast <b>flow-map</b> <i>flow-map-name</i> ]                                           |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>              | Configure the timeout value for multicast forwarding cache entries associated with the flow map.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Options</b>                  | <b>minutes</b> —Length of time that the forwarding cache entry remains active.<br><b>Range:</b> 1 through 720<br><br><b>never non-discard-entry-only</b> —Specify that the forwarding cache entry always remain active. If you omit the <b>non-discard-entry-only</b> option, all multicast forwarding entries, including those in forwarding and pruned states, are kept forever. If you include the <b>non-discard-entry-only</b> option, entries with forwarding states are kept forever, and entries with pruned states time out. |
| <b>Required Privilege Level</b> | routing—To view this statement in the configuration.<br>routing-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                   |

## timeout (Multicast)

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>timeout <i>minutes</i> &lt;family (inet   inet6)&gt;;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Hierarchy Level</b>          | [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">forwarding-cache</a> ],<br>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">forwarding-cache</a> ],<br>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">forwarding-cache</a> ],<br>[edit routing-options multicast <a href="#">forwarding-cache</a> ]                                                                                                                                                            |
| <b>Release Information</b>      | Statement introduced in Junos OS Release 8.2.<br>Statement introduced in Junos OS Release 9.0 for EX Series switches.<br>Statement introduced in Junos OS Release 11.3 for the QFX Series.<br>Statement introduced in Junos OS Release 12.3 for ACX Series routers.                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Configure the timeout value for multicast forwarding cache entries.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Options</b>                  | <b><i>minutes</i></b> —Length of time that the forwarding cache limit remains active.<br><b>Range:</b> 1 through 720<br><br><b><i>family (inet   inet6)</i></b> —(Optional) Apply the configured timeout to either IPv4 or IPv6 multicast forwarding cache entries. Configuring the <b>timeout</b> statement globally for the multicast forwarding cache or including the <b>family</b> statement to configure the timeout value for the IPv4 and IPv6 multicast forwarding caches are mutually exclusive.<br><br><b>Default:</b> By default, the configured timeout applies to both IPv4 and IPv6 multicast forwarding cache entries. |
| <b>Required Privilege Level</b> | <b>routing</b> —To view this statement in the configuration.<br><b>routing-control</b> —To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <i>Example: Configuring the Multicast Forwarding Cache</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## traceoptions (Routing Options)

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <pre> traceoptions {     file <i>filename</i> &lt;files <i>number</i>&gt; &lt;size <i>size</i>&gt; &lt;world-readable   no-world-readable&gt;;     flag <i>flag</i> &lt;disable&gt;; } </pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>     | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast],</p> <p>[edit routing-options],</p> <p>[edit routing-options flow],</p> <p>[edit routing-options multicast]</p>                                                                                                                                                                                                                                         |
| <b>Release Information</b> | <p>Statement introduced before Junos OS Release 7.4.</p> <p><b>nsr-synchronization</b> flag for BGP, IS-IS, LDP, and OSPF added in Junos OS Release 8.4.</p> <p><b>nsr-synchronization</b> and <b>nsr-packet</b> flags for BFD sessions added in Junos OS Release 8.5.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p><b>nsr-synchronization</b> flag for RIP and RIPng added in Junos OS Release 9.0.</p> <p><b>nsr-synchronization</b> flag for Layer 2 VPNs and VPLS added in Junos OS Release 9.1.</p> <p><b>nsr-synchronization</b> flag for PIM added in Junos OS Release 9.3.</p> <p><b>nsr-synchronization</b> flag for MPLS added in Junos OS Release 10.1.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p><b>nsr-synchronization</b> flag for MSDP added in Junos OS Release 12.1.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p> |
| <b>Description</b>         | <p>Define tracing operations that track all routing protocol functionality in the routing device.</p> <p>To specify more than one tracing operation, include multiple <b>flag</b> statements.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Default</b>             | If you do not include this statement, no global tracing operations are performed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>             | <p><b>Values:</b></p> <p><b>disable</b>—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as <b>all</b>.</p> <p><b>file <i>filename</i></b>—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory <b>/var/log</b>. We recommend that you place global routing protocol tracing output in the file <b>routing-log</b>.</p> <p><b>files <i>number</i></b>—(Optional) Maximum number of trace files. When a trace file named <b>trace-file</b> reaches its maximum size, it is renamed <b>trace-file.0</b>, then <b>trace-file.1</b>, and</p>                                                                                                                                                                                                 |

so on, until the maximum number of trace files is reached. Then, the oldest trace file is overwritten. Note that if you specify a maximum number of files, you also must specify a maximum file size with the **size** option.

**Range:** 2 through 1000 files

**Default:** 10 files

**flag flag**—Tracing operation to perform. To specify more than one tracing operation, include multiple **flag** statements. These are the global routing protocol tracing options:

- **all**—All tracing operations
- **condition-manager**—Condition-manager events
- **config-internal**—Configuration internals
- **general**—All normal operations and routing table changes (a combination of the **normal** and **route** trace operations)
- **graceful-restart**—Graceful restart operations
- **normal**—All normal operations
- **nsr-packet**—Detailed trace information for BFD nonstop active routing only
- **nsr-synchronization**—Tracing operations for nonstop active routing
- **nsr-synchronization-detail**—(MPLS only) Tracing operations for nonstop active routing in detail
- **parse**—Configuration parsing
- **policy**—Routing policy operations and actions
- **regex-parse**—Regular-expression parsing
- **route**—Routing table changes
- **state**—State transitions
- **task**—Interface transactions and processing
- **timer**—Timer usage

**no-world-readable**—(Optional) Prevent any user from reading the log file.

**size size**—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named **trace-file** reaches this size, it is renamed **trace-file.0**. When the **trace-file** again reaches its maximum size, **trace-file.0** is renamed **trace-file.1** and **trace-file** is renamed **trace-file.0**. This renaming scheme continues until the maximum number of trace files is reached. Then, the oldest trace file is overwritten. Note that if you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option.

**Syntax:** **xk** to specify KB, **xm** to specify MB, or **xg** to specify GB

**Range:** 10 KB through the maximum file size supported on your system

**Default:** 128 KB

**world-readable**—(Optional) Allow any user to read the log file.

|                           |                                                                               |
|---------------------------|-------------------------------------------------------------------------------|
| <b>Required Privilege</b> | routing and trace—To view this statement in the configuration.                |
| <b>Level</b>              | routing-control and trace-control—To add this statement to the configuration. |

|                              |                                                                                                                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• <i>Example: Tracing Global Routing Protocol Operations</i></li><li>• <i>Tracing Nonstop Active Routing Synchronization Events</i></li></ul> |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## upstream-interface

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>upstream-interface [ <i>interface-names</i> ];</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Hierarchy Level</b>          | <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">pim-to-igmp-proxy</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast pim-to-mld-proxy],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast <a href="#">pim-to-igmp-proxy</a>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-options multicast pim-to-mld-proxy],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast <a href="#">pim-to-igmp-proxy</a>],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options multicast pim-to-mld-proxy],</p> <p>[edit routing-options multicast <a href="#">pim-to-igmp-proxy</a>],</p> <p>[edit routing-options multicast pim-to-mld-proxy]</p> |
| <b>Release Information</b>      | <p>Statement introduced in Junos OS Release 9.6.</p> <p>Statement introduced in Junos OS Release 9.6 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 12.3 for ACX Series routers.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>              | <p>Configure at least one, but not more than two, upstream interfaces on the rendezvous point (RP) routing device that resides between a customer edge-facing Protocol Independent Multicast (PIM) domain and a core-facing PIM domain. The RP routing device translates PIM join or prune messages into corresponding IGMP report or leave messages (if you include the <a href="#">pim-to-igmp-proxy</a> statement), or into corresponding MLD report or leave messages (if you include the <a href="#">pim-to-mld-proxy</a> statement). The routing device then proxies the IGMP or MLD report or leave messages to one or both upstream interfaces to forward IPv4 multicast traffic (for IGMP) or IPv6 multicast traffic (for MLD) across the PIM domains.</p>                                                                                                                                                        |
| <b>Options</b>                  | <p><b><i>interface-names</i></b>—Names of one or two upstream interfaces to which the RP routing device proxies IGMP or MLD report or leave messages for transmission of multicast traffic across PIM domains. You can specify a maximum of two upstream interfaces on the RP routing device. To configure a set of two upstream interfaces, specify the full interface names, including all physical and logical address components, within square brackets ( [ ] ).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Required Privilege Level</b> | <p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">Configuring PIM-to-IGMP Message Translation</a></li> <li>• <a href="#">Configuring PIM-to-MLD Message Translation</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



## PART 3

# Administration

- [Routine Monitoring on page 155](#)
- [Operational Commands on page 159](#)



## CHAPTER 5

# Routine Monitoring

- [Monitoring Routing Information on page 155](#)
- [Verifying That Virtual Router Routing Instances Are Working on page 156](#)

### Monitoring Routing Information

**Purpose** Use the monitoring functionality to view the **inet.0** routing table on the routing device.

**Action** To view the routing table, enter the following commands in the CLI interface:

- **show route terse**
- **show route detail**

**Meaning** [Table 9 on page 155](#) describes the different filters, their functions, and the associated actions.

[Table 10 on page 156](#) summarizes key output fields in the routing information display.

**Table 9: Filtering Route Messages**

| Field               | Function                                                                                                                             | Your Action                                                     |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Destination Address | Specifies the destination address of the route.                                                                                      | Enter the destination address.                                  |
| Next hop address    | Specifies the network layer address of the directly reachable neighboring system (if applicable) and the interface used to reach it. | Enter the next hop address.                                     |
| Best route          | Specifies only the best route available.                                                                                             | Select the view details of the best route.                      |
| Inactive routes     | Specifies the inactive routes.                                                                                                       | Select the view details of inactive routes.                     |
| Exact route         | Specifies the exact route.                                                                                                           | Select the view details of the exact route.                     |
| Hidden routes       | Specifies the hidden routes.                                                                                                         | Select the view details of hidden routes.                       |
| Search              | Applies the specified filter and displays the matching messages.                                                                     | To apply the filter and display messages, click <b>Search</b> . |

Table 10: Summary of Key Routing Information Output Fields

| Field                  | Values                                                                                                                 | Additional Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Static Route Addresses | The list of static route addresses.                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Protocol               | Protocol from which the route was learned: <b>Static</b> , <b>Direct</b> , <b>Local</b> .                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Preference             | The preference is the individual preference value for the route.                                                       | The route preference is used as one of the route selection criteria.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Next-Hop               | Network layer address of the directly reachable neighboring system (if applicable) and the interface used to reach it. | <p>If a next hop is listed as <b>Discard</b>, all traffic with that destination address is discarded rather than routed. This value generally means that the route is a static route for which the <b>discard</b> attribute has been set.</p> <p>If a next hop is listed as <b>Reject</b>, all traffic with that destination address is rejected. This value generally means that the address is unreachable. For example, if the address is a configured interface address and the interface is unavailable, traffic bound for that address is rejected.</p> <p>If a next hop is listed as <b>Local</b>, the destination is an address on the host (either the loopback address or Ethernet management port 0 address, for example).</p> |
| Age                    | How long the route has been active.                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| State                  | Flags for this route.                                                                                                  | There are many possible flags.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**Related Documentation** • [Configuring Static Routing on page 12](#)

## Verifying That Virtual Router Routing Instances Are Working

**Purpose** After creating a virtual router routing instance, verify that it has been set up properly.

**Action** 1. Use the **show route instance** command to list all the routing instances and their properties:

```

user@switch> show route instance
Instance          Type          Primary RIB          Active/holdown/hidden
master            forwarding    inet.0               4/0/1
__juniper_private1__ forwarding    __juniper_private1__.inet.0  1/0/3
__juniper_private2__ forwarding    __juniper_private2__.inet.0  0/0/1

```

```

__juniper_private3__ forwarding
    __juniper_private3__.inet.0          1/0/2

__juniper_private4__ forwarding
    __juniper_private4__.inet.0          4/0/2

__master.anon__      forwarding

r1                    virtual-router

r2                    virtual-router

```

2. Use the **show route forwarding-table** command to view the forwarding table information for each routing instance:

```

user@switch> show route forwarding-table
Routing table: r1---qfabric.inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0      0                    rjct 1628  1
0.0.0.0/32       perm  0      0                    dscd 1626  1
224.0.0.0/4      perm  0      0                    mdsc 1627  1
224.0.0.1/32     perm  0 224.0.0.1          mcst 1623  1
255.255.255.255/32 perm  0      0                    bcst 1624  1

```

**Meaning** The output displays the routing table information and confirms that the virtual router routing instances have been created and the links are up.

**Related Documentation**

- [Configuring Virtual Router Routing Instances on page 15](#)





## CHAPTER 6

# Operational Commands

- `clear ipv6 neighbors`
- `show as-path`
- `show as-path domain`
- `show as-path summary`
- `show ipv6 neighbors`
- `show ipv6 router-advertisement`
- `show route`
- `show route active-path`
- `show route all`
- `show route aspath-regex`
- `show route best`
- `show route brief`
- `show route community`
- `show route community-name`
- `show route damping`
- `show route detail`
- `show route exact`
- `show route export`
- `show route extensive`
- `show route flow validation`
- `show route forwarding-table`
- `show route inactive-path`
- `show route inactive-prefix`
- `show route instance`
- `show route label`
- `show route label-switched-path`
- `show route martians`
- `show route next-hop`

- `show route no-community`
- `show route protocol`
- `show route range`
- `show route receive-protocol`
- `show route resolution`
- `show route snooping`
- `show route source-gateway`
- `show route summary`
- `show route table`
- `show route terse`

## clear ipv6 neighbors

---

|                                 |                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | clear ipv6 neighbors<br><all   host <i>hostname</i> >                                                                                                                                                                                   |
| <b>Release Information</b>      | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.3 for EX Series switches.<br>Command introduced in Junos OS Release 12.2 for the QFX Series.                                                |
| <b>Description</b>              | Clear IPv6 neighbor cache information.                                                                                                                                                                                                  |
| <b>Options</b>                  | <b>none</b> —Clear all IPv6 neighbor cache information.<br><br><b>all</b> —(Optional) Clear all IPv6 neighbor cache information.<br><br><b>host <i>hostname</i></b> —(Optional) Clear the information for the specified IPv6 neighbors. |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>• <a href="#">show ipv6 neighbors on page 171</a></li></ul>                                                                                                                                       |
| <b>List of Sample Output</b>    | <a href="#">clear ipv6 neighbors on page 161</a>                                                                                                                                                                                        |
| <b>Output Fields</b>            | When you enter this command, you are provided feedback on the status of your request.                                                                                                                                                   |

## Sample Output

### clear ipv6 neighbors

```
user@host> clear ipv6 neighbors
```

## show as-path

---

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax              | <a href="#">Syntax on page 162</a><br><a href="#">Syntax (EX Series Switches) on page 162</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Syntax                      | <code>show as-path</code><br><code>&lt;brief   detail&gt;</code><br><code>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Syntax (EX Series Switches) | <code>show as-path</code><br><code>&lt;brief   detail&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Release Information         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br>Command introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Description                 | <p>Display the distribution of autonomous system (AS) paths that the local routing device is using (usually through the routing table). Use this command to debug problems for AS paths and to understand how AS paths have been manipulated through a policy (through the <b>as-path-prepend</b> action) or through aggregation.</p> <p>AS paths are stored in a hash table. A hash table is one method for fast lookup. Each entry in the table is called a bucket. Junos OS computes a hash value that indicates in which bucket the AS path is stored. The AS paths are dispersed among the hash buckets so that a manageable number of AS paths is stored in each bucket. Only unique AS paths are stored. Duplicate AS paths increase a reference count, but do not increase the number of AS paths stored in the hash table.</p> |
| Options                     | <p><b>none</b>—Display basic information about AS paths that the local routing device is using (same as brief).</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Required Privilege Level    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Related Documentation       | <ul style="list-style-type: none"><li>• <a href="#">show as-path summary on page 169</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| List of Sample Output       | <a href="#">show as-path on page 163</a><br><a href="#">show as-path detail on page 164</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Output Fields               | <a href="#">Table 11 on page 163</a> lists the output fields for the <b>show as-path</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Table 11: show as-path Output Fields

| Field Name            | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Level of Output   |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Total AS paths</b> | Total number of AS paths.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>brief none</b> |
| <b>Bucket</b>         | Bucket number.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | All levels        |
| <b>Count</b>          | Number of AS path entries in this bucket.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels        |
| <b>AS path</b>        | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• <b>I</b>—IGP.</li> <li>• <b>E</b>—EGP.</li> <li>• <b>?</b>—Incomplete; typically, the AS path was aggregated.</li> <li>• <b>Atomic</b>—Route is an aggregate of several route prefixes.</li> <li>• <b>Aggregater</b>—Routing device has summarized a range of prefixes.</li> </ul> | All levels        |
| <b>domain</b>         | Number of independent AS domains. The AS paths of an independent AS domain are not shared with the AS paths and AS path attributes of other domains, including the master routing instance domain.                                                                                                                                                                                                                                                                                                                                              | <b>detail</b>     |
| <b>neighbor as</b>    | AS peer address.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail</b>     |
| <b>length</b>         | Length of the AS path.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>detail</b>     |
| <b>segments</b>       | Length of the AS segment descriptor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>detail</b>     |
| <b>references</b>     | Path reference count.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>detail</b>     |

## Sample Output

### show as-path

```

user@host> show as-path
Total AS paths: 30382
  Bucket 0      Count: 36
    I
    14203 2914 174 31752 I
    14203 2914 701 21512 I
    14203 2914 1239 26632 I
    14203 2914 1239 29704 I
    14203 2914 4323 10248 I
    14203 2914 4766 23560 I
    14203 2914 6395 32776 I
    14203 2914 7911 11272 I
    14203 2914 12180 18440 I
    14203 2914 17408 17416 I
    14203 2914 701 702 24586 I
    14203 2914 1239 4657 9226 I
    14203 2914 1239 7132 16394 I
    14203 2914 1299 8308 34826 I
    14203 2914 3320 5603 28682 I

```

```

14203 2914 3491 1680 33802 I
14203 2914 3549 7908 27658 I
14203 2914 3549 20804 30730 I
14203 2914 7018 2687 9226 I
14203 2914 174 9318 9318 23564 I
14203 2914 701 3786 3786 23564 I
14203 2914 701 4761 4795 9228 I
14203 2914 1239 7132 5673 18444 I
14203 2914 3491 20485 24588 24588 I
14203 2914 5511 2200 1945 2060 I
14203 2914 7911 14325 14325 14348 I
14203 2914 701 4637 9230 9230 9230 I
14203 2914 6395 14 14 14 14 I
14203 2914 9299 6163 6163 6163 9232 I
14203 2914 3356 3356 3356 3356 11955 21522 I
14203 2914 9837 9837 9219 I Aggregator: 9219 202.27.91.253
14203 2914 174 30209 30222 30222 30222 ?
14203 2914 1299 5377 I (Atomic) Aggregator: 5377 193.219.192.22
14203 2914 4323 36097 I (Atomic) Aggregator: 36097 216.69.252.254
14203 2914 209 2516 17676 23813 I (Atomic) Aggregator: 23813 219.127.233.66
Bucket 1    Count: 28
14203 2914 35847 I
14203 2914 174 19465 I
14203 2914 174 35849 I
14203 2914 2828 32777 I
14203 2914 4323 14345 I
14203 2914 4323 29705 I
14203 2914 6395 32777 I

```

...

#### show as-path detail

```

user@host> show as-path detail
Total AS paths: 30410
Bucket 0    Count: 36
AS path: I
  domain 0, length 0, segments 0, references 54
AS path: 14203 2914 174 31752 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 701 21512 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 1239 26632 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 1239 29704 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 4323 10248 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 4766 23560 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 6395 32776 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 3
AS path: 14203 2914 7911 11272 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 2
AS path: 14203 2914 12180 18440 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 3
AS path: 14203 2914 17408 17416 I
  domain 1, neighbor as: 14203, length 4, segments 1, references 3
AS path: 14203 2914 701 702 24586 I
  domain 1, neighbor as: 14203, length 5, segments 1, references 3
AS path: 14203 2914 1239 4657 9226 I

```

```
    domain 1, neighbor as: 14203, length 5, segments 1, references 7
AS path: 14203 2914 1239 7132 16394 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 2
AS path: 14203 2914 1299 8308 34826 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 2
AS path: 14203 2914 3320 5603 28682 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 2
AS path: 14203 2914 3491 1680 33802 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 2
AS path: 14203 2914 3549 7908 27658 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 2
AS path: 14203 2914 3549 20804 30730 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 2
AS path: 14203 2914 7018 2687 9226 I
    domain 1, neighbor as: 14203, length 5, segments 1, references 3
AS path: 14203 2914 174 9318 9318 23564 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 2
AS path: 14203 2914 701 3786 3786 23564 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 2
AS path: 14203 2914 701 4761 4795 9228 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 14
AS path: 14203 2914 1239 7132 5673 18444 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 2
AS path: 14203 2914 3491 20485 24588 24588 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 4
AS path: 14203 2914 5511 2200 1945 2060 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 2
AS path: 14203 2914 7911 14325 14325 14348 I
    domain 1, neighbor as: 14203, length 6, segments 1, references 2
AS path: 14203 2914 701 4637 9230 9230 9230 I
    domain 1, neighbor as: 14203, length 7, segments 1, references 3
AS path: 14203 2914 6395 14 14 14 14 I
    domain 1, neighbor as: 14203, length 7, segments 1, references 10
...

```

## show as-path domain

|                                    |                                                                                                                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 166</a><br><a href="#">Syntax (EX Series Switches) on page 166</a>                                                                                                                                       |
| <b>Syntax</b>                      | show as-path domain<br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                         |
| <b>Syntax (EX Series Switches)</b> | show as-path domain                                                                                                                                                                                                                 |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                               |
| <b>Description</b>                 | Display autonomous system (AS) path domain information.                                                                                                                                                                             |
| <b>Options</b>                     | none—(Optional) Display AS path domain information for all routing instances.<br><br>logical-system (all   <i>logical-system-name</i> )—(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                |
| <b>List of Sample Output</b>       | <a href="#">show as-path domain on page 168</a>                                                                                                                                                                                     |
| <b>Output Fields</b>               | <a href="#">Table 12 on page 166</a> lists the output fields for the <b>show as-path domain</b> command. Output fields are listed in the approximate order in which they appear                                                     |

**Table 12: show as-path domain Output Fields**

| Field Name          | Field Description                                                                                                                                                                                                                                                                                                                               |
|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Domain</b>       | Number of independent AS domains. The AS paths of an independent AS domain are not shared with the AS paths and AS path attributes of other domains, including the master routing instance domain.                                                                                                                                              |
| <b>Primary</b>      | Primary AS number.                                                                                                                                                                                                                                                                                                                              |
| <b>References</b>   | Path reference count.                                                                                                                                                                                                                                                                                                                           |
| <b>Number Paths</b> | Number of known AS paths.                                                                                                                                                                                                                                                                                                                       |
| <b>Flags</b>        | Information about the AS path: <ul style="list-style-type: none"> <li>• <b>ASLoop</b>—Path contains an AS loop.</li> <li>• <b>Atomic</b>—Path includes the ATOMIC_AGGREGATE path attribute.</li> <li>• <b>Local</b>—Path was created by local aggregation.</li> <li>• <b>Master</b>—Path was created by the master routing instance.</li> </ul> |
| <b>Local AS</b>     | AS number of the local routing device.                                                                                                                                                                                                                                                                                                          |



Table 12: show as-path domain Output Fields (*continued*)

| Field Name   | Field Description                                       |
|--------------|---------------------------------------------------------|
| <b>Loops</b> | How many times this AS number can appear in an AS path. |

## Sample Output

show as-path domain

```
user@host> show as-path domain
Domain: 1          Primary: 10458
References:        3 Paths:      30383
Flags: Master
Local AS: 10458   Loops: 1
```

## show as-path summary

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 169</a><br><a href="#">Syntax (EX Series Switches) on page 169</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Syntax</b>                      | show as-path summary<br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Syntax (EX Series Switches)</b> | show as-path summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>                 | Display autonomous system (AS) path summary information.<br><br>AS paths are stored in a hash table. A hash table is one method for fast lookup. Each entry in the table is called a bucket. Junos OS computes a hash value that indicates in which bucket the AS path is stored. The AS paths are dispersed among the hash buckets so that a manageable number of AS paths is stored in each bucket. Only unique AS paths are stored. Duplicate AS paths increase a reference count, but do not increase the number of AS paths stored in the hash table. |
| <b>Options</b>                     | <b>none</b> —(Optional) Display AS path summary information for all routing instances.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system.                                                                                                                                                                                                                                                                                                        |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>       | <ul style="list-style-type: none"> <li>• <a href="#">show as-path on page 162</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>List of Sample Output</b>       | <a href="#">show as-path summary on page 170</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Output Fields</b>               | Table 13 on page 169 lists the output fields for the <b>show as-path summary</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                          |

**Table 13: show as-path summary Output Fields**

| Field Name      | Field Description                             |
|-----------------|-----------------------------------------------|
| <b>AS Paths</b> | Number of AS paths.                           |
| <b>Buckets</b>  | Number of hash buckets in use.                |
| <b>Max</b>      | Maximum number of AS path entries per bucket. |
| <b>Min</b>      | Minimum number of AS path entries per bucket. |
| <b>Avg</b>      | Average number of AS path entries per bucket. |

Table 13: show as-path summary Output Fields (*continued*)

| Field Name    | Field Description                                 |
|---------------|---------------------------------------------------|
| Std deviation | Standard deviation of AS path entries per bucket. |

## Sample Output

show as-path summary

```
user@host> show as-path summary
AS Paths  Buckets  Max   Min   Avg   Std deviation
30425     1024     95    12    29    6.481419
```

## show ipv6 neighbors

|                                 |                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show ipv6 neighbors                                                                                                                                                                      |
| <b>Release Information</b>      | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.3 for EX Series switches.<br>Command introduced in Junos OS Release 12.2 for the QFX Series. |
| <b>Description</b>              | Display information about the IPv6 neighbor cache.                                                                                                                                       |
| <b>Options</b>                  | This command has no options.                                                                                                                                                             |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                     |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">clear ipv6 neighbors on page 161</a></li> </ul>                                                                                     |
| <b>List of Sample Output</b>    | <a href="#">show ipv6 neighbors on page 171</a>                                                                                                                                          |
| <b>Output Fields</b>            | <a href="#">Table 14 on page 171</a> describes the output fields for the <b>show ipv6 neighbors</b> command. Output fields are listed in the approximate order in which they appear.     |

**Table 14: show ipv6 neighbors Output Fields**

| Field Name        | Field Description                                                                                                          |
|-------------------|----------------------------------------------------------------------------------------------------------------------------|
| IPv6 Address      | Name of the IPv6 interface.                                                                                                |
| Linklayer Address | Link-layer address.                                                                                                        |
| State             | State of the link: <b>up</b> , <b>down</b> , <b>incomplete</b> , <b>reachable</b> , <b>stale</b> , or <b>unreachable</b> . |
| Exp               | Number of seconds until the entry expires.                                                                                 |
| Rtr               | Whether the neighbor is a routing device: <b>yes</b> or <b>no</b> .                                                        |
| Secure            | Whether this entry was created using the Secure Neighbor Discovery (SEND) protocol: <b>yes</b> or <b>no</b> .              |
| Interface         | Name of the interface.                                                                                                     |

## Sample Output

### show ipv6 neighbors

```

user@host> show ipv6 neighbors
IPv6 Address          Linklayer Address  State      Exp Rtr Secure
Interface
2001:db8:0:1:2a0:a514:0:24c  00:05:85:8f:c8:bd  stale      546 yes no
fe-1/2/0.1

```

|                                    |                   |       |     |     |    |
|------------------------------------|-------------------|-------|-----|-----|----|
| fe80::2a0:a514:0:24c<br>fe-1/2/0.1 | 00:05:85:8f:c8:bd | stale | 258 | yes | no |
| fe80::2a0:a514:0:64c<br>fe-1/2/1.5 | 00:05:85:8f:c8:bd | stale | 111 | yes | no |
| fe80::2a0:a514:0:a4c<br>fe-1/2/2.9 | 00:05:85:8f:c8:bd | stale | 327 | yes | no |

## show ipv6 router-advertisement

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show ipv6 router-advertisement &lt;conflicts&gt; &lt;interface <i>interface</i>&gt; &lt;logical-system (all   <i>logical-system-name</i>)&gt; &lt;prefix <i>prefix/prefix length</i>&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Release Information</b>      | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 12.2 for the QFX Series.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>              | Display information about IPv6 router advertisements, including statistics about messages sent and received on interfaces, and information received from advertisements from other routers.                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Options</b>                  | <p><b>none</b>—Display all IPv6 router advertisement information for all interfaces.</p> <p><b>conflicts</b>—(Optional) Display only the IPv6 router advertisement information that is conflicting.</p> <p><b>interface <i>interface</i></b>—(Optional) Display IPv6 router advertisement information for the specified interface.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>prefix <i>prefix/prefix length</i></b>—(Optional) Display IPv6 router advertisement information for the specified prefix.</p> |
| <b>Additional Information</b>   | The display identifies conflicting information by enclosing the value the router is advertising in brackets.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">clear ipv6 router-advertisement</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>List of Sample Output</b>    | <a href="#">show ipv6 router-advertisement on page 174</a><br><a href="#">show ipv6 router-advertisement conflicts on page 175</a><br><a href="#">show ipv6 router-advertisement prefix on page 175</a>                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Output Fields</b>            | <a href="#">Table 15 on page 173</a> describes the output fields for the <b>show ipv6 router-advertisement</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**Table 15: show ipv6 router-advertisement Output Fields**

| Field Name          | Field Description                                                               |
|---------------------|---------------------------------------------------------------------------------|
| Interface           | Name of the interface.                                                          |
| Advertisements sent | Number of router advertisements sent and the elapsed time since they were sent. |

Table 15: show ipv6 router-advertisement Output Fields (*continued*)

| Field Name              | Field Description                                                                                                             |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Solicits received       | Number of solicitation messages received.                                                                                     |
| Advertisements received | Number of router advertisements received.                                                                                     |
| Advertisements from     | Names of interfaces from which router advertisements have been received and the elapsed time since the last one was received. |
| Managed                 | Managed address configuration flag: 0 (stateless) or 1 (stateful).                                                            |
| Other configuration     | Other stateful configuration flag: 0 (stateless) or 1 (stateful).                                                             |
| Reachable time          | Time that a node identifies a neighbor as reachable after receiving a reachability confirmation, in milliseconds.             |
| Default lifetime        | Default lifetime, in seconds: from 0 seconds to 18.2 hours. A setting of 0 indicates that the router is not a default router. |
| Retransmit timer        | Time between retransmitted Neighbor Solicitation messages, in milliseconds.                                                   |
| Current hop limit       | Configured current hop limit.                                                                                                 |
| Prefix                  | Name and length of the prefix.                                                                                                |
| Valid lifetime          | How long the prefix remains valid for onlink determination.                                                                   |
| Preferred lifetime      | How long the prefix generated by stateless autoconfiguration remains preferred.                                               |
| On link                 | Onlink flag: 0 (not onlink) or 1 (onlink).                                                                                    |
| Autonomous              | Autonomous address configuration flag: 0 (not autonomous) or 1 (autonomous).                                                  |

## Sample Output

### show ipv6 router-advertisement

```

user@host> show ipv6 router-advertisement
Interface: fe-0/1/1.0
  Advertisements sent: 0
  Solicits received: 0
  Advertisements received: 0
Interface: fxp0.0
  Advertisements sent: 0
  Solicits received: 0
  Advertisements received: 1
  Advertisement from fe80::2d0:b7ff:fe1e:7b0e, heard 00:00:13 ago
  Managed: 0
  Other configuration: 0 [1]
  Reachable time: 0 ms
  Default lifetime: 1800 sec

```



```
Retransmit timer: 0 ms  
Current hop limit: 64
```

#### show ipv6 router-advertisement conflicts

```
user@host> show ipv6 router-advertisement conflicts  
Interface: fxp0.0  
Advertisement from fe80::2d0:b7ff:fe1e:7b0e, heard 00:01:08 ago  
Other configuration: 0 [1]
```

#### show ipv6 router-advertisement prefix

```
user@host> show ipv6 router-advertisement prefix 8040::/16  
Interface: fe-0/1/3.0  
Advertisements sent: 3, last sent 00:04:11 ago  
Solicits received: 0  
Advertisements received: 3  
Advertisement from fe80::290:69ff:fe9a:5403, heard 00:00:05 ago  
Managed: 0  
Other configuration: 0  
Reachable time: 0 ms  
Default lifetime: 180 sec [1800 sec]  
Retransmit timer: 0 ms  
Current hop limit: 64  
Prefix: 8040:1::/64  
Valid lifetime: 2592000 sec  
Preferred lifetime: 604800 sec  
On link: 1  
Autonomous: 1
```

## show route

---

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax              | <a href="#">Syntax on page 176</a><br><a href="#">Syntax (EX Series Switches) on page 176</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Syntax                      | <pre>show route &lt;all&gt; &lt;destination-prefix&gt; &lt;logical-system (all   logical-system-name)&gt; &lt;private&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Syntax (EX Series Switches) | <pre>show route &lt;all&gt; &lt;destination-prefix&gt; &lt;private&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Release Information         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br>Option <b>private</b> introduced in Junos OS Release 9.5.<br>Option <b>private</b> introduced in Junos OS Release 9.5 for EX Series switches.                                                                                                                                                                                                                                                                                                                                     |
| Description                 | Display the active entries in the routing tables.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Options                     | <p><b>none</b>—Display brief information about all active entries in the routing tables.</p> <p><b>all</b>—(Optional) Display information about all routing tables, including private, or internal, routing tables.</p> <p><b>destination-prefix</b>—(Optional) Display active entries for the specified address or range of addresses.</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>private</b>—(Optional) Display information only about all private, or internal, routing tables.</p> |
| Required Privilege Level    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Related Documentation       | <ul style="list-style-type: none"><li>• <i>Example: Configuring RIP</i></li><li>• <i>Example: Configuring RIPng</i></li><li>• <i>Example: Configuring IS-IS</i></li><li>• <i>Examples: Configuring Internal BGP Peering</i></li><li>• <i>Examples: Configuring External BGP Peering</i></li><li>• <i>Examples: Configuring OSPF Routing Policy</i></li></ul>                                                                                                                                                                                                                                               |
| List of Sample Output       | <a href="#">show route on page 179</a><br><a href="#">show route on page 180</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

[show route destination-prefix on page 180](#)

[show route extensive on page 180](#)

**Output Fields** [Table 16 on page 177](#) describes the output fields for the **show route** command. Output fields are listed in the approximate order in which they appear.

**Table 16: show route Output Fields**

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i>  | Name of the routing table (for example, inet.0).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <i>number destinations</i> | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <i>number routes</i>       | <p>Number of routes in the routing table and total number of routes in the following states:</p> <ul style="list-style-type: none"> <li>• <b>active</b> (routes that are active).</li> <li>• <b>holddown</b> (routes that are in the pending state before being declared inactive). A holddown route was once the active route and is no longer the active route. The route is in the holddown state because a protocol still has interest in the route, meaning that the interest bit is set. A protocol might have its interest bit set on the previously active route because the protocol is still advertising the route. The route will be deleted after all protocols withdraw their advertisement of the route and remove their interest bit. A persistent holddown state often means that the interested protocol is not releasing its interest bit properly.</li> </ul> <p>However, if you have configured advertisement of multiple routes (with the <b>add-path</b> or <b>advertise-inactive</b> statement), the holddown bit is most likely set because BGP is advertising the route as an active route. In this case, you can ignore the holddown state because nothing is wrong.</p> <ul style="list-style-type: none"> <li>• <b>hidden</b> (routes that are not used because of a routing policy).</li> </ul> |
| <i>destination-prefix</i>  | <p>Route destination (for example:10.0.0.1/24). Sometimes the route information is presented in another format, such as:</p> <ul style="list-style-type: none"> <li>• <b>MPLS-label</b> (for example, 80001).</li> <li>• <b>interface-name</b> (for example, ge-1/0/2).</li> <li>• <b>neighbor-address:control-word-status:encapsulation type:vc-id:source</b> (Layer 2 circuit only. For example, 10.1.1.195:NoCtrlWord:1:1:Local/96): <ul style="list-style-type: none"> <li>• <b>neighbor-address</b>—Address of the neighbor.</li> <li>• <b>control-word-status</b>—Whether the use of the control word has been negotiated for this virtual circuit: <b>NoCtrlWord</b> or <b>CtrlWord</b>.</li> <li>• <b>encapsulation type</b>—Type of encapsulation, represented by a number: (1) Frame Relay DLCI, (2) ATM AAL5 VCC transport, (3) ATM transparent cell transport, (4) Ethernet, (5) VLAN Ethernet, (6) HDLC, (7) PPP, (8) ATM VCC cell transport, (10) ATM VPC cell transport.</li> <li>• <b>vc-id</b>—Virtual circuit identifier.</li> <li>• <b>source</b>—Source of the advertisement: <b>Local</b> or <b>Remote</b>.</li> </ul> </li> </ul>                                                                                                                                                                      |

Table 16: show route Output Fields (*continued*)

| Field Name                                        | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| [ <i>protocol, preference</i> ]                   | <p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> <li>• +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</li> <li>• - —A hyphen indicates the last active route.</li> <li>• *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a <b>to</b> line indicates the best subpath to the route.</li> </ul> <p>In every routing metric except for the BGP <b>LocalPref</b> attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the <b>LocalPref</b> value in the <b>Preference2</b> field. For example, if the <b>LocalPref</b> value for Route 1 is 100, the <b>Preference2</b> value is -101. If the <b>LocalPref</b> value for Route 2 is 155, the <b>Preference2</b> value is -156. Route 2 is preferred because it has a higher <b>LocalPref</b> value and a lower <b>Preference2</b> value.</p>                                                                                                                                                                                                                                   |
| <i>weeks:days</i><br><i>hours:minutes:seconds</i> | How long the route been known (for example, <b>2w4d 13:11:14</b> , or 2 weeks, 4 days, 13 hours, 11 minutes, and 14 seconds).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| metric                                            | Cost value of the indicated route. For routes within an AS, the cost is determined by the IGP and the individual protocol metrics. For external routes, destinations, or routing domains, the cost is determined by a preference value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| localpref                                         | Local preference value included in the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| from                                              | Interface from which the route was received.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| AS path                                           | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• I—IGP.</li> <li>• E—EGP.</li> <li>• ?—Incomplete; typically, the AS path was aggregated.</li> </ul> <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> <li>• [ ]—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the routing device, or if AS path prepending is configured.</li> <li>• { }—Braces enclose AS sets, which are groups of AS numbers in which the order does not matter. A set commonly results from route aggregation. The numbers in each AS set are displayed in ascending order.</li> <li>• ( )—Parentheses enclose a confederation.</li> <li>• ( [ ] )—Parentheses and brackets enclose a confederation set.</li> </ul> <p><b>NOTE:</b> In Junos OS Release 10.3 and later, the AS path field displays an unrecognized attribute and associated hexadecimal value if BGP receives attribute 128 (attribute set) and you have not configured an independent domain in any routing instance.</p> |

Table 16: show route Output Fields (*continued*)

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>validation-state</b> | <p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> <li>• <b>Invalid</b>—Indicates that the prefix is found, but either the corresponding AS received from the EBGp peer is not the AS that appears in the database, or the prefix length in the BGP update message is longer than the maximum length permitted in the database.</li> <li>• <b>Unknown</b>—Indicates that the prefix is not among the prefixes or prefix ranges in the database.</li> <li>• <b>Valid</b>—Indicates that the prefix and autonomous system pair are found in the database.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>to</b>               | <p>Next hop to the destination. An angle bracket (&gt;) indicates that the route is the selected route.</p> <p>If the destination is <b>Discard</b>, traffic is dropped.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>via</b>              | <p>Interface used to reach the next hop. If there is more than one interface available to the next hop, the interface that is actually used is followed by the word <b>Selected</b>. This field can also contain the following information:</p> <ul style="list-style-type: none"> <li>• <b>Weight</b>—Value used to distinguish primary, secondary, and fast reroute backup routes. Weight information is available when MPLS label-switched path (LSP) link protection, node-link protection, or fast reroute is enabled, or when the standby state is enabled for secondary paths. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.</li> <li>• <b>Balance</b>—Balance coefficient indicating how traffic of unequal cost is distributed among next hops when a routing device is performing unequal-cost load balancing. This information is available when you enable BGP multipath load balancing.</li> <li>• <b>lsp-path-name</b>—Name of the LSP used to reach the next hop.</li> <li>• <b>label-action</b>—MPLS label and operation occurring at the next hop. The operation can be <b>pop</b> (where a label is removed from the top of the stack), <b>push</b> (where another label is added to the label stack), or <b>swap</b> (where a label is replaced by another label). For VPNs, expect to see multiple <b>push</b> operations, corresponding to the inner and outer labels required for VPN routes (in the case of a direct PE-to-PE connection, the VPN route would have the inner label push only).</li> </ul> |

## Sample Output

### show route

```

user@host> show route
inet.0: 11 destinations, 12 routes (11 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1:65500:1:10.0.0.20/240
    * [MVPN/70] 19:53:41, metric2 1
    Indirect
1:65500:1:10.0.0.40/240
    * [BGP/170] 19:53:29, localpref 100, from 10.0.0.30
    AS path: I
    > to 10.0.24.4 via lt-0/3/0.24, label-switched-path toD
    [BGP/170] 19:53:26, localpref 100, from 10.0.0.33
    AS path: I
    > to 10.0.24.4 via lt-0/3/0.24, label-switched-path toD
1:65500:1:10.0.0.60/240
    * [BGP/170] 19:53:29, localpref 100, from 10.0.0.30
    AS path: I
    > to 10.0.28.8 via lt-0/3/0.28, label-switched-path toF
    [BGP/170] 19:53:25, localpref 100, from 10.0.0.33

```

```

AS path: I
> to 10.0.28.8 via lt-0/3/0.28, label-switched-path toF

```

### show route

The following sample output shows a VPN route with composite next hops enabled. The first **Push** operation corresponds to the outer label. The second **Push** operation corresponds to the inner label.

```

user@host> show route 70.0.0.0

13979:665001.inet.0: 871 destinations, 3556 routes (871 active, 0 holddown, 0
hidden)
+ = Active Route, - = Last Active, * = Both

70.0.0.0/24      @[BGP/170] 00:28:32, localpref 100, from 10.9.9.160
                  AS path: 13980 ?
                  > to 10.100.0.42 via ae2.0, Push 16, Push 300368(top)
                  [BGP/170] 00:28:28, localpref 100, from 10.9.9.169
                  AS path: 13980 ?
                  > to 10.100.0.42 via ae2.0, Push 126016, Push 300368(top)
#Multipath/255] 00:28:28, metric2 102
                  > to 10.100.0.42 via ae2.0, Push 16, Push 300368(top)
                  to 10.100.0.42 via ae2.0, Push 16, Push 300368(top)

```

### show route destination-prefix

```

user@host> show route 172.16.0.0/12

inet.0: 10 destinations, 10 routes (9 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

172.16.0.0/12   *[Static/5] 2w4d 12:54:27
                  > to 192.168.167.254 via fxp0.0

```

### show route extensive

```

user@host> show route extensive
v1.mvpn.0: 5 destinations, 8 routes (5 active, 1 holddown, 0 hidden)
1:65500:1:10.0.0.40/240 (1 entry, 1 announced)
  *BGP Preference: 170/-101
    PMSI: Flags 0x0: Label[0:0:0]: PIM-SM: Sender 10.0.0.40 Group 225.1.1.1

    Next hop type: Indirect
    Address: 0x92455b8
    Next-hop reference count: 2
    Source: 10.0.0.30
    Protocol next hop: 10.0.0.40
    Indirect next hop: 2 no-forward
    State: <Active Int Ext>
      Local AS: 65500 Peer AS: 65500
    Age: 3 Metric2: 1
    Task: BGP_65500.10.0.0.30+179
    Announcement bits (2): 0-PIM.v1 1-mvpn global task
    AS path: I (Originator) Cluster list: 10.0.0.30
    AS path: Originator ID: 10.0.0.40
    Communities: target:65520:100
    Import Accepted
    Localpref: 100
    Router ID: 10.0.0.30
    Primary Routing Table bgp.mvpn.0

```

```
Indirect next hops: 1
  Protocol next hop: 10.0.0.40 Metric: 1
  Indirect next hop: 2 no-forward
  Indirect path forwarding next hops: 1
    Next hop type: Router
    Next hop: 10.0.24.4 via lt-0/3/0.24 weight 0x1
10.0.0.40/32 Originating RIB: inet.3
  Metric: 1                      Node path count: 1
  Forwarding nexthops: 1
    Nexthop: 10.0.24.4 via lt-0/3/0.24
```

## show route active-path

|                                    |                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 182</a><br><a href="#">Syntax (EX Series Switches) on page 182</a>                                                                                                                                                                                                                                                                                              |
| <b>Syntax</b>                      | <pre>show route active-path &lt;brief   detail   extensive   terse&gt; &lt;logical-system (all   <i>logical-system-name</i>)&gt;</pre>                                                                                                                                                                                                                                                     |
| <b>Syntax (EX Series Switches)</b> | <pre>show route active-path &lt;brief   detail   extensive   terse&gt;</pre>                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>         | <p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                               |
| <b>Description</b>                 | Display all active routes for destinations. An active route is a route that is selected as the best path. Inactive routes are not displayed.                                                                                                                                                                                                                                               |
| <b>Options</b>                     | <p><b>none</b>—Display all active routes.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b>.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>List of Sample Output</b>       | <a href="#">show route active-path on page 182</a><br><a href="#">show route active-path brief on page 183</a><br><a href="#">show route active-path detail on page 183</a><br><a href="#">show route active-path extensive on page 184</a><br><a href="#">show route active-path terse on page 186</a>                                                                                    |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                             |

## Sample Output

### show route active-path

```
user@host> show route active-path

inet.0: 7 destinations, 7 routes (6 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

10.255.70.19/32    *[Direct/0] 21:33:52
                  > via lo0.0
10.255.71.50/32   *[IS-IS/15] 00:18:13, metric 10
                  > to 100.1.2.1 via so-2/1/3.0
100.1.2.0/24      *[Direct/0] 00:18:36
                  > via so-2/1/3.0
```



```

100.1.2.2/32      *[Local/0] 00:18:41
                  Local via so-2/1/3.0
192.168.64.0/21  *[Direct/0] 21:33:52
                  > via fxp0.0
192.168.70.19/32 *[Local/0] 21:33:52
                  Local via fxp0.0

```

### show route active-path brief

The output for the **show route active-path brief** command is identical to that for the **show route active-path** command. For sample output, see [show route active-path on page 182](#).

### show route active-path detail

```

user@host> show route active-path detail

inet.0: 7 destinations, 7 routes (6 active, 0 holddown, 1 hidden)

10.255.70.19/32 (1 entry, 1 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 3
    Next hop: via lo0.0, selected
    State: <Active Int>
    Local AS: 200
    Age: 21:37:10
    Task: IF
    Announcement bits (3): 2-IS-IS 5-Resolve tree 2 6-Resolve tree 3
    AS path: I

10.255.71.50/32 (1 entry, 1 announced)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Router, Next hop index: 397
    Next-hop reference count: 4
    Next hop: 100.1.2.1 via so-2/1/3.0, selected
    State: <Active Int>
    Local AS: 200
    Age: 21:31      Metric: 10
    Task: IS-IS
    Announcement bits (4): 0-KRT 2-IS-IS 5-Resolve tree 2 6-Resolve
tree 3
    AS path: I

100.1.2.0/24 (1 entry, 1 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 3
    Next hop: via so-2/1/3.0, selected
    State: <Active Int>
    Local AS: 200
    Age: 21:54
    Task: IF
    Announcement bits (3): 2-IS-IS 5-Resolve tree 2 6-Resolve tree 3
    AS path: I

100.1.2.2/32 (1 entry, 1 announced)
  *Local Preference: 0
    Next hop type: Local

```

```

Next-hop reference count: 11
Interface: so-2/1/3.0
State: <Active NoReadvrt Int>
Local AS: 200
Age: 21:59
Task: IF
Announcement bits (2): 5-Resolve tree 2 6-Resolve tree 3
AS path: I

192.168.64.0/21 (1 entry, 1 announced)
*Direct Preference: 0
Next hop type: Interface
Next-hop reference count: 3
Next hop: via fxp0.0, selected
State: <Active Int>
Local AS: 200
Age: 21:37:10
Task: IF
Announcement bits (2): 5-Resolve tree 2 6-Resolve tree 3
AS path: I

192.168.70.19/32 (1 entry, 1 announced)
*Local Preference: 0
Next hop type: Local
Next-hop reference count: 11
Interface: fxp0.0
State: <Active NoReadvrt Int>
Local AS: 200
Age: 21:37:10
Task: IF
Announcement bits (2): 5-Resolve tree 2 6-Resolve tree 3
AS path: I

```

#### show route active-path extensive

```

user@host> show route active-path extensive

inet.0: 7 destinations, 7 routes (6 active, 0 holddown, 1 hidden)
10.255.70.19/32 (1 entry, 1 announced)
TSI:
IS-IS level 1, LSP fragment 0
IS-IS level 2, LSP fragment 0
*Direct Preference: 0
Next hop type: Interface
Next-hop reference count: 3
Next hop: via lo0.0, selected
State: <Active Int>
Local AS: 200
Age: 21:39:47
Task: IF
Announcement bits (3): 2-IS-IS 5-Resolve tree 2 6-Resolve tree 3

AS path: I

10.255.71.50/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.255.71.50/32 -> {100.1.2.1}
IS-IS level 2, LSP fragment 0
*IS-IS Preference: 15
Level: 1
Next hop type: Router, Next hop index: 397

```

```

Next-hop reference count: 4
Next hop: 100.1.2.1 via so-2/1/3.0, selected
State: <Active Int>
Local AS: 200
Age: 24:08 Metric: 10
Task: IS-IS
Announcement bits (4): 0-KRT 2-IS-IS 5-Resolve tree 2 6-Resolve
tree 3
AS path: I

100.1.2.0/24 (1 entry, 1 announced)
TSI:
IS-IS level 1, LSP fragment 0
IS-IS level 2, LSP fragment 0
*Direct Preference: 0
Next hop type: Interface
Next-hop reference count: 3
Next hop: via so-2/1/3.0, selected
State: <Active Int>
Local AS: 200
Age: 24:31
Task: IF
Announcement bits (3): 2-IS-IS 5-Resolve tree 2 6-Resolve tree 3
AS path: I

100.1.2.2/32 (1 entry, 1 announced)
*Local Preference: 0
Next hop type: Local
Next-hop reference count: 11
Interface: so-2/1/3.0
State: <Active NoReadvrt Int>
Local AS: 200
Age: 24:36
Task: IF
Announcement bits (2): 5-Resolve tree 2 6-Resolve tree 3
AS path: I

192.168.64.0/21 (1 entry, 1 announced)
*Direct Preference: 0
Next hop type: Interface
Next-hop reference count: 3
Next hop: via fxp0.0, selected
State: <Active Int>
Local AS: 200
Age: 21:39:47
Task: IF
Announcement bits (2): 5-Resolve tree 2 6-Resolve tree 3
AS path: I

192.168.70.19/32 (1 entry, 1 announced)
*Local Preference: 0
Next hop type: Local
Next-hop reference count: 11
Interface: fxp0.0
State: <Active NoReadvrt Int>
Local AS: 200
Age: 21:39:47
Task: IF
Announcement bits (2): 5-Resolve tree 2 6-Resolve tree 3

```

AS path: I

### show route active-path terse

```
user@host> show route active-path terse
```

```
inet.0: 7 destinations, 7 routes (6 active, 0 holddown, 1 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

| A | Destination      | P | Prf | Metric 1 | Metric 2 | Next hop    | AS path |
|---|------------------|---|-----|----------|----------|-------------|---------|
| * | 10.255.70.19/32  | D | 0   |          |          | >1o0.0      |         |
| * | 10.255.71.50/32  | I | 15  | 10       |          | >100.1.2.1  |         |
| * | 100.1.2.0/24     | D | 0   |          |          | >so-2/1/3.0 |         |
| * | 100.1.2.2/32     | L | 0   |          |          | Local       |         |
| * | 192.168.64.0/21  | D | 0   |          |          | >fxp0.0     |         |
| * | 192.168.70.19/32 | L | 0   |          |          | Local       |         |

## show route all

|                                    |                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 187</a><br><a href="#">Syntax (EX Series Switches) on page 187</a>                                                                                                                                                                                                                                        |
| <b>Syntax</b>                      | show route all<br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                               |
| <b>Syntax (EX Series Switches)</b> | show route all                                                                                                                                                                                                                                                                                                                       |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                |
| <b>Description</b>                 | Display information about all routes in all routing tables, including private, or internal, tables.                                                                                                                                                                                                                                  |
| <b>Options</b>                     | <p><b>none</b>—Display information about all routes in all routing tables, including private, or internal, tables.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>                                                   |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                 |
| <b>List of Sample Output</b>       | <a href="#">show route all on page 187</a>                                                                                                                                                                                                                                                                                           |
| <b>Output Fields</b>               | In Junos OS Release 9.5 and later, only the output fields for the <b>show route all</b> command display all routing tables, including private, or hidden, routing tables. The output field table of the <b>show route</b> command does not display entries for private, or hidden, routing tables in Junos OS Release 9.5 and later. |

## Sample Output

### show route all

The following example displays a snippet of output from the **show route** command and then displays the same snippet of output from the **show route all** command:

```

user@host> show route
mpls.0: 7 destinations, 7 routes (5 active, 0 holddown, 2 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
0          *[MPLS/0] 2d 02:24:39, metric 1
            Receive
1          *[MPLS/0] 2d 02:24:39, metric 1
            Receive
2          *[MPLS/0] 2d 02:24:39, metric 1
            Receive
800017     *[VPLS/7] 1d 14:00:16
            > via vt-3/2/0.32769, Pop
800018     *[VPLS/7] 1d 14:00:26
            > via vt-3/2/0.32772, Pop

```

```
user@host> show route all
mpls.0: 7 destinations, 7 routes (5 active, 0 holddown, 2 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
0          *[MPLS/0] 2d 02:19:12, metric 1
            Receive
1          *[MPLS/0] 2d 02:19:12, metric 1
            Receive
2          *[MPLS/0] 2d 02:19:12, metric 1
            Receive
800017     *[VPLS/7] 1d 13:54:49
            > via vt-3/2/0.32769, Pop
800018     *[VPLS/7] 1d 13:54:59
            > via vt-3/2/0.32772, Pop
vt-3/2/0.32769 [VPLS/7] 1d 13:54:49
              Unusable
vt-3/2/0.32772 [VPLS/7] 1d 13:54:59
              Unusable
```

## show route aspath-regex

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 189</a><br><a href="#">Syntax (EX Series Switches) on page 189</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Syntax</b>                      | show route aspath-regex <i>regular-expression</i><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Syntax (EX Series Switches)</b> | show route aspath-regex <i>regular-expression</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Description</b>                 | Display the entries in the routing table that match the specified autonomous system (AS) path regular expression.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Options</b>                     | <p><i>regular-expression</i>—Regular expression that matches an entire AS path.</p> <p><i>logical-system</i> (all   <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Additional Information</b>      | <p>You can specify a regular expression as:</p> <ul style="list-style-type: none"> <li>• An individual AS number</li> <li>• A period wildcard used in place of an AS number</li> <li>• An AS path regular expression that is enclosed in parentheses</li> </ul> <p>You also can include the operators described in the table of AS path regular expression operators in the <i>Junos Policy Framework Configuration Guide</i>. The following list summarizes these operators:</p> <ul style="list-style-type: none"> <li>• <i>{m,n}</i>—At least <i>m</i> and at most <i>n</i> repetitions of the AS path term.</li> <li>• <i>{m}</i>—Exactly <i>m</i> repetitions of the AS path term.</li> <li>• <i>{m,}</i>—<i>m</i> or more repetitions of the AS path term.</li> <li>• <i>*</i>—Zero or more repetitions of an AS path term.</li> <li>• <i>+</i>—One or more repetitions of an AS path term.</li> <li>• <i>?</i>—Zero or one repetition of an AS path term.</li> <li>• <i>aspath_term</i>   <i>aspath_term</i>—Match one of the two AS path terms.</li> </ul> <p>When you specify more than one AS number or path term, or when you include an operator in the regular expression, enclose the entire regular expression in quotation marks. For example, to match any path that contains AS number 234, specify the following command:</p> <pre>show route aspath-regex ". * 234 . *"</pre> |

|                          |                                                                                                                                                                                    |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Required Privilege Level | view                                                                                                                                                                               |
| Related Documentation    | <ul style="list-style-type: none"><li>• <i>Example: Using AS Path Regular Expressions</i></li></ul>                                                                                |
| List of Sample Output    | <a href="#">show route aspath-regex (Matching a Specific AS Number) on page 190</a><br><a href="#">show route aspath-regex (Matching Any Path with Two AS Numbers) on page 190</a> |
| Output Fields            | For information about output fields, see the output field table for the <a href="#">show route</a> command.                                                                        |

## Sample Output

### [show route aspath-regex \(Matching a Specific AS Number\)](#)

```
user@host> show route aspath-regex 65477
inet.0: 46411 destinations, 46411 routes (46409 active, 0 holddown, 2 hidden)
+ = Active Route, - = Last Active, * = Both

111.222.1.0/25      *[BGP/170] 00:08:48, localpref 100, from 111.222.2.24
                   AS Path: [65477] ({65488 65535}) IGP
                   to 111.222.18.225 via fpa0.0(111.222.18.233)
111.222.1.128/25   *[IS-IS/15] 09:15:37, metric 37, tag 1
                   to 111.222.18.225 via fpa0.0(111.222.18.233)
                   [BGP/170] 00:08:48, localpref 100, from 111.222.2.24
                   AS Path: [65477] ({65488 65535}) IGP
                   to 111.222.18.225 via fpa0.0(111.222.18.233)
...
```

### [show route aspath-regex \(Matching Any Path with Two AS Numbers\)](#)

```
user@host> show route aspath-regex ?.* 234 3561.*?

inet.0: 46351 destinations, 46351 routes (46349 active, 0 holddown, 2 hidden)
+ = Active Route, - = Last Active, * = Both

9.20.0.0/17        *[BGP/170] 01:35:00, localpref 100, from 131.103.20.49
                   AS Path: [666] 234 3561 2685 2686 Incomplete
                   to 192.156.169.1 via 192.156.169.14(so-0/0/0)
12.10.231.0/24     *[BGP/170] 01:35:00, localpref 100, from 131.103.20.49
                   AS Path: [666] 234 3561 5696 7369 IGP
                   to 192.156.169.1 via 192.156.169.14(so-0/0/0)
24.64.32.0/19      *[BGP/170] 01:34:59, localpref 100, from 131.103.20.49
                   AS Path: [666] 234 3561 6327 IGP
                   to 192.156.169.1 via 192.156.169.14(so-0/0/0)
...
```



## show route best

|                             |                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax              | <a href="#">Syntax on page 191</a><br><a href="#">Syntax (EX Series Switches) on page 191</a>                                                                                                                                                                                                                                                                                                             |
| Syntax                      | show route best <i>destination-prefix</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                 |
| Syntax (EX Series Switches) | show route best <i>destination-prefix</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                                         |
| Release Information         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                     |
| Description                 | Display the route in the routing table that is the best route to the specified address or range of addresses. The best route is the longest matching route.                                                                                                                                                                                                                                               |
| Options                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b> .<br><br><i>destination-prefix</i> —Address or range of addresses.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| Required Privilege Level    | view                                                                                                                                                                                                                                                                                                                                                                                                      |
| List of Sample Output       | <a href="#">show route best on page 191</a><br><a href="#">show route best detail on page 192</a><br><a href="#">show route best extensive on page 193</a><br><a href="#">show route best terse on page 193</a>                                                                                                                                                                                           |
| Output Fields               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                                            |

## Sample Output

### show route best

```

user@host> show route best 10.255.70.103
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
10.255.70.103/32    *[OSPF/10] 1d 13:19:20, metric 2
                  > to 10.31.1.6 via ge-3/1/0.0
                  via so-0/3/0.0

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
10.255.70.103/32    *[RSVP/7] 1d 13:20:13, metric 2

```

```

> via so-0/3/0.0, label-switched-path green-r1-r3

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
10.0.0.0/8          *[Direct/0] 2d 01:43:34
                    > via fxp2.0
                    [Direct/0] 2d 01:43:34
                    > via fxp1.0

```

### show route best detail

```

user@host> show route best 10.255.70.103 detail
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete
10.255.70.103/32 (1 entry, 1 announced)
  *OSPF   Preference: 10
          Next-hop reference count: 9
          Next hop: 10.31.1.6 via ge-3/1/0.0, selected
          Next hop: via so-0/3/0.0
          State: <Active Int>
          Local AS: 69
          Age: 1d 13:20:06      Metric: 2
          Area: 0.0.0.0
          Task: OSPF
          Announcement bits (2): 0-KRT 3-Resolve tree 2
          AS path: I

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete
10.255.70.103/32 (1 entry, 1 announced)
  State: <FlashAll>
  *RSVP   Preference: 7
          Next-hop reference count: 5
          Next hop: via so-0/3/0.0 weight 0x1, selected
          Label-switched-path green-r1-r3
          Label operation: Push 100016
          State: <Active Int>
          Local AS: 69
          Age: 1d 13:20:59      Metric: 2
          Task: RSVP
          Announcement bits (1): 1-Resolve tree 2
          AS path: I

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
10.0.0.0/8 (2 entries, 0 announced)
  *Direct Preference: 0
          Next hop type: Interface
          Next-hop reference count: 1
          Next hop: via fxp2.0, selected
          State: <Active Int>
          Age: 2d 1:44:20
          Task: IF
          AS path: I
  Direct Preference: 0
          Next hop type: Interface
          Next-hop reference count: 1
          Next hop: via fxp1.0, selected
          State: <NotBest Int>
          Inactive reason: No difference
          Age: 2d 1:44:20

```

Task: IF  
AS path: I

### show route best extensive

The output for the **show route best extensive** command is identical to that for the **show route best detail** command. For sample output, see [show route best detail on page 192](#).

### show route best terse

```
user@host> show route best 10.255.70.103 terse
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
* 10.255.70.103/32  0 10      2          >10.31.1.6
                        so-0/3/0.0

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
* 10.255.70.103/32  R  7      2          >so-0/3/0.0

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
* 10.0.0.0/8        D  0          >fxp2.0
                    D  0          >fxp1.0
```

## show route brief

|                                    |                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 194</a><br><a href="#">Syntax (EX Series Switches) on page 194</a>                                                                                                                                                                                                                                            |
| <b>Syntax</b>                      | show route brief<br><destination-prefix><br><logical-system (all   logical-system-name)>                                                                                                                                                                                                                                                 |
| <b>Syntax (EX Series Switches)</b> | show route brief<br><destination-prefix>                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                    |
| <b>Description</b>                 | Display brief information about the active entries in the routing tables.                                                                                                                                                                                                                                                                |
| <b>Options</b>                     | <b>none</b> —Display all active entries in the routing table.<br><br><b>destination-prefix</b> —(Optional) Display active entries for the specified address or range of addresses.<br><br><b>logical-system (all   logical-system-name)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                     |
| <b>List of Sample Output</b>       | <a href="#">show route brief on page 194</a>                                                                                                                                                                                                                                                                                             |
| <b>Output Fields</b>               | For information about output fields, see the Output Field table of the <a href="#">show route</a> command.                                                                                                                                                                                                                               |

## Sample Output

### show route brief

```

user@host> show route brief
inet.0: 10 destinations, 10 routes (9 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0          *[Static/5] 1w5d 20:30:29
                   Discard
10.255.245.51/32   *[Direct/0] 2w4d 13:11:14
                   > via lo0.0
172.16.0.0/12      *[Static/5] 2w4d 13:11:14
                   > to 192.168.167.254 via fxp0.0
192.168.0.0/18      *[Static/5] 1w5d 20:30:29
                   > to 192.168.167.254 via fxp0.0
192.168.40.0/22     *[Static/5] 2w4d 13:11:14
                   > to 192.168.167.254 via fxp0.0
192.168.64.0/18     *[Static/5] 2w4d 13:11:14
                   > to 192.168.167.254 via fxp0.0
192.168.164.0/22    *[Direct/0] 2w4d 13:11:14
                   > via fxp0.0

```

```
192.168.164.51/32 *[Local/0] 2w4d 13:11:14
                  Local via fxp0.0
207.17.136.192/32 *[Static/5] 2w4d 13:11:14
                  > to 192.168.167.254 via fxp0.0
green.inet.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
100.101.0.0/16    *[Direct/0] 1w5d 20:30:28
                  > via fe-0/0/3.0
100.101.2.3/32   *[Local/0] 1w5d 20:30:28
                  Local via fe-0/0/3.0
224.0.0.5/32     *[OSPF/10] 1w5d 20:30:29, metric 1
                  MultiRecv
```

## show route community

---

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax              | <a href="#">Syntax on page 196</a><br><a href="#">Syntax (EX Series Switches) on page 196</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Syntax                      | <code>show route community <i>as-number:community-value</i></code><br><code>&lt;brief   detail   extensive   terse&gt;</code><br><code>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                        |
| Syntax (EX Series Switches) | <code>show route community <i>as-number:community-value</i></code><br><code>&lt;brief   detail   extensive   terse&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Release Information         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Description                 | Display the route entries in each routing table that are members of a Border Gateway Protocol (BGP) community.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Options                     | <p><b><i>as-number:community-value</i></b>—One or more community identifiers. <b><i>as-number</i></b> is the AS number, and <b><i>community-value</i></b> is the community identifier. When you specify more than one community identifier, enclose the identifiers in double quotation marks. Community identifiers can include wildcards.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| Additional Information      | Specifying the community option displays all routes matching the community found within the routing table. The community option does not limit the output to only the routes being advertised to the neighbor after any egress routing policy.                                                                                                                                                                                                                                                                                                                                                                 |
| Required Privilege Level    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Related Documentation       | <ul style="list-style-type: none"><li>• <a href="#">show route detail on page 205</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| List of Sample Output       | <a href="#">show route community on page 196</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Output Fields               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                                                                                                                                                                                                                                                 |

## Sample Output

### show route community

```
user@host> show route community 234:80
inet.0: 46511 destinations, 46511 routes (46509 active, 0 holddown, 2 hidden)
+ = Active Route, - = Last Active, * = Both
```

```
4.0.0.0/8      *[BGP/170] 03:33:07, localpref 100, from 131.103.20.49
                AS Path: {666} 234 2548 1 IGP
                to 192.156.169.1 via 192.156.169.14(so-0/0/0)
6.0.0.0/8      *[BGP/170] 03:33:07, localpref 100, from 131.103.20.49
                AS Path: {666} 234 2548 568 721 Incomplete
                to 192.156.169.1 via 192.156.169.14(so-0/0/0)
9.2.0.0/16     *[BGP/170] 03:33:06, localpref 100, from 131.103.20.49
                AS Path: {666} 234 2548 1673 1675 1747 IGP
                to 192.156.169.1 via 192.156.169.14(so-0/0/0)
```

## show route community-name

|                                    |                                                                                                                                                                                                                                                                                                                |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 198</a><br><a href="#">Syntax (EX Series Switches) on page 198</a>                                                                                                                                                                                                                  |
| <b>Syntax</b>                      | show route community-name <i>community-name</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                |
| <b>Syntax (EX Series Switches)</b> | show route community-name <i>community-name</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                        |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                          |
| <b>Description</b>                 | Display the route entries in each routing table that are members of a Border Gateway Protocol (BGP) community, specified by a community name.                                                                                                                                                                  |
| <b>Options</b>                     | <i>community-name</i> —Name of the community.<br><br><b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                           |
| <b>List of Sample Output</b>       | <a href="#">show route community-name on page 198</a>                                                                                                                                                                                                                                                          |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                 |

## Sample Output

### show route community-name

```

user@host> show route community-name red-com
inet.0: 17 destinations, 17 routes (16 active, 0 holddown, 1 hidden)

inet.3: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

instance1.inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 11 destinations, 11 routes (11 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.255.245.212/32  *[BGP/170] 00:04:40, localpref 100, from 10.255.245.204
                   AS path: 300 I
                   > to 100.1.2.2 via ge-1/1/0.0, label-switched-path to_fix
20.20.20.20/32    *[BGP/170] 00:04:40, localpref 100, from 10.255.245.204
                   AS path: I
                   > to 100.1.2.2 via ge-1/1/0.0, label-switched-path to_fix
100.1.4.0/24     *[BGP/170] 00:04:40, localpref 100, from 10.255.245.204

```



```

AS path: I
> to 100.1.2.2 via ge-1/1/0.0, label-switched-path to_fix

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

bgp.l3vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.255.245.204:10:10.255.245.212/32
*[BGP/170] 00:06:40, localpref 100, from 10.255.245.204
AS path: 300 I
> to 100.1.2.2 via ge-1/1/0.0, label-switched-path to_fix
10.255.245.204:10:20.20.20.20/32
*[BGP/170] 00:36:02, localpref 100, from 10.255.245.204
AS path: I
> to 100.1.2.2 via ge-1/1/0.0, label-switched-path to_fix
10.255.245.204:10:100.1.4.0/24
*[BGP/170] 00:36:02, localpref 100, from 10.255.245.204
AS path: I
> to 100.1.2.2 via ge-1/1/0.0, label-switched-path to_fix

inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

instance1.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

## show route damping

---

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax                           | <a href="#">Syntax on page 200</a><br><a href="#">Syntax (EX Series Switch and QFX Series) on page 200</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Syntax                                   | <code>show route damping (decayed   history   suppressed)</code><br><code>&lt;brief   detail   extensive   terse&gt;</code><br><code>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Syntax (EX Series Switch and QFX Series) | <code>show route damping (decayed   history   suppressed)</code><br><code>&lt;brief   detail   extensive   terse&gt;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Release Information                      | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br>Command introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Description                              | Display the BGP routes for which updates might have been reduced because of route flap damping.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Options                                  | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.<br><br><b>decayed</b> —Display route damping entries that might no longer be valid, but are not suppressed.<br><br><b>history</b> —Display entries that have already been withdrawn, but have been logged.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system.<br><br><b>suppressed</b> —Display entries that have been suppressed and are no longer being installed into the forwarding table or exported by routing protocols. |
| Required Privilege Level                 | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Related Documentation                    | <ul style="list-style-type: none"><li>• <i>clear bgp damping</i></li><li>• <i>show policy damping</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| List of Sample Output                    | <a href="#">show route damping decayed detail on page 203</a><br><a href="#">show route damping history on page 204</a><br><a href="#">show route damping history detail on page 204</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Output Fields                            | <a href="#">Table 17 on page 201</a> lists the output fields for the <b>show route damping</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Table 17: show route damping Output Fields

| Field Name                                   | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Level of Output         |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <i>routing-table-name</i>                    | Name of the routing table—for example, <b>inet.0</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | All levels              |
| <b>destinations</b>                          | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels              |
| <b>number routes</b>                         | Number of routes in the routing table and total number of routes in the following states: <ul style="list-style-type: none"> <li>• <b>active</b></li> <li>• <b>holdddown</b> (routes that are in a pending state before being declared inactive)</li> <li>• <b>hidden</b> (the routes are not used because of a routing policy)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | All levels              |
| <b>destination-prefix (entry, announced)</b> | Destination prefix. The <b>entry</b> value is the number of routes for this destination, and the <b>announced</b> value is the number of routes being announced for this destination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>detail extensive</b> |
| <b>[protocol, preference]</b>                | Protocol from which the route was learned and the preference value for the route. <ul style="list-style-type: none"> <li>• <b>+</b>—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</li> <li>• <b>-</b>—A hyphen indicates the last active route.</li> <li>• <b>*</b>—An asterisk indicates that the route is both the active and the last active route. An asterisk before a <b>to</b> line indicates the best subpath to the route.</li> </ul> <p>In every routing metric except for the BGP <b>LocalPref</b> attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the <b>LocalPref</b> value in the <b>Preference2</b> field. For example, if the <b>LocalPref</b> value for Route 1 is 100, the <b>Preference2</b> value is -101. If the <b>LocalPref</b> value for Route 2 is 155, the <b>Preference2</b> value is -156. Route 2 is preferred because it has a higher <b>LocalPref</b> value and a lower <b>Preference2</b> value.</p> | All levels              |
| <b>Next-hop reference count</b>              | Number of references made to the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b> |
| <b>Source</b>                                | IP address of the route source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>detail extensive</b> |
| <b>Next hop</b>                              | Network layer address of the directly reachable neighboring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive</b> |
| <b>via</b>                                   | Interface used to reach the next hop. If there is more than one interface available to the next hop, the interface that is actually used is followed by the word <b>Selected</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive</b> |
| <b>Protocol next hop</b>                     | Network layer address of the remote routing device that advertised the prefix. This address is used to derive a forwarding next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>detail extensive</b> |
| <b>Indirect next hop</b>                     | Index designation used to specify the mapping between protocol next hops, tags, kernel export policy, and the forwarding next hops.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail extensive</b> |
| <b>State</b>                                 | Flags for this route. For a description of possible values for this field, see the output field table for the <a href="#">show route detail</a> command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>detail extensive</b> |

Table 17: show route damping Output Fields (*continued*)

| Field Name        | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Level of Output  |
|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Local AS          | AS number of the local routing device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | detail extensive |
| Peer AS           | AS number of the peer routing device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | detail extensive |
| Age               | How long the route has been known.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | detail extensive |
| Metric            | Metric for the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | detail extensive |
| Task              | Name of the protocol that has added the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | detail extensive |
| Announcement bits | List of protocols that announce this route. <i>n-Resolve inet</i> indicates that the route is used for route resolution for next hops found in the routing table. <i>n</i> is an index used by Juniper Networks customer support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | detail extensive |
| AS path           | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• I—IGP.</li> <li>• E—EGP.</li> <li>• ?—Incomplete; typically, the AS path was aggregated.</li> </ul> <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> <li>• [ ]—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the routing device or if AS path prepending is configured.</li> <li>• { }—Braces enclose AS sets, which are groups of AS numbers in which the order does not matter. A set commonly results from route aggregation. The numbers in each AS set are displayed in ascending order.</li> <li>• ( )—Parentheses enclose a confederation.</li> <li>• ( [ ] )—Parentheses and brackets enclose a confederation set.</li> </ul> <p><b>NOTE:</b> In Junos OS Release 10.3 and later, the AS path field displays an unrecognized attribute and associated hexadecimal value if BGP receives attribute 128 (attribute set) and you have not configured an independent domain in any routing instance.</p> | All levels       |
| to                | Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | brief none       |
| via               | Interface used to reach the next hop. If there is more than one interface available to the next hop, the interface that is actually used is followed by the word <b>Selected</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | brief none       |
| Communities       | Community path attribute for the route. See the output field table for the <a href="#">show route detail</a> command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | detail extensive |
| Localpref         | Local preference value included in the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | All levels       |
| Router ID         | BGP router ID as advertised by the neighbor in the open message.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | detail extensive |

Table 17: show route damping Output Fields (*continued*)

| Field Name                     | Field Description                                                                                                                                                        | Level of Output         |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <b>Merit (last update/now)</b> | Last updated and current figure-of-merit value.                                                                                                                          | <b>detail extensive</b> |
| <b>damping-parameters</b>      | Name that identifies the damping parameters used, which is defined in the damping statement at the <b>[edit policy-options]</b> hierarchy level.                         | <b>detail extensive</b> |
| <b>Last update</b>             | Time of most recent change in path attributes.                                                                                                                           | <b>detail extensive</b> |
| <b>First update</b>            | Time of first change in path attributes, which started the route damping process.                                                                                        | <b>detail extensive</b> |
| <b>Flaps</b>                   | Number of times the route has gone up or down or its path attributes have changed.                                                                                       | <b>detail extensive</b> |
| <b>Suppressed</b>              | ( <b>suppressed</b> keyword only) This route is currently suppressed. A suppressed route does not appear in the forwarding table and routing protocols do not export it. | All levels              |
| <b>Reusable in</b>             | ( <b>suppressed</b> keyword only) Time when a suppressed route will again be available.                                                                                  | All levels              |
| <b>Preference will be</b>      | ( <b>suppressed</b> keyword only) Preference value that will be applied to the route when it is again active.                                                            | All levels              |

## Sample Output

### show route damping decayed detail

```

user@host> show route damping decayed detail
inet.0: 173319 destinations, 1533668 routes (172625 active, 4 holddown, 108083
hidden)
10.0.111.0/24 (7 entries, 1 announced)
  *BGP    Preference: 170/-101
           Next-hop reference count: 151973
           Source: 172.23.2.129
           Next hop: via so-1/2/0.0
           Next hop: via so-5/1/0.0, selected
           Next hop: via so-6/0/0.0
           Protocol next hop: 172.23.2.129
           Indirect next hop: 89a1a00 264185
           State: <Active Ext>
           Local AS: 65000 Peer AS: 65490
           Age: 3:28      Metric2: 0
           Task: BGP_65490.172.23.2.129+179
           Announcement bits (6): 0-KRT 1-RT 4-KRT 5-BGP.0.0.0.0+179

  6-Resolve tree 2 7-Resolve tree 3
    AS path: 65490 65520 65525 65525 65525 65525 I ()
    Communities: 65501:390 65501:2000 65501:3000 65504:701
    Localpref: 100
    Router ID: 172.23.2.129
    Merit (last update/now): 1934/1790
    damping-parameters: damping-high

```

```
Last update:      00:03:28 First update:      00:06:40
Flaps: 2
```

### show route damping history

```
user@host> show route damping history
inet.0: 173320 destinations, 1533529 routes (172624 active, 6 holddown, 108122
hidden)
+ = Active Route, - = Last Active, * = Both

10.108.0.0/15      [BGP ] 2d 22:47:58, localpref 100
                  AS path: 65220 65501 65502 I
                  > to 192.168.60.85 via so-3/1/0.0
```

### show route damping history detail

```
user@host> show route damping history detail
inet.0: 173319 destinations, 1533435 routes (172627 active, 2 holddown, 108105
hidden)
10.108.0.0/15 (3 entries, 1 announced)
    BGP                /-101
        Next-hop reference count: 69058
        Source: 192.168.60.85
        Next hop: 192.168.60.85 via so-3/1/0.0, selected
        State: <Hidden Ext>
        Inactive reason: Unusable path
        Local AS: 65000 Peer AS: 65220
        Age: 2d 22:48:10
        Task: BGP_65220.192.168.60.85+179
        AS path: 65220 65501 65502 I ()
        Communities: 65501:390 65501:2000 65501:3000 65504:3561
        Localpref: 100
        Router ID: 192.168.80.25
        Merit (last update/now): 1000/932
        damping-parameters: set-normal
        Last update:      00:01:05 First update:      00:01:05
        Flaps: 1
```

## show route detail

|                                    |                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 205</a><br><a href="#">Syntax (EX Series Switches) on page 205</a>                                                                                                                                                                                                                                                               |
| <b>Syntax</b>                      | show route detail<br><destination-prefix><br><logical-system (all   logical-system-name)>                                                                                                                                                                                                                                                                   |
| <b>Syntax (EX Series Switches)</b> | show route detail<br><destination-prefix>                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br>Command introduced in Junos OS Release 13.2X51-D15 for the QFX Series.                                                                                                                                                             |
| <b>Description</b>                 | Display detailed information about the active entries in the routing tables.                                                                                                                                                                                                                                                                                |
| <b>Options</b>                     | <p><b>none</b>—Display all active entries in the routing table on all systems.</p> <p><b>destination-prefix</b>—(Optional) Display active entries for the specified address or range of addresses.</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                        |
| <b>List of Sample Output</b>       | <a href="#">show route detail on page 214</a><br><a href="#">show route detail (with BGP Multipath) on page 219</a><br><a href="#">show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 220</a>                                                                                                                   |
| <b>Output Fields</b>               | Table 18 on page 205 describes the output fields for the <b>show route detail</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                          |

Table 18: show route detail Output Fields

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i>  | Name of the routing table (for example, inet.0).                                                                                                                                                                                                                                                                                                                |
| <i>number destinations</i> | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                         |
| <i>number routes</i>       | Number of routes in the routing table and total number of routes in the following states: <ul style="list-style-type: none"> <li><b>active</b> (routes that are active)</li> <li><b>holddown</b> (routes that are in the pending state before being declared inactive)</li> <li><b>hidden</b> (routes that are not used because of a routing policy)</li> </ul> |

Table 18: show route detail Output Fields (*continued*)

| Field Name                                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>route-destination</i><br>(entry, announced) | <p>Route destination (for example:10.0.0.1/24). The <b>entry</b> value is the number of routes for this destination, and the <b>announced</b> value is the number of routes being announced for this destination. Sometimes the route destination is presented in another format, such as:</p> <ul style="list-style-type: none"> <li>• <b>MPLS-label</b> (for example, 80001).</li> <li>• <b>interface-name</b> (for example, ge-1/0/2).</li> <li>• <b>neighbor-address:control-word-status:encapsulation type:vc-id:source</b> (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> <li>• <b>neighbor-address</b>—Address of the neighbor.</li> <li>• <b>control-word-status</b>—Whether the use of the control word has been negotiated for this virtual circuit: <b>NoCtrlWord</b> or <b>CtrlWord</b>.</li> <li>• <b>encapsulation type</b>—Type of encapsulation, represented by a number: (1) Frame Relay DLCI, (2) ATM AAL5 VCC transport, (3) ATM transparent cell transport, (4) Ethernet, (5) VLAN Ethernet, (6) HDLC, (7) PPP, (8) ATM VCC cell transport, (10) ATM VPC cell transport.</li> <li>• <b>vc-id</b>—Virtual circuit identifier.</li> <li>• <b>source</b>—Source of the advertisement: <b>Local</b> or <b>Remote</b>.</li> </ul> </li> </ul> |
| <b>label stacking</b>                          | <p>(Next-to-the-last-hop routing device for MPLS only) Depth of the MPLS label stack, where the label-popping operation is needed to remove one or more labels from the top of the stack. A pair of routes is displayed, because the pop operation is performed only when the stack depth is two or more labels.</p> <ul style="list-style-type: none"> <li>• <b>S=0 route</b> indicates that a packet with an incoming label stack depth of 2 or more exits this routing device with one fewer label (the label-popping operation is performed).</li> <li>• If there is no <b>S=</b> information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>[protocol, preference]</b>                  | <p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> <li>• <b>+—</b>A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</li> <li>• <b>- —</b>A hyphen indicates the last active route.</li> <li>• <b>*—</b>An asterisk indicates that the route is both the active and the last active route. An asterisk before a <b>to</b> line indicates the best subpath to the route.</li> </ul> <p>In every routing metric except for the BGP <b>LocalPref</b> attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the <b>LocalPref</b> value in the <b>Preference2</b> field. For example, if the <b>LocalPref</b> value for Route 1 is 100, the <b>Preference2</b> value is -101. If the <b>LocalPref</b> value for Route 2 is 155, the <b>Preference2</b> value is -156. Route 2 is preferred because it has a higher <b>LocalPref</b> value and a lower <b>Preference2</b> value.</p>                                                                                                                                                                                                                           |
| <b>Level</b>                                   | <p>(IS-IS only). In IS-IS, a single AS can be divided into smaller groups called areas. Routing between areas is organized hierarchically, allowing a domain to be administratively divided into smaller areas. This organization is accomplished by configuring Level 1 and Level 2 intermediate systems. Level 1 systems route within an area. When the destination is outside an area, they route toward a Level 2 system. Level 2 intermediate systems route between areas and toward other ASs.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Route Distinguisher</b>                     | IP subnet augmented with a 64-bit prefix.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>PMSI</b>                                    | Provider multicast service interface (MVPN routing table).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Next-hop type</b>                           | Type of next hop. For a description of possible values for this field, see <a href="#">Table 19 on page 209</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |



Table 18: show route detail Output Fields (*continued*)

| Field Name                                           | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Next-hop reference count</b>                      | Number of references made to the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Flood nexthop branches exceed maximum message</b> | Indicates that the number of flood next-hop branches exceeded the system limit of 32 branches, and only a subset of the flood next-hop branches were installed in the kernel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Source</b>                                        | IP address of the route source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Next hop</b>                                      | Network layer address of the directly reachable neighboring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>via</b>                                           | <p>Interface used to reach the next hop. If there is more than one interface available to the next hop, the name of the interface that is actually used is followed by the word <b>Selected</b>. This field can also contain the following information:</p> <ul style="list-style-type: none"> <li>• <b>Weight</b>—Value used to distinguish primary, secondary, and fast reroute backup routes. Weight information is available when MPLS label-switched path (LSP) link protection, node-link protection, or fast reroute is enabled, or when the standby state is enabled for secondary paths. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.</li> <li>• <b>Balance</b>—Balance coefficient indicating how traffic of unequal cost is distributed among next hops when a routing device is performing unequal-cost load balancing. This information is available when you enable BGP multipath load balancing.</li> </ul> |
| <b>Label-switched-path lsp-path-name</b>             | Name of the LSP used to reach the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Label operation</b>                               | MPLS label and operation occurring at this routing device. The operation can be <b>pop</b> (where a label is removed from the top of the stack), <b>push</b> (where another label is added to the label stack), or <b>swap</b> (where a label is replaced by another label).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Interface</b>                                     | (Local only) Local interface name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Protocol next hop</b>                             | Network layer address of the remote routing device that advertised the prefix. This address is used to derive a forwarding next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Indirect next hop</b>                             | Index designation used to specify the mapping between protocol next hops, tags, kernel export policy, and the forwarding next hops.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>State</b>                                         | State of the route (a route can be in more than one state). See <a href="#">Table 20 on page 211</a> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Local AS</b>                                      | AS number of the local routing device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Age</b>                                           | How long the route has been known.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>AIGP</b>                                          | Accumulated interior gateway protocol (AIGP) BGP attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Metricn</b>                                       | Cost value of the indicated route. For routes within an AS, the cost is determined by IGP and the individual protocol metrics. For external routes, destinations, or routing domains, the cost is determined by a preference value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Table 18: show route detail Output Fields (*continued*)

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>MED-plus-IGP</b>        | Metric value for BGP path selection to which the IGP cost to the next-hop destination has been added.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>TTL-Action</b>          | <p>For MPLS LSPs, state of the TTL propagation attribute. Can be enabled or disabled for all RSVP-signaled and LDP-signaled LSPs or for specific VRF routing instances.</p> <p>For sample output, see <a href="#">show route table</a>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Task</b>                | Name of the protocol that has added the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Announcement bits</b>   | List of protocols that announce this route. <b>n-Resolve inet</b> indicates that the route is used for route resolution for next hops found in the routing table. <b>n</b> is an index used by Juniper Networks customer support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>AS path</b>             | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• <b>I</b>—IGP.</li> <li>• <b>E</b>—EGP.</li> <li>• <b>Recorded</b>—The AS path is recorded by the sample process (sampled).</li> <li>• <b>?</b>—Incomplete; typically, the AS path was aggregated.</li> </ul> <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> <li>• <b>[ ]</b>—Brackets enclose the number that precedes the AS path. This number represents the number of ASs present in the AS path, when calculated as defined in RFC 4271. This value is used in the AS-path merge process, as defined in RFC 4893.</li> <li>• <b>[ ]</b>—If more than one AS number is configured on the routing device, or if AS path prepending is configured, brackets enclose the local AS number associated with the AS path.</li> <li>• <b>{ }</b>—Braces enclose AS sets, which are groups of AS numbers in which the order does not matter. A set commonly results from route aggregation. The numbers in each AS set are displayed in ascending order.</li> <li>• <b>( )</b>—Parentheses enclose a confederation.</li> <li>• <b>( [ ] )</b>—Parentheses and brackets enclose a confederation set.</li> </ul> <p><b>NOTE:</b> In Junos OS Release 10.3 and later, the AS path field displays an unrecognized attribute and associated hexadecimal value if BGP receives attribute 128 (attribute set) and you have not configured an independent domain in any routing instance.</p> |
| <b>validation-state</b>    | <p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> <li>• <b>Invalid</b>—Indicates that the prefix is found, but either the corresponding AS received from the EBGp peer is not the AS that appears in the database, or the prefix length in the BGP update message is longer than the maximum length permitted in the database.</li> <li>• <b>Unknown</b>—Indicates that the prefix is not among the prefixes or prefix ranges in the database.</li> <li>• <b>Unverified</b>—Indicates that the origin of the prefix is not verified against the database. This is because the database got populated and the validation is not called for in the BGP import policy, although origin validation is enabled, or the origin validation is not enabled for the BGP peers.</li> <li>• <b>Valid</b>—Indicates that the prefix and autonomous system pair are found in the database.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>FECs bound to route</b> | Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Table 18: show route detail Output Fields (*continued*)

| Field Name                       | Field Description                                                                                                                                                      |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>VC Label</b>                  | MPLS label assigned to the Layer 2 circuit virtual connection.                                                                                                         |
| <b>MTU</b>                       | Maximum transmission unit (MTU) of the Layer 2 circuit.                                                                                                                |
| <b>VLAN ID</b>                   | VLAN identifier of the Layer 2 circuit.                                                                                                                                |
| <b>Prefixes bound to route</b>   | Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.                                                                     |
| <b>Communities</b>               | Community path attribute for the route. See <a href="#">Table 21 on page 213</a> for all possible values for this field.                                               |
| <b>Layer2-info: encaps</b>       | Layer 2 encapsulation (for example, VPLS).                                                                                                                             |
| <b>control flags</b>             | Control flags: <b>none</b> or <b>Site Down</b> .                                                                                                                       |
| <b>mtu</b>                       | Maximum transmission unit (MTU) information.                                                                                                                           |
| <b>Label-Base, range</b>         | First label in a block of labels and label block size. A remote PE routing device uses this first label when sending traffic toward the advertising PE routing device. |
| <b>status vector</b>             | Layer 2 VPN and VPLS network layer reachability information (NLRI).                                                                                                    |
| <b>Accepted Multipath</b>        | Current active path when BGP multipath is configured.                                                                                                                  |
| <b>Accepted MultipathContrib</b> | Path currently contributing to BGP multipath.                                                                                                                          |
| <b>Localpref</b>                 | Local preference value included in the route.                                                                                                                          |
| <b>Router ID</b>                 | BGP router ID as advertised by the neighbor in the open message.                                                                                                       |
| <b>Primary Routing Table</b>     | In a routing table group, the name of the primary routing table in which the route resides.                                                                            |
| <b>Secondary Tables</b>          | In a routing table group, the name of one or more secondary tables in which the route resides.                                                                         |

[Table 19 on page 209](#) describes all possible values for the Next-hop Types output field.

Table 19: Next-hop Types Output Field Values

| Next-Hop Type            | Description         |
|--------------------------|---------------------|
| <b>Broadcast (bcast)</b> | Broadcast next hop. |
| <b>Deny</b>              | Deny next hop.      |
| <b>Discard</b>           | Discard next hop.   |

Table 19: Next-hop Types Output Field Values (*continued*)

| Next-Hop Type                   | Description                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Flood</b>                    | Flood next hop. Consists of components called branches, up to a maximum of 32 branches. Each flood next-hop branch sends a copy of the traffic to the forwarding interface. Used by point-to-multipoint RSVP, point-to-multipoint LDP, point-to-multipoint CCC, and multicast.                                                                                                                             |
| <b>Hold</b>                     | Next hop is waiting to be resolved into a unicast or multicast type.                                                                                                                                                                                                                                                                                                                                       |
| <b>Indexed (idxd)</b>           | Indexed next hop.                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Indirect (indr)</b>          | Used with applications that have a protocol next hop address that is remote. You are likely to see this next-hop type for internal BGP (IBGP) routes when the BGP next hop is a BGP neighbor that is not directly connected.                                                                                                                                                                               |
| <b>Interface</b>                | Used for a network address assigned to an interface. Unlike the router next hop, the interface next hop does not reference any specific node on the network.                                                                                                                                                                                                                                               |
| <b>Local (locl)</b>             | Local address on an interface. This next-hop type causes packets with this destination address to be received locally.                                                                                                                                                                                                                                                                                     |
| <b>Multicast (mcst)</b>         | Wire multicast next hop (limited to the LAN).                                                                                                                                                                                                                                                                                                                                                              |
| <b>Multicast discard (mdsc)</b> | Multicast discard.                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Multicast group (mgrp)</b>   | Multicast group member.                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Receive (recv)</b>           | Receive.                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Reject (rjct)</b>            | Discard. An ICMP unreachable message was sent.                                                                                                                                                                                                                                                                                                                                                             |
| <b>Resolve (rslv)</b>           | Resolving next hop.                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Routed multicast (mcrt)</b>  | Regular multicast next hop.                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Router</b>                   | <p>A specific node or set of nodes to which the routing device forwards packets that match the route prefix.</p> <p>To qualify as next-hop type router, the route must meet the following criteria:</p> <ul style="list-style-type: none"> <li>• Must not be a direct or local subnet for the routing device.</li> <li>• Must have a next hop that is directly connected to the routing device.</li> </ul> |
| <b>Table</b>                    | Routing table next hop.                                                                                                                                                                                                                                                                                                                                                                                    |

Table 19: Next-hop Types Output Field Values (*continued*)

| Next-Hop Type  | Description                                                                                 |
|----------------|---------------------------------------------------------------------------------------------|
| Unicast (ucst) | Unicast.                                                                                    |
| Unilist (ulst) | List of unicast next hops. A packet sent to this next hop goes to any next hop in the list. |

Table 20 on page 211 describes all possible values for the State output field. A route can be in more than one state (for example, <Active NoReadvrt Int Ext>).

Table 20: State Output Field Values

| Value                                 | Description                                                                                                                                                                          |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Accounting                            | Route needs accounting.                                                                                                                                                              |
| Active                                | Route is active.                                                                                                                                                                     |
| Always Compare MED                    | Path with a lower multiple exit discriminator (MED) is available.                                                                                                                    |
| AS path                               | Shorter AS path is available.                                                                                                                                                        |
| Cisco Non-deterministic MED selection | Cisco nondeterministic MED is enabled, and a path with a lower MED is available.                                                                                                     |
| Clone                                 | Route is a clone.                                                                                                                                                                    |
| Cluster list length                   | Length of cluster list sent by the route reflector.                                                                                                                                  |
| Delete                                | Route has been deleted.                                                                                                                                                              |
| Ex                                    | Exterior route.                                                                                                                                                                      |
| Ext                                   | BGP route received from an external BGP neighbor.                                                                                                                                    |
| FlashAll                              | Forces all protocols to be notified of a change to any route, active or inactive, for a prefix. When not set, protocols are informed of a prefix only when the active route changes. |
| Hidden                                | Route not used because of routing policy.                                                                                                                                            |
| IfCheck                               | Route needs forwarding RPF check.                                                                                                                                                    |
| IGP metric                            | Path through next hop with lower IGP metric is available.                                                                                                                            |
| Inactive reason                       | Flags for this route, which was not selected as best for a particular destination.                                                                                                   |
| Initial                               | Route being added.                                                                                                                                                                   |

Table 20: State Output Field Values (*continued*)

| Value                                                    | Description                                                               |
|----------------------------------------------------------|---------------------------------------------------------------------------|
| <b>Int</b>                                               | Interior route.                                                           |
| <b>Int Ext</b>                                           | BGP route received from an internal BGP peer or a BGP confederation peer. |
| <b>Interior &gt; Exterior &gt; Exterior via Interior</b> | Direct, static, IGP, or EBGP path is available.                           |
| <b>Local Preference</b>                                  | Path with a higher local preference value is available.                   |
| <b>Martian</b>                                           | Route is a martian (ignored because it is obviously invalid).             |
| <b>MartianOK</b>                                         | Route exempt from martian filtering.                                      |
| <b>Next hop address</b>                                  | Path with lower metric next hop is available.                             |
| <b>No difference</b>                                     | Path from neighbor with lower IP address is available.                    |
| <b>NoReadvrt</b>                                         | Route not to be advertised.                                               |
| <b>NotBest</b>                                           | Route not chosen because it does not have the lowest MED.                 |
| <b>Not Best in its group</b>                             | Incoming BGP AS is not the best of a group (only one AS can be the best). |
| <b>NotInstall</b>                                        | Route not to be installed in the forwarding table.                        |
| <b>Number of gateways</b>                                | Path with a greater number of next hops is available.                     |
| <b>Origin</b>                                            | Path with a lower origin code is available.                               |
| <b>Pending</b>                                           | Route pending because of a hold-down configured on another route.         |
| <b>Release</b>                                           | Route scheduled for release.                                              |
| <b>RIB preference</b>                                    | Route from a higher-numbered routing table is available.                  |
| <b>Route Distinguisher</b>                               | 64-bit prefix added to IP subnets to make them unique.                    |
| <b>Route Metric or MED comparison</b>                    | Route with a lower metric or MED is available.                            |
| <b>Route Preference</b>                                  | Route with lower preference value is available                            |
| <b>Router ID</b>                                         | Path through a neighbor with lower ID is available.                       |
| <b>Secondary</b>                                         | Route not a primary route.                                                |

Table 20: State Output Field Values (*continued*)

| Value                | Description                                                                                                                                                                                                                       |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Unusable path</b> | Path is not usable because of one of the following conditions: <ul style="list-style-type: none"> <li>• The route is damped.</li> <li>• The route is rejected by an import policy.</li> <li>• The route is unresolved.</li> </ul> |
| <b>Update source</b> | Last tiebreaker is the lowest IP address value.                                                                                                                                                                                   |

Table 21 on page 213 describes the possible values for the Communities output field.

Table 21: Communities Output Field Values

| Value                                                   | Description                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>area-number</i>                                      | 4 bytes, encoding a 32-bit area number. For AS-external routes, the value is <b>0</b> . A nonzero value identifies the route as internal to the OSPF domain, and as within the identified area. Area numbers are relative to a particular OSPF domain.                                                  |
| <b>bandwidth: local AS number:link-bandwidth-number</b> | Link-bandwidth community value used for unequal-cost load balancing. When BGP has several candidate paths available for multipath purposes, it does not perform unequal-cost load balancing according to the link-bandwidth community unless all candidate paths have this attribute.                   |
| <b>domain-id</b>                                        | Unique configurable number that identifies the OSPF domain.                                                                                                                                                                                                                                             |
| <b>domain-id-vendor</b>                                 | Unique configurable number that further identifies the OSPF domain.                                                                                                                                                                                                                                     |
| <i>link-bandwidth-number</i>                            | Link-bandwidth number: from <b>0</b> through <b>4,294,967,295</b> (bytes per second).                                                                                                                                                                                                                   |
| <i>local AS number</i>                                  | Local AS number: from <b>1</b> through <b>65,535</b> .                                                                                                                                                                                                                                                  |
| <i>options</i>                                          | 1 byte. Currently this is only used if the route type is <b>5</b> or <b>7</b> . Setting the least significant bit in the field indicates that the route carries a type 2 metric.                                                                                                                        |
| <b>origin</b>                                           | (Used with VPNs) Identifies where the route came from.                                                                                                                                                                                                                                                  |
| <i>ospf-route-type</i>                                  | 1 byte, encoded as <b>1</b> or <b>2</b> for intra-area routes (depending on whether the route came from a type 1 or a type 2 LSA); <b>3</b> for summary routes; <b>5</b> for external routes (area number must be <b>0</b> ); <b>7</b> for NSSA routes; or <b>129</b> for sham link endpoint addresses. |
| <b>route-type-vendor</b>                                | Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute <b>0x8000</b> . The format is <b>area-number:ospf-route-type:options</b> .                                                                                            |
| <b>rte-type</b>                                         | Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute <b>0x0306</b> . The format is <b>area-number:ospf-route-type:options</b> .                                                                                            |
| <b>target</b>                                           | Defines which VPN the route participates in; <b>target</b> has the format <b>32-bit IP address:16-bit number</b> . For example, 10.19.0.0:100.                                                                                                                                                          |

Table 21: Communities Output Field Values (*continued*)

| Value                         | Description                                                                                                                                       |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| unknown IANA                  | Incoming IANA codes with a value between 0x1 and 0x7fff. This code of the BGP extended community attribute is accepted, but it is not recognized. |
| unknown OSPF vendor community | Incoming IANA codes with a value above 0x8000. This code of the BGP extended community attribute is accepted, but it is not recognized.           |

## Sample Output

### show route detail

```

user@host> show route detail

inet.0: 22 destinations, 23 routes (21 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
    *Static Preference: 5
        Next-hop reference count: 29
        Next hop: 192.168.71.254 via fxp0.0, selected
        State: <Active NoReadvrt Int Ext>
        Local AS: 69
        Age: 1:31:43
        Task: RT
        Announcement bits (2): 0-KRT 3-Resolve tree 2
        AS path: I

10.31.1.0/30 (2 entries, 1 announced)
    *Direct Preference: 0
        Next hop type: Interface
        Next-hop reference count: 2
        Next hop: via so-0/3/0.0, selected
        State: <Active Int>
        Local AS: 69
        Age: 1:30:17
        Task: IF
        Announcement bits (1): 3-Resolve tree 2
        AS path: I
    OSPF Preference: 10
        Next-hop reference count: 1
        Next hop: via so-0/3/0.0, selected
        State: <Int>
        Inactive reason: Route Preference
        Local AS: 69
        Age: 1:30:17 Metric: 1
        Area: 0.0.0.0
        Task: OSPF
        AS path: I

10.31.1.1/32 (1 entry, 1 announced)
    *Local Preference: 0
        Next hop type: Local
        Next-hop reference count: 7
        Interface: so-0/3/0.0
        State: <Active NoReadvrt Int>
        Local AS: 69
        Age: 1:30:20
        Task: IF

```



```

Announcement bits (1): 3-Resolve tree 2
AS path: I

...

10.31.2.0/30 (1 entry, 1 announced)
  *OSPF Preference: 10
    Next-hop reference count: 9
    Next hop: via so-0/3/0.0
    Next hop: 10.31.1.6 via ge-3/1/0.0, selected
    State: <Active Int>
    Local AS: 69
    Age: 1:29:56 Metric: 2
    Area: 0.0.0.0
    Task: OSPF
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I

...

224.0.0.2/32 (1 entry, 1 announced)
  *PIM Preference: 0
    Next-hop reference count: 18
    State: <Active NoReadvrt Int>
    Local AS: 69
    Age: 1:31:45
    Task: PIM Recv
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I

...

224.0.0.22/32 (1 entry, 1 announced)
  *IGMP Preference: 0
    Next-hop reference count: 18
    State: <Active NoReadvrt Int>
    Local AS: 69
    Age: 1:31:43
    Task: IGMP
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

10.255.70.103/32 (1 entry, 1 announced)
  State: <FlashAll>
  *RSVP Preference: 7
    Next-hop reference count: 6
    Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1, selected
    Label-switched-path green-r1-r3
    Label operation: Push 100096
    State: <Active Int>
    Local AS: 69
    Age: 1:25:49 Metric: 2
    Task: RSVP
    Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
    AS path: I

10.255.71.238/32 (1 entry, 1 announced)
  State: <FlashAll>
  *RSVP Preference: 7

```

```

Next-hop reference count: 6
Next hop: via so-0/3/0.0 weight 0x1, selected
Label-switched-path green-r1-r2
State: <Active Int>
Local AS: 69
Age: 1:25:49 Metric: 1
Task: RSVP
Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
AS path: I

private__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

47.0005.80ff.f800.0000.0108.0001.0102.5507.1052/152 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Active Int>
    Local AS: 69
    Age: 1:31:44
    Task: IF
    AS path: I

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
0 (1 entry, 1 announced)
  *MPLS Preference: 0
    Next hop type: Receive
    Next-hop reference count: 6
    State: <Active Int>
    Local AS: 69
    Age: 1:31:45 Metric: 1
    Task: MPLS
    Announcement bits (1): 0-KRT
    AS path: I

...

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

299840 (1 entry, 1 announced)
TSI:
KRT in-kernel 299840 /52 -> {indirect(1048575)}
  *RSVP Preference: 7/2
    Next hop type: Flood
    Address: 0x9174a30
    Next-hop reference count: 4
    Next hop type: Router, Next hop index: 798
    Address: 0x9174c28
    Next-hop reference count: 2
    Next hop: 8.0.0.2 via lt-1/2/0.9 weight 0x1
    Label-switched-path R2-to-R4-2p2mp
    Label operation: Pop
    Next hop type: Router, Next hop index: 1048574
    Address: 0x92544f0
    Next-hop reference count: 2
    Next hop: 7.0.0.2 via lt-1/2/0.7 weight 0x1
    Label-switched-path R2-to-R200-p2mp
    Label operation: Pop
    Next hop: 6.0.0.2 via lt-1/2/0.5 weight 0x8001

```

```

Label operation: Pop
State: <Active Int>
Age: 1:29      Metric: 1
Task: RSVP
Announcement bits (1): 0-KRT
AS path: I...

800010 (1 entry, 1 announced)
  *VPLS Preference: 7
    Next-hop reference count: 2
    Next hop: via vt-3/2/0.32769, selected
    Label operation: Pop
    State: <Active Int>
    Age: 1:29:30
    Task: Common L2 VC
    Announcement bits (1): 0-KRT
    AS path: I

vt-3/2/0.32769 (1 entry, 1 announced)
  *VPLS Preference: 7
    Next-hop reference count: 2
    Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1, selected
    Label-switched-path green-r1-r3
    Label operation: Push 800012, Push 100096(top)
    Protocol next hop: 10.255.70.103
    Push 800012
    Indirect next hop: 87272e4 1048574
    State: <Active Int>
    Age: 1:29:30 Metric2: 2
    Task: Common L2 VC
    Announcement bits (2): 0-KRT 1-Common L2 VC
    AS path: I
    Communities: target:11111:1 Layer2-info: encaps:VPLS,
    control flags:, mtu: 0

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

abcd::10:255:71:52/128 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Active Int>
    Local AS: 69
    Age: 1:31:44
    Task: IF
    AS path: I

fe80::280:42ff:fe10:f179/128 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Active NoReadvrt Int>
    Local AS: 69
    Age: 1:31:44
    Task: IF
    AS path: I

ff02::2/128 (1 entry, 1 announced)
  *PIM Preference: 0

```

```

        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 69
        Age: 1:31:45
        Task: PIM Recv6
        Announcement bits (1): 0-KRT
        AS path: I

ff02::d/128 (1 entry, 1 announced)
  *PIM Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 69
        Age: 1:31:45
        Task: PIM Recv6
        Announcement bits (1): 0-KRT
        AS path: I

ff02::16/128 (1 entry, 1 announced)
  *MLD Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 69
        Age: 1:31:43
        Task: MLD
        Announcement bits (1): 0-KRT
        AS path: I

private.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

fe80::280:42ff:fe10:f179/128 (1 entry, 0 announced)
  *Direct Preference: 0
        Next hop type: Interface
        Next-hop reference count: 1
        Next hop: via lo0.16385, selected
        State: <Active NoReadvrt Int>
        Age: 1:31:44
        Task: IF
        AS path: I

green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)

10.255.70.103:1:3:1/96 (1 entry, 1 announced)
  *BGP Preference: 170/-101
        Route Distinguisher: 10.255.70.103:1
        Next-hop reference count: 7
        Source: 10.255.70.103
        Protocol next hop: 10.255.70.103
        Indirect next hop: 2 no-forward
        State: <Secondary Active Int Ext>
        Local AS: 69 Peer AS: 69
        Age: 1:25:49 Metric2: 1
        AIGP 210
        Task: BGP_69.10.255.70.103+179
        Announcement bits (1): 0-green-l2vpn
        AS path: I
        Communities: target:11111:1 Layer2-info: encaps:VPLS,
        control flags:, mtu: 0
        Label-base: 800008, range: 8
        Localpref: 100
        Router ID: 10.255.70.103

```

```

Primary Routing Table bgp.l2vpn.0

10.255.71.52:1:1:1/96 (1 entry, 1 announced)
  *L2VPN Preference: 170/-1
    Next-hop reference count: 5
    Protocol next hop: 10.255.71.52
    Indirect next hop: 0 -
    State: <Active Int Ext>
    Age: 1:31:40 Metric2: 1
    Task: green-l2vpn
    Announcement bits (1): 1-BGP.0.0.0+179
    AS path: I
    Communities: Layer2-info: encaps:VPLS, control flags:Site-Down,
    mtu: 0
    Label-base: 800016, range: 8, status-vector: 0x9F

10.255.71.52:1:5:1/96 (1 entry, 1 announced)
  *L2VPN Preference: 170/-101
    Next-hop reference count: 5
    Protocol next hop: 10.255.71.52
    Indirect next hop: 0 -
    State: <Active Int Ext>
    Age: 1:31:40 Metric2: 1
    Task: green-l2vpn
    Announcement bits (1): 1-BGP.0.0.0+179
    AS path: I
    Communities: Layer2-info: encaps:VPLS, control flags:, mtu: 0
    Label-base: 800008, range: 8, status-vector: 0x9F

...

l2circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
10.245.255.63:CtrlWord:4:3:Local/96 (1 entry, 1 announced)
  *L2CKT Preference: 7
    Next hop: via so-1/1/2.0 weight 1, selected
    Label-switched-path my-lsp
    Label operation: Push 100000[0]
    Protocol next hop: 10.245.255.63 Indirect next hop: 86af000 296
    State: <Active Int>
    Local AS: 99
    Age: 10:21
    Task: l2 circuit
    Announcement bits (1): 0-LDP
    AS path: I
    VC Label 100000, MTU 1500, VLAN ID 512

```

### show route detail (with BGP Multipath)

```

user@host> show route detail

10.1.1.8/30 (2 entries, 1 announced)
  *BGP Preference: 170/-101
    Next hop type: Router, Next hop index: 262142
    Address: 0x901a010
    Next-hop reference count: 2
    Source: 10.1.1.2
    Next hop: 10.1.1.2 via ge-0/3/0.1, selected
    Next hop: 10.1.1.6 via ge-0/3/0.5
    State: <Active Ext>
    Local AS: 1 Peer AS: 2
    Age: 5:04:43

```

```

Validation State: unverified
Task: BGP_2.10.1.1.2+59955
Announcement bits (1): 0-KRT
AS path: 2 I
Accepted Multipath
Localpref: 100
Router ID: 1.1.1.2
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 678
Address: 0x8f97520
Next-hop reference count: 9
Source: 10.1.1.6
Next hop: 10.1.1.6 via ge-0/3/0.5, selected
State: <NotBest Ext>
Inactive reason: Not Best in its group - Active preferred
Local AS: 1 Peer AS: 2
Age: 5:04:43
Validation State: unverified
Task: BGP_2.10.1.1.6+58198
AS path: 2 I
Accepted MultipathContrib
Localpref: 100
Router ID: 1.1.1.3

```

#### show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs)

```

user@host> show route label 299872 detail
mpls.0: 13 destinations, 13 routes (13 active, 0 holddown, 0 hidden)
299872 (1 entry, 1 announced)
  *LDP Preference: 9
    Next hop type: Flood
    Next-hop reference count: 3
    Address: 0x9097d90
    Next hop: via vt-0/1/0.1
    Next-hop index: 661
    Label operation: Pop
    Address: 0x9172130
    Next hop: via so-0/0/3.0
    Next-hop index: 654
    Label operation: Swap 299872
    State: **Active Int>
    Local AS: 1001
    Age: 8:20 Metric: 1
    Task: LDP
    Announcement bits (1): 0-KRT
    AS path: I
    FECs bound to route: P2MP root-addr 10.255.72.166, grp 232.1.1.1,
src 192.168.142.2

```

## show route exact

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 221</a><br><a href="#">Syntax (EX Series Switches) on page 221</a>                                                                                                                                                                                                                                                                                                             |
| <b>Syntax</b>                      | show route exact <i>destination-prefix</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                |
| <b>Syntax (EX Series Switches)</b> | show route exact <i>destination-prefix</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                                        |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                     |
| <b>Description</b>                 | Display only the routes that exactly match the specified address or range of addresses.                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b> .<br><br><b>destination-prefix</b> —Address or range of addresses.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>List of Sample Output</b>       | <a href="#">show route exact on page 221</a><br><a href="#">show route exact detail on page 221</a><br><a href="#">show route exact extensive on page 222</a><br><a href="#">show route exact terse on page 222</a>                                                                                                                                                                                       |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                                            |

## Sample Output

### show route exact

```

user@host> show route exact 207.17.136.0/24

inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
207.17.136.0/24    *[Static/5] 2d 03:30:22
                  > to 192.168.71.254 via fxp0.0

```

### show route exact detail

```

user@host> show route exact 207.17.136.0/24 detail

inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)

```

```
Restart Complete
207.17.136.0/24 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 29
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 69
    Age: 2d 3:30:26
    Task: RT
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I
```

#### show route exact extensive

```
user@host> show route exact 207.17.136.0/24 extensive
inet.0: 22 destinations, 23 routes (21 active, 0 holddown, 1 hidden)
207.17.136.0/24 (1 entry, 1 announced)
TSI:
KRT in-kernel 207.17.136.0/24 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 29
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 69
    Age: 1:25:18
    Task: RT
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I
```

#### show route exact terse

```
user@host> show route exact 207.17.136.0/24 terse

inet.0: 22 destinations, 23 routes (21 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
A Destination      P Prf  Metric 1   Metric 2   Next hop      AS path
* 207.17.136.0/24  S   5                >192.168.71.254
```



## show route export

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 223</a><br><a href="#">Syntax (EX Series Switches) on page 223</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Syntax</b>                      | <pre>show route export &lt;brief   detail&gt; &lt;instance &lt;instance-name&gt;   routing-table-name&gt; &lt;logical-system (all   logical-system-name)&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Syntax (EX Series Switches)</b> | <pre>show route export &lt;brief   detail&gt; &lt;instance &lt;instance-name&gt;   routing-table-name&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Description</b>                 | Display policy-based route export information. Policy-based export simplifies the process of exchanging route information between routing instances.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                     | <p><b>none</b>—(Same as <b>brief</b>.) Display standard information about policy-based export for all instances and routing tables on all systems.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>instance &lt;instance-name&gt;</b>—(Optional) Display a particular routing instance for which policy-based export is currently enabled.</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>routing-table-name</b>—(Optional) Display information about policy-based export for all routing tables whose name begins with this string (for example, inet.0 and inet6.0 are both displayed when you run the <b>show route export inet</b> command).</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>List of Sample Output</b>       | <a href="#">show route export on page 224</a><br><a href="#">show route export detail on page 224</a><br><a href="#">show route export instance detail on page 224</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Output Fields</b>               | <a href="#">Table 22 on page 223</a> lists the output fields for the <b>show route export</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

**Table 22: show route export Output Fields**

| Field Name                 | Field Description                                                                                                                                           | Level of Output   |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Table or <i>table-name</i> | Name of the routing tables that either import or export routes.                                                                                             | All levels        |
| Routes                     | Number of routes exported from this table into other tables. If a particular route is exported to different tables, the counter will only increment by one. | <b>brief</b> none |

Table 22: show route export Output Fields (*continued*)

| Field Name    | Field Description                                                                                                                                                                                                                                                                                                                                                           | Level of Output   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| Export        | Whether the table is currently exporting routes to other tables: <b>Y</b> or <b>N</b> (Yes or No).                                                                                                                                                                                                                                                                          | <b>brief</b> none |
| Import        | Tables currently importing routes from the originator table. (Not displayed for tables that are not exporting any routes.)                                                                                                                                                                                                                                                  | <b>detail</b>     |
| Flags         | ( <b>instance</b> keyword only) Flags for this feature on this instance: <ul style="list-style-type: none"> <li><b>config auto-policy</b>—The policy was deduced from the configured IGP export policies.</li> <li><b>cleanup</b>—Configuration information for this instance is no longer valid.</li> <li><b>config</b>—The instance was explicitly configured.</li> </ul> | <b>detail</b>     |
| Options       | ( <b>instance</b> keyword only) Configured option displays the type of routing tables the feature handles: <ul style="list-style-type: none"> <li><b>unicast</b>—Indicates <i>instance.inet.0</i>.</li> <li><b>multicast</b>—Indicates <i>instance.inet.2</i>.</li> <li><b>unicast multicast</b>—Indicates <i>instance.inet.0</i> and <i>instance.inet.2</i>.</li> </ul>    | <b>detail</b>     |
| Import policy | ( <b>instance</b> keyword only) Policy that <b>route export</b> uses to construct the import-export matrix. Not displayed if the instance type is <b>vrf</b> .                                                                                                                                                                                                              | <b>detail</b>     |
| Instance      | ( <b>instance</b> keyword only) Name of the routing instance.                                                                                                                                                                                                                                                                                                               | <b>detail</b>     |
| Type          | ( <b>instance</b> keyword only) Type of routing instance: <b>forwarding</b> , <b>non-forwarding</b> , or <b>vrf</b> .                                                                                                                                                                                                                                                       | <b>detail</b>     |

## Sample Output

### show route export

```

user@host> show route export
Table      Export      Routes
inet.0     N            0
black.inet.0 Y           3
red.inet.0 Y            4

```

### show route export detail

```

user@host> show route export detail
inet.0                                Routes:      0
black.inet.0                          Routes:      3
  Import: [ inet.0 ]
red.inet.0                            Routes:      4
  Import: [ inet.0 ]

```

### show route export instance detail

```

user@host> show route export instance detail
Instance: master                      Type: forwarding
Flags: <config auto-policy> Options: <unicast multicast>
Import policy: [ (ospf-master-from-red || isis-master-from-black) ]

```

Instance: black  
Instance: red

Type: non-forwarding  
Type: non-forwarding

## show route extensive

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 226</a><br><a href="#">Syntax (EX Series Switches) on page 226</a>                                                                                                                                                                                                                                                                                                                                                        |
| <b>Syntax</b>                      | <pre>show route extensive &lt;destination-prefix&gt; &lt;logical-system (all   logical-system-name)&gt;</pre>                                                                                                                                                                                                                                                                                                                                        |
| <b>Syntax (EX Series Switches)</b> | <pre>show route extensive &lt;destination-prefix&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>                 | Display extensive information about the active entries in the routing tables.                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Options</b>                     | <p><b>none</b>—Display all active entries in the routing table.</p> <p><b>destination-prefix</b>—(Optional) Display active entries for the specified address or range of addresses.</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>                                                                                                         |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>List of Sample Output</b>       | <a href="#">show route extensive on page 232</a><br><a href="#">show route extensive (Access Route) on page 238</a><br><a href="#">show route extensive (BGP PIC Edge) on page 239</a><br><a href="#">show route extensive (FRR and LFA) on page 239</a><br><a href="#">show route extensive (Route Reflector) on page 240</a><br><a href="#">show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 240</a> |
| <b>Output Fields</b>               | <p><a href="#">Table 23 on page 226</a> describes the output fields for the <b>show route extensive</b> command. Output fields are listed in the approximate order in which they appear.</p>                                                                                                                                                                                                                                                         |

**Table 23: show route extensive Output Fields**

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i>  | Name of the routing table (for example, inet.0).                                                                                                                                                                                                                                                                                                                          |
| <i>number destinations</i> | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                                   |
| <i>number routes</i>       | <p>Number of routes in the routing table and total number of routes in the following states:</p> <ul style="list-style-type: none"> <li><b>active</b> (routes that are active).</li> <li><b>holddown</b> (routes that are in the pending state before being declared inactive).</li> <li><b>hidden</b> (routes that are not used because of a routing policy).</li> </ul> |

Table 23: show route extensive Output Fields (*continued*)

| Field Name                                     | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>route-destination</i><br>(entry, announced) | <p>Route destination (for example: 10.0.0.1/24). The <b>entry</b> value is the number of route for this destination, and the <b>announced</b> value is the number of routes being announced for this destination. Sometimes the route destination is presented in another format, such as:</p> <ul style="list-style-type: none"> <li>• <b>MPLS-label</b> (for example, 80001).</li> <li>• <b>interface-name</b> (for example, ge-1/0/2).</li> <li>• <b>neighbor-address:control-word-status:encapsulation type:vc-id:source</b> (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> <li>• <b>neighbor-address</b>—Address of the neighbor.</li> <li>• <b>control-word-status</b>—Whether the use of the control word has been negotiated for this virtual circuit: <b>NoCtrlWord</b> or <b>CtrlWord</b>.</li> <li>• <b>encapsulation type</b>—Type of encapsulation, represented by a number: (1) Frame Relay DLCI, (2) ATM AAL5 VCC transport, (3) ATM transparent cell transport, (4) Ethernet, (5) VLAN Ethernet, (6) HDLC, (7) PPP, (8) ATM VCC cell transport, (10) ATM VPC cell transport.</li> <li>• <b>vc-id</b>—Virtual circuit identifier.</li> <li>• <b>source</b>—Source of the advertisement: <b>Local</b> or <b>Remote</b>.</li> </ul> </li> </ul> |
| TSI                                            | Protocol header information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| label stacking                                 | <p>(Next-to-the-last-hop routing device for MPLS only) Depth of the MPLS label stack, where the label-popping operation is needed to remove one or more labels from the top of the stack. A pair of routes is displayed, because the pop operation is performed only when the stack depth is two or more labels.</p> <ul style="list-style-type: none"> <li>• <b>S=0 route</b> indicates that a packet with an incoming label stack depth of two or more exits this router with one fewer label (the label-popping operation is performed).</li> <li>• If there is no <b>S=</b> information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| [ <i>protocol, preference</i> ]                | <p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> <li>• <b>+</b>—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</li> <li>• <b>-</b>—A hyphen indicates the last active route.</li> <li>• <b>*</b>—An asterisk indicates that the route is both the active and the last active route. An asterisk before a <b>to</b> line indicates the best subpath to the route.</li> </ul> <p>In every routing metric except for the BGP <b>LocalPref</b> attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the <b>LocalPref</b> value in the <b>Preference2</b> field. For example, if the <b>LocalPref</b> value for Route 1 is 100, the <b>Preference2</b> value is -101. If the <b>LocalPref</b> value for Route 2 is 155, the <b>Preference2</b> value is -156. Route 2 is preferred because it has a higher <b>LocalPref</b> value and a lower <b>Preference2</b> value.</p>                                                                                                                                                                                                                            |
| Level                                          | <p>(IS-IS only). In IS-IS, a single autonomous system (AS) can be divided into smaller groups called areas. Routing between areas is organized hierarchically, allowing a domain to be administratively divided into smaller areas. This organization is accomplished by configuring Level 1 and Level 2 intermediate systems. Level 1 systems route within an area. When the destination is outside an area, they route toward a Level 2 system. Level 2 intermediate systems route between areas and toward other ASs.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Route Distinguisher                            | IP subnet augmented with a 64-bit prefix.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Table 23: show route extensive Output Fields (*continued*)

| Field Name                                           | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Next-hop type</b>                                 | Type of next hop. For a description of possible values for this field, see the Output Field table in the <a href="#">show route detail</a> command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Next-hop reference count</b>                      | Number of references made to the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Flood nexthop branches exceed maximum message</b> | Indicates that the number of flood next-hop branches exceeded the system limit of 32 branches, and only a subset of the flood next-hop branches were installed in the kernel.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Source</b>                                        | IP address of the route source.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Next hop</b>                                      | Network layer address of the directly reachable neighboring system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>via</b>                                           | <p>Interface used to reach the next hop. If there is more than one interface available to the next hop, the name of the interface that is actually used is followed by the word <b>Selected</b>. This field can also contain the following information:</p> <ul style="list-style-type: none"> <li>• <b>Weight</b>—Value used to distinguish primary, secondary, and fast reroute backup routes. Weight information is available when MPLS label-switched path (LSP) link protection, node-link protection, or fast reroute is enabled, or when the standby state is enabled for secondary paths. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.</li> <li>• <b>Balance</b>—Balance coefficient indicating how traffic of unequal cost is distributed among next hops when a routing device is performing unequal-cost load balancing. This information is available when you enable BGP multipath load balancing.</li> </ul> |
| <b>Label-switched-path <i>lsp-path-name</i></b>      | Name of the LSP used to reach the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Label operation</b>                               | MPLS label and operation occurring at this routing device. The operation can be <b>pop</b> (where a label is removed from the top of the stack), <b>push</b> (where another label is added to the label stack), or <b>swap</b> (where a label is replaced by another label).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Offset</b>                                        | Whether the metric has been increased or decreased by an offset value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Interface</b>                                     | (Local only) Local interface name.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Protocol next hop</b>                             | Network layer address of the remote routing device that advertised the prefix. This address is used to recursively derive a forwarding next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b><i>label-operation</i></b>                        | MPLS label and operation occurring at this routing device. The operation can be <b>pop</b> (where a label is removed from the top of the stack), <b>push</b> (where another label is added to the label stack), or <b>swap</b> (where a label is replaced by another label).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Table 23: show route extensive Output Fields (*continued*)

| Field Name                | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Indirect next hops</b> | <p>When present, a list of nodes that are used to resolve the path to the next-hop destination, in the order that they are resolved.</p> <p>When BGP PIC Edge is enabled, the output lines that contain <b>Indirect next hop: weight</b> follow next hops that the software can use to repair paths where a link failure occurs. The next-hop weight has one of the following values:</p> <ul style="list-style-type: none"> <li>• 0x1 indicates active next hops.</li> <li>• 0x4000 indicates passive next hops.</li> </ul> |
| <b>State</b>              | State of the route (a route can be in more than one state). See the Output Field table in the <a href="#">show route detail</a> command.                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Session ID</b>         | The BFD session ID number that represents the protection using MPLS fast reroute (FRR) and loop-free alternate (LFA).                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Weight</b>             | <p>Weight for the backup path. If the weight of an indirect next hop is larger than zero, the weight value is shown.</p> <p>For sample output, see <a href="#">show route table</a>.</p>                                                                                                                                                                                                                                                                                                                                     |

Table 23: show route extensive Output Fields (*continued*)

| Field Name      | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Inactive reason | <p>If the route is inactive, the reason for its current state is indicated. Typical reasons include:</p> <ul style="list-style-type: none"> <li>• <b>Active preferred</b>—Currently active route was selected over this route.</li> <li>• <b>Always compare MED</b>—Path with a lower multiple exit discriminator (MED) is available.</li> <li>• <b>AS path</b>—Shorter AS path is available.</li> <li>• <b>Cisco Non-deterministic MED selection</b>—Cisco nondeterministic MED is enabled and a path with a lower MED is available.</li> <li>• <b>Cluster list length</b>—Path with a shorter cluster list length is available.</li> <li>• <b>Forwarding use only</b>—Path is only available for forwarding purposes.</li> <li>• <b>IGP metric</b>—Path through the next hop with a lower IGP metric is available.</li> <li>• <b>IGP metric type</b>—Path with a lower OSPF link-state advertisement type is available.</li> <li>• <b>Interior &gt; Exterior &gt; Exterior via Interior</b>—Direct, static, IGP, or EBGp path is available.</li> <li>• <b>Local preference</b>—Path with a higher local preference value is available.</li> <li>• <b>Next hop address</b>—Path with a lower metric next hop is available.</li> <li>• <b>No difference</b>—Path from a neighbor with a lower IP address is available.</li> <li>• <b>Not Best in its group</b>—Occurs when multiple peers of the same external AS advertise the same prefix and are grouped together in the selection process. When this reason is displayed, an additional reason is provided (typically one of the other reasons listed).</li> <li>• <b>Number of gateways</b>—Path with a higher number of next hops is available.</li> <li>• <b>Origin</b>—Path with a lower origin code is available.</li> <li>• <b>OSPF version</b>—Path does not support the indicated OSPF version.</li> <li>• <b>RIB preference</b>—Route from a higher-numbered routing table is available.</li> <li>• <b>Route distinguisher</b>—64-bit prefix added to IP subnets to make them unique.</li> <li>• <b>Route metric or MED comparison</b>—Route with a lower metric or MED is available.</li> <li>• <b>Route preference</b>—Route with a lower preference value is available.</li> <li>• <b>Router ID</b>—Path through a neighbor with a lower ID is available.</li> <li>• <b>Unusable path</b>—Path is not usable because of one of the following conditions: the route is damped, the route is rejected by an import policy, or the route is unresolved.</li> <li>• <b>Update source</b>—Last tiebreaker is the lowest IP address value.</li> </ul> |
| Local AS        | Autonomous system (AS) number of the local routing device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Age             | How long the route has been known.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| AIGP            | Accumulated interior gateway protocol (AIGP) BGP attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Metric          | Cost value of the indicated route. For routes within an AS, the cost is determined by IGP and the individual protocol metrics. For external routes, destinations, or routing domains, the cost is determined by a preference value.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MED-plus-IGP    | Metric value for BGP path selection to which the IGP cost to the next-hop destination has been added.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| TTL-Action      | <p>For MPLS LSPs, state of the TTL propagation attribute. Can be enabled or disabled for all RSVP-signaled and LDP-signaled LSPs or for specific VRF routing instances.</p> <p>For sample output, see <a href="#">show route table</a>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |



Table 23: show route extensive Output Fields (*continued*)

| Field Name                           | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Task</b>                          | Name of the protocol that has added the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Announcement bits</b>             | List of protocols that announce this route. <b>n-Resolve inet</b> indicates that the route is used for route resolution for next hops found in the routing table. <b>n</b> is an index used by Juniper Networks customer support only.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>AS path</b>                       | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• <b>I</b>—IGP.</li> <li>• <b>E</b>—EGP.</li> <li>• <b>Recorded</b>—The AS path is recorded by the sample process (sampled).</li> <li>• <b>?</b>—Incomplete; typically, the AS path was aggregated.</li> </ul> <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> <li>• <b>[ ]</b>—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the routing device, or if AS path prepending is configured.</li> <li>• <b>{ }</b>—Braces enclose AS sets, which are groups of AS numbers in which the order does not matter. A set commonly results from route aggregation. The numbers in each AS set are displayed in ascending order.</li> <li>• <b>( )</b>—Parentheses enclose a confederation.</li> <li>• <b>( [ ] )</b>—Parentheses and brackets enclose a confederation set.</li> </ul> <p><b>NOTE:</b> In Junos OS Release 10.3 and later, the AS path field displays an unrecognized attribute and associated hexadecimal value if BGP receives attribute 128 (attribute set) and you have not configured an independent domain in any routing instance.</p> |
| <b>FECs bound to route</b>           | Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>AS path: I &lt;Originator&gt;</b> | (For route reflected output only) Originator ID attribute set by the route reflector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>VC Label</b>                      | MPLS label assigned to the Layer 2 circuit virtual connection.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MTU</b>                           | Maximum transmission unit (MTU) of the Layer 2 circuit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>VLAN ID</b>                       | VLAN identifier of the Layer 2 circuit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Cluster list</b>                  | (For route reflected output only) Cluster ID sent by the route reflector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Originator ID</b>                 | (For route reflected output only) Address of router that originally sent the route to the route reflector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Prefixes bound to route</b>       | Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Communities</b>                   | Community path attribute for the route. See the Output Field table in the <a href="#">show route detail</a> command for all possible values for this field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Layer2-info: encaps</b>           | Layer 2 encapsulation (for example, VPLS).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

Table 23: show route extensive Output Fields (*continued*)

| Field Name                   | Field Description                                                                                                                                                                                                                                                                                                |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>control flags</b>         | Control flags: <b>none</b> or Site Down.                                                                                                                                                                                                                                                                         |
| <b>mtu</b>                   | Maximum transmission unit (MTU) information.                                                                                                                                                                                                                                                                     |
| <b>Label-Base, range</b>     | First label in a block of labels and label block size. A remote PE routing device uses this first label when sending traffic toward the advertising PE routing device.                                                                                                                                           |
| <b>status vector</b>         | Layer 2 VPN and VPLS network layer reachability information (NLRI).                                                                                                                                                                                                                                              |
| <b>Localpref</b>             | Local preference value included in the route.                                                                                                                                                                                                                                                                    |
| <b>Router ID</b>             | BGP router ID as advertised by the neighbor in the open message.                                                                                                                                                                                                                                                 |
| <b>Primary Routing Table</b> | In a routing table group, the name of the primary routing table in which the route resides.                                                                                                                                                                                                                      |
| <b>Secondary Tables</b>      | In a routing table group, the name of one or more secondary tables in which the route resides.                                                                                                                                                                                                                   |
| <b>Originating RIB</b>       | Name of the routing table whose active route was used to determine the forwarding next-hop entry in the resolution database. For example, in the case of inet.0 resolving through inet.0 and inet.3, this field indicates which routing table, inet.0 or inet.3, provided the best path for a particular prefix. |
| <b>Node path count</b>       | Number of nodes in the path.                                                                                                                                                                                                                                                                                     |
| <b>Forwarding nexthops</b>   | Number of forwarding next hops. The forwarding next hop is the network layer address of the directly reachable neighboring system (if applicable) and the interface used to reach it.                                                                                                                            |

## Sample Output

### show route extensive

```

user@host> show route extensive
inet.0: 22 destinations, 23 routes (21 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.10.0.0/16 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 29
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 69
    Age: 1:34:06
    Task: RT
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I

10.31.1.0/30 (2 entries, 1 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 2
    Next hop: via so-0/3/0.0, selected
    State: <Active Int>

```

```

Local AS: 69
Age: 1:32:40
Task: IF
Announcement bits (1): 3-Resolve tree 2
AS path: I
OSPF Preference: 10
Next-hop reference count: 1
Next hop: via so-0/3/0.0, selected
State: <Int>
Inactive reason: Route Preference
Local AS: 69
Age: 1:32:40 Metric: 1
Area: 0.0.0.0
Task: OSPF
AS path: I

10.31.1.1/32 (1 entry, 1 announced)
*Local Preference: 0
Next hop type: Local
Next-hop reference count: 7
Interface: so-0/3/0.0
State: <Active NoReadvrt Int>
Local AS: 69
Age: 1:32:43
Task: IF
Announcement bits (1): 3-Resolve tree 2
AS path: I

...

10.31.2.0/30 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.31.2.0/30 -> {10.31.1.6}
*OSPF Preference: 10
Next-hop reference count: 9
Next hop: via so-0/3/0.0
Next hop: 10.31.1.6 via ge-3/1/0.0, selected
State: <Active Int>
Local AS: 69
Age: 1:32:19 Metric: 2
Area: 0.0.0.0
Task: OSPF
Announcement bits (2): 0-KRT 3-Resolve tree 2
AS path: I

...

224.0.0.2/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 224.0.0.2/32 -> {}
*PIM Preference: 0
Next-hop reference count: 18
State: <Active NoReadvrt Int>
Local AS: 69
Age: 1:34:08
Task: PIM Recv
Announcement bits (2): 0-KRT 3-Resolve tree 2
AS path: I

...

```

```

224.0.0.22/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 224.0.0.22/32 -> {}
    *IGMP Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 69
        Age: 1:34:06
        Task: IGMP
        Announcement bits (2): 0-KRT 3-Resolve tree 2
        AS path: I

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

10.255.70.103/32 (1 entry, 1 announced)
    State: <FlashAll>
    *RSVP Preference: 7
        Next-hop reference count: 6
        Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1, selected
        Label-switched-path green-r1-r3
        Label operation: Push 100096
        State: <Active Int>
        Local AS: 69
        Age: 1:28:12 Metric: 2
        Task: RSVP
        Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
        AS path: I

10.255.71.238/32 (1 entry, 1 announced)
    State: <FlashAll>
    *RSVP Preference: 7
        Next-hop reference count: 6
        Next hop: via so-0/3/0.0 weight 0x1, selected
        Label-switched-path green-r1-r2
        State: <Active Int>
        Local AS: 69
        Age: 1:28:12 Metric: 1
        Task: RSVP
        Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
        AS path: I

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

...

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

47.0005.80ff.f800.0000.0108.0001.0102.5507.1052/152 (1 entry, 0 announced)
    *Direct Preference: 0
        Next hop type: Interface
        Next-hop reference count: 1
        Next hop: via lo0.0, selected
        State: <Active Int>
        Local AS: 69
        Age: 1:34:07
        Task: IF
        AS path: I

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

0 (1 entry, 1 announced)

```

```

TSI:
KRT in-kernel 0 /36 -> {}
    *MPLS Preference: 0
        Next hop type: Receive
        Next-hop reference count: 6
        State: <Active Int>
        Local AS: 69
        Age: 1:34:08 Metric: 1
        Task: MPLS
        Announcement bits (1): 0-KRT
        AS path: I

...

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
299776 (1 entry, 1 announced)
TSI:
KRT in-kernel 299776 /52 -> {Flood}
    *RSVP Preference: 7
        Next hop type: Flood
        Next-hop reference count: 130
        Flood nexthop branches exceed maximum
        Address: 0x8ea65d0

...

800010 (1 entry, 1 announced)

TSI:
KRT in-kernel 800010 /36 -> {vt-3/2/0.32769}
    *VPLS Preference: 7
        Next-hop reference count: 2
        Next hop: via vt-3/2/0.32769, selected
        Label operation: Pop
        State: <Active Int>
        Age: 1:31:53
        Task: Common L2 VC
        Announcement bits (1): 0-KRT
        AS path: I

vt-3/2/0.32769 (1 entry, 1 announced)
TSI:
KRT in-kernel vt-3/2/0.32769.0 /16 -> {indirect(1048574)}
    *VPLS Preference: 7
        Next-hop reference count: 2
        Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1, selected
        Label-switched-path green-r1-r3
        Label operation: Push 800012, Push 100096(top)
        Protocol next hop: 10.255.70.103
        Push 800012
        Indirect next hop: 87272e4 1048574
        State: <Active Int>
        Age: 1:31:53 Metric2: 2
        Task: Common L2 VC
        Announcement bits (2): 0-KRT 1-Common L2 VC
        AS path: I
        Communities: target:11111:1 Layer2-info: encaps:VPLS,
        control flags:, mtu: 0
        Indirect next hops: 1
            Protocol next hop: 10.255.70.103 Metric: 2
            Push 800012
            Indirect next hop: 87272e4 1048574

```

```

Indirect path forwarding next hops: 1
  Next hop: 10.31.1.6 via ge-3/1/0.0 weight 0x1
10.255.70.103/32 Originating RIB: inet.3
  Metric: 2                               Node path count: 1
  Forwarding nexthops: 1
  Nexthop: 10.31.1.6 via ge-3/1/0.0

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

abcd::10:255:71:52/128 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Active Int>
    Local AS: 69
    Age: 1:34:07
    Task: IF
    AS path: I

fe80::280:42ff:fe10:f179/128 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Active NoReadvrt Int>
    Local AS: 69
    Age: 1:34:07
    Task: IF
    AS path: I

ff02::2/128 (1 entry, 1 announced)
TSI:
KRT in-kerne1 ff02::2/128 -> {}
  *PIM Preference: 0
    Next-hop reference count: 18
    State: <Active NoReadvrt Int>
    Local AS: 69
    Age: 1:34:08
    Task: PIM Recv6
    Announcement bits (1): 0-KRT
    AS path: I

ff02::d/128 (1 entry, 1 announced)
TSI:
KRT in-kerne1 ff02::d/128 -> {}
  *PIM Preference: 0
    Next-hop reference count: 18
    State: <Active NoReadvrt Int>
    Local AS: 69
    Age: 1:34:08
    Task: PIM Recv6
    Announcement bits (1): 0-KRT
    AS path: I

ff02::16/128 (1 entry, 1 announced)
TSI:
KRT in-kerne1 ff02::16/128 -> {}
  *MLD Preference: 0
    Next-hop reference count: 18
    State: <Active NoReadvrt Int>

```

```

Local AS: 69
Age: 1:34:06
Task: MLD
Announcement bits (1): 0-KRT
AS path: I

private.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

fe80::280:42ff:fe10:f179/128 (1 entry, 0 announced)
*Direct Preference: 0
  Next hop type: Interface
  Next-hop reference count: 1
  Next hop: via lo0.16385, selected
  State: <Active NoReadvrt Int>
  Age: 1:34:07
  Task: IF
  AS path: I

green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)

10.255.70.103:1:3:1/96 (1 entry, 1 announced)
*BGP Preference: 170/-101
  Route Distinguisher: 10.255.70.103:1
  Next-hop reference count: 7
  Source: 10.255.70.103
  Protocol next hop: 10.255.70.103
  Indirect next hop: 2 no-forward
  State: <Secondary Active Int Ext>
  Local AS: 69 Peer AS: 69
  Age: 1:28:12 Metric2: 1
  Task: BGP_69.10.255.70.103+179
  Announcement bits (1): 0-green-l2vpn
  AS path: I
  Communities: target:11111:1 Layer2-info: encaps:VPLS,
  control flags:, mtu: 0
  Label-base: 800008, range: 8
  Localpref: 100
  Router ID: 10.255.70.103
  Primary Routing Table bgp.l2vpn.0

10.255.71.52:1:1:1/96 (1 entry, 1 announced)
TSI:
Page 0 idx 0 Type 1 val 8699540
*L2VPN Preference: 170/-1
  Next-hop reference count: 5
  Protocol next hop: 10.255.71.52
  Indirect next hop: 0 -
  State: <Active Int Ext>
  Age: 1:34:03 Metric2: 1
  Task: green-l2vpn
  Announcement bits (1): 1-BGP.0.0.0.0+179
  AS path: I
  Communities: Layer2-info: encaps:VPLS, control flags:Site-Down,
  mtu: 0
  Label-base: 800016, range: 8, status-vector: 0x9F

10.255.71.52:1:5:1/96 (1 entry, 1 announced)
TSI:
Page 0 idx 0 Type 1 val 8699528
*L2VPN Preference: 170/-101
  Next-hop reference count: 5

```

```

Protocol next hop: 10.255.71.52
Indirect next hop: 0 -
State: <Active Int Ext>
Age: 1:34:03 Metric2: 1
Task: green-l2vpn
Announcement bits (1): 1-BGP.0.0.0+179
AS path: I
Communities: Layer2-info: encaps:VPLS, control flags:, mtu: 0
Label-base: 800008, range: 8, status-vector: 0x9F

...

12circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
TSI:

10.245.255.63:CtrlWord:4:3:Local/96 (1 entry, 1 announced)
  *L2CKT Preference: 7
    Next hop: via so-1/1/2.0 weight 1, selected
    Label-switched-path my-lsp
    Label operation: Push 100000[0]
    Protocol next hop: 10.245.255.63 Indirect next hop: 86af000 296
    State: <Active Int>
    Local AS: 99
    Age: 10:21
    Task: 12 circuit
    Announcement bits (1): 0-LDP
    AS path: I
    VC Label 100000, MTU 1500, VLAN ID 512

55.0.0.0/24 (1 entry, 1 announced)
TSI:
KRT queued (pending) add
  55.0.0.0/24 -> {Push 300112}
    *BGP Preference: 170/-101
      Next hop type: Router
      Address: 0x925c208
      Next-hop reference count: 2
      Source: 10.0.0.9
      Next hop: 10.0.0.9 via ge-1/2/0.15, selected
      Label operation: Push 300112
      Label TTL action: prop-ttl
      State: <Active Ext>
      Local AS: 7019 Peer AS: 13979
      Age: 1w0d 23:06:56
      AIGP: 25
      Task: BGP_13979.10.0.0.9+56732
      Announcement bits (1): 0-KRT
      AS path: 13979 7018 I
      Accepted
      Route Label: 300112
      Localpref: 100
      Router ID: 10.9.9.1

```

### show route extensive (Access Route)

```

user@host> show route 13.160.0.102 extensive
inet.0: 39256 destinations, 39258 routes (39255 active, 0 holddown, 1 hidden)
13.160.0.102/32 (1 entry, 1 announced)
TSI:

```



```

KRT in-kernel 13.160.0.102/32 -> {13.160.0.2}
OSPF area : 0.0.0.0, LSA ID : 13.160.0.102, LSA type : Extern
  *Access Preference: 13
    Next-hop reference count: 78472
    Next hop: 13.160.0.2 via fe-0/0/0.0, selected
    State: <Active Int>
  Age: 12
    Task: RPD Unix Domain Server./var/run/rpd_serv.local
    Announcement bits (2): 0-KRT 1-OSPFv2
    AS path: I

```

### show route extensive (BGP PIC Edge)

```

user@host> show route 1.1.1.6 extensive
ed.inet.0: 6 destinations, 9 routes (6 active, 0 holddown, 0 hidden)
  1.1.1.6/32 (3 entries, 2 announced)
    State: <CalcForwarding>
    TSI:
      KRT in-kernel 1.1.1.6/32 -> {indirect(1048574), indirect(1048577)}
      Page 0 idx 0 Type 1 val 9219e30
      Nexthop: Self
      AS path: [2] 3 I
      Communities: target:2:1
      Path 1.1.1.6 from 1.1.1.4 Vector len 4. Val: 0
    ..
      #Multipath Preference: 255
      Next hop type: Indirect
      Address: 0x93f4010
      Next-hop reference count: 2
    ..
      Protocol next hop: 1.1.1.4
      Push 299824
      Indirect next hop: 944c000 1048574 INH Session ID: 0x3
      Indirect next hop: weight 0x1
      Protocol next hop: 1.1.1.5
      Push 299824
      Indirect next hop: 944c1d8 1048577 INH Session ID: 0x4
      Indirect next hop: weight 0x4000
      State: <ForwardingOnly Int Ext>
      Inactive reason: Forwarding use only
      Age: 25 Metric2: 15
      Validation State: unverified
      Task: RT
      Announcement bits (1): 0-KRT
      AS path: 3 I
      Communities: target:2:1

```

### show route extensive (FRR and LFA)

```

user@host> show route 20.31.2.0 extensive
inet.0: 46 destinations, 49 routes (45 active, 0 holddown, 1 hidden)
  20.31.2.0/24 (2 entries, 1 announced)
    State: FlashAll
    TSI:
      KRT in-kernel 20.31.2.0/24 -> {Push 299776, Push 299792}
      *RSVP Preference: 7/1
      Next hop type: Router, Next hop index: 1048574
      Address: 0xbbbc010
      Next-hop reference count: 5
      Next hop: 10.31.1.2 via ge-2/1/8.0 weight 0x1, selected
      Label-switched-path europa-d-to-europa-e

```

```

Label operation: Push 299776
Label TTL action: prop-ttl
Session Id: 0x201
Next hop: 10.31.2.2 via ge-2/1/4.0 weight 0x4001
Label-switched-path europa-d-to-europa-e
Label operation: Push 299792
Label TTL action: prop-ttl
Session Id: 0x202
State: Active Int
Local AS: 100
Age: 5:31 Metric: 2
Task: RSVP
Announcement bits (1): 0-KRT
AS path: I
OSPF Preference: 10
Next hop type: Router, Next hop index: 615
Address: 0xb9d78c4
Next-hop reference count: 7
Next hop: 10.31.1.2 via ge-2/1/8.0, selected
Session Id: 0x201
State: Int
Inactive reason: Route Preference
Local AS: 100
Age: 5:35 Metric: 3
Area: 0.0.0.0
Task: OSPF
AS path: I

```

#### show route extensive (Route Reflector)

```

user@host> show route extensive
1.0.0.0/8 (1 entry, 1 announced)

TSI:
KRT in-kernel 1.0.0.0/8 -> {indirect(40)}
  *BGP Preference: 170/-101
    Source: 192.168.4.214
    Protocol next hop: 207.17.136.192 Indirect next hop: 84ac908 40
    State: <Active Int Ext>
    Local AS: 10458 Peer AS: 10458
    Age: 3:09 Metric: 0 Metric2: 0
    Task: BGP_10458.192.168.4.214+1033
    Announcement bits (2): 0-KRT 4-Resolve inet.0
    AS path: 3944 7777 I <Originator>
    Cluster list: 1.1.1.1
    Originator ID: 10.255.245.88
    Communities: 7777:7777
    Localpref: 100
    Router ID: 4.4.4.4
    Indirect next hops: 1
      Protocol next hop: 207.17.136.192 Metric: 0
      Indirect next hop: 84ac908 40
      Indirect path forwarding next hops: 0
      Next hop type: Discard

```

#### show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs)

```

user@host> show route label 299872 detail
mpls.0: 13 destinations, 13 routes (13 active, 0 holddown, 0 hidden)
299872 (1 entry, 1 announced)
  *LDP Preference: 9

```

```
Next hop type: Flood
Next-hop reference count: 3
Address: 0x9097d90
Next hop: via vt-0/1/0.1
Next-hop index: 661
Label operation: Pop
Address: 0x9172130
Next hop: via so-0/0/3.0
Next-hop index: 654
Label operation: Swap 299872
State: **Active Int>
Local AS: 1001
Age: 8:20      Metric: 1
Task: LDP
Announcement bits (1): 0-KRT
AS path: I
FECs bound to route: P2MP root-addr 10.255.72.166, grp 232.1.1.1,
src 192.168.142.2
```

## show route flow validation

**List of Syntax** [Syntax on page 242](#)  
[Syntax \(EX Series Switches\) on page 242](#)

**Syntax** show route flow validation  
 <brief | detail>  
 <ip-prefix>  
 <table *table-name*>  
 <logical-system (all | *logical-system-name*)>

**Syntax (EX Series Switches)** show route flow validation  
 <brief | detail>  
 <ip-prefix>  
 <table *table-name*>

**Release Information** Command introduced before Junos OS Release 7.4.  
 Command introduced in Junos OS Release 9.0 for EX Series switches.

**Description** Display flow route information.

**Options** **none**—Display flow route information.

**brief | detail**—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.

**ip-prefix**—(Optional) IP address for the flow route.

**logical-system (all | *logical-system-name*)**—(Optional) Perform this operation on all logical systems or on a particular logical system.

**table *table-name***—(Optional) Display flow route information for all routing tables whose name begins with this string (for example, inet.0 and inet6.0 are both displayed when you run the **show route flow validation inet** command).

**Required Privilege Level** view

**List of Sample Output** [show route flow validation on page 243](#)

**Output Fields** [Table 24 on page 242](#) lists the output fields for the **show route flow validation** command. Output fields are listed in the approximate order in which they appear.

**Table 24: show route flow validation Output Fields**

| Field Name                | Field Description                                | Level of Output |
|---------------------------|--------------------------------------------------|-----------------|
| <i>routing-table-name</i> | Name of the routing table (for example, inet.0). | All levels      |
| <i>prefix</i>             | Route address.                                   | All levels      |
| Active unicast route      | Active route in the routing table.               | All levels      |

Table 24: show route flow validation Output Fields (*continued*)

| Field Name                  | Field Description                                                       | Level of Output |
|-----------------------------|-------------------------------------------------------------------------|-----------------|
| Dependent flow destinations | Number of flows for which there are routes in the routing table.        | All levels      |
| Origin                      | Source of the route flow.                                               | All levels      |
| Neighbor AS                 | Autonomous system identifier of the neighbor.                           | All levels      |
| Flow destination            | Number of entries and number of destinations that match the route flow. | All levels      |
| Unicast best match          | Destination that is the best match for the route flow.                  | All levels      |
| Flags                       | Information about the route flow.                                       | All levels      |

## Sample Output

### show route flow validation

```

user@host> show route flow validation
inet.0:
10.0.5.0/24Active unicast route
Dependent flow destinations: 1
Origin: 192.168.224.218, Neighbor AS: 65001
Flow destination (3 entries, 1 match origin)
Unicast best match: 10.0.5.0/24
Flags: SubtreeApex Consistent

```

## show route forwarding-table

|                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>                                | <a href="#">Syntax on page 244</a><br><a href="#">Syntax (MX Series Routers) on page 244</a><br><a href="#">Syntax (TX Matrix and TX Matrix Plus Routers) on page 244</a>                                                                                                                                                                                                                                                                                                                                                               |
| <b>Syntax</b>                                        | <pre>show route forwarding-table &lt;detail   extensive   summary&gt; &lt;all&gt; &lt;ccc interface-name&gt; &lt;destination destination-prefix&gt; &lt;family family   matching matching&gt; &lt;interface-name interface-name&gt; &lt;label name&gt; &lt;matching matching&gt; &lt;multicast&gt; &lt;table (default   logical-system-name/routing-instance-name   routing-instance-name)&gt; &lt;vlan (all   vlan-name)&gt; &lt;vpn vpn&gt;</pre>                                                                                     |
| <b>Syntax (MX Series Routers)</b>                    | <pre>show route forwarding-table &lt;detail   extensive   summary&gt; &lt;all&gt; &lt;bridge-domain (all   domain-name)&gt; &lt;ccc interface-name&gt; &lt;destination destination-prefix&gt; &lt;family family   matching matching&gt; &lt;interface-name interface-name&gt; &lt;label name&gt; &lt;learning-vlan-id learning-vlan-id&gt; &lt;matching matching&gt; &lt;multicast&gt; &lt;table (default   logical-system-name/routing-instance-name   routing-instance-name)&gt; &lt;vlan (all   vlan-name)&gt; &lt;vpn vpn&gt;</pre> |
| <b>Syntax (TX Matrix and TX Matrix Plus Routers)</b> | <pre>show route forwarding-table &lt;detail   extensive   summary&gt; &lt;all&gt; &lt;ccc interface-name&gt; &lt;destination destination-prefix&gt; &lt;family family   matching matching&gt; &lt;interface-name interface-name&gt; &lt;matching matching&gt; &lt;label name&gt; &lt;lcc number&gt; &lt;multicast&gt; &lt;table routing-instance-name&gt; &lt;vpn vpn&gt;</pre>                                                                                                                                                         |
| <b>Release Information</b>                           | <p>Command introduced before Junos OS Release 7.4.</p> <p>Option <b>bridge-domain</b> introduced in Junos OS Release 7.5</p> <p>Option <b>learning-vlan-id</b> introduced in Junos OS Release 8.4</p>                                                                                                                                                                                                                                                                                                                                   |

Options **all** and **vlan** introduced in Junos OS Release 9.6.  
 Command introduced in Junos OS Release 11.3 for the QFX Series.

**Description** Display the Routing Engine's forwarding table, including the network-layer prefixes and their next hops. This command is used to help verify that the routing protocol process has relayed the correction information to the forwarding table. The Routing Engine constructs and maintains one or more routing tables. From the routing tables, the Routing Engine derives a table of active routes, called the forwarding table.



**NOTE:** The Routing Engine copies the forwarding table to the Packet Forwarding Engine, the part of the router that is responsible for forwarding packets. To display the entries in the Packet Forwarding Engine's forwarding table, use the **show pfe route** command.

**Options** **none**—Display the routes in the forwarding tables. By default, the **show route forwarding-table** command does not display information about private, or internal, forwarding tables.

**detail | extensive | summary**—(Optional) Display the specified level of output.

**all**—(Optional) Display routing table entries for all forwarding tables, including private, or internal, tables.

**bridge-domain (all | bridge-domain-name)**—(MX Series routers only) (Optional) Display route entries for all bridge domains or the specified bridge domain.

**ccc interface-name**—(Optional) Display route entries for the specified circuit cross-connect interface.

**destination destination-prefix**—(Optional) Destination prefix.

**family family**—(Optional) Display routing table entries for the specified family: **fibre-channel**, **fmembers**, **inet**, **inet6**, **iso**, **mpls**, **tnp**, **unix**, **vpls**, or **vlan-classification**.

**interface-name interface-name**—(Optional) Display routing table entries for the specified interface.

**label name**—(Optional) Display route entries for the specified label.

**lcc number**—(TX Matrix and TX matrix Plus routers only) (Optional) On a routing matrix composed of a TX Matrix router and T640 routers, display information for the specified T640 router (or line-card chassis) connected to the TX Matrix router. On a routing matrix composed of the TX Matrix Plus router and T1600 or T4000 routers, display information for the specified router (line-card chassis) connected to the TX Matrix Plus router.

Replace *number* with the following values depending on the LCC configuration:

- 0 through 3, when T640 routers are connected to a TX Matrix router in a routing matrix.
- 0 through 3, when T1600 routers are connected to a TX Matrix Plus router in a routing matrix.
- 0 through 7, when T1600 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.
- 0, 2, 4, or 6, when T4000 routers are connected to a TX Matrix Plus router with 3D SIBs in a routing matrix.

**learning-vlan-id** *learning-vlan-id*—(MX Series routers only) (Optional) Display learned information for all VLANs or for the specified VLAN.

**matching** *matching*—(Optional) Display routing table entries matching the specified prefix or prefix length.

**multicast**—(Optional) Display routing table entries for multicast routes.

**table** (**default** | *logical-system-name/routing-instance-name* | *routing-instance-name*)—(Optional) Display route entries for all the routing tables in the main routing instance or for the specified routing instance. If your device supports logical systems, you can also display route entries for the specified logical system and routing instance. To view the routing instances on your device, use the [show route instance](#) command.

**vlan** (**all** | *vlan-name*)—(Optional) Display information for all VLANs or for the specified VLAN.

**vpn** *vpn*—(Optional) Display routing table entries for a specified VPN.

**Required Privilege Level**

view

**List of Sample Output**

[show route forwarding-table on page 249](#)  
[show route forwarding-table detail on page 250](#)  
[show route forwarding-table destination extensive \(Weights and Balances\) on page 250](#)  
[show route forwarding-table extensive on page 251](#)  
[show route forwarding-table extensive \(RPF\) on page 252](#)  
[show route forwarding-table family mpls on page 253](#)  
[show route forwarding-table family vpls on page 253](#)  
[show route forwarding-table family vpls extensive on page 253](#)  
[show route forwarding-table table default on page 255](#)  
[show route forwarding-table table](#)  
[logical-system-name/routing-instance-name on page 255](#)  
[show route forwarding-table vpn on page 256](#)

**Output Fields**

[Table 25 on page 247](#) lists the output fields for the **show route forwarding-table** command. Output fields are listed in the approximate order in which they appear. Field names might



be abbreviated (as shown in parentheses) when no level of output is specified, or when the **detail** keyword is used instead of the **extensive** keyword.

**Table 25: show route forwarding-table Output Fields**

| Field Name              | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output         |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| Logical system          | Name of the logical system. This field is displayed if you specify the <b>table</b> <i>logical-system-name/routing-instance-name</i> option on a device that is configured for and supports logical systems.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | All levels              |
| Routing table           | Name of the routing table (for example, inet, inet6, mpls).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | All levels              |
| Address family          | Address family (for example, IP, IPv6, ISO, MPLS, and VPLS).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | All levels              |
| Destination             | Destination of the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive</b> |
| Route Type (Type)       | How the route was placed into the forwarding table. When the <b>detail</b> keyword is used, the route type might be abbreviated (as shown in parentheses): <ul style="list-style-type: none"> <li>• <b>cloned (clon)</b>—(TCP or multicast only) Cloned route.</li> <li>• <b>destination (dest)</b>—Remote addresses directly reachable through an interface.</li> <li>• <b>destination down (iddn)</b>—Destination route for which the interface is unreachable.</li> <li>• <b>interface cloned (ifcl)</b>—Cloned route for which the interface is unreachable.</li> <li>• <b>route down (ifdn)</b>—Interface route for which the interface is unreachable.</li> <li>• <b>ignore (ignr)</b>—Ignore this route.</li> <li>• <b>interface (intf)</b>—Installed as a result of configuring an interface.</li> <li>• <b>permanent (perm)</b>—Routes installed by the kernel when the routing table is initialized.</li> <li>• <b>user</b>—Routes installed by the routing protocol process or as a result of the configuration.</li> </ul> | All levels              |
| Route Reference (RtRef) | Number of routes to reference.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>detail extensive</b> |
| Flags                   | Route type flags: <ul style="list-style-type: none"> <li>• <b>none</b>—No flags are enabled.</li> <li>• <b>accounting</b>—Route has accounting enabled.</li> <li>• <b>cached</b>—Cache route.</li> <li>• <b>incoming-iface interface-number</b>—Check against incoming interface.</li> <li>• <b>prefix load balance</b>—Load balancing is enabled for this prefix.</li> <li>• <b>rt nh decoupled</b>—Route has been decoupled from the next hop to the destination.</li> <li>• <b>sent to PFE</b>—Route has been sent to the Packet Forwarding Engine.</li> <li>• <b>static</b>—Static route.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>extensive</b>        |
| Next hop                | IP address of the next hop to the destination.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>detail extensive</b> |

Table 25: show route forwarding-table Output Fields (*continued*)

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Level of Output              |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Next hop Type (Type)       | <p>Next-hop type. When the <b>detail</b> keyword is used, the next-hop type might be abbreviated (as indicated in parentheses):</p> <ul style="list-style-type: none"> <li>• <b>broadcast (bcst)</b>—Broadcast.</li> <li>• <b>deny</b>—Deny.</li> <li>• <b>discard (dscd)</b>—Discard.</li> <li>• <b>hold</b>—Next hop is waiting to be resolved into a unicast or multicast type.</li> <li>• <b>indexed (idxd)</b>—Indexed next hop.</li> <li>• <b>indirect (indr)</b>—Indirect next hop.</li> <li>• <b>local (locl)</b>—Local address on an interface.</li> <li>• <b>routed multicast (mcrst)</b>—Regular multicast next hop.</li> <li>• <b>multicast (mcst)</b>—Wire multicast next hop (limited to the LAN).</li> <li>• <b>multicast discard (mdsc)</b>—Multicast discard.</li> <li>• <b>multicast group (mgrp)</b>—Multicast group member.</li> <li>• <b>receive (rcv)</b>—Receive.</li> <li>• <b>reject (rjct)</b>—Discard. An ICMP unreachable message was sent.</li> <li>• <b>resolve (rslv)</b>—Resolving the next hop.</li> <li>• <b>unicast (ucst)</b>—Unicast.</li> <li>• <b>unilist (ulst)</b>—List of unicast next hops. A packet sent to this next hop goes to any next hop in the list.</li> </ul> | <b>detail extensive</b>      |
| Index                      | Software index of the next hop that is used to route the traffic for a given prefix.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>detail extensive none</b> |
| Route interface-index      | Logical interface index from which the route is learned. For example, for interface routes, this is the logical interface index of the route itself. For static routes, this field is zero. For routes learned through routing protocols, this is the logical interface index from which the route is learned.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>extensive</b>             |
| Reference (NhRef)          | Number of routes that refer to this next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>detail extensive none</b> |
| Next-hop interface (Netif) | Interface used to reach the next hop.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>detail extensive none</b> |
| Weight                     | Value used to distinguish primary, secondary, and fast reroute backup routes. Weight information is available when MPLS label-switched path (LSP) link protection, node-link protection, or fast reroute is enabled, or when the standby state is enabled for secondary paths. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible (see the <b>Balance</b> field description).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>extensive</b>             |
| Balance                    | Balance coefficient indicating how traffic of unequal cost is distributed among next hops when a router is performing unequal-cost load balancing. This information is available when you enable BGP multipath load balancing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>extensive</b>             |
| RPF interface              | List of interfaces from which the prefix can be accepted. Reverse path forwarding (RPF) information is displayed only when <b>rpf-check</b> is configured on the interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>extensive</b>             |

## Sample Output

### show route forwarding-table

```

user@host> show route forwarding-table
Routing table: default.inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  46   4
0.0.0.0/32       perm  0                               dscd  44   1
1.1.1.0/24       ifdn  0                               rslv  608  1 ge-2/0/1.0
1.1.1.0/32       iddn  0 1.1.1.0          recv  606  1 ge-2/0/1.0
1.1.1.1/32       user  0                               rjct  46   4
1.1.1.1/32       intf  0 1.1.1.1          locl  607  2
1.1.1.1/32       iddn  0 1.1.1.1          locl  607  2
1.1.1.255/32     iddn  0 ff:ff:ff:ff:ff:ff bcst  605  1 ge-2/0/1.0
10.0.0.0/24      intf  0                               rslv  616  1 ge-2/0/0.0
10.0.0.0/32      dest  0 10.0.0.0         recv  614  1 ge-2/0/0.0
10.0.0.1/32      intf  0 10.0.0.1         locl  615  2
10.0.0.1/32      dest  0 10.0.0.1         locl  615  2
10.0.0.255/32    dest  0 10.0.0.255       bcst  613  1 ge-2/0/0.0
10.1.1.0/24      ifdn  0                               rslv  612  1 ge-2/0/1.0
10.1.1.0/32      iddn  0 10.1.1.0         recv  610  1 ge-2/0/1.0
10.1.1.1/32      user  0                               rjct  46   4
10.1.1.1/32      intf  0 10.1.1.1         locl  611  2
10.1.1.1/32      iddn  0 10.1.1.1         locl  611  2
10.1.1.255/32    iddn  0 ff:ff:ff:ff:ff:ff bcst  609  1 ge-2/0/1.0
10.209.0.0/16    user  0 10.209.63.254    ucst  419  20 fxp0.0
10.209.0.0/16    user  1 0:12:1e:ca:98:0  ucst  419  20 fxp0.0
10.209.0.0/18    intf  0                               rslv  418  1 fxp0.0
10.209.0.0/32    dest  0 10.209.0.0       recv  416  1 fxp0.0
10.209.2.131/32  intf  0 10.209.2.131     locl  417  2
10.209.2.131/32  dest  0 10.209.2.131     locl  417  2
10.209.17.55/32  dest  0 0:30:48:5b:78:d2 ucst  435  1 fxp0.0
10.209.63.42/32  dest  0 0:23:7d:58:92:ca ucst  434  1 fxp0.0
10.209.63.254/32 dest  0 0:12:1e:ca:98:0  ucst  419  20 fxp0.0
10.209.63.255/32 dest  0 10.209.63.255    bcst  415  1 fxp0.0
10.227.0.0/16    user  0 10.209.63.254    ucst  419  20 fxp0.0

...

Routing table: iso
ISO:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  27   1
47.0005.80ff.f800.0000.0108.0003.0102.5524.5220.00
intf  0                               locl  28   1

Routing table: inet6
Internet6:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  6    1
ff00::/8         perm  0                               mdsc  4    1
ff02::1/128      perm  0 ff02::1          mcst  3    1

Routing table: ccc
MPLS:
Interface.Label  Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  16   1
100004(top)fe-0/0/1.0

```

## show route forwarding-table detail

```

user@host> show route forwarding-table detail
Routing table: inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          user   2 0:90:69:8e:b1:1b ucst  132   4 fxp0.0
default          perm   0                               rjct  14    1
10.1.1.0/24      intf   0 ff.3.0.21         ucst  322   1 so-5/3/0.0
10.1.1.0/32      dest   0 10.1.1.0          recv  324   1 so-5/3/0.0
10.1.1.1/32      intf   0 10.1.1.1          locl  321   1
10.1.1.255/32    dest   0 10.1.1.255        bcst  323   1 so-5/3/0.0
10.21.21.0/24    intf   0 ff.3.0.21         ucst  326   1 so-5/3/0.0
10.21.21.0/32    dest   0 10.21.21.0        recv  328   1 so-5/3/0.0
10.21.21.1/32    intf   0 10.21.21.1        locl  325   1
10.21.21.255/32  dest   0 10.21.21.255      bcst  327   1 so-5/3/0.0
127.0.0.1/32     intf   0 127.0.0.1         locl  320   1
172.17.28.19/32  clon   1 192.168.4.254     ucst  132   4 fxp0.0
172.17.28.44/32  clon   1 192.168.4.254     ucst  132   4 fxp0.0

...

Routing table: private1__inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct  46    1
10.0.0.0/8       intf   0                               rslv  136   1 fxp1.0
10.0.0.0/32      dest   0 10.0.0.0          recv  134   1 fxp1.0
10.0.0.4/32      intf   0 10.0.0.4          locl  135   2
10.0.0.4/32      dest   0 10.0.0.4          locl  135   2

...

Routing table: iso
ISO:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct  38    1

Routing table: inet6
Internet6:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct  22    1
ff00::/8         perm   0                               mdsc  21    1
ff02::1/128      perm   0 ff02::1          mcst  17    1

...

Routing table: mpls
MPLS:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct  28    1

```

## show route forwarding-table destination extensive (Weights and Balances)

```

user@host> show route forwarding-table destination 3.4.2.1 extensive
Routing table: inet [Index 0]
Internet:

Destination: 3.4.2.1/32
Route type: user
Route reference: 0                               Route interface-index: 0

```

```

Flags: sent to PFE
Next-hop type: unilist           Index: 262143  Reference: 1
Nexthop: 4.4.4.4
Next-hop type: unicast          Index: 335      Reference: 2
Next-hop interface: so-1/1/0.0  Weight: 22    Balance: 3
Nexthop: 145.12.1.2
Next-hop type: unicast          Index: 337      Reference: 2
Next-hop interface: so-0/1/2.0  Weight: 33    Balance: 33

```

### show route forwarding-table extensive

```
user@host> show route forwarding-table extensive
```

```
Routing table: inet [Index 0]
```

```
Internet:
```

```
Destination: default
```

```
Route type: user
```

```
Route reference: 2
```

```
Route interface-index: 0
```

```
Flags: sent to PFE
```

```
Nexthop: 0:90:69:8e:b1:1b
```

```
Next-hop type: unicast
```

```
Index: 132
```

```
Reference: 4
```

```
Next-hop interface: fxp0.0
```

```
Destination: default
```

```
Route type: permanent
```

```
Route reference: 0
```

```
Route interface-index: 0
```

```
Flags: none
```

```
Next-hop type: reject
```

```
Index: 14
```

```
Reference: 1
```

```
Destination: 127.0.0.1/32
```

```
Route type: interface
```

```
Route reference: 0
```

```
Route interface-index: 0
```

```
Flags: sent to PFE
```

```
Nexthop: 127.0.0.1
```

```
Next-hop type: local
```

```
Index: 320
```

```
Reference: 1
```

```
...
```

```
Routing table: private1__inet [Index 1]
```

```
Internet:
```

```
Destination: default
```

```
Route type: permanent
```

```
Route reference: 0
```

```
Route interface-index: 0
```

```
Flags: sent to PFE
```

```
Next-hop type: reject
```

```
Index: 46
```

```
Reference: 1
```

```
Destination: 10.0.0.0/8
```

```
Route type: interface
```

```
Route reference: 0
```

```
Route interface-index: 3
```

```
Flags: sent to PFE
```

```
Next-hop type: resolve
```

```
Index: 136
```

```
Reference: 1
```

```
Next-hop interface: fxp1.0
```

```
...
```

```
Routing table: iso [Index 0]
```

```
ISO:
```

```
Destination: default
```

```
Route type: permanent
```

```

Route reference: 0
Flags: sent to PFE
Next-hop type: reject
Route interface-index: 0
Index: 38      Reference: 1

Routing table: inet6 [Index 0]
Internet6:

Destination: default
Route type: permanent
Route reference: 0
Flags: sent to PFE
Next-hop type: reject
Route interface-index: 0
Index: 22      Reference: 1

Destination: ff00::/8
Route type: permanent
Route reference: 0
Flags: sent to PFE
Next-hop type: multicast discard
Route interface-index: 0
Index: 21      Reference: 1

...

Routing table: private1__inet6 [Index 1]
Internet6:

Destination: default
Route type: permanent
Route reference: 0
Flags: sent to PFE
Next-hop type: reject
Route interface-index: 0
Index: 54      Reference: 1

Destination: fe80::2a0:a5ff:fe3d:375/128
Route type: interface
Route reference: 0
Flags: sent to PFE
Next-hop: fe80::2a0:a5ff:fe3d:375
Next-hop type: local
Route interface-index: 0
Index: 75      Reference: 1

...

```

#### show route forwarding-table extensive (RPF)

The next example is based on the following configuration, which enables an RPF check on all routes that are learned from this interface, including the interface route:

```

so-1/1/0 {
  unit 0 {
    family inet {
      rpf-check;
      address 15.95.1.2/30;
    }
  }
}

```

```

user@host> show route forwarding-table extensive
Routing table: inet [Index 0]
Internet:
...
...
Destination: 15.95.1.3/32
Route type: destination
Route reference: 0
Route interface-index: 67

```

```

Flags: sent to PFE
Nexthop: 15.95.1.3
Next-hop type: broadcast          Index: 328      Reference: 1
Next-hop interface: so-1/1/0.0
RPF interface: so-1/1/0.0

```

### show route forwarding-table family mpls

```

user@host> show route forwarding-table family mpls
Routing table: mpls
MPLS:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0
0                user  0
1                user  0
2                user  0
100000           user  0 10.31.1.6          swap 100001      fe-1/1/0.0
800002           user  0                  Pop                                vt-0/3/0.32770

vt-0/3/0.32770 (VPLS)
                  user  0                  indr  351      4
                  Push 800000, Push 100002(top)

so-0/0/0.0

```

### show route forwarding-table family vpls

```

user@host> show route forwarding-table family vpls
Routing table: green.vpls
VPLS:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          dymn  0
default          perm  0
fe-0/1/0.0       dymn  0
00:90:69:0c:20:1f/48      <<<<<Remote CE

                  dymn  0                  indr  351      4
                  Push 800000, Push 100002(top)

so-0/0/0.0
00:90:69:85:b0:1f/48      <<<<<Local CE

                  dymn  0                  ucst  354      2 fe-0/1/0.0

```

### show route forwarding-table family vpls extensive

```

user@host> show route forwarding-table family vpls extensive
Routing table: green.vpls [Index 2]
VPLS:

Destination: default
Route type: dynamic
Route reference: 0
Flags: sent to PFE
Next-hop type: flood          Index: 289      Reference: 1
Next-hop type: unicast       Index: 291      Reference: 3
Next-hop interface: fe-0/1/3.0
Next-hop type: unicast       Index: 290      Reference: 3
Next-hop interface: fe-0/1/2.0

Destination: default
Route type: permanent
Route reference: 0
Flags: none
Route interface-index: 72
Route interface-index: 0

```

```

Next-hop type: discard                                Index: 341      Reference: 1

Destination: fe-0/1/2.0
Route type: dynamic
Route reference: 0                                    Route interface-index: 69
Flags: sent to PFE
Next-hop type: flood                                Index: 293      Reference: 1
Next-hop type: indirect                              Index: 363      Reference: 4
Next-hop type: Push 800016
Next-hop interface: at-1/0/1.0
Next-hop type: indirect                              Index: 301      Reference: 5
Next hop: 10.31.3.2
Next-hop type: Push 800000
Next-hop interface: fe-0/1/1.0
Next-hop type: unicast                              Index: 291      Reference: 3
Next-hop interface: fe-0/1/3.0

Destination: fe-0/1/3.0
Route type: dynamic
Route reference: 0                                    Route interface-index: 70
Flags: sent to PFE
Next-hop type: flood                                Index: 292      Reference: 1
Next-hop type: indirect                              Index: 363      Reference: 4
Next-hop type: Push 800016
Next-hop interface: at-1/0/1.0
Next-hop type: indirect                              Index: 301      Reference: 5
Next hop: 10.31.3.2
Next-hop type: Push 800000
Next-hop interface: fe-0/1/1.0
Next-hop type: unicast                              Index: 290      Reference: 3
Next-hop interface: fe-0/1/2.0

Destination: 10:00:00:01:01:01/48
Route type: dynamic
Route reference: 0                                    Route interface-index: 70
Flags: sent to PFE, prefix load balance
Next-hop type: unicast                              Index: 291      Reference: 3
Next-hop interface: fe-0/1/3.0
Route used as destination:
  Packet count:          6640   Byte count:          675786
Route used as source
  Packet count:          6894   Byte count:          696424

Destination: 10:00:00:01:01:04/48
Route type: dynamic
Route reference: 0                                    Route interface-index: 69
Flags: sent to PFE, prefix load balance
Next-hop type: unicast                              Index: 290      Reference: 3
Next-hop interface: fe-0/1/2.0
Route used as destination:
  Packet count:          96     Byte count:          8079
Route used as source:
  Packet count:          296    Byte count:          24955

Destination: 10:00:00:01:03:05/48
Route type: dynamic
Route reference: 0                                    Route interface-index: 74
Flags: sent to PFE, prefix load balance
Next-hop type: indirect                              Index: 301      Reference: 5
Next hop: 10.31.3.2

```



Next-hop type: Push 800000  
 Next-hop interface: fe-0/1/1.0

### show route forwarding-table table default

user@host> show route forwarding-table table default

Routing table: default.inet

Internet:

| Destination    | Type | RtRef | Next hop        | Type | Index | NhRef | Netif      |
|----------------|------|-------|-----------------|------|-------|-------|------------|
| default        | perm | 0     |                 | rjct | 36    | 2     |            |
| 0.0.0.0/32     | perm | 0     |                 | dscd | 34    | 1     |            |
| 10.0.60.0/30   | user | 0     | 10.0.60.13      | ucst | 713   | 5     | fe-0/1/3.0 |
| 10.0.60.12/30  | intf | 0     |                 | rslv | 688   | 1     | fe-0/1/3.0 |
| 10.0.60.12/32  | dest | 0     | 10.0.60.12      | recv | 686   | 1     | fe-0/1/3.0 |
| 10.0.60.13/32  | dest | 0     | 0:5:85:8b:bc:22 | ucst | 713   | 5     | fe-0/1/3.0 |
| 10.0.60.14/32  | intf | 0     | 10.0.60.14      | loc1 | 687   | 2     |            |
| 10.0.60.14/32  | dest | 0     | 10.0.60.14      | loc1 | 687   | 2     |            |
| 10.0.60.15/32  | dest | 0     | 10.0.60.15      | bcst | 685   | 1     | fe-0/1/3.0 |
| 10.0.67.12/30  | user | 0     | 10.0.60.13      | ucst | 713   | 5     | fe-0/1/3.0 |
| 10.0.80.0/30   | ifdn | 0     | ff.3.0.21       | ucst | 676   | 1     | so-0/0/1.0 |
| 10.0.80.0/32   | dest | 0     | 10.0.80.0       | recv | 678   | 1     | so-0/0/1.0 |
| 10.0.80.2/32   | user | 0     |                 | rjct | 36    | 2     |            |
| 10.0.80.2/32   | intf | 0     | 10.0.80.2       | loc1 | 675   | 1     |            |
| 10.0.80.3/32   | dest | 0     | 10.0.80.3       | bcst | 677   | 1     | so-0/0/1.0 |
| 10.0.90.12/30  | intf | 0     |                 | rslv | 684   | 1     | fe-0/1/0.0 |
| 10.0.90.12/32  | dest | 0     | 10.0.90.12      | recv | 682   | 1     | fe-0/1/0.0 |
| 10.0.90.14/32  | intf | 0     | 10.0.90.14      | loc1 | 683   | 2     |            |
| 10.0.90.14/32  | dest | 0     | 10.0.90.14      | loc1 | 683   | 2     |            |
| 10.0.90.15/32  | dest | 0     | 10.0.90.15      | bcst | 681   | 1     | fe-0/1/0.0 |
| 10.5.0.0/16    | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |
| 10.10.0.0/16   | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |
| 10.13.10.0/23  | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |
| 10.84.0.0/16   | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |
| 10.150.0.0/16  | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |
| 10.157.64.0/19 | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |
| 10.209.0.0/16  | user | 0     | 192.168.187.126 | ucst | 324   | 15    | fxp0.0     |

...

Routing table: default.iso

ISO:

| Destination | Type | RtRef | Next hop | Type | Index | NhRef | Netif |
|-------------|------|-------|----------|------|-------|-------|-------|
| default     | perm | 0     |          | rjct | 60    | 1     |       |

Routing table: default.inet6

Internet6:

| Destination | Type | RtRef | Next hop | Type | Index | NhRef | Netif |
|-------------|------|-------|----------|------|-------|-------|-------|
| default     | perm | 0     |          | rjct | 44    | 1     |       |
| ::/128      | perm | 0     |          | dscd | 42    | 1     |       |
| ff00::/8    | perm | 0     |          | mdsc | 43    | 1     |       |
| ff02::1/128 | perm | 0     | ff02::1  | mcst | 39    | 1     |       |

Routing table: default.mpls

MPLS:

| Destination | Type | RtRef | Next hop | Type | Index | NhRef | Netif |
|-------------|------|-------|----------|------|-------|-------|-------|
| default     | perm | 0     |          | dscd | 50    | 1     |       |

### show route forwarding-table table logical-system-name/routing-instance-name

user@host> show route forwarding-table table R4/vpn-red

```

Logical system: R4
Routing table: vpn-red.inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  563   1
0.0.0.0/32       perm  0                               dscd  561   2
1.0.0.1/32       user  0                               dscd  561   2
2.0.2.0/24       intf  0                               rslv  771   1 ge-1/2/0.3
2.0.2.0/32       dest  0 2.0.2.0             recv  769   1 ge-1/2/0.3
2.0.2.1/32       intf  0 2.0.2.1             locl  770   2
2.0.2.1/32       dest  0 2.0.2.1             locl  770   2
2.0.2.2/32       dest  0 0.4.80.3.0.1b.c0.d5.e4.bd.0.1b.c0.d5.e4.bc.8.0 ucst  789   1 ge-1/2/0.3
2.0.2.255/32     dest  0 2.0.2.255           bcst  768   1 ge-1/2/0.3
224.0.0.0/4      perm  1                               mdsc  562   1
224.0.0.1/32     perm  0 224.0.0.1           mcst  558   1
255.255.255.255/32 perm  0                               bcst  559   1

```

```

Logical system: R4
Routing table: vpn-red.iso
ISO:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  608   1

```

```

Logical system: R4
Routing table: vpn-red.inet6
Internet6:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  708   1
::/128           perm  0                               dscd  706   1
ff00::/8         perm  0                               mdsc  707   1
ff02::1/128      perm  0 ff02::1             mcst  704   1

```

```

Logical system: R4
Routing table: vpn-red.mpls
MPLS:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               dscd  638

```

### show route forwarding-table vpn

```

user@host> show route forwarding-table vpn VPN-A
Routing table:: VPN-A.inet
Internet:
Destination      Type RtRef Nexthop          Type Index NhRef Netif
default          perm  0                               rjct   4    4
10.39.10.20/30   intf  0 ff.3.0.21             ucst   40    1
so-0/0/0.0
10.39.10.21/32   intf  0 10.39.10.21           locl   36    1
10.255.14.172/32 user  0                               ucst   69    2
so-0/0/0.0
10.255.14.175/32 user  0                               indr   81    3
Push 100004, Push
100004(top) so-1/0/0.0
224.0.0.0/4      perm  2                               mdsc   5    3
224.0.0.1/32     perm  0 224.0.0.1             mcst   1    8
224.0.0.5/32     user  1 224.0.0.5             mcst   1    8
255.255.255.255/32 perm  0                               bcst   2    3

```

## show route inactive-path

|                                    |                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 257</a><br><a href="#">Syntax (EX Series Switches) on page 257</a>                                                                                                                                                                                                                                                                                                |
| <b>Syntax</b>                      | <pre>show route inactive-path &lt;brief   detail   extensive   terse&gt; &lt;logical-system (all   <i>logical-system-name</i>)&gt;</pre>                                                                                                                                                                                                                                                     |
| <b>Syntax (EX Series Switches)</b> | <pre>show route inactive-path &lt;brief   detail   extensive   terse&gt;</pre>                                                                                                                                                                                                                                                                                                               |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                             |
| <b>Description</b>                 | Display routes for destinations that have no active route. An inactive route is a route that was not selected as the best path.                                                                                                                                                                                                                                                              |
| <b>Options</b>                     | <p><b>none</b>—Display all inactive routes.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b>.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>List of Sample Output</b>       | <a href="#">show route inactive-path on page 257</a><br><a href="#">show route inactive-path detail on page 258</a><br><a href="#">show route inactive-path extensive on page 259</a><br><a href="#">show route inactive-path terse on page 259</a>                                                                                                                                          |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                               |

## Sample Output

### show route inactive-path

```
user@host> show route inactive-path

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

10.12.100.12/30      [OSPF/10] 03:57:28, metric 1
> via so-0/3/0.0

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
```

```

10.0.0.0/8          [Direct/0] 04:39:56
                    > via fxp1.0

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

10.12.80.0/30       [BGP/170] 04:38:17, localpref 100
                    AS path: 100 I
                    > to 10.12.80.1 via ge-6/3/2.0

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

bgp.l3vpn.0: 3 destinations, 3 routes (0 active, 0 holddown, 3 hidden)
Restart Complete

inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

#### show route inactive-path detail

```

user@host> show route inactive-path detail

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete

10.12.100.12/30 (2 entries, 1 announced)
  OSPF   Preference: 10
         Next-hop reference count: 1
         Next hop: via so-0/3/0.0, selected
         State: <Int>
         Inactive reason: Route Preference
         Local AS: 1
         Age: 3:58:24   Metric: 1
         Area: 0.0.0.0
         Task: OSPF
         AS path: I

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

10.0.0.0/8 (2 entries, 0 announced)
  Direct Preference: 0
         Next hop type: Interface
         Next-hop reference count: 1
         Next hop: via fxp1.0, selected
         State: <NotBest Int>
         Inactive reason: No difference
         Age: 4:40:52
         Task: IF
         AS path: I

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete

10.12.80.0/30 (2 entries, 1 announced)

```

```

BGP      Preference: 170/-101
        Next-hop reference count: 6
        Source: 10.12.80.1
        Next hop: 10.12.80.1 via ge-6/3/2.0, selected
        State: <Ext>
        Inactive reason: Route Preference
        Peer AS: 100
        Age: 4:39:13
        Task: BGP_100.10.12.80.1+179
        AS path: 100 I
        Localpref: 100
        Router ID: 10.0.0.0

```

### show route inactive-path extensive

The output for the **show route inactive-path extensive** command is identical to that of the **show route inactive-path detail** command. For sample output, see [show route inactive-path detail on page 258](#).

### show route inactive-path terse

```

user@host> show route inactive-path terse

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
  10.12.100.12/30   0 10      1          >so-0/3/0.0

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
  10.0.0.0/8        D  0          >fxp1.0

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
  10.12.80.0/30     B 170      100      >10.12.80.1    100 I

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

bgp.l3vpn.0: 3 destinations, 3 routes (0 active, 0 holddown, 3 hidden)
Restart Complete

inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

## show route inactive-prefix

---

|                                    |                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 260</a><br><a href="#">Syntax (EX Series Switches) on page 260</a>                                                                                                                                                                                                                                                                                                |
| <b>Syntax</b>                      | <code>show route inactive-prefix</code><br><code>&lt;brief   detail   extensive   terse&gt;</code><br><code>&lt;logical-system (all   <i>logical-system-name</i>)&gt;</code>                                                                                                                                                                                                                 |
| <b>Syntax (EX Series Switches)</b> | <code>show route inactive-prefix</code><br><code>&lt;brief   detail   extensive   terse&gt;</code>                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                        |
| <b>Description</b>                 | Display inactive route destinations in each routing table.                                                                                                                                                                                                                                                                                                                                   |
| <b>Options</b>                     | <b>none</b> —Display all inactive route destination.<br><br><b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>List of Sample Output</b>       | <a href="#">show route inactive-prefix on page 260</a><br><a href="#">show route inactive-prefix detail on page 260</a><br><a href="#">show route inactive-prefix extensive on page 261</a><br><a href="#">show route inactive-prefix terse on page 261</a>                                                                                                                                  |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                               |

## Sample Output

### show route inactive-prefix

```
user@host> show route inactive-prefix

inet.0: 14 destinations, 14 routes (13 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

127.0.0.1/32          [Direct/0] 00:04:54
> via lo0.0
```

### show route inactive-prefix detail

```
user@host> show route inactive-prefix detail

inet.0: 14 destinations, 14 routes (13 active, 0 holddown, 1 hidden)
```

```

127.0.0.1/32 (1 entry, 0 announced)
  Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Hidden Martian Int>
    Age: 4:51
    Task: IF
    AS path: I00:04:54
      > via lo0.0

```

### show route inactive-prefix extensive

The output for the **show route inactive-prefix extensive** command is identical to that of the **show route inactive-path detail** command. For sample output, see [show route inactive-prefix detail on page 260](#).

### show route inactive-prefix terse

```
user@host> show route inactive-prefix terse
```

```
inet.0: 18 destinations, 18 routes (17 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
```

| A Destination | P Prf | Metric 1 | Metric 2 | Next hop | AS path |
|---------------|-------|----------|----------|----------|---------|
| 127.0.0.1/32  | D 0   |          |          | >lo0.0   |         |

## show route instance

---

|                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>                             | <a href="#">Syntax on page 262</a><br><a href="#">Syntax (EX Series Switches and QFX Series) on page 262</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Syntax</b>                                     | <pre>show route instance &lt;brief   detail   summary&gt; &lt;instance-name&gt; &lt;logical-system (all   logical-system-name)&gt; &lt;operational&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Syntax (EX Series Switches and QFX Series)</b> | <pre>show route instance &lt;brief   detail   summary&gt; &lt;instance-name&gt; &lt;operational&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Release Information</b>                        | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br>Command introduced in Junos OS Release 11.3 for the QFX Series.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>                                | Display routing instance information.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                                    | <p><b>none</b>—(Same as <b>brief</b>) Display standard information about all routing instances.</p> <p><b>brief   detail   summary</b>—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b>. (These options are not available with the <b>operational</b> keyword.)</p> <p><b>instance-name</b>—(Optional) Display information for all routing instances whose name begins with this string (for example, <b>cust1</b>, <b>cust11</b>, and <b>cust111</b> are all displayed when you run the <b>show route instance cust1</b> command).</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>operational</b>—(Optional) Display operational routing instances.</p> |
| <b>Required Privilege Level</b>                   | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>                      | <ul style="list-style-type: none"><li>• <a href="#">Understanding Virtual Router Routing Instances on page 4</a></li><li>• <a href="#">Configuring Virtual Router Routing Instances on page 15</a></li><li>• <a href="#">Verifying That Virtual Router Routing Instances Are Working on page 156</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>List of Sample Output</b>                      | <a href="#">show route instance on page 264</a><br><a href="#">show route instance detail (Graceful Restart Complete) on page 264</a><br><a href="#">show route instance detail (Graceful Restart Incomplete) on page 266</a><br><a href="#">show route instance detail (VPLS Routing Instance) on page 267</a><br><a href="#">show route instance operational on page 268</a><br><a href="#">show route instance summary on page 268</a>                                                                                                                                                                                                                                                                                                                                                                                                              |



**Output Fields** Table 26 on page 263 lists the output fields for the **show route instance** command. Output fields are listed in the approximate order in which they appear.

**Table 26: show route instance Output Fields**

| Field Name                       | Field Description                                                                                                                                                                                                                                                  | Level of Output           |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Instance or <i>instance-name</i> | Name of the routing instance.                                                                                                                                                                                                                                      | All levels                |
| Operational Routing Instances    | ( <b>operational</b> keyword only) Names of all operational routing instances.                                                                                                                                                                                     | —                         |
| Type                             | Type of routing instance: <b>forwarding</b> , <b>l2vpn</b> , <b>no-forwarding</b> , <b>vpls</b> , <b>virtual-router</b> , or <b>vrf</b> .                                                                                                                          | All levels                |
| State                            | State of the routing instance: <b>active</b> or <b>inactive</b> .                                                                                                                                                                                                  | <b>brief detail none</b>  |
| Interfaces                       | Name of interfaces belonging to this routing instance.                                                                                                                                                                                                             | <b>brief detail none</b>  |
| Restart State                    | Status of graceful restart for this instance: <b>Pending</b> or <b>Complete</b> .                                                                                                                                                                                  | <b>detail</b>             |
| Path selection timeout           | Maximum amount of time, in seconds, remaining until graceful restart is declared complete. The default is <b>300</b> .                                                                                                                                             | <b>detail</b>             |
| Tables                           | Tables (and number of routes) associated with this routing instance.                                                                                                                                                                                               | <b>brief detail none</b>  |
| Route-distinguisher              | Unique route distinguisher associated with this routing instance.                                                                                                                                                                                                  | <b>detail</b>             |
| Vrf-import                       | VPN routing and forwarding instance import policy name.                                                                                                                                                                                                            | <b>detail</b>             |
| Vrf-export                       | VPN routing and forwarding instance export policy name.                                                                                                                                                                                                            | <b>detail</b>             |
| Vrf-import-target                | VPN routing and forwarding instance import target community name.                                                                                                                                                                                                  | <b>detail</b>             |
| Vrf-export-target                | VPN routing and forwarding instance export target community name.                                                                                                                                                                                                  | <b>detail</b>             |
| Fast-reroute-priority            | Fast reroute priority setting for a VPLS routing instance: <b>high</b> , <b>medium</b> , or <b>low</b> . The default is <b>low</b> .                                                                                                                               | <b>detail</b>             |
| Restart State                    | Restart state: <ul style="list-style-type: none"> <li><b>Pending;protocol-name</b>—List of protocols that have not yet completed graceful restart for this routing table.</li> <li><b>Complete</b>—All protocols have restarted for this routing table.</li> </ul> | <b>detail</b>             |
| Primary rib                      | Primary table for this routing instance.                                                                                                                                                                                                                           | <b>brief none summary</b> |
| Active/holddown/hidden           | Number of active, hold-down, and hidden routes.                                                                                                                                                                                                                    | All levels                |

## Sample Output

### show route instance

```

user@host> show route instance
Instance           Type
Primary RIB
master             forwarding
    inet.0         16/0/1
    iso.0          1/0/0
    mpls.0         0/0/0
    inet6.0        2/0/0
    l2circuit.0    0/0/0
__juniper_private1__ forwarding
    __juniper_private1__.inet.0 12/0/0
    __juniper_private1__.inet6.0 1/0/0

```

### show route instance detail (Graceful Restart Complete)

```

user@host> show route instance detail
master:
  Router ID: 10.255.14.176
  Type: forwarding      State: Active
  Restart State: Complete Path selection timeout: 300
  Tables:
    inet.0              : 17 routes (15 active, 0 holddown, 1 hidden)
    Restart Complete
    inet.3              : 2 routes (2 active, 0 holddown, 0 hidden)
    Restart Complete
    iso.0               : 1 routes (1 active, 0 holddown, 0 hidden)
    Restart Complete
    mpls.0              : 19 routes (19 active, 0 holddown, 0 hidden)
    Restart Complete
    bgp.l3vpn.0         : 10 routes (10 active, 0 holddown, 0 hidden)
    Restart Complete
    inet6.0             : 2 routes (2 active, 0 holddown, 0 hidden)
    Restart Complete
    bgp.l2vpn.0         : 1 routes (1 active, 0 holddown, 0 hidden)
    Restart Complete
  BGP-INET:
    Router ID: 10.69.103.1
    Type: vrf           State: Active
    Restart State: Complete Path selection timeout: 300
    Interfaces:
      t3-0/0/0.103
    Route-distinguisher: 10.255.14.176:103
    Vrf-import: [ BGP-INET-import ]
    Vrf-export: [ BGP-INET-export ]
    Tables:
      BGP-INET.inet.0    : 4 routes (4 active, 0 holddown, 0 hidden)
      Restart Complete
  BGP-L:
    Router ID: 10.69.104.1
    Type: vrf           State: Active
    Restart State: Complete Path selection timeout: 300
    Interfaces:
      t3-0/0/0.104
    Route-distinguisher: 10.255.14.176:104
    Vrf-import: [ BGP-L-import ]
    Vrf-export: [ BGP-L-export ]
    Tables:

```

```

BGP-L.inet.0          : 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
BGP-L.mpls.0          : 3 routes (3 active, 0 holddown, 0 hidden)
Restart Complete
L2VPN:
Router ID: 0.0.0.0
Type: l2vpn            State: Active
Restart State: Complete Path selection timeout: 300
Interfaces:
  t3-0/0/0.512
Route-distinguisher: 10.255.14.176:512
Vrf-import: [ L2VPN-import ]
Vrf-export: [ L2VPN-export ]
Tables:
  L2VPN.l2vpn.0        : 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete
LDP:
Router ID: 10.69.105.1
Type: vrf              State: Active
Restart State: Complete Path selection timeout: 300
Interfaces:
  t3-0/0/0.105
Route-distinguisher: 10.255.14.176:105
Vrf-import: [ LDP-import ]
Vrf-export: [ LDP-export ]
Tables:
  LDP.inet.0           : 5 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
OSPF:
Router ID: 10.69.101.1
Type: vrf              State: Active
Restart State: Complete Path selection timeout: 300
Interfaces:
  t3-0/0/0.101
Route-distinguisher: 10.255.14.176:101
Vrf-import: [ OSPF-import ]
Vrf-export: [ OSPF-export ]
Vrf-import-target: [ target:11111
Tables:
  OSPF.inet.0          : 8 routes (7 active, 0 holddown, 0 hidden)
Restart Complete
RIP:
Router ID: 10.69.102.1
Type: vrf              State: Active
Restart State: Complete Path selection timeout: 300
Interfaces:
  t3-0/0/0.102
Route-distinguisher: 10.255.14.176:102
Vrf-import: [ RIP-import ]
Vrf-export: [ RIP-export ]
Tables:
  RIP.inet.0           : 6 routes (6 active, 0 holddown, 0 hidden)
Restart Complete
STATIC:
Router ID: 10.69.100.1
Type: vrf              State: Active
Restart State: Complete Path selection timeout: 300
Interfaces:
  t3-0/0/0.100
Route-distinguisher: 10.255.14.176:100
Vrf-import: [ STATIC-import ]

```

```

Vrf-export: [ STATIC-export ]
Tables:
  STATIC.inet.0          : 4 routes (4 active, 0 holddown, 0 hidden)
  Restart Complete

```

### show route instance detail (Graceful Restart Incomplete)

```

user@host> show route instance detail
master:
  Router ID: 10.255.14.176
  Type: forwarding          State: Active
  Restart State: Pending    Path selection timeout: 300
  Tables:
    inet.0                  : 17 routes (15 active, 1 holddown, 1 hidden)
    Restart Pending: OSPF LDP
    inet.3                  : 2 routes (2 active, 0 holddown, 0 hidden)
    Restart Pending: OSPF LDP
    iso.0                   : 1 routes (1 active, 0 holddown, 0 hidden)
    Restart Complete
    mpls.0                  : 23 routes (23 active, 0 holddown, 0 hidden)
    Restart Pending: LDP VPN
    bgp.l3vpn.0             : 10 routes (10 active, 0 holddown, 0 hidden)
    Restart Pending: BGP VPN
    inet6.0                 : 2 routes (2 active, 0 holddown, 0 hidden)
    Restart Complete
    bgp.l2vpn.0             : 1 routes (1 active, 0 holddown, 0 hidden)
    Restart Pending: BGP VPN
  BGP-INET:
    Router ID: 10.69.103.1
    Type: vrf                State: Active
    Restart State: Pending    Path selection timeout: 300
    Interfaces:
      t3-0/0/0.103
    Route-distinguisher: 10.255.14.176:103
    Vrf-import: [ BGP-INET-import ]
    Vrf-export: [ BGP-INET-export ]
    Tables:
      BGP-INET.inet.0       : 6 routes (5 active, 0 holddown, 0 hidden)
      Restart Pending: VPN
  BGP-L:
    Router ID: 10.69.104.1
    Type: vrf                State: Active
    Restart State: Pending    Path selection timeout: 300
    Interfaces:
      t3-0/0/0.104
    Route-distinguisher: 10.255.14.176:104
    Vrf-import: [ BGP-L-import ]
    Vrf-export: [ BGP-L-export ]
    Tables:
      BGP-L.inet.0          : 6 routes (5 active, 0 holddown, 0 hidden)
      Restart Pending: VPN
      BGP-L.mpls.0          : 2 routes (2 active, 0 holddown, 0 hidden)
      Restart Pending: VPN
  L2VPN:
    Router ID: 0.0.0.0
    Type: l2vpn              State: Active
    Restart State: Pending    Path selection timeout: 300
    Interfaces:
      t3-0/0/0.512
    Route-distinguisher: 10.255.14.176:512
    Vrf-import: [ L2VPN-import ]

```

```

Vrf-export: [ L2VPN-export ]
Tables:
  L2VPN.l2vpn.0      : 2 routes (2 active, 0 holddown, 0 hidden)
  Restart Pending: VPN L2VPN
LDP:
  Router ID: 10.69.105.1
  Type: vrf          State: Active
  Restart State: Pending Path selection timeout: 300
  Interfaces:
    t3-0/0/0.105
  Route-distinguisher: 10.255.14.176:105
  Vrf-import: [ LDP-import ]
  Vrf-export: [ LDP-export ]
  Tables:
    LDP.inet.0       : 5 routes (4 active, 1 holddown, 0 hidden)
    Restart Pending: OSPF LDP VPN
OSPF:
  Router ID: 10.69.101.1
  Type: vrf          State: Active
  Restart State: Pending Path selection timeout: 300
  Interfaces:
    t3-0/0/0.101
  Route-distinguisher: 10.255.14.176:101
  Vrf-import: [ OSPF-import ]
  Vrf-export: [ OSPF-export ]
  Tables:
    OSPF.inet.0      : 8 routes (7 active, 1 holddown, 0 hidden)
    Restart Pending: OSPF VPN
RIP:
  Router ID: 10.69.102.1
  Type: vrf          State: Active
  Restart State: Pending Path selection timeout: 300
  Interfaces:
    t3-0/0/0.102
  Route-distinguisher: 10.255.14.176:102
  Vrf-import: [ RIP-import ]
  Vrf-export: [ RIP-export ]
  Tables:
    RIP.inet.0       : 8 routes (6 active, 2 holddown, 0 hidden)
    Restart Pending: RIP VPN
STATIC:
  Router ID: 10.69.100.1
  Type: vrf          State: Active
  Restart State: Pending Path selection timeout: 300
  Interfaces:
    t3-0/0/0.100
  Route-distinguisher: 10.255.14.176:100
  Vrf-import: [ STATIC-import ]
  Vrf-export: [ STATIC-export ]
  Tables:
    STATIC.inet.0    : 4 routes (4 active, 0 holddown, 0 hidden)
    Restart Pending: VPN

```

#### show route instance detail (VPLS Routing Instance)

```

user@host> show route instance detail test-vpls
test-vpls:
  Router ID: 0.0.0.0
  Type: vpls          State: Active
  Interfaces:
    lsi.1048833

```

```

    lsi.1048832
    fe-0/1/0.513
    Route-distinguisher: 10.255.37.65:1
    Vrf-import: [ __vrf-import-test-vpls-internal__ ]
    Vrf-export: [ __vrf-export-test-vpls-internal__ ]
    Vrf-import-target: [ target:300:1 ]
    Vrf-export-target: [ target:300:1 ]
    Fast-reroute-priority: high
    Tables:
        test-vpls.l2vpn.0          : 3 routes (3 active, 0 holddown, 0 hidden)

```

### show route instance operational

```

user@host> show route instance operational
Operational Routing Instances:

master
default

```

### show route instance summary

```

user@host> show route instance summary

```

| Instance | Type       | Primary rib      | Active/holddown/hidden |
|----------|------------|------------------|------------------------|
| master   | forwarding |                  |                        |
|          |            | inet.0           | 15/0/1                 |
|          |            | iso.0            | 1/0/0                  |
|          |            | mpls.0           | 35/0/0                 |
|          |            | l3vpn.0          | 0/0/0                  |
|          |            | inet6.0          | 2/0/0                  |
|          |            | l2vpn.0          | 0/0/0                  |
|          |            | l2circuit.0      | 0/0/0                  |
| BGP-INET | vrf        |                  |                        |
|          |            | BGP-INET.inet.0  | 5/0/0                  |
|          |            | BGP-INET.iso.0   | 0/0/0                  |
|          |            | BGP-INET.inet6.0 | 0/0/0                  |
| BGP-L    | vrf        |                  |                        |
|          |            | BGP-L.inet.0     | 5/0/0                  |
|          |            | BGP-L.iso.0      | 0/0/0                  |
|          |            | BGP-L.mpls.0     | 4/0/0                  |
|          |            | BGP-L.inet6.0    | 0/0/0                  |
| L2VPN    | l2vpn      |                  |                        |
|          |            | L2VPN.inet.0     | 0/0/0                  |
|          |            | L2VPN.iso.0      | 0/0/0                  |
|          |            | L2VPN.inet6.0    | 0/0/0                  |
|          |            | L2VPN.l2vpn.0    | 2/0/0                  |
| LDP      | vrf        |                  |                        |
|          |            | LDP.inet.0       | 4/0/0                  |
|          |            | LDP.iso.0        | 0/0/0                  |
|          |            | LDP.mpls.0       | 0/0/0                  |
|          |            | LDP.inet6.0      | 0/0/0                  |
|          |            | LDP.l2circuit.0  | 0/0/0                  |
| OSPF     | vrf        |                  |                        |
|          |            | OSPF.inet.0      | 7/0/0                  |
|          |            | OSPF.iso.0       | 0/0/0                  |
|          |            | OSPF.inet6.0     | 0/0/0                  |
| RIP      | vrf        |                  |                        |
|          |            | RIP.inet.0       | 6/0/0                  |
|          |            | RIP.iso.0        | 0/0/0                  |
|          |            | RIP.inet6.0      | 0/0/0                  |
| STATIC   | vrf        |                  |                        |
|          |            | STATIC.inet.0    | 4/0/0                  |

|                |       |
|----------------|-------|
| STATIC.iso.0   | 0/0/0 |
| STATIC.inet6.0 | 0/0/0 |

## show route label

---

|                                    |                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 270</a><br><a href="#">Syntax (EX Series Switches) on page 270</a>                                                                                                                                                                                                                                                                                         |
| <b>Syntax</b>                      | <code>show route label <i>label</i></code><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                            |
| <b>Syntax (EX Series Switches)</b> | <code>show route label <i>label</i></code><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                    |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.5 for EX Series switches.                                                                                                                                                                                                                                                                 |
| <b>Description</b>                 | Display the routes based on a specified Multiprotocol Label Switching (MPLS) label value.                                                                                                                                                                                                                                                                                             |
| <b>Options</b>                     | <b><i>label</i></b> —Value of the MPLS label.<br><br><b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>List of Sample Output</b>       | <a href="#">show route label on page 270</a><br><a href="#">show route label detail on page 271</a><br><a href="#">show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 271</a><br><a href="#">show route label extensive on page 271</a><br><a href="#">show route label terse on page 271</a>                                             |
| <b>Output Fields</b>               | For information about output fields, see the output field table for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                         |

## Sample Output

### show route label

```
user@host> show route label 100016

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
100016          *[VPN/170] 03:25:41
                 > to 10.12.80.1 via ge-6/3/2.0, Pop
```



### show route label detail

```

user@host> show route label 100016 detail

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
100016 (1 entry, 1 announced)
    *VPN      Preference: 170
                Next-hop reference count: 2
                Source: 10.12.80.1
                Next hop: 10.12.80.1 via ge-6/3/2.0, selected
                Label operation: Pop
                State: <Active Int Ext>
                Local AS: 1
                Age: 3:23:31
                Task: BGP.0.0.0.0+179
                Announcement bits (1): 0-KRT
                AS path: 100 I
                Ref Cnt: 2

```

### show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs)

```

user@host> show route label 299872 detail

mpls.0: 13 destinations, 13 routes (13 active, 0 holddown, 0 hidden)
299872 (1 entry, 1 announced)
    *LDP      Preference: 9
                Next hop type: Flood
                Next-hop reference count: 3
                Address: 0x9097d90
                Next hop: via vt-0/1/0.1
                Next-hop index: 661
                Label operation: Pop
                Address: 0x9172130
                Next hop: via so-0/0/3.0
                Next-hop index: 654
                Label operation: Swap 299872
                State: **Active Int>
                Local AS: 1001
                Age: 8:20      Metric: 1
                Task: LDP
                Announcement bits (1): 0-KRT
                AS path: I
                FECs bound to route: P2MP root-addr 10.255.72.166, grp 232.1.1.1,
src 192.168.142.2

```

### show route label extensive

The output for the `show route label extensive` command is identical to that of the `show route label detail` command. For sample output, see [show route label detail on page 271](#).

### show route label terse

```

user@host> show route label 100016 terse

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
* 100016          V 170                >10.12.80.1

```



## show route label-switched-path

|                                    |                                                                                                                                                                                                                                                                                                     |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 273</a><br><a href="#">Syntax (EX Series Switches) on page 273</a>                                                                                                                                                                                                       |
| <b>Syntax</b>                      | <b>show route label-switched-path</b> <i>path-name</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                              |
| <b>Syntax (EX Series Switches)</b> | <b>show route label-switched-path</b> <i>path-name</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                      |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.5 for EX Series switches.                                                                                                                                                                               |
| <b>Description</b>                 | Display the routes used in an MPLS label-switched path (LSP).                                                                                                                                                                                                                                       |
| <b>Options</b>                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output.<br><br><i>path-name</i> —LSP tunnel name.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                |
| <b>List of Sample Output</b>       | <a href="#">show route label-switched-path on page 273</a>                                                                                                                                                                                                                                          |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                      |

## Sample Output

### show route label-switched-path

```

user@host> show route label-switched-path sf-to-ny
inet.0: 29 destinations, 29 routes (29 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.1.1.1/32          [MPLS/7] 00:00:06, metric 0
> to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny
3.3.3.3/32          *[MPLS/7] 00:00:06, metric 0
> to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny

inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2.2.2.2/32          *[MPLS/7] 00:00:06, metric 0
> to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny
4.4.4.4/32          *[MPLS/7] 00:00:06, metric 0
> to 111.222.1.9 via s0-0/0/0, label-switched-path abc
> to 111.222.1.9 via s0-0/0/0, label-switched-path xyz
> to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny

```

```
111.222.1.9/32      [MPLS/7] 00:00:06, metric 0
                   > to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

mpls.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
```

## show route martians

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| List of Syntax              | <a href="#">Syntax on page 275</a><br><a href="#">Syntax (EX Series Switches) on page 275</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Syntax                      | <pre>show route martians &lt;logical-system (all   <i>logical-system-name</i>)&gt; &lt;table <i>routing-table-name</i>&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Syntax (EX Series Switches) | <pre>show route martians &lt;table <i>routing-table-name</i>&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Release Information         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Description                 | Display the martian (invalid and ignored) entries associated with each routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Options                     | <p><b>none</b>—Display standard information about route martians for all routing tables.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>table <i>routing-table-name</i></b>—(Optional) Display information about route martians for all routing tables whose name begins with this string (for example, <b>inet.0</b> and <b>inet6.0</b> are both displayed when you run the <b>show route martians table inet</b> command).</p> |
| Required Privilege Level    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Related Documentation       | <ul style="list-style-type: none"> <li><a href="#">Example: Configuring Martian Addresses</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| List of Sample Output       | <a href="#">show route martians on page 276</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Output Fields               | <p><a href="#">Table 27 on page 275</a> lists the output fields for the <b>show route martians</b> command. Output fields are listed in the approximate order in which they appear</p>                                                                                                                                                                                                                                                                                                                                                                  |

**Table 27: show route martians Output Fields**

| Field Name                | Field Description                                           |
|---------------------------|-------------------------------------------------------------|
| <i>table-name</i>         | Name of the route table in which the route martians reside. |
| <i>destination-prefix</i> | Route destination.                                          |
| <i>match value</i>        | Route match parameter.                                      |
| <i>status</i>             | Status of the route: <b>allowed</b> or <b>disallowed</b> .  |

## Sample Output

### show route martians

```
user@host> show route martians

inet.0:
    0.0.0.0/0 exact -- allowed
    0.0.0.0/8 orlonger -- disallowed
    127.0.0.0/8 orlonger -- disallowed
    192.0.0.0/24 orlonger -- disallowed
    240.0.0.0/4 orlonger -- disallowed
    224.0.0.0/4 exact -- disallowed
    224.0.0.0/24 exact -- disallowed

inet.1:
    0.0.0.0/0 exact -- allowed
    0.0.0.0/8 orlonger -- disallowed
    127.0.0.0/8 orlonger -- disallowed
    192.0.0.0/24 orlonger -- disallowed
    240.0.0.0/4 orlonger -- disallowed

inet.2:
    0.0.0.0/0 exact -- allowed
    0.0.0.0/8 orlonger -- disallowed
    127.0.0.0/8 orlonger -- disallowed
    192.0.0.0/24 orlonger -- disallowed
    240.0.0.0/4 orlonger -- disallowed
    224.0.0.0/4 exact -- disallowed
    224.0.0.0/24 exact -- disallowed

inet.3:
    0.0.0.0/0 exact -- allowed
    0.0.0.0/8 orlonger -- disallowed
    127.0.0.0/8 orlonger -- disallowed
    192.0.0.0/24 orlonger -- disallowed
    240.0.0.0/4 orlonger -- disallowed
    224.0.0.0/4 exact -- disallowed
    224.0.0.0/24 exact -- disallowed

...

inet6.0:
    ::1/128 exact -- disallowed
    ff00::/8 exact -- disallowed
    ff02::/16 exact -- disallowed

inet6.1:
    ::1/128 exact -- disallowed

inet6.2:
    ::1/128 exact -- disallowed
    ff00::/8 exact -- disallowed
    ff02::/16 exact -- disallowed

inet6.3:
    ::1/128 exact -- disallowed
    ff00::/8 exact -- disallowed
    ff02::/16 exact -- disallowed

...
```

## show route next-hop

|                                    |                                                                                                                                                                                                                                                                                                            |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 277</a><br><a href="#">Syntax (EX Series Switches) on page 277</a>                                                                                                                                                                                                              |
| <b>Syntax</b>                      | <b>show route next-hop</b> <i>next-hop</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                 |
| <b>Syntax (EX Series Switches)</b> | <b>show route next-hop</b> <i>next-hop</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                         |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                      |
| <b>Description</b>                 | Display the entries in the routing table that are being sent to the specified next-hop address.                                                                                                                                                                                                            |
| <b>Options</b>                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system.<br><br><b><i>next-hop</i></b> —Next-hop address. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                       |
| <b>List of Sample Output</b>       | <a href="#">show route next-hop on page 277</a><br><a href="#">show route next-hop detail on page 278</a><br><a href="#">show route next-hop extensive on page 280</a><br><a href="#">show route next-hop terse on page 281</a>                                                                            |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                             |

## Sample Output

### show route next-hop

```

user@host> show route next-hop 192.168.71.254

inet.0: 18 destinations, 18 routes (17 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

10.10.0.0/16      *[Static/5] 06:26:25
                  > to 192.168.71.254 via fxp0.0
10.209.0.0/16    *[Static/5] 06:26:25
                  > to 192.168.71.254 via fxp0.0
172.16.0.0/12    *[Static/5] 06:26:25
                  > to 192.168.71.254 via fxp0.0
192.168.0.0/16   *[Static/5] 06:26:25

```

```

> to 192.168.71.254 via fxp0.0
192.168.102.0/23 *[Static/5] 06:26:25
> to 192.168.71.254 via fxp0.0
207.17.136.0/24 *[Static/5] 06:26:25
> to 192.168.71.254 via fxp0.0
207.17.136.192/32 *[Static/5] 06:26:25
> to 192.168.71.254 via fxp0.0

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 4 destinations, 5 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

#### show route next-hop detail

```

user@host> show route next-hop 192.168.71.254 detail

inet.0: 18 destinations, 18 routes (17 active, 0 holddown, 1 hidden)
Restart Complete
10.10.0.0/16 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2
    AS path: I

10.209.0.0/16 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2
    AS path: I

172.16.0.0/12 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2

```



```

AS path: I

192.168.0.0/16 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2
    AS path: I

192.168.102.0/23 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2
    AS path: I

207.17.136.0/24 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2
    AS path: I

207.17.136.192/32 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 36
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 1
    Age: 6:27:41
    Task: RT
    Announcement bits (3): 0-KRT 3-Resolve tree 1 5-Resolve tree 2
    AS path: I

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 4 destinations, 5 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

**show route next-hop extensive**

```
user@host> show route next-hop 192.168.71.254 extensive
```

```
inet.0: 18 destinations, 18 routes (17 active, 0 holddown, 1 hidden)
```

```
10.10.0.0/16 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 10.10.0.0/16 -> {192.168.71.254}
```

```
*Static Preference: 5
```

```
Next-hop reference count: 22
```

```
Next hop: 192.168.71.254 via fxp0.0, selected
```

```
State: <Active NoReadvrt Int Ext>
```

```
Local AS: 69
```

```
Age: 2:02:28
```

```
Task: RT
```

```
Announcement bits (1): 0-KRT
```

```
AS path: I
```

```
10.209.0.0/16 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 10.209.0.0/16 -> {192.168.71.254}
```

```
*Static Preference: 5
```

```
Next-hop reference count: 22
```

```
Next hop: 192.168.71.254 via fxp0.0, selected
```

```
State: <Active NoReadvrt Int Ext>
```

```
Local AS: 69
```

```
Age: 2:02:28
```

```
Task: RT
```

```
Announcement bits (1): 0-KRT
```

```
AS path: I
```

```
172.16.0.0/12 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 172.16.0.0/12 -> {192.168.71.254}
```

```
*Static Preference: 5
```

```
Next-hop reference count: 22
```

```
Next hop: 192.168.71.254 via fxp0.0, selected
```

```
State: <Active NoReadvrt Int Ext>
```

```
Local AS: 69
```

```
Age: 2:02:28
```

```
Task: RT
```

```
Announcement bits (1): 0-KRT
```

```
AS path: I
```

```
192.168.0.0/16 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 192.168.0.0/16 -> {192.168.71.254}
```

```
*Static Preference: 5
```

```
Next-hop reference count: 22
```

```
Next hop: 192.168.71.254 via fxp0.0, selected
```

```
State: <Active NoReadvrt Int Ext>
```

```
Local AS: 69
```

```
Age: 2:02:28
```

```
Task: RT
```

```
Announcement bits (1): 0-KRT
```

```
AS path: I
```

```
192.168.102.0/23 (1 entry, 1 announced)
```

```
TSI:
```

```
KRT in-kernel 192.168.102.0/23 -> {192.168.71.254}
```

```
*Static Preference: 5
```

```

Next-hop reference count: 22
Next hop: 192.168.71.254 via fxp0.0, selected
State: <Active NoReadvrt Int Ext>
Local AS: 69
Age: 2:02:28
Task: RT
Announcement bits (1): 0-KRT
AS path: I

207.17.136.0/24 (1 entry, 1 announced)
TSI:
KRT in-kernel 207.17.136.0/24 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 69
    Age: 2:02:28
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

207.17.136.192/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 207.17.136.192/32 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 69
    Age: 2:02:28
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

mpls.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

green.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

red.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

### show route next-hop terse

```

user@host> show route next-hop 192.168.71.254 terse

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
* 10.10.0.0/16     S  5         0         0  >192.168.71.254
* 10.209.0.0/16    S  5         0         0  >192.168.71.254
* 172.16.0.0/12    S  5         0         0  >192.168.71.254

```

```

* 192.168.0.0/16      S   5                >192.168.71.254
* 192.168.102.0/23   S   5                >192.168.71.254
* 207.17.136.0/24    S   5                >192.168.71.254
* 207.17.136.192/32  S   5                >192.168.71.254

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 4 destinations, 5 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete
private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

## show route no-community

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 283</a><br><a href="#">Syntax (EX Series Switches) on page 283</a>                                                                                                                                                                                                                                                                                                        |
| <b>Syntax</b>                      | show route no-community<br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                              |
| <b>Syntax (EX Series Switches)</b> | show route no-community<br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                |
| <b>Description</b>                 | Display the route entries in each routing table that are not associated with any community.                                                                                                                                                                                                                                                                                                          |
| <b>Options</b>                     | <p><b>none</b>—(Same as <b>brief</b>) Display the route entries in each routing table that are not associated with any community.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>List of Sample Output</b>       | <a href="#">show route no-community on page 283</a><br><a href="#">show route no-community detail on page 284</a><br><a href="#">show route no-community extensive on page 284</a><br><a href="#">show route no-community terse on page 285</a>                                                                                                                                                      |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                                       |

## Sample Output

### show route no-community

```

user@host> show route no-community
inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

10.10.0.0/16      *[Static/5] 00:36:27
> to 192.168.71.254 via fxp0.0
10.209.0.0/16    *[Static/5] 00:36:27
> to 192.168.71.254 via fxp0.0
10.255.71.52/32  *[Direct/0] 00:36:27
> via lo0.0
10.255.71.63/32  *[OSPF/10] 00:04:39, metric 1
> to 35.1.1.2 via ge-3/1/0.0
10.255.71.64/32  *[OSPF/10] 00:00:08, metric 2

```

```

10.255.71.240/32    > to 35.1.1.2 via ge-3/1/0.0
                    *[OSPF/10] 00:05:04, metric 2
                    via so-0/1/2.0
                    > via so-0/3/2.0
10.255.71.241/32    *[OSPF/10] 00:05:14, metric 1
                    > via so-0/1/2.0
10.255.71.242/32    *[OSPF/10] 00:05:19, metric 1
                    > via so-0/3/2.0
12.1.1.0/24         *[OSPF/10] 00:05:14, metric 2
                    > via so-0/3/2.0
14.1.1.0/24         *[OSPF/10] 00:00:08, metric 3
                    > to 35.1.1.2 via ge-3/1/0.0
                    via so-0/1/2.0
                    via so-0/3/2.0
16.1.1.0/24         *[OSPF/10] 00:05:14, metric 2
                    > via so-0/1/2.0
.....

```

### show route no-community detail

```

user@host> show route no-community detail

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
    *Static Preference: 5
        Next-hop reference count: 22
        Next hop: 192.168.71.254 via fxp0.0, selected
        State: <Active NoReadvrt Int Ext>
        Age: 38:08
        Task: RT
        Announcement bits (1): 0-KRT
        AS path: I

10.209.0.0/16 (1 entry, 1 announced)
    *Static Preference: 5
        Next-hop reference count: 22
        Next hop: 192.168.71.254 via fxp0.0, selected
        State: <Active NoReadvrt Int Ext>
        Age: 38:08
        Task: RT
        Announcement bits (1): 0-KRT
        AS path: I

....

```

### show route no-community extensive

```

user@host> show route no-community extensive

inet.0: 18 destinations, 18 routes (17 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.10.0.0/16 -> {192.168.71.254}
    *Static Preference: 5
        Next-hop reference count: 22
        Next hop: 192.168.71.254 via fxp0.0, selected
        State: <Active NoReadvrt Int Ext>
        Local AS: 69
        Age: 2:03:33
        Task: RT
        Announcement bits (1): 0-KRT
        AS path: I

```

```

10.209.0.0/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.209.0.0/16 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Local AS: 69
    Age: 2:03:33
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

```

### show route no-community terse

```
user@host> show route no-community terse
```

```

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

```

| A   | Destination      | P | Prf | Metric 1 | Metric 2 | Next hop        | AS path |
|-----|------------------|---|-----|----------|----------|-----------------|---------|
| *   | 10.10.0.0/16     | S | 5   |          |          | >192.168.71.254 |         |
| *   | 10.209.0.0/16    | S | 5   |          |          | >192.168.71.254 |         |
| *   | 10.255.71.52/32  | D | 0   |          |          | >lo0.0          |         |
| *   | 10.255.71.63/32  | 0 | 10  | 1        |          | >35.1.1.2       |         |
| *   | 10.255.71.64/32  | 0 | 10  | 2        |          | >35.1.1.2       |         |
| *   | 10.255.71.240/32 | 0 | 10  | 2        |          | so-0/1/2.0      |         |
|     |                  |   |     |          |          | >so-0/3/2.0     |         |
| *   | 10.255.71.241/32 | 0 | 10  | 1        |          | >so-0/1/2.0     |         |
| *   | 10.255.71.242/32 | 0 | 10  | 1        |          | >so-0/3/2.0     |         |
| *   | 12.1.1.0/24      | 0 | 10  | 2        |          | >so-0/3/2.0     |         |
| *   | 14.1.1.0/24      | 0 | 10  | 3        |          | >35.1.1.2       |         |
|     |                  |   |     |          |          | so-0/1/2.0      |         |
|     |                  |   |     |          |          | so-0/3/2.0      |         |
| *   | 16.1.1.0/24      | 0 | 10  | 2        |          | >so-0/1/2.0     |         |
| ... |                  |   |     |          |          |                 |         |

## show route protocol

---

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 286</a><br><a href="#">Syntax (EX Series Switches) on page 286</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Syntax</b>                      | <code>show route protocol <i>protocol</i></code><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Syntax (EX Series Switches)</b> | <code>show route protocol <i>protocol</i></code><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.<br><b>ospf2</b> and <b>ospf3</b> options introduced in Junos OS Release 9.2.<br><b>ospf2</b> and <b>ospf3</b> options introduced in Junos OS Release 9.2 for EX Series switches.<br><b>flow</b> option introduced in Junos OS Release 10.0.<br><b>flow</b> option introduced in Junos OS Release 10.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Description</b>                 | Display the route entries in the routing table that were learned from a particular protocol.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b> .<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system.<br><br><b><i>protocol</i></b> —Protocol from which the route was learned: <ul style="list-style-type: none"><li>• <b>access</b>—Access route for use by DHCP application</li><li>• <b>access-internal</b>—Access-internal route for use by DHCP application</li><li>• <b>aggregate</b>—Locally generated aggregate route</li><li>• <b>arp</b>—Route learned through the Address Resolution Protocol</li><li>• <b>atmvpn</b>—Asynchronous Transfer Mode virtual private network</li><li>• <b>bgp</b>—Border Gateway Protocol</li><li>• <b>ccc</b>—Circuit cross-connect</li><li>• <b>direct</b>—Directly connected route</li><li>• <b>dvmrp</b>—Distance Vector Multicast Routing Protocol</li><li>• <b>esis</b>—End System-to-Intermediate System</li><li>• <b>flow</b>—Locally defined flow-specification route</li><li>• <b>frr</b>—Precomputed protection route or backup route used when a link goes down</li><li>• <b>isis</b>—Intermediate System-to-Intermediate System</li><li>• <b>ldp</b>—Label Distribution Protocol</li><li>• <b>l2circuit</b>—Layer 2 circuit</li></ul> |



- **l2vpn**—Layer 2 virtual private network
- **local**—Local address
- **mpls**—Multiprotocol Label Switching
- **msdp**—Multicast Source Discovery Protocol
- **ospf**—Open Shortest Path First versions 2 and 3
- **ospf2**—Open Shortest Path First versions 2 only
- **ospf3**—Open Shortest Path First version 3 only
- **pim**—Protocol Independent Multicast
- **rip**—Routing Information Protocol
- **ripng**—Routing Information Protocol next generation
- **rsvp**—Resource Reservation Protocol
- **rtarget**—Local route target virtual private network
- **static**—Statically defined route
- **tunnel**—Dynamic tunnel
- **vpn**—Virtual private network



**NOTE:** EX Series switches run a subset of these protocols. See the switch CLI for details.

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>List of Sample Output</b>    | <a href="#">show route protocol access on page 288</a><br><a href="#">show route protocol access-internal extensive on page 288</a><br><a href="#">show route protocol arp on page 288</a><br><a href="#">show route protocol bgp on page 289</a><br><a href="#">show route protocol bgp detail on page 289</a><br><a href="#">show route protocol bgp extensive on page 289</a><br><a href="#">show route protocol bgp terse on page 290</a><br><a href="#">show route protocol direct on page 290</a><br><a href="#">show route protocol frr on page 291</a><br><a href="#">show route protocol l2circuit detail on page 291</a><br><a href="#">show route protocol l2vpn extensive on page 292</a><br><a href="#">show route protocol ldp on page 293</a><br><a href="#">show route protocol ldp extensive on page 293</a><br><a href="#">show route protocol ospf (Layer 3 VPN) on page 294</a><br><a href="#">show route protocol ospf detail on page 295</a><br><a href="#">show route protocol rip on page 295</a><br><a href="#">show route protocol rip detail on page 295</a> |

[show route protocol ripng table inet6 on page 296](#)

[show route protocol static detail on page 296](#)

**Output Fields** For information about output fields, see the output field tables for the [show route](#) command, the [show route detail](#) command, the [show route extensive](#) command, or the [show route terse](#) command.

## Sample Output

### show route protocol access

```
user@host> show route protocol access
inet.0: 30380 destinations, 30382 routes (30379 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

13.160.0.3/32      *[Access/13] 00:00:09
                  > to 13.160.0.2 via fe-0/0/0.0
13.160.0.4/32      *[Access/13] 00:00:09
                  > to 13.160.0.2 via fe-0/0/0.0
13.160.0.5/32      *[Access/13] 00:00:09
                  > to 13.160.0.2 via fe-0/0/0.0
```

### show route protocol access-internal extensive

```
user@host> show route protocol access-internal 13.160.0.19 extensive
inet.0: 100020 destinations, 100022 routes (100019 active, 0 holddown, 1 hidden)
13.160.0.19/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 13.160.0.19/32 -> {13.160.0.2}
    *Access-internal Preference: 12
        Next-hop reference count: 200000
        Next hop: 13.160.0.2 via fe-0/0/0.0, selected
        State: <Active Int>
    Age: 36
        Task: RPD Unix Domain Server./var/run/rpd_serv.local
        Announcement bits (1): 0-KRT
        AS path: I
```

### show route protocol arp

```
user@host> show route protocol arp
inet.0: 43 destinations, 43 routes (42 active, 0 holddown, 1 hidden)

inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)

cust1.inet.0: 1033 destinations, 2043 routes (1033 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

20.20.1.3/32      [ARP/4294967293] 00:04:35, from 20.20.1.1
                  Unusable
20.20.1.4/32      [ARP/4294967293] 00:04:35, from 20.20.1.1
                  Unusable
20.20.1.5/32      [ARP/4294967293] 00:04:32, from 20.20.1.1
                  Unusable
20.20.1.6/32      [ARP/4294967293] 00:04:34, from 20.20.1.1
                  Unusable
20.20.1.7/32      [ARP/4294967293] 00:04:35, from 20.20.1.1
                  Unusable
20.20.1.8/32      [ARP/4294967293] 00:04:35, from 20.20.1.1
                  Unusable
```

```

20.20.1.9/32      [ARP/4294967293] 00:04:35, from 20.20.1.1
                  Unusable
20.20.1.10/32     [ARP/4294967293] 00:04:35, from 20.20.1.1
                  Unusable
20.20.1.11/32     [ARP/4294967293] 00:04:33, from 20.20.1.1
                  Unusable
20.20.1.12/32     [ARP/4294967293] 00:04:33, from 20.20.1.1
                  Unusable
20.20.1.13/32     [ARP/4294967293] 00:04:33, from 20.20.1.1
                  Unusable
...

```

### show route protocol bgp

```

user@host> show route protocol bgp 192.168.64.0/21
inet.0: 335832 destinations, 335833 routes (335383 active, 0 holddown, 450 hidden)
+ = Active Route, - = Last Active, * = Both

192.168.64.0/21    *[BGP/170] 6d 10:41:16, localpref 100, from 192.168.69.71
                  AS path: 10458 14203 2914 4788 4788 I
                  > to 192.168.167.254 via fxp0.0

```

### show route protocol bgp detail

```

user@host> show route protocol bgp 66.117.63.0/24 detail
inet.0: 335805 destinations, 335806 routes (335356 active, 0 holddown, 450 hidden)
66.117.63.0/24    (1 entry, 1 announced)
  *BGP           Preference: 170/-101
                  Next hop type: Indirect
                  Next-hop reference count: 1006436
                  Source: 192.168.69.71
                  Next hop type: Router, Next hop index: 324
                  Next hop: 192.168.167.254 via fxp0.0, selected
                  Protocol next hop: 192.168.69.71
                  Indirect next hop: 8e166c0 342
                  State: <Active Ext>
                  Local AS: 69 Peer AS: 10458
                  Age: 6d 10:42:42 Metric2: 0
                  Task: BGP_10458.192.168.69.71+179
                  Announcement bits (3): 0-KRT 2-BGP RT Background 3-Resolve tree
1
                  AS path: 10458 14203 2914 4788 4788 I
                  Communities: 2914:410 2914:2403 2914:3400
                  Accepted
                  Localpref: 100
                  Router ID: 207.17.136.192

```

### show route protocol bgp extensive

```

user@host> show route protocol bgp 192.168.64.0/21 extensive

inet.0: 335827 destinations, 335828 routes (335378 active, 0 holddown, 450 hidden)
192.168.64.0/21 (1 entry, 1 announced)
TSI:
KRT in-kernel 1.9.0.0/16 -> {indirect(342)}
Page 0 idx 1 Type 1 val db31a80
  Nexthop: Self
  AS path: [69] 10458 14203 2914 4788 4788 I
  Communities: 2914:410 2914:2403 2914:3400
Path 1.9.0.0 from 192.168.69.71 Vector len 4. Val: 1
  *BGP           Preference: 170/-101
                  Next hop type: Indirect

```

```

Next-hop reference count: 1006502
Source: 192.168.69.71
Next hop type: Router, Next hop index: 324
Next hop: 192.168.167.254 via fxp0.0, selected
Protocol next hop: 192.168.69.71
Indirect next hop: 8e166c0 342
State: <Active Ext>
Local AS: 69 Peer AS: 10458
Age: 6d 10:44:45 Metric2: 0
Task: BGP_10458.192.168.69.71+179
Announcement bits (3): 0-KRT 2-BGP RT Background 3-Resolve tree
1
AS path: 10458 14203 2914 4788 4788 I
Communities: 2914:410 2914:2403 2914:3400
Accepted
Localpref: 100
Router ID: 207.17.136.192
Indirect next hops: 1
    Protocol next hop: 192.168.69.71
    Indirect next hop: 8e166c0 342
    Indirect path forwarding next hops: 1
        Next hop type: Router
        Next hop: 192.168.167.254 via fxp0.0
    192.168.0.0/16 Originating RIB: inet.0
    Node path count: 1
    Forwarding nexthops: 1
        Nexthop: 192.168.167.254 via fxp0.0

```

### show route protocol bgp terse

```

user@host> show route protocol bgp 192.168.64.0/21 terse

inet.0: 24 destinations, 32 routes (23 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

A Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
192.168.64.0/21    B 170      100          >100.1.3.2    10023 21 I

```

### show route protocol direct

```

user@host> show route protocol direct

inet.0: 335843 destinations, 335844 routes (335394 active, 0 holddown, 450 hidden)
+ = Active Route, - = Last Active, * = Both

8.8.8.0/24          *[Direct/0] 17w0d 10:31:49
> via fe-1/3/1.0
10.255.165.1/32     *[Direct/0] 25w4d 04:13:18
> via lo0.0
30.30.30.0/24       *[Direct/0] 17w0d 23:06:26
> via fe-1/3/2.0
192.168.164.0/22    *[Direct/0] 25w4d 04:13:20
> via fxp0.0

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

47.0005.80ff.f800.0000.0108.0001.0102.5516.5001/152
*[Direct/0] 25w4d 04:13:21
> via lo0.0

```

```
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
```

```
abcd::10:255:165:1/128
    *[Direct/0] 25w4d 04:13:21
    > via lo0.0
fe80::2a0:a5ff:fe12:ad7/128
    *[Direct/0] 25w4d 04:13:21
    > via lo0.0
```

### show route protocol frr

```
user@host> show route protocol frr
inet.0: 43 destinations, 43 routes (42 active, 0 holddown, 1 hidden)

inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)

cust1.inet.0: 1033 destinations, 2043 routes (1033 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

20.20.1.3/32      *[FRR/200] 00:05:38, from 20.20.1.1
                  > to 20.20.1.3 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.4/32      *[FRR/200] 00:05:38, from 20.20.1.1
                  > to 20.20.1.4 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.5/32      *[FRR/200] 00:05:35, from 20.20.1.1
                  > to 20.20.1.5 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.6/32      *[FRR/200] 00:05:37, from 20.20.1.1
                  > to 20.20.1.6 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.7/32      *[FRR/200] 00:05:38, from 20.20.1.1
                  > to 20.20.1.7 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.8/32      *[FRR/200] 00:05:38, from 20.20.1.1
                  > to 20.20.1.8 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.9/32      *[FRR/200] 00:05:38, from 20.20.1.1
                  > to 20.20.1.9 via ge-4/1/0.0
                  to 10.10.15.1 via ge-0/2/4.0, Push 16, Push 299792(top)
20.20.1.10/32     *[FRR/200] 00:05:38, from 20.20.1.1
...

```

### show route protocol l2circuit detail

```
user@host> show route protocol l2circuit detail

mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
100000 (1 entry, 1 announced)
    *L2CKT Preference: 7
        Next hop: via ge-2/0/0.0, selected
        Label operation: Pop      Offset: 4
        State: <Active Int>
        Local AS: 99
        Age: 9:52
        Task: Common L2 VC
        Announcement bits (1): 0-KRT
        AS path: I

ge-2/0/0.0 (1 entry, 1 announced)
```

```

*L2CKT Preference: 7
  Next hop: via so-1/1/2.0 weight 1, selected
  Label-switched-path my-lsp
  Label operation: Push 100000, Push 100000(top)[0] Offset: -4
  Protocol next hop: 10.245.255.63
  Push 100000 Offset: -4
    Indirect next hop: 86af0c0 298
  State: <Active Int>
  Local AS: 99
  Age: 9:52
  Task: Common L2 VC
  Announcement bits (2): 0-KRT 1-Common L2 VC
  AS path: I

l2circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

10.245.255.63:CtrlWord:4:3:Local/96 (1 entry, 1 announced)
  *L2CKT Preference: 7
    Next hop: via so-1/1/2.0 weight 1, selected
    Label-switched-path my-lsp
    Label operation: Push 100000[0]
    Protocol next hop: 10.245.255.63 Indirect next hop: 86af000 296
    State: <Active Int>
    Local AS: 99
    Age: 10:21
    Task: l2 circuit
    Announcement bits (1): 0-LDP
    AS path: I
    VC Label 100000, MTU 1500, VLAN ID 512

```

### show route protocol l2vpn extensive

```

user@host> show route protocol l2vpn extensive

inet.0: 14 destinations, 15 routes (13 active, 0 holddown, 1 hidden)

inet.3: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

mpls.0: 7 destinations, 7 routes (7 active, 0 holddown, 0 hidden)
800001 (1 entry, 1 announced)
TSI:
KRT in-kernel 800001 /36 -> {so-0/0/0.0}
  *L2VPN Preference: 7
    Next hop: via so-0/0/0.0 weight 49087 balance 97%, selected
    Label operation: Pop Offset: 4
    State: <Active Int>
    Local AS: 69
    Age: 7:48
    Task: Common L2 VC
    Announcement bits (1): 0-KRT
    AS path: I

so-0/0/0.0 (1 entry, 1 announced)
TSI:
KRT in-kernel so-0/0/0.0 /16 -> {indirect(288)}
  *L2VPN Preference: 7
    Next hop: via so-0/0/1.0, selected
    Label operation: Push 800000 Offset: -4
    Protocol next hop: 10.255.14.220

```

```

Push 800000 Offset: -4
Indirect next hop: 85142a0 288
State: <Active Int>
Local AS: 69
Age: 7:48
Task: Common L2 VC
Announcement bits (2): 0-KRT 1-Common L2 VC
AS path: I
Communities: target:69:1 Layer2-info: encaps:PPP,
control flags:2, mtu: 0

```

### show route protocol ldp

```

user@host> show route protocol ldp
inet.0: 12 destinations, 13 routes (12 active, 0 holddown, 0 hidden)

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

192.168.16.1/32    *[LDP/9] 1d 23:03:35, metric 1
                  > via t1-4/0/0.0, Push 100000
192.168.17.1/32    *[LDP/9] 1d 23:03:35, metric 1
                  > via t1-4/0/0.0

private1___.inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

mpls.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

100064            *[LDP/9] 1d 23:03:35, metric 1
                  > via t1-4/0/0.0, Pop
100064(S=0)        *[LDP/9] 1d 23:03:35, metric 1
                  > via t1-4/0/0.0, Pop
100080            *[LDP/9] 1d 23:03:35, metric 1
                  > via t1-4/0/0.0, Swap 100000

```

### show route protocol ldp extensive

```

user@host> show route protocol ldp extensive
192.168.16.1/32 (1 entry, 1 announced)
  State: <FlashAll>
  *LDP Preference: 9
    Next-hop reference count: 3
    Next hop: via t1-4/0/0.0, selected
    Label operation: Push 100000
    State: <Active Int>
    Local AS: 65500
    Age: 1d 23:03:58 Metric: 1
    Task: LDP
    Announcement bits (2): 0-Resolve tree 1 2-Resolve tree 2
    AS path: I

192.168.17.1/32 (1 entry, 1 announced)
  State: <FlashAll>
  *LDP Preference: 9
    Next-hop reference count: 3
    Next hop: via t1-4/0/0.0, selected
    State: <Active Int>
    Local AS: 65500
    Age: 1d 23:03:58 Metric: 1
    Task: LDP

```

```

Announcement bits (2): 0-Resolve tree 1 2-Resolve tree 2
AS path: I

private1__inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

mpls.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)

100064 (1 entry, 1 announced)
TSI:
KRT in-kernel 100064 /36 -> {t1-4/0/0.0}
    *LDP    Preference: 9
            Next-hop reference count: 2
            Next hop: via t1-4/0/0.0, selected
            State: <Active Int>
            Local AS: 65500
            Age: 1d 23:03:58      Metric: 1
            Task: LDP
            Announcement bits (1): 0-KRT
            AS path: I
            Prefixes bound to route: 192.168.17.1/32

100064(S=0) (1 entry, 1 announced)
TSI:
KRT in-kernel 100064 /40 -> {t1-4/0/0.0}
    *LDP    Preference: 9
            Next-hop reference count: 2
            Next hop: via t1-4/0/0.0, selected
            Label operation: Pop
            State: <Active Int>
            Local AS: 65500
            Age: 1d 23:03:58      Metric: 1
            Task: LDP
            Announcement bits (1): 0-KRT
            AS path: I

100080 (1 entry, 1 announced)
TSI:
KRT in-kernel 100080 /36 -> {t1-4/0/0.0}
    *LDP    Preference: 9
            Next-hop reference count: 2
            Next hop: via t1-4/0/0.0, selected
            Label operation: Swap 100000
            State: <Active Int>
            Local AS: 65500
            Age: 1d 23:03:58      Metric: 1
            Task: LDP
            Announcement bits (1): 0-KRT
            AS path: I
            Prefixes bound to route: 192.168.16.1/32

```

### show route protocol ospf (Layer 3 VPN)

```

user@host> show route protocol ospf
inet.0: 40 destinations, 40 routes (39 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

10.39.1.4/30      *[OSPF/10] 00:05:18, metric 4
                  > via t3-3/2/0.0
10.39.1.8/30      [OSPF/10] 00:05:18, metric 2
                  > via t3-3/2/0.0
10.255.14.171/32 *[OSPF/10] 00:05:18, metric 4

```



```

                > via t3-3/2/0.0
10.255.14.179/32  *[OSPF/10] 00:05:18, metric 2
                > via t3-3/2/0.0
224.0.0.5/32     *[OSPF/10] 20:25:55, metric 1

VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.39.1.16/30     [OSPF/10] 00:05:43, metric 1
                > via so-0/2/2.0
10.255.14.173/32  *[OSPF/10] 00:05:43, metric 1
                > via so-0/2/2.0
224.0.0.5/32     *[OSPF/10] 20:26:20, metric 1

```

### show route protocol ospf detail

```

user@host> show route protocol ospf detail
VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.39.1.16/30 (2 entries, 0 announced)
   OSPF   Preference: 10
           Nexthop: via so-0/2/2.0, selected
           State: <Int>
           Inactive reason: Route Preference
           Age: 6:25      Metric: 1
           Area: 0.0.0.0
           Task: VPN-AB-OSPF
           AS path: I
           Communities: Route-Type:0.0.0.0:1:0

...

```

### show route protocol rip

```

user@host> show route protocol rip
inet.0: 26 destinations, 27 routes (25 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
10.255.14.177/32  *[RIP/100] 20:24:34, metric 2
                > to 10.39.1.22 via t3-0/2/2.0
224.0.0.9/32     *[RIP/100] 00:03:59, metric 1

```

### show route protocol rip detail

```

user@host> show route protocol rip detail
inet.0: 26 destinations, 27 routes (25 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

VPN-AB.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
10.255.14.177/32 (1 entry, 1 announced)
   *RIP   Preference: 100
           Nexthop: 10.39.1.22 via t3-0/2/2.0, selected
           State: <Active Int>
           Age: 20:25:02  Metric: 2
           Task: VPN-AB-RIPv2
           Announcement bits (2): 0-KRT 2-BGP.0.0.0.0+179
           AS path: I
           Route learned from 10.39.1.22 expires in 96 seconds

```

**show route protocol ripng table inet6**

```

user@host> show route protocol ripng table inet6
inet6.0: 4215 destinations, 4215 routes (4214 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

1111::1/128      * [RIPng/100] 02:13:33, metric 2
                  > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::2/128      * [RIPng/100] 02:13:33, metric 2
                  > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::3/128      * [RIPng/100] 02:13:33, metric 2
                  > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::4/128      * [RIPng/100] 02:13:33, metric 2
                  > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::5/128      * [RIPng/100] 02:13:33, metric 2
                  > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0
1111::6/128      * [RIPng/100] 02:13:33, metric 2
                  > to fe80::2a0:a5ff:fe3d:56 via t3-0/2/0.0

```

**show route protocol static detail**

```

user@host> show route protocol static detail
inet.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
10.5.0.0/16 (1 entry, 1 announced)
    *Static Preference: 5
        Next hop type: Router, Next hop index: 324
        Address: 0x9274010
        Next-hop reference count: 27
        Next hop: 192.168.187.126 via fxp0.0, selected
        Session Id: 0x0
        State: <Active NoReadvrt Int Ext>
        Age: 7w3d 21:24:25
        Validation State: unverified
        Task: RT
        Announcement bits (1): 0-KRT
        AS path: I

10.10.0.0/16 (1 entry, 1 announced)
    *Static Preference: 5
        Next hop type: Router, Next hop index: 324
        Address: 0x9274010
        Next-hop reference count: 27
        Next hop: 192.168.187.126 via fxp0.0, selected
        Session Id: 0x0
        State: <Active NoReadvrt Int Ext>
        Age: 7w3d 21:24:25
        Validation State: unverified
        Task: RT
        Announcement bits (1): 0-KRT
        AS path: I

10.13.10.0/23 (1 entry, 1 announced)
    *Static Preference: 5
        Next hop type: Router, Next hop index: 324
        Address: 0x9274010
        Next-hop reference count: 27
        Next hop: 192.168.187.126 via fxp0.0, selected
        Session Id: 0x0
        State: <Active NoReadvrt Int Ext>
        Age: 7w3d 21:24:25
        Validation State: unverified

```

Task: RT  
Announcement bits (1): 0-KRT  
AS path: I

## show route range

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 298</a><br><a href="#">Syntax (EX Series Switches) on page 298</a>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Syntax</b>                      | <pre>show route range &lt;brief   detail   extensive   terse&gt; &lt;destination-prefix&gt; &lt;logical-system (all   logical-system-name)&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Syntax (EX Series Switches)</b> | <pre>show route range &lt;brief   detail   extensive   terse&gt; &lt;destination-prefix&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Description</b>                 | Display routing table entries using a prefix range.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>                     | <p><b>none</b>—Display standard information about all routing table entries using a prefix range.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b>.</p> <p><b>destination-prefix</b>—(Optional) Destination and prefix mask for the range.</p> <p><b>logical-system (all   logical-system-name)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>List of Sample Output</b>       | <a href="#">show route range on page 298</a><br><a href="#">show route range destination-prefix on page 299</a><br><a href="#">show route range detail on page 299</a><br><a href="#">show route range extensive on page 300</a><br><a href="#">show route range terse on page 301</a>                                                                                                                                                                                                                                             |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                                                                                                                                                                     |

## Sample Output

### show route range

```
user@host> show route range
```

```
inet.0: 11 destinations, 11 routes (10 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
```

```
10.10.0.0/16      *[Static/5] 00:30:01
                  > to 192.168.71.254 via fxp0.0
10.209.0.0/16    *[Static/5] 00:30:01
```

```

10.255.71.14/32      > to 192.168.71.254 via fxp0.0
                    *[Direct/0] 00:30:01
                    > via lo0.0
172.16.0.0/12       *[Static/5] 00:30:01
                    > to 192.168.71.254 via fxp0.0
192.168.0.0/16      *[Static/5] 00:30:01
                    > to 192.168.71.254 via fxp0.0
192.168.64.0/21     *[Direct/0] 00:30:01
                    > via fxp0.0
192.168.71.14/32    *[Local/0] 00:30:01
                    Local via fxp0.0
192.168.102.0/23    *[Static/5] 00:30:01
                    > to 192.168.71.254 via fxp0.0
...

```

### show route range destination-prefix

```

user@host> show route range 192.168.0.0

inet.0: 11 destinations, 11 routes (10 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

192.168.0.0/16      *[Static/5] 00:31:14
                    > to 192.168.71.254 via fxp0.0
192.168.64.0/21     *[Direct/0] 00:31:14
                    > via fxp0.0
192.168.71.14/32    *[Local/0] 00:31:14
                    Local via fxp0.0
192.168.102.0/23    *[Static/5] 00:31:14
                    > to 192.168.71.254 via fxp0.0

```

### show route range detail

```

user@host> show route range detail

inet.0: 11 destinations, 11 routes (10 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Age: 30:05
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

10.209.0.0/16 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Age: 30:05
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

10.255.71.14/32 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected

```

```

State: <Active Int>
Age: 30:05
Task: IF
AS path: I

172.16.0.0/12 (1 entry, 1 announced)
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Age: 30:05
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

...

```

### show route range extensive

```

user@host> show route range extensive

inet.0: 11 destinations, 11 routes (10 active, 0 holddown, 1 hidden)
10.10.0.0/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.10.0.0/16 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Age: 30:17
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

10.209.0.0/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.209.0.0/16 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 22
    Next hop: 192.168.71.254 via fxp0.0, selected
    State: <Active NoReadvrt Int Ext>
    Age: 30:17
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I

10.255.71.14/32 (1 entry, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via lo0.0, selected
    State: <Active Int>
    Age: 30:17
    Task: IF
    AS path: I

172.16.0.0/12 (1 entry, 1 announced)
TSI:
KRT in-kernel 172.16.0.0/12 -> {192.168.71.254}
  *Static Preference: 5
    Next-hop reference count: 22

```

```

Next hop: 192.168.71.254 via fxp0.0, selected
State: <Active NoReadvrt Int Ext>
Age: 30:17
Task: RT
Announcement bits (1): 0-KRT
AS path: I

```

```
...
```

### show route range terse

```
user@host> show route range terse
```

```
inet.0: 11 destinations, 11 routes (10 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
```

| A | Destination       | P | Prf | Metric 1 | Metric 2 | Next hop        | AS path |
|---|-------------------|---|-----|----------|----------|-----------------|---------|
| * | 10.10.0.0/16      | S | 5   |          |          | >192.168.71.254 |         |
| * | 10.209.0.0/16     | S | 5   |          |          | >192.168.71.254 |         |
| * | 10.255.71.14/32   | D | 0   |          |          | >lo0.0          |         |
| * | 172.16.0.0/12     | S | 5   |          |          | >192.168.71.254 |         |
| * | 192.168.0.0/16    | S | 5   |          |          | >192.168.71.254 |         |
| * | 192.168.64.0/21   | D | 0   |          |          | >fxp0.0         |         |
| * | 192.168.71.14/32  | L | 0   |          |          | Local           |         |
| * | 192.168.102.0/23  | S | 5   |          |          | >192.168.71.254 |         |
| * | 207.17.136.0/24   | S | 5   |          |          | >192.168.71.254 |         |
| * | 207.17.136.192/32 | S | 5   |          |          | >192.168.71.254 |         |

```
__juniper_private1__.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

| A | Destination | P | Prf | Metric 1 | Metric 2 | Next hop | AS path |
|---|-------------|---|-----|----------|----------|----------|---------|
| * | 10.0.0.0/8  | D | 0   |          |          | >fxp2.0  |         |
|   |             | D | 0   |          |          | >fxp1.0  |         |
| * | 10.0.0.4/32 | L | 0   |          |          | Local    |         |

```
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

| A | Destination                                         | P | Prf | Metric 1 | Metric 2 | Next hop | AS path |
|---|-----------------------------------------------------|---|-----|----------|----------|----------|---------|
|   | 47.0005.80ff.f800.0000.0108.0001.0102.5507.1014/152 |   |     |          |          |          |         |
| * |                                                     | D | 0   |          |          | >lo0.0   |         |

```
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

| A | Destination                  | P | Prf | Metric 1 | Metric 2 | Next hop | AS path |
|---|------------------------------|---|-----|----------|----------|----------|---------|
|   | abcd::10:255:71:14/128       |   |     |          |          |          |         |
| * |                              | D | 0   |          |          | >lo0.0   |         |
|   | fe80::280:42ff:fe11:226f/128 |   |     |          |          |          |         |
| * |                              | D | 0   |          |          | >lo0.0   |         |

```
__juniper_private1__.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

| A | Destination                  | P | Prf | Metric 1 | Metric 2 | Next hop   | AS path |
|---|------------------------------|---|-----|----------|----------|------------|---------|
|   | fe80::280:42ff:fe11:226f/128 |   |     |          |          |            |         |
| * |                              | D | 0   |          |          | >lo0.16385 |         |

## show route receive-protocol

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 302</a><br><a href="#">Syntax (EX Series Switches) on page 302</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Syntax</b>                      | show route receive-protocol <i>protocol neighbor-address</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Syntax (EX Series Switches)</b> | show route receive-protocol <i>protocol neighbor-address</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Description</b>                 | Display the routing information as it was received through a particular neighbor using a particular dynamic routing protocol.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Options</b>                     | <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b><i>protocol neighbor-address</i></b>—Protocol transmitting the route (<b>bgp</b>, <b>dvmrp</b>, <b>msdp</b>, <b>pim</b>, <b>rip</b>, or <b>ripng</b>) and address of the neighboring router from which the route entry was received.</p>                                                                                                                                                                                                                                  |
| <b>Additional Information</b>      | The output displays the selected routes and the attributes with which they were received, but does not show the effects of import policy on the routing attributes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>List of Sample Output</b>       | <a href="#">show route receive-protocol bgp on page 305</a><br><a href="#">show route receive-protocol bgp extensive on page 305</a><br><a href="#">show route receive-protocol bgp table extensive on page 305</a><br><a href="#">show route receive-protocol bgp logical-system extensive on page 306</a><br><a href="#">show route receive-protocol bgp detail (Layer 2 VPN) on page 307</a><br><a href="#">show route receive-protocol bgp extensive (Layer 2 VPN) on page 307</a><br><a href="#">show route receive-protocol bgp (Layer 3 VPN) on page 308</a><br><a href="#">show route receive-protocol bgp detail (Layer 3 VPN) on page 308</a><br><a href="#">show route receive-protocol bgp extensive (Layer 3 VPN) on page 309</a> |
| <b>Output Fields</b>               | Table 28 on page 302 describes the output fields for the <b>show route receive-protocol</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Table 28: show route receive-protocol Output Fields

| Field Name                | Field Description                              | Level of Output |
|---------------------------|------------------------------------------------|-----------------|
| <i>routing-table-name</i> | Name of the routing table—for example, inet.0. | All levels      |



Table 28: show route receive-protocol Output Fields (*continued*)

| Field Name                                   | Field Description                                                                                                                                                                                                                                                                                                                        | Level of Output         |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| <i>number destinations</i>                   | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                  | All levels              |
| <i>number routes</i>                         | Number of routes in the routing table and total number of routes in the following states: <ul style="list-style-type: none"> <li>• <b>active</b></li> <li>• <b>holddown</b> (routes that are in pending state before being declared inactive)</li> <li>• <b>hidden</b> (routes that are not used because of a routing policy)</li> </ul> | All levels              |
| Prefix                                       | Destination prefix.                                                                                                                                                                                                                                                                                                                      | none <b>brief</b>       |
| MED                                          | Multiple exit discriminator value included in the route.                                                                                                                                                                                                                                                                                 | none <b>brief</b>       |
| <i>destination-prefix (entry, announced)</i> | Destination prefix. The <b>entry</b> value is the number of routes for this destination, and the <b>announced</b> value is the number of routes being announced for this destination.                                                                                                                                                    | <b>detail extensive</b> |
| Route Distinguisher                          | 64-bit prefix added to IP subnets to make them unique.                                                                                                                                                                                                                                                                                   | <b>detail extensive</b> |
| Label-Base, range                            | First label in a block of labels and label block size. A remote PE routing device uses this first label when sending traffic toward the advertising PE routing device.                                                                                                                                                                   | <b>detail extensive</b> |
| VPN Label                                    | Virtual private network (VPN) label. Packets are sent between CE and PE routing devices by advertising VPN labels. VPN labels transit over either an RSVP or an LDP label-switched path (LSP) tunnel.                                                                                                                                    | <b>detail extensive</b> |
| Next hop                                     | Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.                                                                                                                                                                                                                                        | All levels              |
| Localpref or Lclpref                         | Local preference value included in the route.                                                                                                                                                                                                                                                                                            | All levels              |

Table 28: show route receive-protocol Output Fields (*continued*)

| Field Name          | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Level of Output  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| AS path             | <p>Autonomous system (AS) path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>• <b>I</b>—IGP.</li> <li>• <b>E</b>—EGP.</li> <li>• <b>?</b>—Incomplete; typically, the AS path was aggregated.</li> </ul> <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> <li>• <b>[ ]</b>—Brackets enclose the number that precedes the AS path. This number represents the number of ASs present in the AS path, when calculated as defined in RFC 4271. This value is used the AS-path merge process, as defined in RFC 4893.</li> <li>• <b>[ ]</b>—If more than one AS number is configured on the router, or if AS path prepending is configured, brackets enclose the local AS number associated with the AS path.</li> <li>• <b>{ }</b>—Braces enclose AS sets, which are groups of AS numbers in which the order does not matter. A set commonly results from route aggregation. The numbers in each AS set are displayed in ascending order.</li> <li>• <b>( )</b>—Parentheses enclose a confederation.</li> <li>• <b>( [ ] )</b>—Parentheses and brackets enclose a confederation set.</li> </ul> <p><b>NOTE:</b> In Junos OS Release 10.3 and later, the AS path field displays an unrecognized attribute and associated hexadecimal value if BGP receives attribute 128 (attribute set) and you have not configured an independent domain in any routing instance.</p> | All levels       |
| Cluster list        | (For route reflected output only) Cluster ID sent by the route reflector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | detail extensive |
| Originator ID       | (For route reflected output only) Address of routing device that originally sent the route to the route reflector.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | detail extensive |
| Communities         | Community path attribute for the route. See the Output Field table in the <a href="#">show route detail</a> command for all possible values for this field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | detail extensive |
| AIGP                | Accumulated interior gateway protocol (AIGP) BGP attribute.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | detail extensive |
| Attrset AS          | Number, local preference, and path of the AS that originated the route. These values are stored in the <b>Attrset</b> attribute at the originating routing device.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | detail extensive |
| Layer2-info: encaps | Layer 2 encapsulation (for example, VPLS).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | detail extensive |
| control flags       | Control flags: <b>none</b> or <b>Site Down</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | detail extensive |
| mtu                 | Maximum transmission unit (MTU) of the Layer 2 circuit.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | detail extensive |

## Sample Output

### show route receive-protocol bgp

```
user@host> show route receive-protocol bgp 10.255.245.215

inet.0: 28 destinations, 33 routes (27 active, 0 holddown, 1 hidden)
Prefix          Next hop          MED      Lclpref  AS path
10.22.1.0/24     10.255.245.215    0         100      I
10.22.2.0/24     10.255.245.215    0         100      I
```

### show route receive-protocol bgp extensive

```
user@host> show route receive-protocol bgp 10.255.245.63 extensive
inet.0: 244 destinations, 244 routes (243 active, 0 holddown, 1 hidden)
Prefix          Next hop          MED      Lclpref  AS path
1.1.1.0/24 (1 entry, 1 announced)
  Next hop: 10.0.50.3
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.45
165.3.0.0/16 (1 entry, 1 announced)
  Next hop: 111.222.5.254
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.68
165.4.0.0/16 (1 entry, 1 announced)
  Next hop: 111.222.5.254
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.45
195.1.2.0/24 (1 entry, 1 announced)
  Next hop: 111.222.5.254
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.68
inet.2: 63 destinations, 63 routes (63 active, 0 holddown, 0 hidden)
Prefix          Next hop          MED      Lclpref  AS path
inet.3: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Next hop          MED      Lclpref  AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Next hop          MED      Lclpref  AS path
mpls.0: 48 destinations, 48 routes (48 active, 0 holddown, 0 hidden)
```

### show route receive-protocol bgp table extensive

```
user@host> show route receive-protocol bgp 207.17.136.192 table inet.0 66.117.68.0/24 extensive
inet.0: 227315 destinations, 227316 routes (227302 active, 0 holddown, 13 hidden)
* 66.117.63.0/24 (1 entry, 1 announced)
  Nexthop: 207.17.136.29
  Localpref: 100
  AS path: AS2 PA[6]: 14203 2914 3356 29748 33437 AS_TRANS
  AS path: AS4 PA[2]: 33437 393219
  AS path: Merged[6]: 14203 2914 3356 29748 33437 393219 I
  Communities: 2914:420
```

**show route receive-protocol bgp logical-system extensive**

```
user@host> show route receive-protocol bgp 10.0.0.9 logical-system PE4 extensive
inet.0: 12 destinations, 13 routes (12 active, 0 holddown, 0 hidden)
* 10.0.0.0/30 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 10.0.0.4/30 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

10.0.0.8/30 (2 entries, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 10.9.9.1/32 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 10.100.1.1/32 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 44.0.0.0/24 (1 entry, 1 announced)
  Accepted
  Route Label: 300096
  Nexthop: 10.0.0.9
  AS path: 13979 I
  AIGP: 203

* 55.0.0.0/24 (1 entry, 1 announced)
  Accepted
  Route Label: 300112
  Nexthop: 10.0.0.9
  AS path: 13979 7018 I
  AIGP: 25

* 66.0.0.0/24 (1 entry, 1 announced)
  Accepted
  Route Label: 300144
  Nexthop: 10.0.0.9
  AS path: 13979 7018 I

* 99.0.0.0/24 (1 entry, 1 announced)
  Accepted
  Route Label: 300160
  Nexthop: 10.0.0.9
  AS path: 13979 7018 I
```

**show route receive-protocol bgp detail (Layer 2 VPN)**

```

user@host> show route receive-protocol bgp 10.255.14.171 detail
inet.0: 68 destinations, 68 routes (67 active, 0 holddown, 1 hidden)
Prefix          Nexthop          MED    Lclpref AS path
inet.3: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
mpls.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
frame-vpn.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0
hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.245.35:1:5:1/96 (1 entry, 1 announced)
  Route Distinguisher: 10.255.245.35:1
  Label-base : 800000, range : 4, status-vector : 0x0
  Nexthop: 10.255.245.35
  Localpref: 100
  AS path: I
  Communities: target:65299:100 Layer2-info: encaps:FRAME RELAY,
  control flags: 0, mtu: 0
bgp.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.245.35:1:5:1/96 (1 entry, 0 announced)
  Route Distinguisher: 10.255.245.35:1
  Label-base : 800000, range : 4, status-vector : 0x0
  Nexthop: 10.255.245.35
  Localpref: 100
  AS path: I
  Communities: target:65299:100 Layer2-info: encaps:FRAME RELAY,
  control flags:0, mtu: 0

```

**show route receive-protocol bgp extensive (Layer 2 VPN)**

```

user@host> show route receive-protocol bgp 10.255.14.171 extensive
inet.0: 68 destinations, 68 routes (67 active, 0 holddown, 1 hidden)
Prefix          Nexthop          MED    Lclpref AS path
inet.3: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
mpls.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
frame-vpn.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.245.35:1:5:1/96 (1 entry, 1 announced)
  Route Distinguisher: 10.255.245.35:1
  Label-base : 800000, range : 4, status-vector : 0x0
  Nexthop: 10.255.245.35
  Localpref: 100
  AS path: I
  Communities: target:65299:100 Layer2-info: encaps:FRAME RELAY,
  control flags:0, mtu: 0
bgp.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.245.35:1:5:1/96 (1 entry, 0 announced)
  Route Distinguisher: 10.255.245.35:1
  Label-base : 800000, range : 4, status-vector : 0x0
  Nexthop: 10.255.245.35
  Localpref: 100

```

```

AS path: I
Communities: target:65299:100 Layer2-info: encaps:FRAME RELAY,
control flags:0, mtu: 0

```

### show route receive-protocol bgp (Layer 3 VPN)

```

user@host> show route receive-protocol bgp 10.255.14.171
inet.0: 33 destinations, 33 routes (32 active, 0 holddown, 1 hidden)
Prefix          Nexthop          MED    Lclpref AS path
inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
VPN-A.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.175/32 10.255.14.171          100 2 I
10.255.14.179/32 10.255.14.171          2    100 I
VPN-B.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.175/32 10.255.14.171          100 2 I
10.255.14.177/32 10.255.14.171          100 I
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
mpls.0: 9 destinations, 9 routes (9 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
bgp.l3vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.171:300:10.255.14.177/32
                  10.255.14.171          100 I
10.255.14.171:100:10.255.14.179/32
                  10.255.14.171          2    100 I
10.255.14.171:200:10.255.14.175/32
                  10.255.14.171          100 2 I

```

### show route receive-protocol bgp detail (Layer 3 VPN)

```

user@host> show route receive-protocol bgp 10.255.14.174 detail
inet.0: 16 destinations, 17 routes (15 active, 0 holddown, 1 hidden)
inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
vpna.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
* 10.49.0.0/30 (1 entry, 1 announced)
  Route Distinguisher: 10.255.14.176:2
  VPN Label: 101264
  Nexthop: 10.255.14.174
  Localpref: 100
  AS path: I
  Communities: target:200:100
  AttrSet AS: 100
    Localpref: 100
    AS path: I
* 10.255.14.172/32 (1 entry, 1 announced)
  Route Distinguisher: 10.255.14.176:2
  VPN Label: 101280
  Nexthop: 10.255.14.174
  Localpref: 100
  AS path: I
  Communities: target:200:100
  AttrSet AS: 100
    Localpref: 100
    AS path: I
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
bgp.l3vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

```

```

* 10.255.14.174:2:10.49.0.0/30 (1 entry, 0 announced)
  Route Distinguisher: 10.255.14.174:2
  VPN Label: 101264
  Nexthop: 10.255.14.174
  Localpref: 100
  AS path: I
  Communities: target:200:100
  AttrSet AS: 100
    Localpref: 100
    AS path: I
* 10.255.14.174:2:10.255.14.172/32 (1 entry, 0 announced)
  Route Distinguisher: 10.255.14.174:2
  VPN Label: 101280
  Nexthop: 10.255.14.174
  Localpref: 100
  AS path: I
  Communities: target:200:100
  AttrSet AS: 100
    Localpref: 100
    AS path: I
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

```

### show route receive-protocol bgp extensive (Layer 3 VPN)

```

user@host> show route receive-protocol bgp 10.255.245.63 extensive
inet.0: 244 destinations, 244 routes (243 active, 0 holddown, 1 hidden)
  Prefix          Nexthop          MED      Lclpref AS path
  1.1.1.0/24 (1 entry, 1 announced)
    Nexthop: 10.0.50.3
    Localpref: 100
    AS path: I <Originator>
    Cluster list: 10.2.3.1
    Originator ID: 10.255.245.45
  165.3.0.0/16 (1 entry, 1 announced)
    Nexthop: 111.222.5.254
    Localpref: 100
    AS path: I <Originator>
    Cluster list: 10.2.3.1
    Originator ID: 10.255.245.68
  165.4.0.0/16 (1 entry, 1 announced)
    Nexthop: 111.222.5.254
    Localpref: 100
    AS path: I <Originator>
    Cluster list: 10.2.3.1
    Originator ID: 10.255.245.45
  195.1.2.0/24 (1 entry, 1 announced)
    Nexthop: 111.222.5.254
    Localpref: 100
    AS path: I <Originator>
    Cluster list: 10.2.3.1
    Originator ID: 10.255.245.68
inet.2: 63 destinations, 63 routes (63 active, 0 holddown, 0 hidden)
  Prefix          Nexthop          MED      Lclpref AS path
inet.3: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
  Prefix          Nexthop          MED      Lclpref AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
  Prefix          Nexthop          MED      Lclpref AS path
mpls.0: 48 destinations, 48 routes (48 active, 0 holddown, 0 hidden)

```

## show route resolution

---

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 310</a><br><a href="#">Syntax (EX Series Switches) on page 310</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Syntax</b>                      | <pre>show route resolution &lt;brief   detail   extensive   summary&gt; &lt;index <i>index</i>&gt; &lt;logical-system (all   <i>logical-system-name</i>)&gt; &lt;prefix&gt; &lt;table <i>routing-table-name</i>&gt; &lt;unresolved&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Syntax (EX Series Switches)</b> | <pre>show route resolution &lt;brief   detail   extensive   summary&gt; &lt;index <i>index</i>&gt; &lt;prefix&gt; &lt;table <i>routing-table-name</i>&gt; &lt;unresolved&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Description</b>                 | Display the entries in the next-hop resolution database. This database provides for recursive resolution of next hops through other prefixes in the routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Options</b>                     | <p><b>none</b>—Display standard information about all entries in the next-hop resolution database.</p> <p><b>brief   detail   extensive   summary</b>—(Optional) Display the specified level of output.</p> <p><b>index <i>index</i></b>—(Optional) Show the index of the resolution tree.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>prefix <i>network/destination-prefix</i></b>—(Optional) Display database entries for the specified address.</p> <p><b>table <i>routing-table-name</i></b>—(Optional) Display information about a particular routing table (for example, <b>inet.0</b>) where policy-based export is currently enabled.</p> <p><b>unresolved</b>—(Optional) Display routes that could not be resolved.</p> |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>       | <ul style="list-style-type: none"><li>• <a href="#">Example: Configuring Route Resolution on PE Routers</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>List of Sample Output</b>       | <a href="#">show route resolution detail on page 311</a><br><a href="#">show route resolution summary on page 312</a><br><a href="#">show route resolution unresolved on page 312</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |



**Output Fields** Table 29 on page 311 describes the output fields for the **show route resolution** command. Output fields are listed in the approximate order in which they appear.

**Table 29: show route resolution Output Fields**

| Field Name                         | Field Description                                                                                                                                                                                                                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i>          | Name of the routing table whose prefixes are resolved using the entries in the route resolution database. For routing table groups, this is the name of the primary routing table whose prefixes are resolved using the entries in the route resolution database.                                                                                     |
| <b>Tree index</b>                  | Tree index identifier.                                                                                                                                                                                                                                                                                                                                |
| <b>Nodes</b>                       | Number of nodes in the tree.                                                                                                                                                                                                                                                                                                                          |
| <b>Reference count</b>             | Number of references made to the next hop.                                                                                                                                                                                                                                                                                                            |
| <b>Contributing routing tables</b> | Routing tables used for next-hop resolution.                                                                                                                                                                                                                                                                                                          |
| <b>Originating RIB</b>             | Name of the routing table whose active route was used to determine the forwarding next-hop entry in the resolution database. For example, in the case of <b>inet.0</b> resolving through <b>inet.0</b> and <b>inet.3</b> , this field indicates which routing table, <b>inet.0</b> or <b>inet.3</b> , provided the best path for a particular prefix. |
| <b>Metric</b>                      | Metric associated with the forwarding next hop.                                                                                                                                                                                                                                                                                                       |
| <b>Node path count</b>             | Number of nodes in the path.                                                                                                                                                                                                                                                                                                                          |
| <b>Forwarding next hops</b>        | Number of forwarding next hops. The forwarding next hop is the network layer address of the directly reachable neighboring system (if applicable) and the interface used to reach it.                                                                                                                                                                 |

## Sample Output

### show route resolution detail

```

user@host> show route resolution detail
Tree Index: 1, Nodes 0, Reference Count 1
Contributing routing tables: inet.3
Tree Index: 2, Nodes 23, Reference Count 1
Contributing routing tables: inet.0 inet.3
10.10.0.0/16 Originating RIB: inet.0
  Node path count: 1
  Forwarding nexthops: 1
10.31.1.0/30 Originating RIB: inet.0
  Node path count: 1
  Forwarding nexthops: 1
10.31.1.1/32 Originating RIB: inet.0
  Node path count: 1
  Forwarding nexthops: 0
10.31.1.4/30 Originating RIB: inet.0
  Node path count: 1
  Forwarding nexthops: 1
10.31.1.5/32 Originating RIB: inet.0

```

```
Node path count: 1
Forwarding nexthops: 0
10.31.2.0/30 Originating RIB: inet.0
Metric: 2 Node path count: 1
Forwarding nexthops: 2
10.31.11.0/24 Originating RIB: inet.0
Node path count: 1
Forwarding nexthops: 1
```

#### show route resolution summary

```
user@host> show route resolution summary
Tree Index: 1, Nodes 24, Reference Count 1
Contributing routing tables: :voice.inet.0 :voice.inet.3
Tree Index: 2, Nodes 2, Reference Count 1
Contributing routing tables: inet.3
Tree Index: 3, Nodes 43, Reference Count 1
Contributing routing tables: inet.0 inet.3
```

#### show route resolution unresolved

```
user@host> show route resolution unresolved
Tree Index 1
vt-3/2/0.32769.0      /16
    Protocol Nexthop: 10.255.71.238 Push 800000
    Indirect nexthop: 0 -
vt-3/2/0.32772.0      /16
    Protocol Nexthop: 10.255.70.103 Push 800008
    Indirect nexthop: 0 -
Tree Index 2
```

## show route snooping

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <pre>show route snooping &lt;brief   detail   extensive   terse&gt; &lt;all&gt; &lt;best address/prefix&gt; &lt;exact address&gt; &lt;range prefix-range&gt; &lt;summary&gt; &lt;table table-name&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b>      | <p>Command introduced in Junos OS Release 8.5.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Display the entries in the routing table that were learned from snooping.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Options</b>                  | <p><b>none</b>—Display the entries in the routing table that were learned from snooping.</p> <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b>.</p> <p><b>all</b>—(Optional) Display all entries, including hidden entries.</p> <p><b>best address/prefix</b>—(Optional) Display the longest match for the provided address and optional prefix.</p> <p><b>exact address/prefix</b>—(Optional) Display exact matches for the provided address and optional prefix.</p> <p><b>range prefix-range</b>—(Optional) Display information for the provided address range.</p> <p><b>summary</b>—(Optional) Display route snooping summary statistics.</p> <p><b>table table-name</b>—(Optional) Display information for the named table.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>List of Sample Output</b>    | <a href="#">show route snooping detail on page 313</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Output Fields</b>            | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## Sample Output

### show route snooping detail

```
user@host> show route snooping detail
__+domainAll__.inet.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
224.0.0.2/32 (1 entry, 1 announced)
  *IGMP    Preference: 0
           Next hop type: MultiRecv
           Next-hop reference count: 4
           State: <Active NoReadvrt Int>
```

```

Age: 2:24
Task: IGMP
Announcement bits (1): 0-KRT
AS path: I

224.0.0.22/32 (1 entry, 1 announced)
  *IGMP Preference: 0
    Next hop type: MultiRecv
    Next-hop reference count: 4
    State: <Active NoReadvrt Int>
    Age: 2:24
    Task: IGMP
    Announcement bits (1): 0-KRT
    AS path: I

__+domainAll__.inet.1: 36 destinations, 36 routes (36 active, 0 holddown, 0 hidden)

224.0.0.0.0.0.0.0.0/24 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4), Next hop index: 1048584
    Next-hop reference count: 4
    State: <Active Int>
    Age: 2:24
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.2.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:13
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.3.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.4.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:17
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.5.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113

```

```
State: <Active Int>
Age: 1:58
Task: MC
Announcement bits (1): 0-KRT
AS path: I

225.0.0.6.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:14
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.7.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:12
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.9.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:13
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

225.0.0.10.11.11.11.100.3.9.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

226.0.0.1.11.11.11.100.3.10.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:09
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

226.0.0.2.11.11.11.100.3.10.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
```

```

Age: 8
Task: MC
Announcement bits (1): 0-KRT
AS path: I

226.0.0.4.11.11.11.100.3.10.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:10
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

226.0.0.8.11.11.11.100.3.10.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:12
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

226.0.0.10.11.11.11.100.3.10.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 1:56
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.1.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:10
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.2.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:13
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.3.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:16

```

```
Task: MC
Announcement bits (1): 0-KRT
AS path: I

227.0.0.4.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.5.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 1:57
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.7.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 1:57
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.8.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:10
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

227.0.0.10.11.11.11.100.3.11.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

228.0.0.1.11.11.11.100.3.12.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:09
    Task: MC
```

```

Announcement bits (1): 0-KRT
AS path: I

228.0.0.2.11.11.11.100.3.12.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:18
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

228.0.0.7.11.11.11.100.3.12.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:11
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

228.0.0.8.11.11.11.100.3.12.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:17
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

228.0.0.9.11.11.11.100.3.12.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 8
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

228.0.0.10.11.11.11.100.3.12.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:12
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

229.0.0.3.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:09
    Task: MC
    Announcement bits (1): 0-KRT

```



```
AS path: I

229.0.0.4.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:12
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

229.0.0.5.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 9
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

229.0.0.6.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

229.0.0.7.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

229.0.0.8.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:15
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I

229.0.0.9.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:14
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I
```

```
229.0.0.10.11.11.11.100.3.13.0.0/80 (1 entry, 1 announced)
  *Multicast Preference: 180
    Next hop type: Multicast (IPv4)
    Next-hop reference count: 113
    State: <Active Int>
    Age: 2:13
    Task: MC
    Announcement bits (1): 0-KRT
    AS path: I
```

## show route source-gateway

|                                    |                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 321</a><br><a href="#">Syntax (EX Series Switches) on page 321</a>                                                                                                                                                                                                                                                                                             |
| <b>Syntax</b>                      | <b>show route source-gateway</b> <i>address</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                           |
| <b>Syntax (EX Series Switches)</b> | <b>show route source-gateway</b> <i>address</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                     |
| <b>Description</b>                 | Display the entries in the routing table that were learned from a particular address. The <b>Source</b> field in the <b>show route detail</b> command output lists the source for each route, if known.                                                                                                                                                                                   |
| <b>Options</b>                     | <b>brief   detail   extensive   terse</b> —(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to <b>brief</b> .<br><br><b>address</b> —IP address of the system.<br><br><b>logical-system (all   <i>logical-system-name</i>)</b> —(Optional) Perform this operation on all logical systems or on a particular logical system. |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>List of Sample Output</b>       | <a href="#">show route source-gateway on page 321</a><br><a href="#">show route source-gateway detail on page 322</a><br><a href="#">show route source-gateway extensive on page 324</a>                                                                                                                                                                                                  |
| <b>Output Fields</b>               | For information about output fields, see the output field tables for the <a href="#">show route</a> command, the <a href="#">show route detail</a> command, the <a href="#">show route extensive</a> command, or the <a href="#">show route terse</a> command.                                                                                                                            |

## Sample Output

### show route source-gateway

```

user@host> show route source-gateway 10.255.70.103
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

```

```

mpls.0: 7 destinations, 7 routes (5 active, 0 holddown, 2 hidden)
Restart Complete

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

10.255.70.103:1:3:1/96
    *[BGP/170] 12:12:24, localpref 100, from 10.255.70.103
    AS path: I
    > via so-0/3/0.0, label-switched-path green-r1-r3

red.l2vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

10.255.70.103:2:3:1/96
    *[BGP/170] 12:12:24, localpref 0, from 10.255.70.103
    AS path: I
    > via so-0/3/0.0, label-switched-path green-r1-r3

bgp.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

10.255.70.103:1:3:1/96
    *[BGP/170] 12:12:24, localpref 100, from 10.255.70.103
    AS path: I
    > via so-0/3/0.0, label-switched-path green-r1-r3

10.255.70.103:2:3:1/96
    *[BGP/170] 12:12:24, localpref 0, from 10.255.70.103
    AS path: I
    > via so-0/3/0.0, label-switched-path green-r1-r3

```

#### show route source-gateway detail

```

user@host> show route source-gateway 10.255.70.103 detail
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 7 destinations, 7 routes (5 active, 0 holddown, 2 hidden)
Restart Complete

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
Restart Complete
green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)

```

```

Restart Complete
10.255.70.103:1:3:1/96 (1 entry, 1 announced)
  *BGP    Preference: 170/-101
          Route Distinguisher: 10.255.70.103:1
          Next-hop reference count: 7
          Source: 10.255.70.103
          Protocol next hop: 10.255.70.103
          Indirect next hop: 2 no-forward
          State: <Secondary Active Int Ext>
          Local AS: 69 Peer AS: 69
          Age: 12:14:00 Metric2: 1
          Task: BGP_69.10.255.70.103+179
          Announcement bits (1): 0-green-12vpn
          AS path: I
          Communities: target:11111:1 Layer2-info: encaps:VPLS,
          control flags:, mtu: 0
          Label-base: 800008, range: 8
          Localpref: 100
          Router ID: 10.255.70.103
          Primary Routing Table bgp.12vpn.0

red.12vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Restart Complete

10.255.70.103:2:3:1/96 (1 entry, 1 announced)
  *BGP    Preference: 170/-1
          Route Distinguisher: 10.255.70.103:2
          Next-hop reference count: 7
          Source: 10.255.70.103
          Protocol next hop: 10.255.70.103
          Indirect next hop: 2 no-forward
          State: <Secondary Active Int Ext>
          Local AS: 69 Peer AS: 69
          Age: 12:14:00 Metric2: 1
          Task: BGP_69.10.255.70.103+179
          Announcement bits (1): 0-red-12vpn
          AS path: I
          Communities: target:11111:2 Layer2-info: encaps:VPLS,
          control flags:Site-Down, mtu: 0
          Label-base: 800016, range: 8
          Localpref: 0
          Router ID: 10.255.70.103
          Primary Routing Table bgp.12vpn.0

bgp.12vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

10.255.70.103:1:3:1/96 (1 entry, 0 announced)
  *BGP    Preference: 170/-101
          Route Distinguisher: 10.255.70.103:1
          Next-hop reference count: 7
          Source: 10.255.70.103
          Protocol next hop: 10.255.70.103
          Indirect next hop: 2 no-forward
          State: <Active Int Ext>
          Local AS: 69 Peer AS: 69
          Age: 12:14:00 Metric2: 1
          Task: BGP_69.10.255.70.103+179
          AS path: I
          Communities: target:11111:1 Layer2-info: encaps:VPLS, control
flags:, mtu: 0

```

```

Label-base: 800008, range: 8
Localpref: 100
Router ID: 10.255.70.103
Secondary Tables: green.l2vpn.0
10.255.70.103:2:3:1/96 (1 entry, 0 announced)
  *BGP Preference: 170/-1
    Route Distinguisher: 10.255.70.103:2
    Next-hop reference count: 7
    Source: 10.255.70.103
    Protocol next hop: 10.255.70.103
    Indirect next hop: 2 no-forward
    State: <Active Int Ext>
    Local AS: 69 Peer AS: 69
    Age: 12:14:00 Metric2: 1
    Task: BGP_69.10.255.70.103+179
    AS path: I
    Communities: target:11111:2 Layer2-info: encaps:VPLS,
    control flags:Site-Down,
    mtu: 0
    Label-base: 800016, range: 8
    Localpref: 0
    Router ID: 10.255.70.103
    Secondary Tables: red.l2vpn.0

```

#### show route source-gateway extensive

```

user@host> show route source-gateway 10.255.70.103 extensive
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete

private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

mpls.0: 7 destinations, 7 routes (5 active, 0 holddown, 2 hidden)
Restart Complete

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
Restart Complete

green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
10.255.70.103:1:3:1/96 (1 entry, 1 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 10.255.70.103:1
    Next-hop reference count: 7
    Source: 10.255.70.103
    Protocol next hop: 10.255.70.103
    Indirect next hop: 2 no-forward
    State: <Secondary Active Int Ext>
    Local AS: 69 Peer AS: 69
    Age: 12:15:24 Metric2: 1
    Task: BGP_69.10.255.70.103+179
    Announcement bits (1): 0-green-l2vpn
    AS path: I
    Communities: target:11111:1 Layer2-info: encaps:VPLS,
    control flags:, mtu: 0

```

```

Label-base: 800008, range: 8
Localpref: 100
Router ID: 10.255.70.103
Primary Routing Table bgp.l2vpn.0

red.l2vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Restart Complete

10.255.70.103:2:3:1/96 (1 entry, 1 announced)
*BGP Preference: 170/-1
Route Distinguisher: 10.255.70.103:2
Next-hop reference count: 7
Source: 10.255.70.103
Protocol next hop: 10.255.70.103
Indirect next hop: 2 no-forward
State: <Secondary Active Int Ext>
Local AS: 69 Peer AS: 69
Age: 12:15:24 Metric2: 1
Task: BGP_69.10.255.70.103+179
Announcement bits (1): 0-red-l2vpn
AS path: I
Communities: target:11111:2 Layer2-info: encaps:VPLS,
control flags:Site-Down, mtu: 0
Label-base: 800016, range: 8
Localpref: 0
Router ID: 10.255.70.103
Primary Routing Table bgp.l2vpn.0

bgp.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete

10.255.70.103:1:3:1/96 (1 entry, 0 announced)
*BGP Preference: 170/-101
Route Distinguisher: 10.255.70.103:1
Next-hop reference count: 7
Source: 10.255.70.103
Protocol next hop: 10.255.70.103
Indirect next hop: 2 no-forward
State: <Active Int Ext>
Local AS: 69 Peer AS: 69
Age: 12:15:24 Metric2: 1
Task: BGP_69.10.255.70.103+179
AS path: I
Communities: target:11111:1 Layer2-info: encaps:VPLS,
control flags:, mtu: 0
Label-base: 800008, range: 8
Localpref: 100
Router ID: 10.255.70.103
Secondary Tables: green.l2vpn.0
Indirect next hops: 1
    Protocol next hop: 10.255.70.103 Metric: 2
    Indirect next hop: 2 no-forward
    Indirect path forwarding next hops: 1
Next hop: via so-0/3/0.0 weight 0x1
    10.255.70.103/32 Originating RIB: inet.3
    Metric: 2 Node path count: 1
    Forwarding nexthops: 1
    Nexthop: via so-0/3/0.0

10.255.70.103:2:3:1/96 (1 entry, 0 announced)
*BGP Preference: 170/-1

```

```

Route Distinguisher: 10.255.70.103:2
Next-hop reference count: 7
Source: 10.255.70.103
Protocol next hop: 10.255.70.103
Indirect next hop: 2 no-forward
State: <Active Int Ext>
Local AS: 69 Peer AS: 69
Age: 12:15:24 Metric2: 1
Task: BGP_69.10.255.70.103+179
AS path: I
Communities: target:11111:2 Layer2-info: encaps:VPLS,
control flags:Site-Down,
mtu: 0
Label-base: 800016, range: 8
Localpref: 0
Router ID: 10.255.70.103
Secondary Tables: red.12vpn.0
Indirect next hops: 1
    Protocol next hop: 10.255.70.103 Metric: 2
    Indirect next hop: 2 no-forward
    Indirect path forwarding next hops: 1
Next hop: via so-0/3/0.0 weight 0x1
    10.255.70.103/32 Originating RIB: inet.3
    Metric: 2 Node path count: 1
    Forwarding nexthops: 1
    Nexthop: via so-0/3/0.0

```



## show route summary

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 327</a><br><a href="#">Syntax (EX Series Switches) on page 327</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Syntax</b>                      | <pre>show route summary &lt;logical-system (all   <i>logical-system-name</i>)&gt; &lt;table <i>routing-table-name</i>&gt;</pre>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Syntax (EX Series Switches)</b> | show route summary                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Release Information</b>         | <p>Command introduced before Junos OS Release 7.4.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Description</b>                 | <p>Display summary statistics about the entries in the routing table.</p> <p>CPU utilization might increase while the device learns routes. We recommend that you use the <b>show route summary</b> command after the device learns and enters the routes into the routing table. Depending on the size of your network, this might take several minutes. If you receive a “timeout communicating with routing daemon” error when using the <b>show route summary</b> command, wait several minutes before attempting to use the command again. This is not a critical system error, but you might experience a delay in using the command-line interface (CLI).</p> |
| <b>Options</b>                     | <p><b>none</b>—Display summary statistics about the entries in the routing table.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b>table <i>routing-table-name</i></b>—(Optional) Display summary statistics for all routing tables whose name begins with this string (for example, <b>inet.0</b> and <b>inet6.0</b> are both displayed when you run the <b>show route summary table inet</b> command). If you only want to display statistics for a specific routing table, make sure to enter the exact name of that routing table.</p>      |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>List of Sample Output</b>       | <a href="#">show route summary on page 328</a><br><a href="#">show route summary table on page 329</a><br><a href="#">show route summary table (with Route Limits Configured for the Routing Table) on page 329</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Output Fields</b>               | <p><a href="#">Table 30 on page 327</a> lists the output fields for the <b>show route summary</b> command. Output fields are listed in the approximate order in which they appear.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

**Table 30: show route summary Output Fields**

| Field Name | Field Description                    |
|------------|--------------------------------------|
| Router ID  | Address of the local routing device. |

Table 30: show route summary Output Fields (*continued*)

| Field Name                | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i> | Name of the routing table (for example, <b>inet.0</b> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>destinations</b>       | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>routes</b>             | Number of routes in the routing table: <ul style="list-style-type: none"> <li><b>active</b>—Number of routes that are active.</li> <li><b>holddown</b>—Number of routes that are in the hold-down state before being declared inactive.</li> <li><b>hidden</b>—Number of routes that are not used because of routing policy.</li> </ul>                                                                                                                                                                                                                                                                                                                                                     |
| <b>Limit/Threshold</b>    | Displays the configured route limits for the routing table set with the <b>maximum-prefixes</b> and the <b>maximum-paths</b> statements. If you do not configure route limits for the routing table, the show output does not display this information. <ul style="list-style-type: none"> <li><b>destinations</b>—The first number represents the maximum number of route prefixes installed in the routing table. The second number represents the number of route prefixes that trigger a warning message.</li> <li><b>routes</b>—The first number represents the maximum number of routes. The second number represents the number of routes that trigger a warning message.</li> </ul> |
| <b>Direct</b>             | Routes on the directly connected network.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Local</b>              | Local routes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <i>protocol-name</i>      | Name of the protocol from which the route was learned. For example, <b>OSPF</b> , <b>RSVP</b> , and <b>Static</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Sample Output

### show route summary

```

user@host> show route summary
Autonomous system number: 69
Router ID: 10.255.71.52
Maximum-ECMP: 32
inet.0: 24 destinations, 25 routes (23 active, 0 holddown, 1 hidden)
Restart Complete
      Direct:      6 routes,      5 active
      Local:       4 routes,      4 active
      OSPF:        5 routes,      4 active
      Static:      7 routes,      7 active
      IGMP:        1 routes,      1 active
      PIM:         2 routes,      2 active

inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Restart Complete
      RSVP:        2 routes,      2 active

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

```

Restart Complete
  Direct:      1 routes,      1 active

mpls.0: 7 destinations, 7 routes (5 active, 0 holddown, 2 hidden)
Restart Complete
  MPLS:       3 routes,      3 active
  VPLS:       4 routes,      2 active

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
Restart Complete
  Direct:     2 routes,      2 active
  PIM:        2 routes,      2 active
  MLD:        1 routes,      1 active

green.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
  BGP:        2 routes,      2 active
  L2VPN:      2 routes,      2 active

red.l2vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Restart Complete
  BGP:        2 routes,      2 active
  L2VPN:      1 routes,      1 active

bgp.l2vpn.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
Restart Complete
  BGP:        4 routes,      4 active

```

#### show route summary table

```

user@host> show route summary table inet
Router ID: 192.168.0.1

inet.0: 32 destinations, 34 routes (31 active, 0 holddown, 1 hidden)
  Direct:     6 routes,      5 active
  Local:      9 routes,      9 active
  OSPF:       3 routes,      1 active
  Static:    13 routes,     13 active
  ICMP:       1 routes,      1 active
  PIM:        2 routes,      2 active

inet.1: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
  Multicast:   1 routes,      1 active

inet6.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
  Local:       1 routes,      1 active
  PIM:         2 routes,      2 active

inet6.1: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
  Multicast:   1 routes,      1 active

```

#### show route summary table (with Route Limits Configured for the Routing Table)

```

user@host> show route summary table VPN-A.inet.0
Autonomous system number: 100
Router ID: 10.255.182.142

VPN-A.inet.0: 13 destinations, 14 routes (13 active, 0 holddown, 0 hidden)
Limit/Threshold: 2000/200 destinations 20/12 routes
  Direct:     2 routes,      2 active
  Local:       1 routes,      1 active

```

|       |           |          |
|-------|-----------|----------|
| OSPF: | 4 routes, | 3 active |
| BGP:  | 4 routes, | 4 active |
| IGMP: | 1 routes, | 1 active |
| PIM:  | 2 routes, | 2 active |

## show route table

---

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>              | <a href="#">Syntax on page 331</a><br><a href="#">Syntax (EX Series Switches) on page 331</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Syntax</b>                      | show route table <i>routing-table-name</i><br><brief   detail   extensive   terse><br><logical-system (all   <i>logical-system-name</i> )>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Syntax (EX Series Switches)</b> | show route table <i>routing-table-name</i><br><brief   detail   extensive   terse>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Release Information</b>         | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>                 | Display the route entries in a particular routing table.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Options</b>                     | <p><b>brief   detail   extensive   terse</b>—(Optional) Display the specified level of output.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><b><i>routing-table-name</i></b>—Display route entries for all routing tables whose name begins with this string (for example, inet.0 and inet6.0 are both displayed when you run the <b>show route table inet</b> command).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Required Privilege Level</b>    | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Related Documentation</b>       | <ul style="list-style-type: none"> <li>• <a href="#">show route summary on page 327</a></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>List of Sample Output</b>       | <a href="#">show route table bgp.l2.vpn on page 332</a><br><a href="#">show route table bgp.l3vpn.0 on page 332</a><br><a href="#">show route table bgp.l3vpn.0 detail on page 332</a><br><a href="#">show route table bgp.rtarget.0 (When Proxy BGP Route Target Filtering Is Configured) on page 334</a><br><a href="#">show route table inet.0 on page 334</a><br><a href="#">show route table inet6.0 on page 334</a><br><a href="#">show route table inet6.3 on page 335</a><br><a href="#">show route table inetflow detail on page 335</a><br><a href="#">show route table l2circuit.0 on page 335</a><br><a href="#">show route table mpls on page 336</a><br><a href="#">show route table mpls extensive on page 336</a><br><a href="#">show route table mpls.0 on page 336</a><br><a href="#">show route table mpls.0 (RSVP Route—Transit LSP) on page 337</a><br><a href="#">show route table vpls_1 detail on page 337</a><br><a href="#">show route table vpn-a on page 337</a><br><a href="#">show route table vpn-a.mdt.0 on page 338</a><br><a href="#">show route table VPN-A detail on page 338</a> |

[show route table VPN-AB.inet.0 on page 338](#)

[show route table VPN\\_blue.mvpn-inet6.0 on page 339](#)

[show route table inetflow detail on page 339](#)

**Output Fields** For information about output fields, see the output field tables for the [show route](#) command, the [show route detail](#) command, the [show route extensive](#) command, or the [show route terse](#) command.

## Sample Output

### show route table bgp.l2.vpn

```
user@host> show route table bgp.l2.vpn
bgp.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

192.168.24.1:1:4:1/96
    *[BGP/170] 01:08:58, localpref 100, from 192.168.24.1
    AS path: I
    > to 10.0.16.2 via fe-0/0/1.0, label-switched-path am
```

### show route table bgp.l3vpn.0

```
user@host> show route table bgp.l3vpn.0
bgp.l3vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.255.71.15:100:10.255.71.17/32
    *[BGP/170] 00:03:59, MED 1, localpref 100, from
10.255.71.15
    AS path: I
    > via so-2/1/0.0, Push 100020, Push 100011(top)
10.255.71.15:200:10.255.71.18/32
    *[BGP/170] 00:03:59, MED 1, localpref 100, from
10.255.71.15
    AS path: I
    > via so-2/1/0.0, Push 100021, Push 100011(top)
```

### show route table bgp.l3vpn.0 detail

```
user@host> show route table bgp.l3vpn.0 detail
bgp.l3vpn.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)

10.255.245.12:1:4.0.0.0/8 (1 entry, 1 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 10.255.245.12:1
    Source: 10.255.245.12
    Next hop: 192.168.208.66 via fe-0/0/0.0, selected
    Label operation: Push 182449
    Protocol next hop: 10.255.245.12
    Push 182449
    Indirect next hop: 863a630 297
    State: <Active Int Ext>
    Local AS: 35 Peer AS: 35
    Age: 12:19 Metric2: 1
    Task: BGP_35.10.255.245.12+179
    Announcement bits (1): 0-BGP.0.0.0.0+179
    AS path: 30 10458 14203 2914 3356 I (Atomic) Aggregator: 3356 4.68.0.11

    Communities: 2914:420 target:11111:1 origin:56:78
```

```

VPN Label: 182449
Localpref: 100
Router ID: 10.255.245.12

10.255.245.12:1:4.17.225.0/24 (1 entry, 1 announced)
*BGP Preference: 170/-101
Route Distinguisher: 10.255.245.12:1
Source: 10.255.245.12
Next hop: 192.168.208.66 via fe-0/0/0.0, selected
Label operation: Push 182465
Protocol next hop: 10.255.245.12
Push 182465
Indirect next hop: 863a8f0 305
State: <Active Int Ext>
Local AS: 35 Peer AS: 35
Age: 12:19 Metric2: 1
Task: BGP_35.10.255.245.12+179
Announcement bits (1): 0-BGP.0.0.0.0+179
AS path: 30 10458 14203 2914 11853 11853 11853 6496 6496 6496 6496 6496 I
Communities: 2914:410 target:12:34 target:11111:1 origin:12:34
VPN Label: 182465
Localpref: 100
Router ID: 10.255.245.12

10.255.245.12:1:4.17.226.0/23 (1 entry, 1 announced)
*BGP Preference: 170/-101
Route Distinguisher: 10.255.245.12:1
Source: 10.255.245.12
Next hop: 192.168.208.66 via fe-0/0/0.0, selected
Label operation: Push 182465
Protocol next hop: 10.255.245.12
Push 182465
Indirect next hop: 86bd210 330
State: <Active Int Ext>
Local AS: 35 Peer AS: 35
Age: 12:19 Metric2: 1
Task: BGP_35.10.255.245.12+179
Announcement bits (1): 0-BGP.0.0.0.0+179
AS path: 30 10458 14203 2914 11853 11853 11853 6496 6496 6496 6496 6496
6496 I
Communities: 2914:410 target:12:34 target:11111:1 origin:12:34
VPN Label: 182465
Localpref: 100
Router ID: 10.255.245.12

10.255.245.12:1:4.17.251.0/24 (1 entry, 1 announced)
*BGP Preference: 170/-101
Route Distinguisher: 10.255.245.12:1
Source: 10.255.245.12
Next hop: 192.168.208.66 via fe-0/0/0.0, selected
Label operation: Push 182465
Protocol next hop: 10.255.245.12
Push 182465
Indirect next hop: 86bd210 330
State: <Active Int Ext>
Local AS: 35 Peer AS: 35
Age: 12:19 Metric2: 1
Task: BGP_35.10.255.245.12+179
Announcement bits (1): 0-BGP.0.0.0.0+179
AS path: 30 10458 14203 2914 11853 11853 11853 6496 6496 6496 6496 6496

```

```

6496 I
Communities: 2914:410 target:12:34 target:11111:1 origin:12:34
VPN Label: 182465
Localpref: 100

```

### show route table bgp.rtarget.0 (When Proxy BGP Route Target Filtering Is Configured)

```

user@host> show route table bgp.rtarget.0
bgp.rtarget.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

100:100:100/96
                *[RTarget/5] 00:03:14
                  Type Proxy
                    for 10.255.165.103
                    for 10.255.166.124
                  Local

```

### show route table inet.0

```

user@host> show route table inet.0
inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0        *[Static/5] 00:51:57
                  > to 111.222.5.254 via fxp0.0
1.0.0.1/32       *[Direct/0] 00:51:58
                  > via at-5/3/0.0
1.0.0.2/32       *[Local/0] 00:51:58
                  Local
12.12.12.21/32   *[Local/0] 00:51:57
                  Reject
13.13.13.13/32   *[Direct/0] 00:51:58
                  > via t3-5/2/1.0
13.13.13.14/32   *[Local/0] 00:51:58
                  Local
13.13.13.21/32   *[Local/0] 00:51:58
                  Local
13.13.13.22/32   *[Direct/0] 00:33:59
                  > via t3-5/2/0.0
127.0.0.1/32     [Direct/0] 00:51:58
                  > via lo0.0
111.222.5.0/24   *[Direct/0] 00:51:58
                  > via fxp0.0
111.222.5.81/32  *[Local/0] 00:51:58
                  Local

```

### show route table inet6.0

```

user@host> show route table inet6.0
inet6.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Route, * = Both

fec0:0:0:3::/64 *[Direct/0] 00:01:34
>via fe-0/1/0.0

fec0:0:0:3::/128 *[Local/0] 00:01:34
>Local

fec0:0:0:4::/64 *[Static/5] 00:01:34
>to fec0:0:0:3::ffff via fe-0/1/0.0

```



**show route table inet6.3**

```

user@router> show route table inet6.3
inet6.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

::10.255.245.195/128
    *[LDP/9] 00:00:22, metric 1
    > via so-1/0/0.0
::10.255.245.196/128
    *[LDP/9] 00:00:08, metric 1
    > via so-1/0/0.0, Push 100008

```

**show route table inetflow detail**

```

user@host> show route table inetflow detail
inetflow.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
10.12.44.1,*/48 (1 entry, 1 announced)
    *BGP Preference: 170/-101
        Next-hop reference count: 2
        State: <Active Ext>
        Local AS: 65002 Peer AS: 65000
        Age: 4
        Task: BGP_65000.10.12.99.5+3792
        Announcement bits (1): 0-Flow
        AS path: 65000 I
        Communities: traffic-rate:0:0
        Validation state: Accept, Originator: 10.12.99.5
        Via: 10.12.44.0/24, Active
        Localpref: 100
        Router ID: 10.255.71.161

10.12.56.1,*/48 (1 entry, 1 announced)
    *Flow Preference: 5
        Next-hop reference count: 2
        State: <Active>
        Local AS: 65002
        Age: 6:30
        Task: RT Flow
        Announcement bits (2): 0-Flow 1-BGP.0.0.0.0+179
        AS path: I
        Communities: 1:1

```

**show route table l2circuit.0**

```

user@host> show route table l2circuit.0
l2circuit.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.1.1.195:NoCtrlWord:1:1:Local/96
    *[L2CKT/7] 00:50:47
    > via so-0/1/2.0, Push 100049
    > via so-0/1/3.0, Push 100049
10.1.1.195:NoCtrlWord:1:1:Remote/96
    *[LDP/9] 00:50:14
    Discard
10.1.1.195:CtrlWord:1:2:Local/96
    *[L2CKT/7] 00:50:47
    > via so-0/1/2.0, Push 100049
    > via so-0/1/3.0, Push 100049
10.1.1.195:CtrlWord:1:2:Remote/96

```

```
*[LDP/9] 00:50:14
Discard
```

### show route table mpls

```
user@host> show route table mpls
mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

0                *[MPLS/0] 00:13:55, metric 1
                  Receive
1                *[MPLS/0] 00:13:55, metric 1
                  Receive
2                *[MPLS/0] 00:13:55, metric 1
                  Receive
1024             *[VPN/0] 00:04:18
                  to table red.inet.0, Pop
```

### show route table mpls extensive

```
user@host> show route table mpls extensive
100000 (1 entry, 1 announced)
TSI:
KRT in-kernel 100000 /36 -> {so-1/0/0.0}
    *LDP      Preference: 9
              Next hop: via so-1/0/0.0, selected
              Pop
              State: <Active Int>
              Age: 29:50      Metric: 1
              Task: LDP
              Announcement bits (1): 0-KRT
              AS path: I
              Prefixes bound to route: 10.0.0.194/32
```

### show route table mpls.0

```
user@host> show route table mpls.0
mpls.0: 11 destinations, 11 routes (11 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

0                *[MPLS/0] 00:45:09, metric 1
                  Receive
1                *[MPLS/0] 00:45:09, metric 1
                  Receive
2                *[MPLS/0] 00:45:09, metric 1
                  Receive
100000           *[L2VPN/7] 00:43:04
                  > via so-0/1/0.1, Pop
100001           *[L2VPN/7] 00:43:03
                  > via so-0/1/0.2, Pop      Offset: 4
100002           *[LDP/9] 00:43:22, metric 1
                  via so-0/1/2.0, Pop
                  > via so-0/1/3.0, Pop
100002(S=0)      *[LDP/9] 00:43:22, metric 1
                  via so-0/1/2.0, Pop
                  > via so-0/1/3.0, Pop
100003           *[LDP/9] 00:43:22, metric 1
                  > via so-0/1/2.0, Swap 100002
                  via so-0/1/3.0, Swap 100002
100004           *[LDP/9] 00:43:16, metric 1
                  via so-0/1/2.0, Swap 100049
                  > via so-0/1/3.0, Swap 100049
```

```

so-0/1/0.1      *[L2VPN/7] 00:43:04
                 > via so-0/1/2.0, Push 100001, Push 100049(top)
                 via so-0/1/3.0, Push 100001, Push 100049(top)
so-0/1/0.2      *[L2VPN/7] 00:43:03
                 > via so-0/1/2.0, Push 100000, Push 100049(top) Offset: -4
                 > via so-0/1/3.0, Push 100000, Push 100049(top) Offset: -4

```

### show route table mpls.0 (RSVP Route—Transit LSP)

```
user@host> show route table mpls.0
```

```

mpls.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

```

```

0          *[MPLS/0] 00:37:31, metric 1
           Receive
1          *[MPLS/0] 00:37:31, metric 1
           Receive
2          *[MPLS/0] 00:37:31, metric 1
           Receive
13         *[MPLS/0] 00:37:31, metric 1
           Receive
300352     *[RSVP/7/1] 00:08:00, metric 1
           > to 8.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
300352(S=0) *[RSVP/7/1] 00:08:00, metric 1
           > to 8.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
300384     *[RSVP/7/2] 00:05:20, metric 1
           > to 8.64.1.106 via ge-1/0/0.0, Pop
300384(S=0) *[RSVP/7/2] 00:05:20, metric 1
           > to 8.64.1.106 via ge-1/0/0.0, Pop

```

### show route table vpls\_1 detail

```
user@host> show route table vpls_1 detail
```

```

vpls_1.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

```

```

1.1.1.11:1000:1:1/96 (1 entry, 1 announced)
*L2VPN Preference: 170/-1
Receive table: vpls_1.l2vpn.0
Next-hop reference count: 2
State: <Active Int Ext>
Age: 4:29:47 Metric2: 1
Task: vpls_1-l2vpn
Announcement bits (1): 1-BGP.0.0.0+179
AS path: I
Communities: Layer2-info: encaps:VPLS, control flags:Site-Down
Label-base: 800000, range: 8, status-vector: 0xFF

```

### show route table vpn-a

```
user@host> show route table vpn-a
```

```
vpn-a.l2vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
```

```
+ = Active Route, - = Last Active, * = Both
```

```

192.168.16.1:1:1/96
           *[VPN/7] 05:48:27
           Discard
192.168.24.1:1:2/96
           *[BGP/170] 00:02:53, localpref 100, from 192.168.24.1
           AS path: I
           > to 10.0.16.2 via fe-0/0/1.0, label-switched-path am

```

```

192.168.24.1:1:3:1/96
    *[BGP/170] 00:02:53, localpref 100, from 192.168.24.1
    AS path: I
    > to 10.0.16.2 via fe-0/0/1.0, label-switched-path am

```

#### show route table vpn-a.mdt.0

```

user@host> show route table vpn-a.mdt.0
vpn-a.mdt.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1:1:0:10.255.14.216:232.1.1.1/144
    *[MVPN/70] 01:23:05, metric2 1
    Indirect
1:1:1:10.255.14.218:232.1.1.1/144
    *[BGP/170] 00:57:49, localpref 100, from 10.255.14.218
    AS path: I
    > via so-0/0/0.0, label-switched-path r0e-to-r1
1:1:2:10.255.14.217:232.1.1.1/144
    *[BGP/170] 00:57:49, localpref 100, from 10.255.14.217
    AS path: I
    > via so-0/0/1.0, label-switched-path r0-to-r2

```

#### show route table VPN-A detail

```

user@host> show route table VPN-A detail
VPN-AB.inet.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)
10.255.179.9/32 (1 entry, 1 announced)
    *BGP Preference: 170/-101
    Route Distinguisher: 10.255.179.13:200
    Next hop type: Indirect
    Next-hop reference count: 5
    Source: 10.255.179.13
    Next hop type: Router, Next hop index: 732
    Next hop: 10.39.1.14 via fe-0/3/0.0, selected
    Label operation: Push 299824, Push 299824(top)
    Protocol next hop: 10.255.179.13
    Push 299824
    Indirect next hop: 8f275a0 1048574
    State: (Secondary Active Int Ext)
    Local AS: 1 Peer AS: 1
    Age: 3:41:06 Metric: 1 Metric2: 1
    Task: BGP_1.10.255.179.13+64309
    Announcement bits (2): 0-KRT 1-BGP RT Background
    AS path: I
    Communities: target:1:200 rte-type:0.0.0.0:1:0
    Import Accepted
    VPN Label: 299824 TTL Action: vrf-ttl-propagate
    Localpref: 100
    Router ID: 10.255.179.13
    Primary Routing Table bgp.13vpn.0

```

#### show route table VPN-AB.inet.0

```

user@host> show route table VPN-AB.inet.0
VPN-AB.inet.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.39.1.0/30      *[OSPF/10] 00:07:24, metric 1
                  > via so-7/3/1.0
10.39.1.4/30     *[Direct/0] 00:08:42
                  > via so-5/1/0.0

```

```

10.39.1.6/32      *[Local/0] 00:08:46
                  Local
10.255.71.16/32  *[Static/5] 00:07:24
                  > via so-2/0/0.0
10.255.71.17/32  *[BGP/170] 00:07:24, MED 1, localpref 100, from
10.255.71.15
                  AS path: I
                  > via so-2/1/0.0, Push 100020, Push 100011(top)
10.255.71.18/32  *[BGP/170] 00:07:24, MED 1, localpref 100, from
10.255.71.15
                  AS path: I
                  > via so-2/1/0.0, Push 100021, Push 100011(top)
10.255.245.245/32 *[BGP/170] 00:08:35, localpref 100
                  AS path: 2 I
                  > to 10.39.1.5 via so-5/1/0.0
10.255.245.246/32 *[OSPF/10] 00:07:24, metric 1
                  > via so-7/3/1.0

```

#### show route table VPN\_blue.mvpn-inet6.0

```

user@host> show route table VPN_blue.mvpn-inet6.0
vpn_blue.mvpn-inet6.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1:10.255.2.202:65535:10.255.2.202/432
    *[BGP/170] 00:02:37, localpref 100, from 10.255.2.202
    AS path: I
    > via so-0/1/3.0
1:10.255.2.203:65535:10.255.2.203/432
    *[BGP/170] 00:02:37, localpref 100, from 10.255.2.203
    AS path: I
    > via so-0/1/0.0
1:10.255.2.204:65535:10.255.2.204/432
    *[MVPN/70] 00:57:23, metric2 1
    Indirect
5:10.255.2.202:65535:128::192.168.90.2:128:ffff::1/432
    *[BGP/170] 00:02:37, localpref 100, from 10.255.2.202
    AS path: I
    > via so-0/1/3.0
6:10.255.2.203:65535:65000:128::10.12.53.12:128:ffff::1/432
    *[PIM/105] 00:02:37
    Multicast (IPv6)
7:10.255.2.202:65535:65000:128::192.168.90.2:128:ffff::1/432
    *[MVPN/70] 00:02:37, metric2 1
    Indirect

```

#### show route table inetflow detail

```

user@host> show route table inetflow detail
inetflow.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
10.12.44.1,*/48 (1 entry, 1 announced)
    *BGP      Preference: 170/-101
              Next-hop reference count: 2
              State: <Active Ext>
              Local AS: 65002 Peer AS: 65000
              Age: 4
              Task: BGP_65000.10.12.99.5+3792
              Announcement bits (1): 0-Flow
              AS path: 65000 I
              Communities: traffic-rate:0:0
              Validation state: Accept, Originator: 10.12.99.5

```

```

Via: 10.12.44.0/24, Active
Localpref: 100
Router ID: 10.255.71.161

10.12.56.1,*/48 (1 entry, 1 announced)
  *Flow Preference: 5
    Next-hop reference count: 2
    State: <Active>
    Local AS: 65002
    Age: 6:30
    Task: RT Flow
    Announcement bits (2): 0-Flow 1-BGP.0.0.0.0+179
    AS path: I
    Communities: 1:1

user@PE1> show route table green.l2vpn.0 (VPLS Multihoming with FEC 129)
green.l2vpn.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.1.1.2:100:1.1.1.2/96 AD
    *[VPLS/170] 1d 03:11:03, metric2 1
    Indirect
1.1.1.4:100:1.1.1.4/96 AD
    *[BGP/170] 1d 03:11:02, localpref 100, from 1.1.1.4
    AS path: I, validation-state: unverified
    > via ge-1/2/1.5
1.1.1.2:100:1.0/96 MH
    *[VPLS/170] 1d 03:11:03, metric2 1
    Indirect
1.1.1.4:100:1.0/96 MH
    *[BGP/170] 1d 03:11:02, localpref 100, from 1.1.1.4
    AS path: I, validation-state: unverified
    > via ge-1/2/1.5
1.1.1.4:NoCtrlWord:5:100:100:1.1.1.2:1.1.1.4/176
    *[VPLS/7] 1d 03:11:02, metric2 1
    > via ge-1/2/1.5
1.1.1.4:NoCtrlWord:5:100:100:1.1.1.4:1.1.1.2/176
    *[LDP/9] 1d 03:11:02
    Discard

user@host> show route table red extensive
red.inet.0: 364481 destinations, 714087 routes (364480 active, 48448 holddown, 1
hidden)
22.0.0.0/32 (3 entries, 1 announced)
  State: <OnList CalcForwarding>
TSI:
KRT in-kerne 22.0.0.0/32 -> {composite(1048575)} Page 0 idx 1 Type 1 val 0x934342c

  Nexthop: Self
  AS path: [2] I
  Communities: target:2:1
Path 22.0.0.0 from 2.3.0.0 Vector len 4. Val: 1
  @BGP Preference: 170/-1
    Route Distinguisher: 2:1
    Next hop type: Indirect
    Address: 0x258059e4
    Next-hop reference count: 2
    Source: 2.2.0.0
    Next hop type: Router
    Next hop: 10.1.1.1 via ge-1/1/9.0, selected
    Label operation: Push 707633

```

```

Label TTL action: prop-ttl
Session Id: 0x17d8
Protocol next hop: 2.2.0.0
Push 16
Composite next hop: 0x25805988 - INH Session ID: 0x193c
Indirect next hop: 0x23eea900 - INH Session ID: 0x193c
State: <Secondary Active Int Ext ProtectionPath ProtectionCand>
Local AS:      2 Peer AS:      2
Age: 23        Metric2: 35
Validation State: unverified
Task: BGP_2.2.2.0.0+34549
AS path: I
Communities: target:2:1
Import Accepted
VPN Label: 16
Localpref: 0
Router ID: 2.2.0.0
Primary Routing Table bgp.l3vpn.0
Composite next hops: 1
  Protocol next hop: 2.2.0.0 Metric: 35
  Push 16
  Composite next hop: 0x25805988 - INH Session ID: 0x193c
  Indirect next hop: 0x23eea900 - INH Session ID: 0x193c
  Indirect path forwarding next hops: 1
    Next hop type: Router
    Next hop: 10.1.1.1 via ge-1/1/9.0
    Session Id: 0x17d8
  2.2.0.0/32 Originating RIB: inet.3
    Metric: 35                      Node path count: 1
    Forwarding nexthops: 1
      Nexthop: 10.1.1.1 via ge-1/1/9.0
BCP Preference: 170/-1
Route Distinguisher: 2:1
Next hop type: Indirect
Address: 0x9347028
Next-hop reference count: 3
Source: 2.3.0.0
Next hop type: Router, Next hop index: 702
Next hop: 10.1.4.2 via ge-1/0/0.0, selected
Label operation: Push 634278
Label TTL action: prop-ttl
Session Id: 0x17d9
Protocol next hop: 2.3.0.0
Push 16
Composite next hop: 0x93463a0 1048575 INH Session ID: 0x17da
Indirect next hop: 0x91e8800 1048574 INH Session ID: 0x17da
State: <Secondary NotBest Int Ext ProtectionPath ProtectionCand>

Inactive reason: Not Best in its group - IGP metric
Local AS:      2 Peer AS:      2
Age: 3:34      Metric2: 70
Validation State: unverified
Task: BGP_2.2.3.0.0+32805
Announcement bits (2): 0-KRT 1-BGP_RT_Background
AS path: I
Communities: target:2:1
Import Accepted
VPN Label: 16
Localpref: 0
Router ID: 2.3.0.0
Primary Routing Table bgp.l3vpn.0

```

```


Composite next hops: 1
  Protocol next hop: 2.3.0.0 Metric: 70
  Push 16
  Composite next hop: 0x93463a0 1048575 INH Session ID:
0x17da
  Indirect next hop: 0x91e8800 1048574 INH Session ID:
0x17da
  Indirect path forwarding next hops: 1
    Next hop type: Router
    Next hop: 10.1.4.2 via ge-1/0/0.0
    Session Id: 0x17d9
  2.3.0.0/32 Originating RIB: inet.3
    Metric: 70                      Node path count: 1
    Forwarding nexthops: 1
      Nexthop: 10.1.4.2 via ge-1/0/0.0
#Multipath Preference: 255
  Next hop type: Indirect
  Address: 0x24afca30
  Next-hop reference count: 1
  Next hop type: Router
  Next hop: 10.1.1.1 via ge-1/1/9.0, selected
  Label operation: Push 707633
  Label TTL action: prop-ttl
  Session Id: 0x17d8
  Next hop type: Router, Next hop index: 702
  Next hop: 10.1.4.2 via ge-1/0/0.0
  Label operation: Push 634278
  Label TTL action: prop-ttl
  Session Id: 0x17d9
  Protocol next hop: 2.2.0.0
  Push 16
  Composite next hop: 0x25805988 - INH Session ID: 0x193c
  Indirect next hop: 0x23eea900 - INH Session ID: 0x193c Weight 0x1

  Protocol next hop: 2.3.0.0
  Push 16
  Composite next hop: 0x93463a0 1048575 INH Session ID: 0x17da
  Indirect next hop: 0x91e8800 1048574 INH Session ID: 0x17da Weight
0x4000
  State: <ForwardingOnly Int Ext>
  Inactive reason: Forwarding use only
  Age: 23          Metric2: 35
  Validation State: unverified
  Task: RT
  AS path: I
  Communities: target:2:1

```



## show route terse

|                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>List of Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                   | <a href="#">Syntax on page 343</a><br><a href="#">Syntax (EX Series Switches) on page 343</a>                                                                                                                                                   |
| <b>Syntax</b>                                                                                                                                                                                                                                                                                                                                                                                                                           | <pre>show route terse &lt;logical-system (all   <i>logical-system-name</i>)&gt;</pre>                                                                                                                                                           |
| <b>Syntax (EX Series Switches)</b>                                                                                                                                                                                                                                                                                                                                                                                                      | show route terse                                                                                                                                                                                                                                |
| <b>Release Information</b>                                                                                                                                                                                                                                                                                                                                                                                                              | Command introduced before Junos OS Release 7.4.<br>Command introduced in Junos OS Release 9.0 for EX Series switches.                                                                                                                           |
| <b>Description</b>                                                                                                                                                                                                                                                                                                                                                                                                                      | Display a high-level summary of the routes in the routing table.                                                                                                                                                                                |
| <div>  <p><b>NOTE:</b> For BGP routes, the <code>show route terse</code> command displays the local preference attribute and MED instead of the metric1 and metric2 values. This is mostly due to historical reasons.</p> <p>To display the metric1 and metric2 value of a BGP route, use the <a href="#">show route extensive</a> command.</p> </div> |                                                                                                                                                                                                                                                 |
| <b>Options</b>                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>none</b>—Display a high-level summary of the routes in the routing table.</p> <p><b>logical-system (all   <i>logical-system-name</i>)</b>—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> |
| <b>Required Privilege Level</b>                                                                                                                                                                                                                                                                                                                                                                                                         | view                                                                                                                                                                                                                                            |
| <b>List of Sample Output</b>                                                                                                                                                                                                                                                                                                                                                                                                            | <a href="#">show route terse on page 345</a>                                                                                                                                                                                                    |
| <b>Output Fields</b>                                                                                                                                                                                                                                                                                                                                                                                                                    | <a href="#">Table 31 on page 343</a> describes the output fields for the <code>show route terse</code> command. Output fields are listed in the approximate order in which they appear.                                                         |

**Table 31: show route terse Output Fields**

| Field Name                 | Field Description                                                                                                                                                                                                                                                                                                                                               |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>routing-table-name</i>  | Name of the routing table (for example, inet.0).                                                                                                                                                                                                                                                                                                                |
| <i>number destinations</i> | Number of destinations for which there are routes in the routing table.                                                                                                                                                                                                                                                                                         |
| <i>number routes</i>       | Number of routes in the routing table and total number of routes in the following states: <ul style="list-style-type: none"> <li><b>active</b> (routes that are active)</li> <li><b>holddown</b> (routes that are in the pending state before being declared inactive)</li> <li><b>hidden</b> (routes that are not used because of a routing policy)</li> </ul> |

Table 31: show route terse Output Fields (*continued*)

| Field Name       | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>route key</i> | Key for the state of the route: <ul style="list-style-type: none"> <li>• <b>+</b>—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table.</li> <li>• <b>-</b>—A hyphen indicates the last active route.</li> <li>• <b>*</b>—An asterisk indicates that the route is both the active and the last active route. An asterisk before a <b>to</b> line indicates the best subpath to the route.</li> </ul>                                                                                                                                                                                                                |
| <b>A</b>         | Active route. An asterisk (*) indicates this is the active route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>V</b>         | Validation status of the route: <ul style="list-style-type: none"> <li>• <b>?</b>—Not evaluated. Indicates that the route was not learned through BGP.</li> <li>• <b>I</b>—Invalid. Indicates that the prefix is found, but either the corresponding AS received from the EBGP peer is not the AS that appears in the database, or the prefix length in the BGP update message is longer than the maximum length permitted in the database.</li> <li>• <b>N</b>—Unknown. Indicates that the prefix is not among the prefixes or prefix ranges in the database.</li> <li>• <b>V</b>—Valid. Indicates that the prefix and autonomous system pair are found in the database.</li> </ul> |
| Destination      | Destination of the route.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>P</b>         | Protocol through which the route was learned: <ul style="list-style-type: none"> <li>• <b>A</b>—Aggregate</li> <li>• <b>B</b>—BGP</li> <li>• <b>C</b>—CCC</li> <li>• <b>D</b>—Direct</li> <li>• <b>G</b>—GMPLS</li> <li>• <b>I</b>—IS-IS</li> <li>• <b>L</b>—L2CKT, L2VPN, LDP, Local</li> <li>• <b>K</b>—Kernel</li> <li>• <b>M</b>—MPLS, MSDP</li> <li>• <b>O</b>—OSPF</li> <li>• <b>P</b>—PIM</li> <li>• <b>R</b>—RIP, RIPng</li> <li>• <b>S</b>—Static</li> <li>• <b>T</b>—Tunnel</li> </ul>                                                                                                                                                                                     |
| <b>Prf</b>       | Preference value of the route. In every routing metric except for the BGP <b>LocalPref</b> attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the <b>LocalPref</b> value in the <b>Preference2</b> field. For example, if the <b>LocalPref</b> value for Route 1 is 100, the <b>Preference2</b> value is -101. If the <b>LocalPref</b> value for Route 2 is 155, the <b>Preference2</b> value is -156. Route 2 is preferred because it has a higher <b>LocalPref</b> value and a lower <b>Preference2</b> value.                                                                                              |
| Metric 1         | First metric value in the route. For routes learned from BGP, this is the MED metric.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Metric 2         | Second metric value in the route. For routes learned from BGP, this is the IGP metric.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Table 31: show route terse Output Fields (*continued*)

| Field Name | Field Description                                                                                                                                                                                                                                                                                                                                          |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Next hop   | Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.                                                                                                                                                                                                                                                          |
| AS path    | <p>AS path through which the route was learned. The letters at the end of the AS path indicate the path origin, providing an indication of the state of the route at the point at which the AS path originated:</p> <ul style="list-style-type: none"> <li>I—IGP.</li> <li>E—EGP.</li> <li>?—Incomplete; typically, the AS path was aggregated.</li> </ul> |

## Sample Output

### show route terse

```

user@host> show route terse
inet.0: 10 destinations, 12 routes (10 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

A V Destination      P Prf  Metric 1  Metric 2  Next hop      AS path
* ? 1.0.1.1/32       0 10      1           >10.0.0.2      I
?                               B 170      100           I
unverified                               >10.0.0.2
* ? 1.1.1.1/32       D 0           >10.0.0.2
* V 2.2.0.2/32       B 170      110      >10.0.2        200 I
valid                               >10.0.0.2
* ? 10.0.0.0/30      D 0           >1t-1/2/0.1    I
?                               B 170      100           I
unverified                               >10.0.0.2
* ? 10.0.0.1/32      L 0           Local          I
* ? 10.0.0.4/30      B 170      100           I
unverified                               >10.0.0.2
* ? 10.0.0.8/30      B 170      100           I
unverified                               >10.0.0.2
* I 172.16.1.1/32    B 170      90           200 I
invalid                               >10.0.0.2
* N 192.168.2.3/32   B 170      100           200 I
unknown                               >10.0.0.2
* ? 224.0.0.5/32     O 10      1           MultiRecv

```



## PART 4

# Troubleshooting

- [Troubleshooting Procedures on page 349](#)



## CHAPTER 7

# Troubleshooting Procedures

- [Troubleshooting Virtual Routing Instances on page 349](#)

## Troubleshooting Virtual Routing Instances

---

- [Direct Routes Not Leaked Between Routing Instances on page 349](#)

### Direct Routes Not Leaked Between Routing Instances

**Problem**    **Description:** Direct routes are not exported (leaked) between virtual routing instances. For example, consider the following scenario:

- QFX switch with two virtual routing instances:
  - Routing instance 1 connects to downstream device through interface xe-0/0/1.
  - Routing instance 2 connects to upstream device through interface xe-0/0/2.

If you enable route leaking between the routing instances (by using the **rib-group** statement, for example), the downstream device cannot connect to the upstream device because the QFX switch connects to the upstream device over a direct route and these routes are not leaked between instances.



**NOTE:** You can see a route to the upstream device in the routing table of the downstream device, but this route is not functional.

Indirect routes *are* leaked between routing instances, so the downstream device can connect to any upstream devices that are connected to the QFX switch over indirect routes.

**Solution**    This is expected behavior.

**Related  
Documentation**

- [Understanding Virtual Router Routing Instances on page 4](#)
- [Configuring Virtual Router Routing Instances on page 15](#)
- [rib-group on page 133](#)

