



Junos[®] OS

RIP Feature Guide



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Juniper Networks, Inc.
1133 Innovation Way
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

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Junos® OS RIP Feature Guide

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About the Documentation

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- Using the Examples in This Manual on page xiii
- Documentation Conventions on page xv
- Documentation Feedback on page xvii
- Requesting Technical Support on page xvii

Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <https://www.juniper.net/documentation/>.

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Using the Examples in This Manual

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

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

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

Merging a Full Example

To merge a full example, follow these steps:

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

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

```
system {
  scripts {
    commit {
      file ex-script.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 [CLI Explorer](#).

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 xvi defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<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@# set system domain-name <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"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i> >;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [community-ids]
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

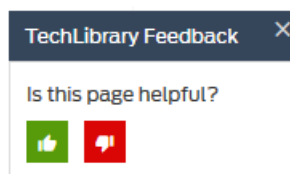
Table 2: Text and Syntax Conventions (continued)

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

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- Click the thumbs-up icon if the information on the page was helpful to you.
- Click the thumbs-down icon if the information on the page was not helpful to you or if you have suggestions for improvement, and use the pop-up form to provide feedback.
- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active Juniper Care or Partner Support Services support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <https://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
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- Find product documentation: <https://www.juniper.net/documentation/>
- Find solutions and answer questions using our Knowledge Base: <https://kb.juniper.net/>
- Download the latest versions of software and review release notes: <https://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <https://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <https://www.juniper.net/company/communities/>
- Create a service request online: <https://myjuniper.juniper.net>

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

Creating a Service Request with JTAC

You can create a service request with JTAC on the Web or by telephone.

- Visit <https://myjuniper.juniper.net>.
- 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 <https://support.juniper.net/support/requesting-support/>.

CHAPTER 1

Overview

- [RIP and RIPng Overview on page 19](#)

RIP and RIPng Overview

- [RIP Overview on page 19](#)
- [RIPng Overview on page 24](#)
- [Supported RIP and RIPng Standards on page 26](#)

RIP Overview

RIP is an interior gateway protocol (IGP) that uses a distance-vector algorithm to determine the best route to a destination, using the hop count as the metric.

In a RIP network, each router's forwarding table is distributed among the nodes through the flooding of routing table information. Because topology changes are flooded throughout the network, every node maintains the same list of destinations. Packets are then routed to these destinations based on path-cost calculations done at each node in the network.



NOTE: In general, the term *RIP* refers to RIP version 1 and RIP version 2.

This topic contains the following sections:

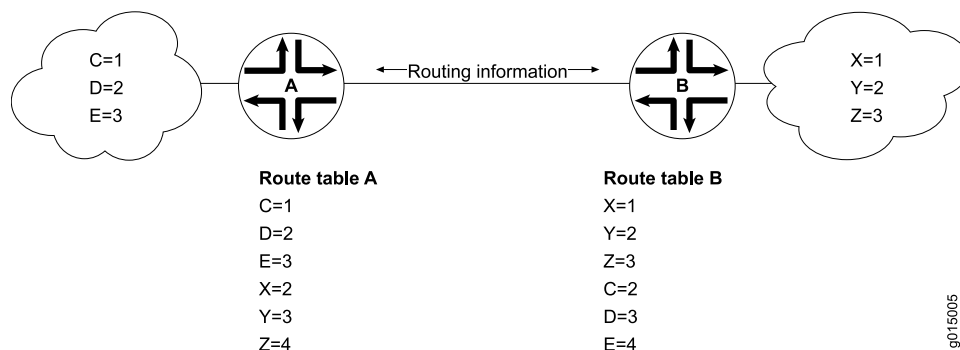
- [Distance-Vector Routing Protocols on page 19](#)
- [RIP Protocol Overview on page 20](#)
- [RIP Packets on page 21](#)
- [Maximizing Hop Count on page 22](#)
- [Split Horizon and Poison Reverse Efficiency Techniques on page 22](#)
- [Limitations of Unidirectional Connectivity on page 23](#)

Distance-Vector Routing Protocols

Distance-vector routing protocols transmit routing information that includes a distance vector, typically expressed as the number of hops to the destination. This information is flooded out all protocol-enabled interfaces at regular intervals (every 30 seconds in the

case of RIP) to create a network map that is stored in each node's local topology database. [Figure 1 on page 20](#) shows how distance-vector routing works.

Figure 1: Distance-Vector Protocol



In [Figure 1 on page 20](#), Routers A and B have RIP enabled on adjacent interfaces. Router A has known RIP neighbors Routers C, D, and E, which are 1, 2, and 3 hops away, respectively. Router B has known RIP neighbors Routers X, Y, and Z, which are 1, 2, and 3 hops away, respectively. Every 30 seconds, each router floods its entire routing table information out all RIP-enabled interfaces. In this case, flooding exchanges routing table information across the RIP link.

When Router A receives routing information from Router B, it adds 1 to the hop count to determine the new hop count. For example, Router X has a hop count of 1, but when Router A imports the route to X, the new hop count is 2. The imported route also includes information about where the route was learned, so that the original route is imported as a route to Router X through Router B with a hop count of 2.

When multiple routes to the same host are received, RIP uses the distance-vector algorithm to determine which path to import into the forwarding table. The route with the smallest hop count is imported. If there are multiple routes with the same hop count, all are imported into the forwarding table, and traffic is sent along the paths in round-robin fashion.

RIP Protocol Overview

The RIP IGP uses the Bellman-Ford, or *distance-vector*, algorithm to determine the best route to a destination. RIP uses the hop count as the metric. RIP enables hosts and routers to exchange information for computing routes through an IP-based network. RIP is intended to be used as an IGP in reasonably homogeneous networks of moderate size.

The Junos[®] operating system (Junos OS) supports RIP versions 1 and 2.



NOTE: RIP is not supported for multipoint interfaces.

RIP version 1 packets contain the minimal information necessary to route packets through a network. However, this version of RIP does not support authentication or subnetting.

RIP uses User Datagram Protocol (UDP) port 520.

RIP has the following architectural limitations:

- The longest network path cannot exceed 15 hops (assuming that each network, or hop, has a cost of 1).
- RIP depends on counting to infinity to resolve certain unusual situations—When the network consists of several hundred routers, and when a routing loop has formed, the amount of time and network bandwidth required to resolve a next hop might be great.
- RIP uses only a fixed metric to select a route. Other IGPs use additional parameters, such as measured delay, reliability, and load.

RIP Packets

RIP packets contain the following fields:

- Command—Indicates whether the packet is a request or response message. Request messages seek information for the router's routing table. Response messages are sent periodically and also when a request message is received. Periodic response messages are called *update messages*. Update messages contain the command and version fields and 25 destinations (by default), each of which includes the destination IP address and the metric to reach that destination.



NOTE: Beginning with Junos OS Release 11.1, three additional command field types are available to support RIP demand circuits. When you configure an interface for RIP demand circuits, the command field indicates whether the packet is an update request, update response, or update acknowledge message. Neighbor interfaces send updates on demand, not periodically. These command field types are only valid on interfaces configured for RIP demand circuits. For more detailed information, see [“RIP Demand Circuits Overview” on page 49](#).

- Version number—Version of RIP that the originating router is running.
- Address family identifier—Address family used by the originating router. The family is always IP.
- Address—IP address included in the packet.
- Metric—Value of the metric advertised for the address.
- Mask—Mask associated with the IP address (RIP version 2 only).
- Next hop—IP address of the next-hop router (RIP version 2 only).

Routing information is exchanged in a RIP network by RIP request and RIP response packets. A router that has just booted can broadcast a RIP request on all RIP-enabled interfaces. Any routers running RIP on those links receive the request and respond by sending a RIP response packet immediately to the router. The response packet contains the routing table information required to build the local copy of the network topology map.

In the absence of RIP request packets, all RIP routers broadcast a RIP response packet every 30 seconds on all RIP-enabled interfaces. The RIP broadcast is the primary way in which topology information is flooded throughout the network.

Once a router learns about a particular destination through RIP, it starts a timer. Every time it receives a new response packet with information about the destination, the router resets the timer to zero. However, if the router receives no updates about a particular destination for 180 seconds, it removes the destination from its RIP routing table.

In addition to the regular transmission of RIP packets every 30 seconds, if a router detects a new neighbor or detects that an interface is unavailable, it generates a triggered update. The new routing information is immediately broadcast out all RIP-enabled interfaces, and the change is reflected in all subsequent RIP response packets.

Maximizing Hop Count

The successful routing of traffic across a RIP network requires that every node in the network maintain the same view of the topology. Topology information is broadcast between RIP neighbors every 30 seconds. If Router A is many hops away from a new host, Router B, the route to B might take significant time to propagate through the network and be imported into Router A's routing table. If the two routers are 5 hops away from each other, Router A cannot import the route to Router B until 2.5 minutes after Router B is online (30 seconds per hop). For large numbers of hops, the delay becomes prohibitive. To help prevent this delay from growing arbitrarily large, RIP enforces a maximum hop count of 15 hops. Any prefix that is more than 15 hops away is treated as unreachable and assigned a hop count equal to infinity. This maximum hop count is called the *network diameter*.

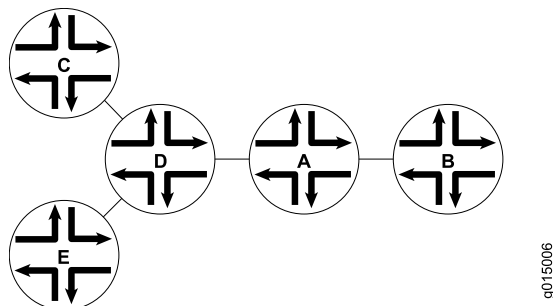
Split Horizon and Poison Reverse Efficiency Techniques

Because RIP functions by periodically flooding the entire routing table out to the network, it generates a lot of traffic. The split horizon and poison reverse techniques can help reduce the amount of network traffic originated by RIP hosts and make the transmission of routing information more efficient.

If a router receives a set of route advertisements on a particular interface, RIP determines that those advertisements do not need to be retransmitted out the same interface. This technique, known as *split horizon*, helps limit the amount of RIP routing traffic by eliminating information that other neighbors on that interface have already learned.

[Figure 2 on page 22](#) shows an example of the split horizon technique.

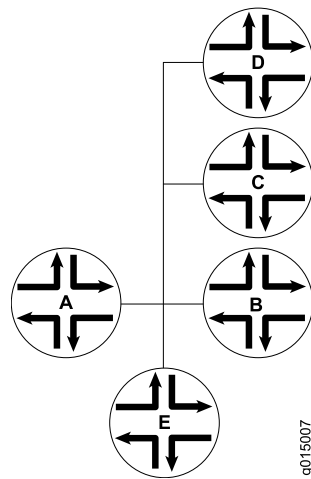
Figure 2: Split Horizon Example



In [Figure 2 on page 22](#), Router A advertises routes to Routers C, D, and E to Router B. In this example, Router A can reach Router C in 2 hops. When Router A advertises the route to Router B, Router B imports it as a route to Router C through Router A in 3 hops. If Router B then readvertised this route to Router A, Router A would import it as a route to Router C through Router B in 4 hops. However, the advertisement from Router B to Router A is unnecessary, because Router A can already reach the route in 2 hops. The split horizon technique helps reduce extra traffic by eliminating this type of route advertisement.

Similarly, the poison reverse technique helps to optimize the transmission of routing information and improve the time to reach network convergence. If Router A learns about unreachable routes through one of its interfaces, it advertises those routes as unreachable (hop count of 16) out the same interface. [Figure 3 on page 23](#) shows an example of the poison reverse technique.

Figure 3: Poison Reverse Example

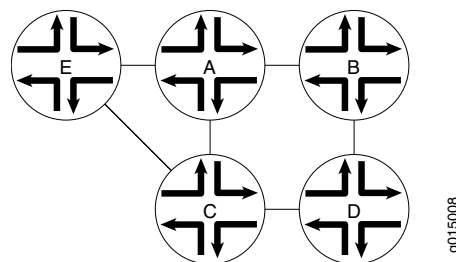


In [Figure 3 on page 23](#), Router A learns through one of its interfaces that routes to Routers C, D, and E are unreachable. Router A readvertises those routes out the same interface as unreachable. The advertisement informs Router B that Routers C, D, and E are definitely not reachable through Router A.

Limitations of Unidirectional Connectivity

Because RIP processes routing information based solely on the receipt of routing table updates, it cannot ensure bidirectional connectivity. As [Figure 4 on page 23](#) shows, RIP networks are limited by their unidirectional connectivity.

Figure 4: Limitations of Unidirectional Connectivity



In [Figure 4 on page 23](#), Routers A and D flood their routing table information to Router B. Because the path to Router E has the fewest hops when routed through Router A, that route is imported into Router B's forwarding table. However, suppose that Router A can transmit traffic but is not receiving traffic from Router B because of an unavailable link or invalid routing policy. If the only route to Router E is through Router A, any traffic destined for Router A is lost, because bidirectional connectivity was never established.

OSPF establishes bidirectional connectivity with a three-way handshake.

- See Also**
- [RIP Configuration Overview on page 27](#)
 - *Example: Configuring RIP*

RIPng Overview

The Routing Information Protocol next generation (RIPng) is an interior gateway protocol (IGP) that uses a distance-vector algorithm to determine the best route to a destination, using hop count as the metric. RIPng exchanges routing information used to compute routes and is intended for IP version 6 (IPv6)-based networks. RIPng is disabled by default.

On devices in secure context, IPv6 is disabled. You must enable IPv6 to use RIPng. For instructions, see the *Junos OS Interfaces Configuration Guide for Security Devices*.

This topic contains the following sections:

- [RIPng Protocol Overview on page 24](#)
- [RIPng Standards on page 25](#)
- [RIPng Packets on page 25](#)

RIPng Protocol Overview

The RIPng IGP uses the Bellman-Ford distance-vector algorithm to determine the best route to a destination, using hop count as the metric. RIPng allows hosts and routers to exchange information for computing routes through an IP-based network. RIPng is intended to act as an IGP for moderately-sized autonomous systems.

RIPng is a distinct routing protocol from RIPv2. The Junos OS implementation of RIPng is similar to RIPv2, but has the following differences:

- RIPng does not need to implement authentication on packets.
- Junos OS does not support multiple instances of RIPng.
- Junos OS does not support RIPng routing table groups.

RIPng is a UDP-based protocol and uses UDP port 521.

RIPng has the following architectural limitations:

- The longest network path cannot exceed 15 hops (assuming that each network, or hop, has a cost of 1).

- RIPng is prone to routing loops when the routing tables are reconstructed. Especially when RIPng is implemented in large networks that consist of several hundred routers, RIPng might take an extremely long time to resolve routing loops.
- RIPng uses only a fixed metric to select a route. Other IGP's use additional parameters, such as measured delay, reliability, and load.

RIPng Standards

RIPng is defined in the following documents:

- RFC 2080, *RIPng for IPv6*
- RFC 2081, *RIPng Protocol Applicability Statement*

To access Internet Requests for Comments (RFCs) and drafts, see the Internet Engineering Task Force (IETF) website.

RIPng Packets

A RIPng packet header contains the following fields:

- Command—Indicates whether the packet is a request or response message. Request messages seek information for the router's routing table. Response messages are sent periodically or when a request message is received. Periodic response messages are called update messages. Update messages contain the command and version fields and a set of destinations and metrics.
- Version number—Specifies the version of RIPng that the originating router is running. This is currently set to Version 1.

The rest of the RIPng packet contains a list of routing table entries consisting of the following fields:

- Destination prefix—128-bit IPv6 address prefix for the destination.
- Prefix length—Number of significant bits in the prefix.
- Metric—Value of the metric advertised for the address.
- Route tag—A route attribute that must be advertised and redistributed with the route. Primarily, the route tag distinguishes external RIPng routes from internal RIPng routes when routes must be redistributed across an exterior gateway protocol (EGP).

See Also • [Example: Configuring a Basic RIPng Network on page 105](#)

Supported RIP and RIPng Standards

Junos OS substantially supports the following RFCs, which define standards for RIP (for IP version 4 [IPv4]) and RIP next generation (RIPng, for IP version 6 [IPv6]).

Junos OS supports authentication for all RIP protocol exchanges (MD5 or simple authentication).

- RFC 1058, *Routing Information Protocol*
- RFC 2080, *RIPng for IPv6*
- RFC 2082, *RIP-2 MD5 Authentication*

Multiple keys using distinct key IDs are not supported.

- RFC 2453, *RIP Version 2*

The following RFC does not define a standard, but provides information about RIPng. The IETF classifies it as “Informational.”

- RFC 2081, *RIPng Protocol Applicability Statement*

- See Also**
- *Supported IPv4, TCP, and UDP Standards*
 - *Supported IPv6 Standards*
 - *Accessing Standards Documents on the Internet*

CHAPTER 2

Configuring RIP

- [Basic RIP Configuration on page 27](#)
- [RIP Authentication on page 35](#)
- [RIP Timers on page 41](#)
- [RIP Demand Circuits on page 49](#)
- [BFD for RIP on page 55](#)
- [Traffic Control in a RIP Network on page 70](#)
- [Point-to-Multipoint RIP Networks on page 79](#)
- [RIP Import Policy on page 86](#)
- [Interoperability of RIPv1 and RIPv2 Networks on page 92](#)
- [Route Redistribution Between RIP Instances on page 96](#)

Basic RIP Configuration

- [RIP Configuration Overview on page 27](#)
- [Understanding Basic RIP Routing on page 28](#)
- [Example: Configuring a Basic RIP Network on page 28](#)

RIP Configuration Overview

To achieve basic connectivity between all RIP hosts in a RIP network, you enable RIP on every interface that is expected to transmit and receive RIP traffic, as described in the steps that follow.

To configure a RIP network:

1. Configure network interfaces. See the *Junos OS Interfaces Configuration Guide for Security Devices*.
2. Define RIP groups, which are logical groupings of interfaces, and add interfaces to the groups. Then, configure a routing policy to export directly connected routes and routes learned through RIP routing exchanges. See “[Example: Configuring a Basic RIP Network](#)” on page 28.

3. (Optional) Configure metrics to control traffic through the RIP network. See [“Example: Controlling Traffic in a RIP Network with an Incoming Metric” on page 71](#) and [“Example: Controlling Traffic in a RIP Network with an Outgoing Metric” on page 73](#).
4. (Optional) Configure authentication to ensure that only trusted routers participate in the autonomous system's routing. See [“Enabling Authentication with Plain-Text Passwords” on page 36](#) and [Enabling Authentication with MD5 Authentication \(CLI Procedure\)](#).

- See Also**
- [Junos OS Feature Support Reference for SRX Series and J Series Devices](#)
 - [RIP Overview on page 19](#)
 - [Verifying a RIP Configuration on page 153](#)

Understanding Basic RIP Routing

RIP is an interior gateway protocol (IGP) that routes packets within a single autonomous system (AS). By default, RIP does not advertise the subnets that are directly connected through the device's interfaces. For traffic to pass through a RIP network, you must create a routing policy to export these routes. Advertising only the direct routes propagates the routes to the immediately adjacent RIP-enabled router only. To propagate all routes through the entire RIP network, you must configure the routing policy to export the routes learned through RIP.

- See Also**
- [RIP Overview on page 19](#)

Example: Configuring a Basic RIP Network

This example shows how to configure a basic RIP network.

- [Requirements on page 28](#)
- [Overview on page 28](#)
- [Configuration on page 29](#)
- [Verification on page 31](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

Overview

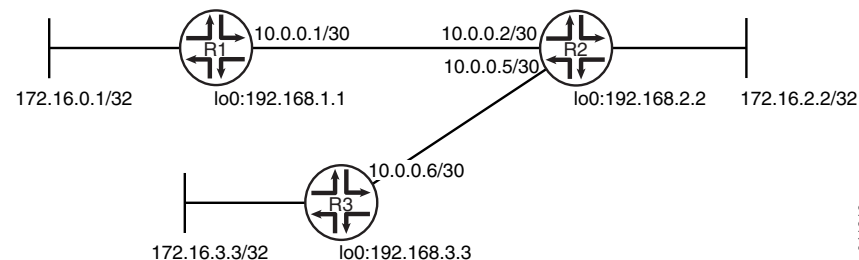
In this example, you configure a basic RIP network, create a RIP group called **rip-group**, and add the directly connected interfaces to the RIP group. Then you configure a routing policy to advertise direct routes using policy statement **advertise-routes-through-rip**.

By default, Junos OS does not advertise RIP routes, not even routes that are learned through RIP. To advertise RIP routes, you must configure and apply an export routing policy that advertises RIP-learned and direct routes.

In Junos OS, you do not need to configure the RIP version. RIP version 2 is used by default.

To use RIP on the device, you must configure RIP on all of the RIP interfaces within the network. [Figure 5 on page 29](#) shows the topology used in this example.

Figure 5: Sample RIP Network Topology



“CLI Quick Configuration” on page 29 shows the configuration for all of the devices in [Figure 5 on page 29](#). The section “Step-by-Step Procedure” on page 30 describes the steps on Device R1.

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, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter commit from configuration mode.

Device R1

```
set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set interfaces lo0 unit 1 family inet address 172.16.0.1/32
set interfaces lo0 unit 1 family inet address 192.168.1.1/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
```

Device R2

```
set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32
set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
```

```
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
```

Device R3

```
set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
```

**Step-by-Step
Procedure**

The following example requires you to 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 a basic RIP network:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```
[edit interfaces]
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30
user@R1# set lo0 unit 1 family inet address 172.16.0.1/32
user@R1# set lo0 unit 1 family inet address 192.168.1.1/32
```

2. Create the RIP group and add the interface.

To configure RIP in Junos OS, you must configure a group that contains the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

```
[edit protocols rip group rip-group]
user@R1# set neighbor fe-1/2/0.1
```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group rip-group]
user@R1# set export advertise-routes-through-rip
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    family inet {
      address 10.0.0.1/30;
    }
  }
}
lo0 {
  unit 1 {
    family inet {
      address 172.16.0.1/32;
      address 192.168.1.1/32;
    }
  }
}
```

```
user@R1# show protocols
rip {
  group rip-group {
    export advertise-routes-through-rip;
    neighbor fe-1/2/0.1;
  }
}
```

```
user@R1# show policy-options
policy-statement advertise-routes-through-rip {
  term 1 {
    from protocol [ direct rip ];
    then accept;
  }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Checking the Routing Table on page 32](#)
- [Looking at the Routes That Device R1 Is Advertising to Device R2 on page 32](#)
- [Looking at the Routes That Device R1 Is Receiving from Device R2 on page 33](#)

- [Verifying the RIP-Enabled Interfaces on page 33](#)
- [Verifying the Exchange of RIP Messages on page 34](#)
- [Verifying Reachability of All Hosts in the RIP Network on page 34](#)

Checking the Routing Table

Purpose Verify that the routing table is populated with the expected routes..

Action From operational mode, enter the **show route protocol rip** command.

```
user@R1> show route protocol rip
inet.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.4/30      *[RIP/100] 00:59:15, metric 2, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
172.16.2.2/32    *[RIP/100] 02:52:48, metric 2, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
172.16.3.3/32    *[RIP/100] 00:45:05, metric 3, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
192.168.2.2/32   *[RIP/100] 02:52:48, metric 2, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
192.168.3.3/32   *[RIP/100] 00:45:05, metric 3, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
224.0.0.9/32     *[RIP/100] 00:45:09, metric 1
                 MultiRecv
```

Meaning The output shows that the routes have been learned from Device R2 and Device R3.

If you were to delete the **from protocol rip** condition in the routing policy on Device R2, the remote routes from Device R3 would not be learned on Device R1.

Looking at the Routes That Device R1 Is Advertising to Device R2

Purpose Verify that Device R1 is sending the expected routes.

Action From operational mode, enter the **show route advertising-protocol rip** command.

```
user@R1> show route advertising-protocol rip 10.0.0.1
inet.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

172.16.0.1/32    *[Direct/0] 05:18:26
                 > via lo0.1
192.168.1.1/32   *[Direct/0] 05:18:25
                 > via lo0.1
```

Meaning Device R1 is sending routes to its directly connected networks.

Looking at the Routes That Device R1 Is Receiving from Device R2

Purpose Verify that Device R1 is receiving the expected routes.

Action From operational mode, enter the **show route receive-protocol rip** command.

```
user@R1> show route receive-protocol rip 10.0.0.2
inet.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.4/30      *[RIP/100] 02:31:22, metric 2, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
172.16.2.2/32   *[RIP/100] 04:24:55, metric 2, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
172.16.3.3/32   *[RIP/100] 02:17:12, metric 3, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
192.168.2.2/32  *[RIP/100] 04:24:55, metric 2, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
192.168.3.3/32  *[RIP/100] 02:17:12, metric 3, tag 0
                 > to 10.0.0.2 via fe-1/2/0.1
```

Meaning Device R1 is receiving from Device R2 all of Device R2's directly connected networks. Device R1 is also receiving from Device R2 all of Device R3's directly connected networks, which Device R2 learned from Device R3 through RIP.

Verifying the RIP-Enabled Interfaces

Purpose Verify that all RIP-enabled Interfaces are available and active.

Action From operational mode, enter the **show rip neighbor** command.

```
user@R1> show rip neighbor
```

Neighbor	Local State	Source Address	Destination Address	Send Mode	Receive Mode	In Met
fe-1/2/0.1	Up	10.0.0.1	224.0.0.9	mcast	both	1

Meaning The output shows that the RIP-enabled interface on Device R1 is operational.

In general for this command, the output shows a list of the RIP neighbors that are configured on the device. Verify the following information:

- Each configured interface is present. Interfaces are listed in alphabetical order.
- Each configured interface is up. The state of the interface is listed in the **Local State** column. A state of **Up** indicates that the link is passing RIP traffic. A state of **Dn** indicates that the link is not passing RIP traffic. In a point-to-point link, this state generally means that either the end point is not configured for RIP or the link is unavailable.

Verifying the Exchange of RIP Messages

Purpose Verify that RIP messages are being sent and received on all RIP-enabled interfaces.

Action From operational mode, enter the **show rip statistics** command.

```
user@R1> show rip statistics
```

```
RIPv2 info: port 520; holddown 120s.
```

```
   rts learned  rts held down  rqsts dropped  resps dropped
             5              0             0             0
```

```
fe-1/2/0.1: 5 routes learned; 2 routes advertised; timeout 180s; update interval 30s
```

Counter	Total	Last 5 min	Last minute
Updates Sent	2669	10	2
Triggered Updates Sent	2	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	2675	11	2
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0
none	0	0	0

Meaning The output shows the number of RIP routes learned. It also shows the number of RIP updates sent and received on the RIP-enabled interfaces. Verify the following information:

- The number of RIP routes learned matches the number of expected routes learned. Subnets learned by direct connectivity through an outgoing interface are not listed as RIP routes.
- RIP updates are being sent on each RIP-enabled interface. If no updates are being sent, the routing policy might not be configured to export routes.
- RIP updates are being received on each RIP-enabled interface. If no updates are being received, the routing policy might not be configured to export routes on the host connected to that subnet. The lack of updates might also indicate an authentication error.

Verifying Reachability of All Hosts in the RIP Network

Purpose Use the **traceroute** command on each loopback address in the network to verify that all hosts in the RIP network are reachable from each Juniper Networks device.

Action From operational mode, enter the **traceroute** command.

```
user@R1> traceroute 192.168.3.3

traceroute to 192.168.3.3 (192.168.3.3), 30 hops max, 40 byte packets
 1  10.0.0.2 (10.0.0.2)  1.094 ms  1.028 ms  0.957 ms
 2  192.168.3.3 (192.168.3.3)  1.344 ms  2.245 ms  2.125 ms
```

Meaning Each numbered row in the output indicates a routing hop in the path to the host. The three-time increments indicate the round-trip time (RTT) between the device and the hop for each traceroute packet.

To ensure that the RIP network is healthy, verify the following information:

- The final hop in the list is the host you want to reach.
- The number of expected hops to the host matches the number of hops in the traceroute output. The appearance of more hops than expected in the output indicates that a network segment is probably unreachable. It might also indicate that the incoming or outgoing metric on one or more hosts has been set unexpectedly.

RIP Authentication

- [Understanding RIP Authentication on page 35](#)
- [Enabling Authentication with Plain-Text Passwords on page 36](#)
- [Example: Configuring Route Authentication for RIP on page 36](#)

Understanding RIP Authentication

RIPv2 provides authentication support so that RIP links can require authentication keys (passwords) before they become active. Authentication provides an additional layer of security on the network beyond the other security features. By default, this authentication is disabled.

Authentication keys can be specified in either plain-text or MD5 form. Authentication requires all routers within the RIP network or subnetwork to have the same authentication type and key (password) configured.

This type of authentication is not supported on RIPv1 networks.

Note that the RIPv2 authentication described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

See Also • [RIP Overview on page 19](#)

Enabling Authentication with Plain-Text Passwords

To configure authentication that requires a plain-text password to be included in the transmitted packet, enable simple authentication by performing these steps on all RIP devices in the network:

1. Navigate to the top of the configuration hierarchy.
2. Perform the configuration tasks described in [Table 3 on page 36](#).
3. If you are finished configuring the router, commit the configuration.

Table 3: Configuring Simple RIP Authentication

Task	CLI Configuration Editor
Navigate to Rip level in the configuration hierarchy.	From the [edit] hierarchy level, enter edit protocols rip
Set the authentication type to simple .	Set the authentication type to simple : set authentication-type simple
Set the authentication key to a simple-text password. The password can be from 1 through 16 contiguous characters long and can include any ASCII strings.	Set the authentication key to a simple-text password: set authentication-key <i>password</i>

See Also • [RIP Configuration Overview on page 27](#)

Example: Configuring Route Authentication for RIP

This example shows how to configure authentication for a RIP network.

- [Requirements on page 36](#)
- [Overview on page 36](#)
- [Configuration on page 37](#)
- [Verification on page 40](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

Overview

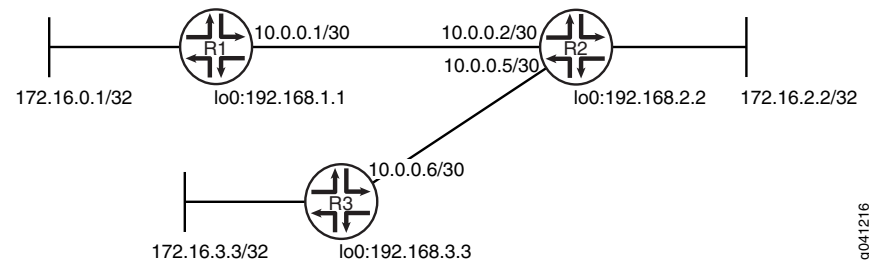
You can configure the router to authenticate RIP route queries. By default, authentication is disabled. You can use one of the following authentication methods:

- Simple authentication—Uses a text password that is included in the transmitted packet. The receiving router uses an authentication key (password) to verify the packet.
- MD5 authentication—Creates an encoded checksum that is included in the transmitted packet. The receiving router uses an authentication key (password) to verify the packet's MD5 checksum.

This example shows MD5 authentication.

Figure 6 on page 37 shows the topology used in this example.

Figure 6: RIP Authentication Network Topology



"CLI Quick Configuration" on page 37 shows the configuration for all of the devices in Figure 6 on page 37. The section "Step-by-Step Procedure" on page 38 describes the steps on Device R1.

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 R1

```

set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set interfaces lo0 unit 1 family inet address 172.16.0.1/32
set interfaces lo0 unit 1 family inet address 192.168.1.1/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.1
set protocols rip authentication-type md5
set protocols rip authentication-key "$ABC123$ABC123"
set protocols rip traceoptions file rip-authentication-messages
set protocols rip traceoptions flag auth
set protocols rip traceoptions flag packets
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32

```

```

set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor fe-1/2/1.5
set protocols rip authentication-type md5
set protocols rip authentication-key "$ABC123$ABC123"
set protocols rip traceoptions file rip-authentication-messages
set protocols rip traceoptions flag auth
set protocols rip traceoptions flag packets
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set protocols rip authentication-type md5
set protocols rip authentication-key "$ABC123$ABC123"
set protocols rip traceoptions file rip-authentication-messages
set protocols rip traceoptions flag auth
set protocols rip traceoptions flag packets
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 RIP authentication:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30
user@R1# set lo0 unit 1 family inet address 172.16.0.1/32
user@R1# set lo0 unit 1 family inet address 192.168.1.1/32

```

2. Create the RIP group and add the interface.

To configure RIP in Junos OS, you must configure a group that contains the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

```
[edit protocols rip group rip-group]
user@R1# set neighbor fe-1/2/0.1
```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group rip-group]
user@R1# set export advertise-routes-through-rip
```

5. Require MD5 authentication for RIP route queries received on an interface.

The passwords must match on neighboring RIP routers. If the password does not match, the packet is rejected. The password can be from 1 through 16 contiguous characters long and can include any ASCII strings.

Do not enter the password as shown here. The password shown here is the encrypted password that is displayed in the configuration after the actual password is already configured.

```
[edit protocols rip]
user@R1# set authentication-type md5
user@R1# set authentication-key "$ABC123$ABC123"
```

6. Configure tracing operations to track authentication.

```
[edit protocols rip traceoptions]
user@R1# set file rip-authentication-messages
user@R1# set flag auth
user@R1# set flag packets
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    family inet {
      address 10.0.0.1/30;
```

```
    }  
  }  
}  
lo0 {  
  unit 1 {  
    family inet {  
      address 172.16.0.1/32;  
      address 192.168.1.1/32;  
    }  
  }  
}
```

```
user@R1# show protocols  
rip {  
  traceoptions {  
    file rip-authentication-messages;  
    flag auth;  
    flag packets;  
  }  
  authentication-type md5;  
  authentication-key $ABC123$ABC123; ## SECRET-DATA  
  group rip-group {  
    export advertise-routes-through-rip;  
    neighbor fe-1/2/0.1;  
  }  
}
```

```
user@R1# show policy-options  
policy-statement advertise-routes-through-rip {  
  term 1 {  
    from protocol [ direct rip ];  
    then accept;  
  }  
}
```

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

Verification

Confirm that the configuration is working properly.

- [Checking for Authentication Failures on page 40](#)
- [Verifying That MD5 Authentication Is Enabled in RIP Update Packets on page 41](#)

Checking for Authentication Failures

Purpose Verify that there are no authentication failures.

Action From operational mode, enter the **show rip statistics** command.

```
user@R1> show rip statistics
```



```

RIPv2 info: port 520; holddown 120s.
      rts learned  rts held down  rqsts dropped  resps dropped
              5              0              0              0

fe-1/2/0.1:  5 routes learned; 2 routes advertised; timeout 180s; update interval
30s
Counter              Total      Last 5 min  Last minute
-----
Updates Sent              2669          10          2
Triggered Updates Sent    2            0            0
Responses Sent            0            0            0
Bad Messages              0            0            0
RIPv1 Updates Received    0            0            0
RIPv1 Bad Route Entries   0            0            0
RIPv1 Updates Ignored     0            0            0
RIPv2 Updates Received    2675         11            2
RIPv2 Bad Route Entries   0            0            0
RIPv2 Updates Ignored     0            0            0
Authentication Failures    0            0            0
RIP Requests Received     0            0            0
RIP Requests Ignored      0            0            0
none                      0            0            0

```

Meaning The output shows that there are no authentication failures.

Verifying That MD5 Authentication Is Enabled in RIP Update Packets

Purpose Use tracing operations to verify that MD5 authentication is enabled in RIP updates.

Action From operational mode, enter the **show log** command.

```

user@R1> show log rip-authentication-messages | match md5
Feb 15 15:45:13.969462      sending msg 0xb9a8c04, 3 rtes (needs MD5)
Feb 15 15:45:43.229867      sending msg 0xb9a8c04, 3 rtes (needs MD5)
Feb 15 15:46:13.174410      sending msg 0xb9a8c04, 3 rtes (needs MD5)
Feb 15 15:46:42.716566      sending msg 0xb9a8c04, 3 rtes (needs MD5)
Feb 15 15:47:11.425076      sending msg 0xb9a8c04, 3 rtes (needs MD5)
...

```

Meaning The **(needs MD5)** output shows that all route updates require MD5 authentication.

See Also • [Understanding Basic RIP Routing on page 28](#)

RIP Timers

- [Understanding RIP Timers on page 42](#)
- [Example: Configuring RIP Timers on page 43](#)

Understanding RIP Timers

RIP uses several timers to regulate its operation.

The update interval is the interval at which routes that are learned by RIP are advertised to neighbors. This timer controls the interval between routing updates. The update interval is set to 30 seconds, by default, with a small random amount of time added when the timer is reset. This added time prevents congestion that can occur if all routing devices update their neighbors simultaneously.

To configure the update time interval, include the **update-interval** statement:

```
update-interval seconds;
```

seconds can be a value from 10 through 60.

You can set a route timeout interval. If a route is not refreshed after being installed in the routing table by the specified time interval, the route is marked as invalid and is removed from the routing table after the hold-down period expires.

To configure the route timeout for RIP, include the **route-timeout** statement:

```
route-timeout seconds;
```

seconds can be a value from 30 through 360. The default value is 180 seconds.

RIP routes expire when either a route timeout limit is met or a route metric reaches infinity, and the route is no longer valid. However, the expired route is retained in the routing table for a specified period so that neighbors can be notified that the route has been dropped. This time period is set by configuring the hold-down timer. Upon expiration of the hold-down timer, the route is removed from the routing table.

To configure the hold-down timer for RIP, include the **holddown** statement:

```
holddown seconds;
```

seconds can be a value from 10 through 180. The default value is 120 seconds.



NOTE: In Junos OS Release 11.1 and later, a retransmission timer is available for RIP demand circuits.

Generally, we recommend against changing the RIP timers, unless the effects of a change are well understood. The route timeout should be at least three times the update interval. Normally, the default values are best left in effect for standard operations.

Example: Configuring RIP Timers

This example shows how to configure the RIP update interval and how to monitor the impact of the change.

- [Requirements on page 43](#)
- [Overview on page 43](#)
- [Configuration on page 43](#)
- [Verification on page 46](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

Overview

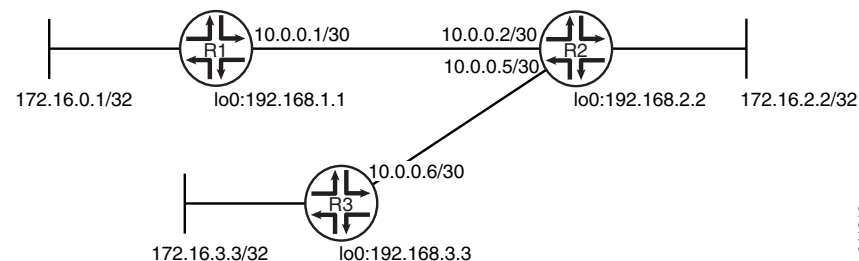
In this example, Device R2 has an update interval of 60 seconds for its neighbor, Device R1, and an update interval of 10 seconds for its neighbor, Device R3.

This example is not necessarily practical, but it is shown for demonstration purposes. Generally, we recommend against changing the RIP timers, unless the effects of a change are well understood. Normally, the default values are best left in effect for standard operations.

An export policy is also shown because an export policy is required as part of the minimum configuration for RIP.

[Figure 7 on page 43](#) shows the topology used in this example.

Figure 7: RIP Timers Network Topology



[“CLI Quick Configuration” on page 43](#) shows the configuration for all of the devices in [Figure 7 on page 43](#). The section [“Step-by-Step Procedure” on page 44](#) describes the steps on Device R2.

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 R1

```

set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set interfaces lo0 unit 1 family inet address 172.16.0.1/32
set interfaces lo0 unit 1 family inet address 192.168.1.1/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32
set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2 update-interval 60
set protocols rip group rip-group neighbor fe-1/2/1.5 update-interval 10
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Step-by-Step Procedure The following example requires you to 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 the RIP update interval:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```

[edit interfaces]
user@R2# set fe-1/2/0 unit 2 family inet address 10.0.0.2/30
user@R2# set fe-1/2/1 unit 5 family inet address 10.0.0.5/30
user@R2# set lo0 unit 2 family inet address 192.168.2.2/32
user@R2# set lo0 unit 2 family inet address 172.16.2.2/32

```

2. Configure different update intervals for the two RIP neighbors.

To configure RIP in Junos OS, you must configure a group that contains the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

```
[edit protocols rip group rip-group]
user@R2# set neighbor fe-1/2/0.2 update-interval 60
user@R2# set neighbor fe-1/2/1.5 update-interval 10
```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R2# set from protocol direct
user@R2# set from protocol rip
user@R2# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group rip-group]
user@R2# set export advertise-routes-through-rip
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R2# show interfaces
fe-1/2/0 {
  unit 2 {
    family inet {
      address 10.0.0.2/30;
    }
  }
}
fe-1/2/1 {
  unit 5 {
    family inet {
      address 10.0.0.5/30;
    }
  }
}
lo0 {
  unit 2 {
    family inet {
      address 192.168.2.2/32;
      address 172.16.2.2/32;
    }
  }
}
```

```
}
```

```
user@R2# show protocols
rip {
  group rip-group {
    export advertise-routes-through-rip;
    neighbor fe-1/2/0.2 {
      update-interval 60;
    }
    neighbor fe-1/2/1.5 {
      update-interval 10;
    }
  }
}
```

```
user@R2# show policy-options
policy-statement advertise-routes-through-rip {
  term 1 {
    from protocol [ direct rip ];
    then accept;
  }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Checking the RIP Updates Sent by Device R2 on page 46](#)
- [Checking the RIP Updates Received by Device R2 on page 47](#)
- [Checking the RIP Updates Received by Device R3 on page 48](#)

Checking the RIP Updates Sent by Device R2

Purpose Make sure that the RIP update packets are sent at the expected interval.

Action From operational mode, enter the **show rip statistics** command.

```
user@R2> show rip statistics
```

```
RIPv2 info: port 520; holddown 120s.
```

```
   rts learned  rts held down  rqsts dropped  resps dropped
           4             2             0             0
```

```
fe-1/2/0.2: 2 routes learned; 5 routes advertised; timeout 180s; update interval 60s
```

Counter	Total	Last 5 min	Last minute
Updates Sent	123	5	1
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0

RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	244	10	2
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0
none	0	0	0

fe-1/2/1.5: 2 routes learned; 5 routes advertised; timeout 180s; update interval 10s

Counter	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	734	32	6
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	245	11	2
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0
none	0	0	0

Meaning The **update interval** field shows that the interval is 60 seconds for Neighbor R1 and 10 seconds for Neighbor R3. The **Updates Sent** field shows that Device R2 is sending updates to Device R1 at roughly 1/6 of the rate that it is sending updates to Device R3.

Checking the RIP Updates Received by Device R2

Purpose Make sure that the RIP update packets are sent at the expected interval.

Action From operational mode, enter the **show rip statistics** command.

```
user@R1> show rip statistics
```

```
RIPv2 info: port 520; holddown 120s.
  rts learned  rts held down  rqsts dropped  resps dropped
           5             0           0           0

fe-1/2/0.1: 5 routes learned; 2 routes advertised; timeout 180s; update interval
30s
Counter          Total    Last 5 min    Last minute
-----
Updates Sent      312         10           2
Triggered Updates Sent  2           0           0
Responses Sent    0           0           0
Bad Messages      0           0           0
RIPv1 Updates Received  0           0           0
```

RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	181	5	1
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	1	0	0
RIP Requests Ignored	0	0	0
none	0	0	0

Meaning The RIPv2 Updates Received field shows the number of updates received from Device R2.

Checking the RIP Updates Received by Device R3

Purpose Make sure that the RIP update packets are sent at the expected interval.

Action From operational mode, enter the **show rip statistics** command.

```
user@R3> show rip statistics
```

```
RIPv2 info: port 520; holddown 120s.
```

```
    rts learned  rts held down  rqsts dropped  resps dropped
           5             0           0           0
```

```
fe-1/2/0.6: 5 routes learned; 2 routes advertised; timeout 180s; update interval 30s
```

Counter	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	314	11	2
Triggered Updates Sent	1	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	827	31	6
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0
none	0	0	0

Meaning The RIPv2 Updates Received field shows the number of updates received from Device R2.

Release History Table

Release	Description
11.1	In Junos OS Release 11.1 and later, a retransmission timer is available for RIP demand circuits.

RIP Demand Circuits

- [RIP Demand Circuits Overview on page 49](#)
- [Example: Configuring RIP Demand Circuits on page 52](#)

RIP Demand Circuits Overview

RIP periodically sends routing information (RIP packets) to neighboring devices. These periodic broadcasts can consume bandwidth resources and interfere with network traffic by preventing WAN circuits from being closed. Demand circuits for RIP is defined in RFC 2091 and overcomes these issues by exchanging incremental updates on demand.

A demand circuit is a point-to-point connection between two neighboring interfaces configured for RIP. Demand circuits preserve bandwidth by establishing a link when data needs to be transferred, and terminating the link when the data transfer is complete. Demand circuits increase the efficiency of RIP on the configured interfaces by offering minimal network overhead in terms of messages passed between the demand circuit end points, conserving resources, and reducing costs.

By configuring RIP demand circuits, a specific event triggers the device to send an update, thereby eliminating the periodic transmission of RIP packets over the neighboring interface. To save overhead, the device sends RIP information only when changes occur in the routing database, such as:

- The device is first powered on
- The device receives a request for route update information
- A change occurs in the network
- The demand circuit goes down or comes up

The device sends update requests, update responses, and acknowledgments. In addition, the device retransmits updates and requests until valid acknowledgments are received. The device dynamically learns RIP neighbors. If the neighboring interface goes down, RIP flushes routes learned from the neighbor's IP address.

Routes learned from demand circuits do not age like other RIP entries because demand circuits are in a permanent state. Routes in a permanent state are only removed under the following conditions:

- A formerly reachable route changes to unreachable in an incoming response
- The demand circuit is down due to an excessive number of unacknowledged retransmissions

You can also set the RIP hold-down timer and the RIP demand circuit retransmission timer to regulate performance. The demand circuit uses these timers to determine if there is a change that requires update messages to be sent. There is also a database timer that runs only when RIP flushes learned routes from the routing table.

This topic includes the following sections:

- [RIP Demand Circuit Packets on page 50](#)
- [Timers Used by RIP Demand Circuits on page 51](#)

RIP Demand Circuit Packets

When you configure an interface for RIP demand circuits, the supported command field packet types are different than those for RIP version 1 and RIP version 2. RIP packets for RIP demand circuits contain three additional packet types and an extended 4-byte update header. Both RIP version 1 and RIP version 2 support the three packet types and the extended 4-byte header. [Table 4 on page 50](#) describes the three packet types.

Table 4: RIP Demand Circuit Packet Types

Packet Type	Description
Update Request	Update request messages seek information for the device's routing table. This message is sent when the device is first powered on or when a down demand circuit comes up. The device sends this message every 5 seconds (by default) until an update response message is received.
Update Response	Update response messages are sent in response to an update request message, which occurs when the device is first powered on or when a down demand circuit comes up. Each update response message contains a sequence number that the neighbor uses to acknowledge the update request.
Update Acknowledge	Update acknowledge messages are sent in response to every update response message received by the neighbor.



NOTE: These packets are only valid on interfaces configured for RIP demand circuits. If a demand circuit receives a RIP packet that does not contain these packet types, it silently discards the packet and logs an error message similar to the following:

Ignoring RIP packet with invalid version 0 from neighbor 10.0.0.0 and source 10.0.0.1

- See Also**
- [RIP Packets on page 21](#)
 - [demand-circuit on page 168](#)

Timers Used by RIP Demand Circuits

RIP demand circuits use the RIP hold-down timer and the RIP demand circuit retransmission timer to regulate performance and to determine if there is a change in the network that requires the device to send update messages. The hold-down timer is a global RIP timer that affects the entire RIP configuration; whatever range you configure for RIP applies to RIP demand circuits. The retransmission timer affects only RIP demand circuits. In addition, there is a database timer that runs only when RIP flushes learned routes from the routing table.

- **Hold-down timer (global RIP timer)**—Use the hold-down timer to configure the number of seconds that RIP waits before updating the routing table. The value of the hold-down timer affects the entire RIP configuration, not just the demand circuit interfaces. The hold-down timer starts when a route timeout limit is met, when a formerly reachable route is unreachable, or when a demand circuit interface is down. When the hold-down timer is running, routes are advertised as unreachable on other interfaces. When the hold-down timer expires, the route is removed from the routing table if all destinations are aware that the route is unreachable or the remaining destinations are down. By default, RIP waits 120 seconds between routing table updates. The range is from 10 to 180 seconds.
- **Retransmission timer (RIP demand circuit timer)**—RIP demand circuits send update messages every 5 seconds to an unresponsive peer. Use the retransmission timer to limit the number of times a demand circuit resends update messages to an unresponsive peer. If the configured retransmission threshold is reached, routes from the next hop router are marked as unreachable and the hold-down timer starts. The value of the retransmission timer affects only the demand circuit interfaces. To determine the number of times to resend the update message, use the following calculation:

$$5 \text{ seconds} * \text{number of retransmissions} = \text{retransmission seconds}$$

The retransmission range is from 5 through 180 seconds, which corresponds to sending an update message a minimum of 1 time (5 seconds) and a maximum of 36 times (180 seconds).

- **Database timer (global timeout timer)**—Routes learned from demand circuits do not age like other RIP entries because demand circuits are in a permanent state. On a RIP demand circuit, the database timer starts upon receipt of the update response message with the flush flag sent from a RIP demand circuit peer. When the neighbor receives this message, all routes from that peer are flushed, and the database timer starts and runs for the configured route timeout interval. When the database timer is running, routes are still advertised as reachable on other interfaces. When the database timer expires, the device advertises all routes from its peer as unreachable.

- See Also**
- [Example: Configuring RIP Timers on page 43](#)
 - [Example: Configuring RIP Demand Circuits on page 52](#)
 - [holddown on page 174](#)
 - [max-retrans-time on page 177](#)

Example: Configuring RIP Demand Circuits

This example describes how to configure an interface as a RIP demand circuit.

- [Requirements on page 52](#)
- [Overview on page 52](#)
- [Configuration on page 53](#)
- [Verification on page 54](#)

Requirements

Before you begin, configure the device interfaces. See the *Junos OS Network Interfaces Library for Routing Devices* or the *Junos OS Interfaces Configuration Guide for Security Devices*.

Overview

A demand circuit is a point-to-point connection between two neighboring interfaces configured for RIP. Demand circuits increase the efficiency of RIP on the configured interfaces by eliminating the periodic transmission of RIP packets. Demand circuits preserve bandwidth by establishing a link when data needs to be transferred, and terminating the link when the data transfer is complete. In this example, two devices are connected using SONET/SDH interfaces.



NOTE: When you configure RIP demand circuits, any silent removal of the RIP configuration goes unnoticed by the RIP peer and leads to stale entries in the routing table. To clear the stale entries, deactivate and reactivate RIP on the neighboring devices.

In this example, you configure interface **so-0/1/0** with the following settings:

- **demand-circuit**—Configures the interface as a demand circuit. To complete the demand circuit, you must configure both ends of the pair as demand circuits.
- **max-retrans-time**—RIP demand circuits send update messages every 5 seconds to an unresponsive peer. Use the retransmission timer to limit the number of times a demand circuit resends update messages to an unresponsive peer. If the configured retransmission threshold is reached, routes from the next-hop router are marked as unreachable, and the hold-down timer starts. The value of the retransmission timer affects only the demand circuit interfaces. To determine the number of times to resend the update message, use the following calculation:

$$5 \text{ seconds} \times \text{retransmissions} = \text{retransmission seconds}$$

For example, if you want the demand circuit to send only two update messages to an unresponsive peer, the calculation is: $5 \times 2 = 10$. When you configure the retransmission timer, you enter 10 seconds.

The retransmission range is from 5 through 180 seconds, which corresponds to sending an update message a minimum of 1 time (5 seconds) and a maximum of 36 times (180 seconds).

Configuration

In the following example, you configure a neighboring interface to be a RIP demand circuit and save the 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 in the CLI at the **[edit]** hierarchy level.

```
set interfaces so-0/1/0 unit 0 family inet address 192.0.2.0/24
set protocols rip group group1 neighbor so-0/1/0 demand-circuit
set protocols rip group group1 neighbor so-0/1/0 max-retrans-time 10
```

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 a RIP demand circuit on one neighboring interface:

1. Configure the interface.

```
[edit interfaces]
user@host# set so-0/1/0 unit 0 family inet address 192.0.2.0/24
```

2. Configure the neighbor as a demand circuit.

```
[edit protocols rip]
user@host# set group group1 neighbor so-0/1/0 demand-circuit
```

3. Configure the demand circuit retransmission timer.

```
[edit protocols rip]
user@host# set group group1 neighbor so-0/1/0 max-retrans-time 10
```

4. If you are done configuring the device, commit the configuration.

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



NOTE: Repeat this entire configuration on the other neighboring interface.

Results

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

```
user@host# show interfaces
so-0/1/0 {
  unit 0 {
    family inet {
      address 192.0.2.0/24;
    }
  }
}
```

```
user@host# show protocols
rip {
  group group1 {
    neighbor so-0/1/0 {
      demand-circuit;
      max-retrans-time 10;
    }
  }
}
```

Verification

Confirm that the configuration is working properly.

Verifying a Demand Circuit Configuration

Purpose Verify that the demand circuit configuration is working.

Action To verify that the demand circuit configuration is in effect, use the **show rip neighbor** operational mode command.

```
user@host> show rip neighbor
```

Neighbor	State	Source Address	Destination Address	Send Mode	Receive Mode	In Met
so-0/1/0.0(DC)	Up	10.10.10.2	224.0.0.9	mcast	both	1

When you configure demand circuits, the **show rip neighbor** command displays a DC flag next to the neighboring interface configured for demand circuits.



NOTE: If you configure demand circuits at the `[edit protocols rip group group-name neighbor neighbor-name]` hierarchy level, the output shows only the neighboring interface that you specifically configured as a demand circuit. If you configure demand circuits at the `[edit protocols rip group group-name]` hierarchy level, all of the interfaces in the group are configured as demand circuits. Therefore, the output shows all of the interfaces in that group as demand circuits.

BFD for RIP

- [Understanding BFD for RIP on page 55](#)
- [Example: Configuring BFD for RIP on page 56](#)
- [Understanding BFD Authentication for RIP on page 62](#)
- [Example: Configuring BFD Authentication for RIP on page 63](#)

Understanding BFD for RIP

The Bidirectional Forwarding Detection (BFD) Protocol is a simple hello mechanism that detects failures in a network. 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. BFD works with a wide variety of network environments and topologies. BFD failure detection times are shorter than RIP detection times, providing faster reaction times to various kinds of failures in the network. Instead of waiting for the routing protocol neighbor timeout, BFD provides rapid detection of link failures. BFD timers are adaptive and can be adjusted to be more or less aggressive. For example, a timer can adapt to a higher value if the adjacency fails, or a neighbor can negotiate a higher value for a timer than the one configured. Note that the functionality of configuring BFD for RIP described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

BFD enables quick failover between a primary and a secondary routed path. The protocol tests the operational status of the interface multiple times per second. BFD provides for configuration timers and thresholds for failure detection. For example, if the minimum interval is set for 50 milliseconds and the threshold uses the default value of three missed messages, a failure is detected on an interface within 200 milliseconds of the failure.

Intervening devices (for example, an Ethernet LAN switch) hide link-layer failures from routing protocol peers, such as when two routers are connected by way of a LAN switch, where the local interface status remains up even when a physical fault happens on the remote link. Link-layer failure detection times vary, depending on the physical media and the Layer 2 encapsulation. BFD can provide fast failure detection times for all media types, encapsulations, topologies, and routing protocols.

To enable BFD for RIP, both sides of the connection must receive an update message from the peer. By default, RIP does not export any routes. Therefore, you must enable update messages to be sent by configuring an export policy for routes before a BFD session is triggered.

Example: Configuring BFD for RIP

This example shows how to configure Bidirectional Forwarding Detection (BFD) for a RIP network.

- [Requirements on page 56](#)
- [Overview on page 56](#)
- [Configuration on page 58](#)
- [Verification on page 61](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

Overview

To enable failure detection, include the **bfd-liveness-detection** statement:

```
bfd-liveness-detection {  
  detection-time {  
    threshold milliseconds;  
  }  
  minimum-interval milliseconds;  
  minimum-receive-interval milliseconds;  
  multiplier number;  
  no-adaptation;  
  transmit-interval {  
    threshold milliseconds;  
    minimum-interval milliseconds;  
  }  
  version (1 | automatic);  
}
```

Optionally, you can specify the threshold for the adaptation of the detection time by including the **threshold** statement. When the BFD session detection time adapts to a value equal to or greater than the threshold, a single trap and a system log message are sent.

To specify the minimum transmit and receive interval for failure detection, include the **minimum-interval** statement. This value represents the minimum interval at which the local routing device transmits hello packets as well as the minimum interval at which the routing device expects to receive a reply from a neighbor with which it has established a BFD session. You can configure a value in the range from 1 through 255,000 milliseconds. This examples sets a minimum interval of 600 milliseconds.



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 nonstop active routing configured, the minimum interval recommendations are unchanged and depend only on your network deployment.

You can optionally specify the minimum transmit and receive intervals separately.

To specify only the minimum receive interval for failure detection, include the **minimum-receive-interval** statement. This value represents the minimum interval at which the local routing device expects to receive a reply from a neighbor with which it has established a BFD session. You can configure a value in the range from 1 through 255,000 milliseconds.

To specify only the minimum transmit interval for failure detection, include the **transmit-interval minimum-interval** statement. This value represents the minimum interval at 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.

To specify the number of hello packets not received by a neighbor that causes the originating interface to be declared down, include the **multiplier** statement. The default is 3, and you can configure a value in the range from 1 through 255.

To specify the threshold for detecting the adaptation of the transmit interval, include the **transmit-interval threshold** statement. The threshold value must be greater than the transmit interval.

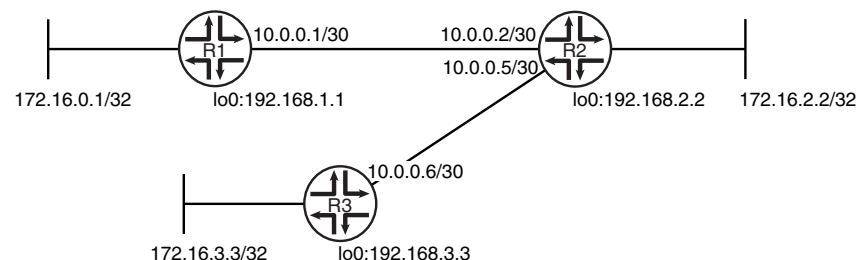
To specify the BFD version used for detection, include the **version** statement. The default is to have the version detected automatically.

You can trace BFD operations by including the **traceoptions** statement at the **[edit protocols bfd]** hierarchy level.

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

Figure 8 on page 58 shows the topology used in this example.

Figure 8: RIP BFD Network Topology



"CLI Quick Configuration" on page 58 shows the configuration for all of the devices in Figure 8 on page 58. The section "Step-by-Step Procedure" on page 59 describes the steps on Device R1.

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 R1

```
set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set protocols bfd traceoptions file bfd-trace
set protocols bfd traceoptions flag all
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.1
set protocols rip group rip-group bfd-liveness-detection minimum-interval 600
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
```

Device R2

```
set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor fe-1/2/1.5
set protocols rip group rip-group bfd-liveness-detection minimum-interval 600
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set protocols rip group rip-group bfd-liveness-detection minimum-interval 600
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 a BFD for a RIP network:

1. Configure the network interfaces.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30

```

2. Create the RIP group and add the interface.

To configure RIP in Junos OS, you must configure a group that contains the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

```

[edit protocols rip group rip-group]
user@R1# set neighbor fe-1/2/0.1

```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```

[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept

```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```

[edit protocols rip group rip-group]
user@R1# set export advertise-routes-through-rip

```

5. Enable BFD.

```

[edit protocols rip group rip-group]
user@R1# set bfd-liveness-detection minimum-interval 600

```

6. Configure tracing operations to track BFD messages.

```
[edit protocols bfd traceoptions]
user@R1# set file bfd-trace
user@R1# set flag all
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    family inet {
      address 10.0.0.1/30;
    }
  }
}
```

```
user@R1# show protocols
bfd {
  traceoptions {
    file bfd-trace;
    flag all;
  }
}
rip {
  group rip-group {
    export advertise-routes-through-rip;
    bfd-liveness-detection {
      minimum-interval 600;
    }
    neighbor fe-1/2/0.1;
  }
}
```

```
user@R1# show policy-options
policy-statement advertise-routes-through-rip {
  term 1 {
    from protocol [ direct rip ];
    then accept;
  }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Verifying That the BFD Sessions Are Up on page 61](#)
- [Checking the BFD Trace File on page 61](#)

Verifying That the BFD Sessions Are Up

Purpose Make sure that the BFD sessions are operating.

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

```
user@R1> show bfd session
```

Address	State	Interface	Detect Time	Transmit Interval	Multiplier
10.0.0.2	Up	fe-1/2/0.1	1.800	0.600	3

1 sessions, 1 clients
Cumulative transmit rate 1.7 pps, cumulative receive rate 1.7 pps

Meaning The output shows that there are no authentication failures.

Checking the BFD Trace File

Purpose Use tracing operations to verify that BFD packets are being exchanged.

Action From operational mode, enter the **show log** command.

```
user@R1> show log bfd-trace
```

```
Feb 16 10:26:32 PPM Trace: BFD periodic xmit to 10.0.0.2 (IFL 124, rtbl 53,
single-hop port)
Feb 16 10:26:32 Received Downstream TraceMsg (24) len 86:
Feb 16 10:26:32   IfIndex (3) len 4: 0
Feb 16 10:26:32   Protocol (1) len 1: BFD
Feb 16 10:26:32   Data (9) len 61: (hex) 42 46 44 20 70 61 63 6b 65 74 20 66 72
6f 6d 20 31 30 2e
Feb 16 10:26:32 PPM Trace: BFD packet from 10.0.0.1 (IFL 73, rtbl 56, ttl 255)
absorbed
Feb 16 10:26:32 Received Downstream TraceMsg (24) len 60:
Feb 16 10:26:32   IfIndex (3) len 4: 0
Feb 16 10:26:32   Protocol (1) len 1: BFD
Feb 16 10:26:32   Data (9) len 35: (hex) 42 46 44 20 70 65 72 69 6f 64 69 63 20
78 6d 69 74 20 6f
...
```

Meaning The output shows the normal functioning of BFD.

Understanding BFD Authentication for RIP

BFD enables rapid detection of communication failures between adjacent systems. By default, authentication for BFD sessions is disabled. However, when running BFD over Network Layer protocols, the risk of service attacks can be significant. 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 RIP. BFD authentication is only supported in the domestic image and is not available in the export image.

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 the level of authentication that can be configured:

- [BFD Authentication Algorithms on page 62](#)
- [Security Authentication Keychains on page 63](#)
- [Strict Versus Loose Authentication on page 63](#)

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 1. 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 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.

See Also • [bfd-liveness-detection on page 164](#)

Example: Configuring BFD Authentication for RIP

This example shows how to configure Bidirectional Forwarding Detection (BFD) authentication for a RIP network.

- [Requirements on page 64](#)
- [Overview on page 64](#)
- [Configuration on page 64](#)
- [Verification on page 68](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

The devices must be running Junos OS Release 9.6 or later.

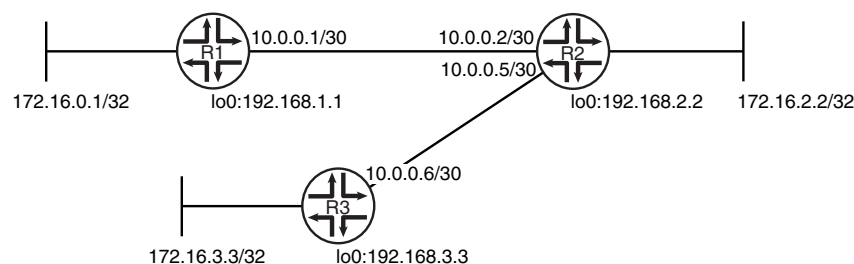
Overview

Only three steps are needed to configure authentication on a BFD session:

1. Specify the BFD authentication algorithm for the RIP protocol.
2. Associate the authentication keychain with the RIP protocol.
3. Configure the related security authentication keychain.

Figure 9 on page 64 shows the topology used in this example.

Figure 9: RIP BFD Authentication Network Topology



“CLI Quick Configuration” on page 64 shows the configuration for all of the devices in Figure 9 on page 64. The section “Step-by-Step Procedure” on page 65 describes the steps on Device R1.

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, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

Device R1

```
set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set protocols bfd traceoptions file bfd-trace
set protocols bfd traceoptions flag all
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.1
set protocols rip group rip-group bfd-liveness-detection minimum-interval 600
set protocols rip group rip-group bfd-liveness-detection authentication key-chain bfd-rip
set protocols rip group rip-group bfd-liveness-detection authentication algorithm
  keyed-md5
set protocols rip group rip-group bfd-liveness-detection authentication loose-check
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
```



```

set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
set security authentication-key-chains key-chain bfd-rip key 53 secret $ABC123$ABC123
set security authentication-key-chains key-chain bfd-rip key 53 start-time
  "2012-2-16.12:00:00 -0800"

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor fe-1/2/1.5
set protocols rip group rip-group bfd-liveness-detection minimum-interval 600
set protocols rip group rip-group bfd-liveness-detection authentication key-chain bfd-rip
set protocols rip group rip-group bfd-liveness-detection authentication algorithm
  keyed-md5
set protocols rip group rip-group bfd-liveness-detection authentication loose-check
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
set security authentication-key-chains key-chain bfd-rip key 53 secret $ABC123$ABC123
set security authentication-key-chains key-chain bfd-rip key 53 start-time
  "2012-2-16.12:00:00 -0800"

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set protocols rip group rip-group bfd-liveness-detection minimum-interval 600
set protocols rip group rip-group bfd-liveness-detection authentication key-chain bfd-rip
set protocols rip group rip-group bfd-liveness-detection authentication algorithm
  keyed-md5
set protocols rip group rip-group bfd-liveness-detection authentication loose-check
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
set security authentication-key-chains key-chain bfd-rip key 53 secret $ABC123$ABC123
set security authentication-key-chains key-chain bfd-rip key 53 start-time
  "2012-2-16.12:00:00 -0800"

```

**Step-by-Step
Procedure**

The following example requires you to 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 a BFD authentication:

1. Configure the network interfaces.

```
[edit interfaces]
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30
```

2. Create the RIP group and add the interface.

To configure RIP in Junos OS, you must configure a group that contains the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

```
[edit protocols rip group rip-group]
user@R1# set neighbor fe-1/2/0.1
```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group rip-group]
user@R1# set export advertise-routes-through-rip
```

5. Enable BFD.

```
[edit protocols rip group rip-group]
user@R1# set bfd-liveness-detection minimum-interval 600
```

6. Specify the algorithm (**keyed-md5**, **keyed-sha-1**, **meticulous-keyed-md5**, **meticulous-keyed-sha-1**, or **simple-password**) to use.



NOTE: Nonstop active routing 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.

```
[edit protocols rip group rip-group]
user@R1# set bfd-liveness-detection authentication algorithm keyed-md5
```

7. Specify the keychain to be used to associate BFD sessions on RIP with the unique security authentication keychain attributes.

The keychain you specify must match a keychain name configured at the **[edit security authentication key-chains]** hierarchy level.

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.

```
[edit protocols rip group rip-group]
user@R1# set bfd-liveness-detection authentication key-chain bfd-rip
```

8. (Optional) Specify loose authentication checking if you are transitioning from nonauthenticated sessions to authenticated sessions.

```
[edit protocols rip group rip-group]
user@R1# set bfd-liveness-detection authentication loose-check
```

9. Specify the unique security authentication information for BFD sessions:
 - The matching keychain name as specified in Step 7.
 - 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 *yyyy-mm-dd.hh:mm:ss*.

```
[edit security authentication-key-chains key-chain bfd-rip]
user@R1# set key 53 secret $ABC123$ABC123
user@R1# set key 53 start-time "2012-2-16.12:00:00 -0800"
```

10. Configure tracing operations to track BFD authentication.

```
[edit protocols bfd traceoptions]
user@R1# set file bfd-trace
user@R1# set flag all
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, **show policy-options**, and **show security** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    family inet {
      address 10.0.0.1/30;
    }
  }
}
```

```
}  
}
```

```
user@R1# show protocols  
bfd {  
  traceoptions {  
    file bfd-trace;  
    flag all;  
  }  
}  
rip {  
  group rip-group {  
    export advertise-routes-through-rip;  
    bfd-liveness-detection {  
      minimum-interval 600;  
    }  
    neighbor fe-1/2/0.1;  
  }  
}
```

```
user@R1# show policy-options  
policy-statement advertise-routes-through-rip {  
  term 1 {  
    from protocol [ direct rip ];  
    then accept;  
  }  
}
```

```
user@R1# show security  
authentication-key-chains {  
  key-chain bfd-rip {  
    key 53 {  
      secret $ABC123$ABC123  
      start-time "2012-2-16.12:00:00 -0800";  
    }  
  }  
}
```

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

Verification

Confirm that the configuration is working properly.

- [Verifying That the BFD Sessions Are Authenticated on page 68](#)
- [Viewing Extensive Information About the BFD Authentication on page 69](#)
- [Checking the BFD Trace File on page 70](#)

Verifying That the BFD Sessions Are Authenticated

Purpose Make sure that the BFD sessions are authenticated.

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

```
user@R1> show bfd session detail
```

```

Address          State    Interface    Detect   Transmit
10.0.0.2         Up      fe-1/2/0.1   1.800   0.600   Multiplier
                                     3
Client RIP, TX interval 0.600, RX interval 0.600, Authenticate
Session up time 01:39:34
Local diagnostic None, remote diagnostic None
Remote state Up, version 1
Logical system 6, routing table index 53

1 sessions, 1 clients
Cumulative transmit rate 1.7 pps, cumulative receive rate 1.7 pps
```

Meaning **Authenticate** is displayed to indicate that BFD authentication is configured.

Viewing Extensive Information About the BFD Authentication

Purpose View the keychain name, the authentication algorithm and mode for each client in the session, and the BFD authentication configuration status.

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

```
user@R1> show bfd session extensive
```

```

Address          State    Interface    Detect   Transmit   Multiplier
10.0.0.2         Up      fe-1/2/0.1   1.800   0.600      3
Client RIP, TX interval 0.600, RX interval 0.600, Authenticate
keychain bfd-rip, algo keyed-md5, mode loose
Session up time 01:46:29
Local diagnostic None, remote diagnostic None
Remote state Up, version 1
Logical system 6, routing table index 53
Min async interval 0.600, min slow interval 1.000
Adaptive async TX interval 0.600, RX interval 0.600
Local min TX interval 0.600, minimum RX interval 0.600, multiplier 3
Remote min TX interval 0.600, min RX interval 0.600, multiplier 3
Local discriminator 225, remote discriminator 226
Echo mode disabled/inactive
Authentication enabled/active, keychain bfd-rip, algo keyed-md5, mode loose
Session ID: 0x300501

1 sessions, 1 clients
Cumulative transmit rate 1.7 pps, cumulative receive rate 1.7 pps
```

Meaning The output shows the keychain name, the authentication algorithm and mode for the client in the session, and the BFD authentication configuration status.

Checking the BFD Trace File

Purpose Use tracing operations to verify that BFD packets are being exchanged.

Action From operational mode, enter the **show log** command.

```
user@R1> show log bfd-trace
```

```
Feb 16 10:26:32 PPM Trace: BFD periodic xmit to 10.0.0.2 (IFL 124, rtbl 53,
single-hop port)
Feb 16 10:26:32 Received Downstream TraceMsg (24) len 86:
Feb 16 10:26:32   IfIndex (3) len 4: 0
Feb 16 10:26:32   Protocol (1) len 1: BFD
Feb 16 10:26:32   Data (9) len 61: (hex) 42 46 44 20 70 61 63 6b 65 74 20 66 72
6f 6d 20 31 30 2e
Feb 16 10:26:32 PPM Trace: BFD packet from 10.0.0.1 (IFL 73, rtbl 56, ttl 255)
absorbed
Feb 16 10:26:32 Received Downstream TraceMsg (24) len 60:
Feb 16 10:26:32   IfIndex (3) len 4: 0
Feb 16 10:26:32   Protocol (1) len 1: BFD
Feb 16 10:26:32   Data (9) len 35: (hex) 42 46 44 20 70 65 72 69 6f 64 69 63 20
78 6d 69 74 20 6f
...
```

Meaning The output shows the normal functioning of BFD.

Traffic Control in a RIP Network

- [Understanding Traffic Control with Metrics in a RIP Network on page 70](#)
- [Example: Controlling Traffic in a RIP Network with an Incoming Metric on page 71](#)
- [Example: Controlling Traffic in a RIP Network with an Outgoing Metric on page 73](#)
- [Example: Configuring the Metric Value Added to Imported RIP Routes on page 74](#)

Understanding Traffic Control with Metrics in a RIP Network

To tune a RIP network and control traffic flowing through the network, you increase or decrease the cost of the paths through the network. RIP provides two ways to modify the path cost: an incoming metric and an outgoing metric, which are each set to 1 by default. These metrics are attributes that manually specify the cost of any route advertised through a host. By increasing or decreasing the metrics—and thus the cost—of links throughout the network, you can control packet transmission across the network.

The incoming metric modifies the cost of an individual segment when a route across the segment is imported into the routing table. For example, if you set the incoming metric on the segment to 3, the individual segment cost along the link is changed from 1 to 3. The increased cost affects all route calculations through that link. Other routes that were previously excluded because of a high hop count might now be selected into the router's forwarding table.

The outgoing metric modifies the path cost for all the routes advertised out a particular interface. Unlike the incoming metric, the outgoing metric modifies the routes that other routers are learning and thereby controls the way they send traffic.

If an exported route was learned from a member of the same RIP group, the metric associated with that route is the normal RIP metric. For example, a RIP route with a metric of 5 learned from a neighbor configured with an incoming metric of 2 is advertised with a combined metric of 7 when advertised to neighbors in the same group. However, if this route was learned from a RIP neighbor in a different group or from a different protocol, the route is advertised with the metric value configured in the outgoing metric for that group.

You might want to increase the metric of routes to decrease the likelihood that a particular route is selected and installed in the routing table. This process is sometimes referred to as *route poisoning*. Some reasons that you might want to poison a route are that the route is relatively expensive to use, or it has relatively low bandwidth.

A route with a higher metric than another route becomes the active route only when the lower-metric route becomes unavailable. In this way, the higher-metric route serves as a backup path.

One way to increase the metric of imported routes is to configure an import policy. Another way is to include the **metric-in** statement in the RIP neighbor configuration. One way to increase the metric of export routes is to configure an export policy. Another way is to include the **metric-out** statement in the RIP neighbor configuration.

Example: Controlling Traffic in a RIP Network with an Incoming Metric

This example shows how to control traffic with an incoming metric.

- [Requirements on page 71](#)
- [Overview on page 71](#)
- [Configuration on page 72](#)
- [Verification on page 73](#)

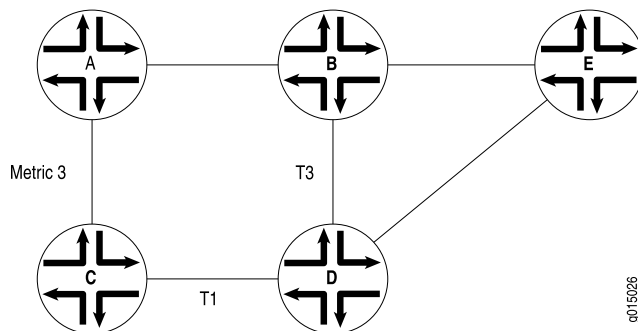
Requirements

Before you begin, define RIP groups, and add interfaces to the groups. Then configure a routing policy to export directly connected routes and routes learned through the RIP routing exchanges. See “[Example: Configuring a Basic RIP Network](#)” on page 28.

Overview

In this example, routes to Router D are received by Router A across both of its RIP-enabled interfaces as shown in [Figure 10 on page 72](#). Because the route through Router B and the route through Router C have the same number of hops, both routes are imported into the forwarding table. However, because the T3 link from Router B to Router D has a higher bandwidth than the T1 link from Router C to Router D, you want traffic to flow from Router A through Router B to Router D.

Figure 10: Controlling Traffic in a RIP Network with the Incoming Metric



To force this flow, you can modify the route metrics as they are imported into Router A's routing table. By setting the incoming metric on the interface from Router A to Router C, you modify the metric on all routes received through that interface. Setting the incoming route metric on Router A changes only the routes in Router A's routing table, and affects only how Router A sends traffic to Router D. Router D's route selection is based on its own routing table, which, by default, includes no adjusted metric values.

In the example, Router C receives a route advertisement from Router D and readvertises the route to Router A. When Router A receives the route, it applies the incoming metric on the interface. Instead of incrementing the metric by 1 (the default), Router A increments it by 3 (the configured incoming metric), giving the route from Router A to Router D through Router C a total path metric of 4. Because the route through Router B has a metric of 2, it becomes the preferred route for all traffic from Router A to Router D.

This example uses a RIP group called **alpha 1** on interface **g3-0/0/0**.

Configuration

Step-by-Step Procedure

To control traffic with an incoming metric:

1. Enable RIP on the interface.

```
[edit protocols rip]
user@host# set group alpha1 neighbor ge-0/0/0
```

2. Set the incoming metric.

```
[edit protocols rip]
user@host# set metric-in 3
```

3. If you are done configuring the device, commit the configuration.

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


Verification

To verify that the configuration is working properly, enter the **show route protocols rip** command.

Example: Controlling Traffic in a RIP Network with an Outgoing Metric

This example shows how to control traffic with an outgoing metric.

- [Requirements on page 73](#)
- [Overview on page 73](#)
- [Configuration on page 74](#)
- [Verification on page 74](#)

Requirements

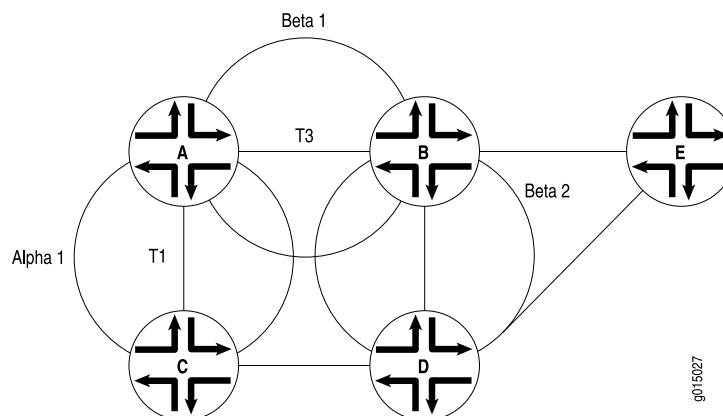
Before you begin:

- Define RIP groups, and add interfaces to the groups. Then configure a routing policy to export directly connected routes and routes learned through RIP routing exchanges. See [“Example: Configuring a Basic RIP Network” on page 28](#).
- Control traffic with an incoming metric. See [“Example: Controlling Traffic in a RIP Network with an Incoming Metric” on page 71](#).

Overview

In this example, each route from Router A to Router D has two hops as shown in [Figure 11 on page 73](#). However, because the link from Router A to Router B in the RIP group has a higher bandwidth than the link from Router A to Router C in RIP group Alpha 1, you want traffic from Router D to Router A to flow through Router B. To control the way Router D sends traffic to Router A, you can alter the routes that Router D receives by configuring the outgoing metric on Router A's interfaces in the Alpha 1 RIP group.

Figure 11: Controlling Traffic in a RIP Network with the Outgoing Metric



If the outgoing metric for the Alpha 1 RIP group—the A-to-C link—is changed to 3, Router D calculates the total path metric from Router A through Router C as 4. In contrast, the

unchanged default total path metric to Router A through Router B in the RIP group is 2. The fact that Router A's interfaces belong to two different RIP groups allows you to configure two different outgoing metrics on its interfaces, because you configure path metrics at the group level.

By configuring the outgoing metric, you control the way Router A sends traffic to Router D. By configuring the outgoing metric on the same router, you control the way Router D sends traffic to Router A.

This example uses an outgoing metric of 3.

Configuration

Step-by-Step Procedure

To control traffic with an outgoing metric:

1. Set the outgoing metric.

```
[edit protocols rip group alpha1]
user@host# set metric-out 3
```

2. If you are done configuring the device, commit the configuration.

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

Verification

To verify that the configuration is working properly, enter the **show protocols rip** command.

Example: Configuring the Metric Value Added to Imported RIP Routes

This example shows how to change the default metric to be added to incoming routes to control the route selection process.

- [Requirements on page 74](#)
- [Overview on page 74](#)
- [Configuration on page 75](#)
- [Verification on page 78](#)

Requirements

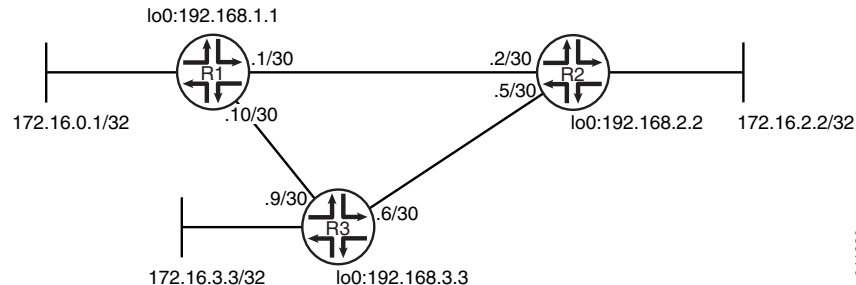
No special configuration beyond device initialization is required before configuring this example.

Overview

Normally, when multiple routes are available, RIP selects the route with the lowest hop count. Changing the default metric enables you to control the route selection process such that a route with a higher hop count can be preferred over of a route with a lower hop count.

Figure 12 on page 75 shows the topology used in this example.

Figure 12: RIP Incoming Metrics Network Topology



Device R1 has two potential paths to reach 172.16.2.2/32. The default behavior is to send traffic out the 0.1/30 interface facing Device R2. Suppose, though, that the path through Device R3 is less expensive to use or has higher bandwidth links. This example shows how to use the **metric-in** statement to ensure that Device R1 uses the path through Device R3 to reach 172.16.2.2/32. “CLI Quick Configuration” on page 75 shows the configuration for all of the devices in Figure 12 on page 75. The section “Step-by-Step Procedure” on page 76 describes the steps on Device R1.

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 R1

```

set interfaces fe-1/2/0 unit 1 description to-R2
set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set interfaces ge-1/2/1 unit 10 description to-R3
set interfaces ge-1/2/1 unit 10 family inet address 10.0.0.10/30
set interfaces lo0 unit 1 family inet address 172.16.0.1/32
set interfaces lo0 unit 1 family inet address 192.168.1.1/32
set protocols rip group primary export advertise-routes-through-rip
set protocols rip group primary neighbor ge-1/2/1.10
set protocols rip group secondary export advertise-routes-through-rip
set protocols rip group secondary neighbor fe-1/2/0.1 metric-in 4
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces ge-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32
set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor ge-1/2/1.5

```

```

set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces ge-1/2/1 unit 9 family inet address 10.0.0.9/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set protocols rip group rip-group neighbor ge-1/2/1.9
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 a RIP metrics:

1. Configure the network interfaces.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 description to-R2
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30
user@R1# set ge-1/2/1 unit 10 description to-R3
user@R1# set ge-1/2/1 unit 10 family inet address 10.0.0.10/30
user@R1# set lo0 unit 1 family inet address 172.16.0.1/32
user@R1# set lo0 unit 1 family inet address 192.168.1.1/32

```

2. Create the RIP groups and add the interfaces.

To configure RIP in Junos OS, you must configure one or more groups that contain the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

For the interface that is facing Device R2, the **metric-in 4** setting causes this route to be less likely to be chosen as the active route.

```

[edit protocols rip]
user@R1# set group primary neighbor ge-1/2/1.10
user@R1# set group secondary neighbor fe-1/2/0.1 metric-in 4

```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip]
user@R1# set group primary export advertise-routes-through-rip
user@R1# set group secondary export advertise-routes-through-rip
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    description to-R2;
    family inet {
      address 10.0.0.1/30;
    }
  }
}
ge-1/2/1 {
  unit 10 {
    description to-R3;
    family inet {
      address 10.0.0.10/30;
    }
  }
}
lo0 {
  unit 1 {
    family inet {
      address 172.16.0.1/32;
      address 192.168.1.1/32;
    }
  }
}
```

```
user@R1# show protocols
rip {
  group primary {
    export advertise-routes-through-rip;
    neighbor ge-1/2/1.10;
  }
  group secondary {
```

```
export advertise-routes-through-rip;
neighbor fe-1/2/0.1 {
    metric-in 4;
}
}
```

```
user@R1# show policy-options
policy-statement advertise-routes-through-rip {
    term 1 {
        from protocol [ direct rip ];
        then accept;
    }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Verifying That the Expected Route Is Active on page 78](#)
- [Removing the metric-in Statement on page 78](#)

Verifying That the Expected Route Is Active

Purpose Make sure that to reach 172.16.2.2/32, Device R1 uses the path through Device R3.

Action From operational mode, enter the **show route 172.16.2.2** command.

```
user@R1> show route 172.16.2.2
inet.0: 12 destinations, 12 routes (12 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
172.16.2.2/32      *[RIP/100] 00:15:46, metric 3, tag 0
                  > to 10.0.0.9 via ge-1/2/1.10
```

Meaning The **to 10.0.0.9 via ge-1/2/1.10** output shows that Device R1 uses the path through Device R3 to reach 172.16.2.2/32. The metric for this route is 3.

Removing the metric-in Statement

Purpose Delete or deactivate the **metric-in** statement to see what happens to the 172.16.2.2/32 route.

Action 1. From configuration mode, deactivate the **metric-in** statement.

```
[edit protocols rip group secondary neighbor fe-1/2/0.1]
```

```
user@R1# deactivate metric-in
user@R1# commit
```

2. From operational mode, enter the **show route 172.16.2.2** command.

```
user@R1> show route 172.16.2.2
inet.0: 12 destinations, 12 routes (12 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

172.16.2.2/32      *[RIP/100] 00:00:06, metric 2, tag 0
                  > to 10.0.0.2 via fe-1/2/0.1
```

Meaning The **to 10.0.0.2 via fe-1/2/0.1** output shows that Device R1 uses the path through Device R2 to reach 172.16.2.2/32. The metric for this route is 2.

- Related Documentation**
- [RIP Configuration Overview on page 27](#)
 - [Verifying a RIP Configuration on page 153](#)
 - [RIP Overview on page 19](#)

Point-to-Multipoint RIP Networks

- [Configuring Point-to-Multipoint RIP Networks Overview on page 79](#)
- [Example: Configuring Point-to-Multipoint RIP Networks on page 80](#)

Configuring Point-to-Multipoint RIP Networks Overview

A point-to-multipoint RIP network consists of a device having two or more peers on a single interface. All the devices forming a point-to-multipoint connection are placed in a single broadcast domain.

In a RIP network, a device can have a single peer or multiple peers for an interface. However, the demand circuit feature implementation in a RIP network requires the use of a single RIP peer. When you configure the following statements, a RIP network with demand circuits can also be configured to have multiple peers on an interface:

- Configuring the interface type to be a multipoint interface by using the **interface-type (Protocols RIP) p2mp** statement.
- Enabling dynamic peer discovery by using the **dynamic-peers** statement (SRX Series devices only).



NOTE: Before configuring the [dynamic-peers](#) statement, IPsec must be configured and IPsec tunnels must be set up by configuring IPsec parameters. Without IPsec configuration, the remote peers have to be explicitly configured at the RIP protocol level by using the [peer address](#) statement. See *Configuring Security Associations for IPsec on an ES PIC* for more details.

- Configuring peers by using the [peer address](#) statement.

```
[edit]
protocols {
  rip {
    group red {
      neighbor fe-0/1/3 {
        interface-type (Protocols RIP) p2mp;
        peer address; (or use dynamic-peers;)
      }
    }
  }
}
```

The [show rip statistics peer address](#) command can be used to display the RIP statistics at the peer level. The [clear rip statistics peer address](#) command can be used to clear the RIP statistics for a peer. Alternatively, you can use the [show rip statistics peer all](#) and [clear rip statistics peer all](#) command to display and clear RIP statistics for all peers.

Example: Configuring Point-to-Multipoint RIP Networks

This example shows how to configure a point-to-multipoint RIP network.

- [Requirements on page 80](#)
- [Overview on page 80](#)
- [Configuration on page 82](#)
- [Verification on page 84](#)

Requirements

This example uses the following hardware and software components:

- M Series routers, MX Series routers, T Series routers, or SRX Series devices
- Junos OS Release 12.1 or later

Overview

In a RIP network, a device can have a single peer or multiple peers for an interface. However, the demand circuit feature implementation in a RIP network requires the use of a single RIP peer.

When you include the following statements, the demand circuit implementation can have multiple peers for a given RIP neighbor.

- Configuring the interface type to be a multipoint interface by using the **interface-type (Protocols RIP) p2mp** statement.
- Enabling dynamic peer discovery by using the **dynamic-peers** statement (SRX Series devices only).



NOTE: To configure the **dynamic-peers** statement, IPsec tunnels must be set up by configuring IPsec parameters. See *Configuring Security Associations for IPsec on an ES PIC* for more details.

- Configuring peers by using the **peer address** statement.

```
[edit]
protocols {
  rip {
    group red {
      neighbor fe-0/1/3 {
        interface-type (Protocols RIP) p2mp;
        peer address; (or use dynamic-peers;)
      }
    }
  }
}
```

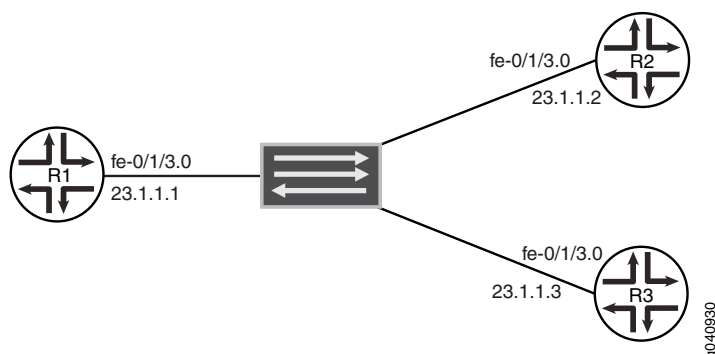
The **show rip statistics peer** command can be used to display the RIP statistics at the peer level.

Topology

In this example, Devices R1, R2, and R3 form a point-to-multipoint network. R1 is connected to R2 and to R3 as a point-to-multipoint connection through a switch that places all devices in the same broadcast domain. RIP demand circuits are configured on all three devices. The two peers to R1 are configured statically by using the **peer address** statement. The **dynamic-peers** statement is not used here.

Figure 13 on page 82 shows the topology used in this example.

Figure 13: Configuring a Point-to-Multipoint RIP Network



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 R1

```

set interfaces fe-0/1/3 unit 0 family inet address 23.1.1/24
set policy-options policy-statement accept-rip-routes term from-direct from protocol direct
set policy-options policy-statement accept-rip-routes term from-direct then accept
set policy-options policy-statement accept-rip-routes term from-rip from protocol rip
set policy-options policy-statement accept-rip-routes term from-rip then accept
set protocols rip traceoptions file R1.log size 4m world-readable
set protocols rip traceoptions flag all detail
set protocols rip group red export accept-rip-routes
set protocols rip group red neighbor fe-0/1/3.0 interface-type p2mp
set protocols rip group red neighbor fe-0/1/3.0 peer 23.1.1.2
set protocols rip group red neighbor fe-0/1/3.0 peer 23.1.1.3
set protocols rip group red neighbor fe-0/1/3.0 demand-circuit
set protocols rip group red neighbor fe-0/1/3.0 max-retrans-time 10

```

Similarly, configure Devices R2 and R3, omitting the **peer address** configuration statement.

Configuring a Point-to-Multipoint RIP Network (with Demand Circuits)

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 the point-to-multipoint feature across a RIP network:

1. Configure the device interface.

```

[edit interfaces fe-0/1/3 unit 0]
user@R1# set family inet address 23.1.1/24

```

2. Define a policy for exporting RIP routes from the routing table to the protocol for transmission through the network.

```
[edit policy-options policy-statement accept-rip-routes]
user@R1# set term from-direct from protocol direct
user@R1# set term from-direct then accept
user@R1# set term from-rip from protocol rip
user@R1# set term from-rip then accept
```

3. Configure RIP and a RIP group with the defined export policy and point-to-multipoint configuration statements.

```
[edit protocols rip]
user@R1# set traceoptions file R1.log size 4m world-readable
user@R1# set traceoptions flag all detail
user@R1# set group red export accept-rip-routes
user@R1# set group red neighbor fe-0/1/3.0 interface-type p2mp
user@R1# set group red neighbor fe-0/1/3.0 peer 23.1.1.2
user@R1# set group red neighbor fe-0/1/3.0 peer 23.1.1.3
user@R1# set group red neighbor fe-0/1/3.0 demand-circuit
user@R1# set group red neighbor fe-0/1/3.0 max-retrans-time 10
```

Similarly, configure Devices R2 and R3, omitting the **peer address** configuration statement.



NOTE: Configuring **max-retrans-time** is optional. In the absence of this configuration statement, the default retransmission time of 180 seconds is configured.

The configuration used in this example is for a RIP network with demand circuits. To configure RIP for networks without demand circuits, exclude the **demand-circuit** and **max-retrans-time** statements from the configuration and check the resulting output. For more information about configuring RIP demand circuits, see [“Example: Configuring RIP Demand Circuits” on page 52](#).

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show policy-options**, and **show protocols rip** commands. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
[edit]
user@R1# show interfaces
fe-0/1/3 {
  unit 0 {
    family inet {
      address 23.1.1.24;
```

```
    }  
  }  
}
```

```
user@R1# show protocols rip  
traceoptions {  
  file R1.log size 4m world-readable;  
  flag all detail;  
}  
group red {  
  export accept-rip-routes;  
  neighbor fe-0/1/3.0 {  
    interface-type p2mp;  
    peer 23.1.1.2;  
    peer 23.1.1.3;  
    demand-circuit;  
    max-retrans-time 10;  
  }  
}
```

```
user@R1# show policy-options  
policy-statement accept-rip-routes {  
  term from-direct {  
    from protocol direct;  
    then accept;  
  }  
  term from-rip {  
    from protocol rip;  
    then accept;  
  }  
}
```

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

Verification

Confirm that the configuration is working properly.

Verifying the Point-to-Multipoint RIP Network

Purpose Verify that the RIP network is functional with the point-to-multipoint feature configured.

Action From operational mode, run the **show rip neighbor** command.

```
user@R1> show rip neighbor
```

Neighbor	Local State	Source Address	Destination Address	Send Mode	Receive Mode	In Met
-----	-----	-----	-----	-----	-----	---
fe-0/1/3.0(DC)	Up	23.1.1.1	23.1.1.2	unicast	unicast	1
fe-0/1/3.0(DC)	Up	23.1.1.1	23.1.1.3	unicast	unicast	1

From operational mode, run the **show rip statistics peer address** command.

```
user@R1> show rip statistics peer 23.1.1.2
```

```
RIPv2 info: port 520; holddown 120s.
    rts learned  rts held down  rqsts dropped  resps dropped
              3              0              0              0

fe-0/1/3.0 Peer-IP 23.1.1.2: 2 routes learned; 3 routes advertised; timeout 180s;
update interval 0s
Counter
```

	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	0	0	0
Triggered Updates Sent	3	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	2	0	0
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0
none	3	0	0

```
user@R1> show rip statistics peer 23.1.1.3
```

```
RIPv2 info: port 520; holddown 120s.
    rts learned  rts held down  rqsts dropped  resps dropped
              3              0              0              0

fe-0/1/3.0 Peer-IP 23.1.1.3: 2 routes learned; 3 routes advertised; timeout 180s;
update interval 0s
Counter
```

	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	0	0	0
Triggered Updates Sent	3	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	2	0	0
RIPv2 Bad Route Entries	0	0	0

RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0
none	3	0	0

Meaning The RIP network is up and running with the point-to-multipoint feature configured.

- Related Documentation**
- [demand-circuit on page 168](#)
 - [dynamic-peers on page 169](#)
 - [Example: Configuring RIP Demand Circuits on page 52](#)
 - [interface-type \(Protocols RIP\) on page 176](#)
 - [peer on page 182](#)

RIP Import Policy

- [Understanding RIP Import Policy on page 86](#)
- [Example: Applying Policies to RIP Routes Imported from Neighbors on page 86](#)

Understanding RIP Import Policy

The default RIP import policy is to accept all received RIP routes that pass a sanity check. To filter routes being imported by the local routing device from its neighbors, include the **import** statement, and list the names of one or more policies to be evaluated. If you specify more than one policy, they are evaluated in order (first to last) and the first matching policy is applied to the route. If no match is found, the local routing device does not import any routes. Note that the functionality of applying policies to RIP routes imported from neighbors described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

Example: Applying Policies to RIP Routes Imported from Neighbors

This example shows how to configure an import policy in a RIP network.

- [Requirements on page 86](#)
- [Overview on page 87](#)
- [Configuration on page 87](#)
- [Verification on page 90](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

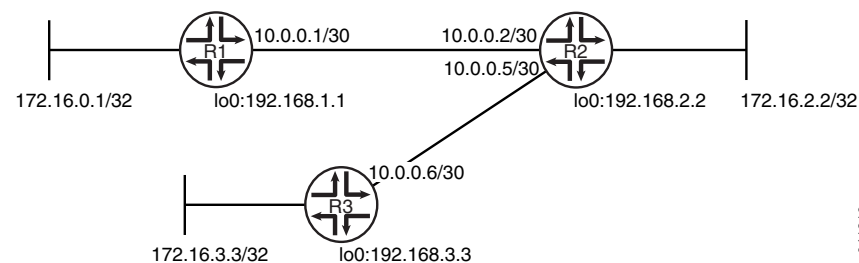
Overview

In this example, Device R1 has an import policy that accepts the 10/8 and 192.168/16 RIP routes and rejects all other RIP routes. This means that the 172.16/16 RIP routes are excluded from Device R1's routing table.

An export policy is also shown because an export policy is required as part of the minimum configuration for RIP.

Figure 14 on page 87 shows the topology used in this example.

Figure 14: RIP Import Policy Network Topology



"CLI Quick Configuration" on page 87 shows the configuration for all of the devices in Figure 14 on page 87. The section "Step-by-Step Procedure" on page 88 describes the steps on Device R1.

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, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

Device R1

```
set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set interfaces lo0 unit 1 family inet address 172.16.0.1/32
set interfaces lo0 unit 1 family inet address 192.168.1.1/32
set protocols rip import rip-import
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
set policy-options policy-statement rip-import term 1 from protocol rip
set policy-options policy-statement rip-import term 1 from route-filter 10.0.0.0/8 orlonger
set policy-options policy-statement rip-import term 1 from route-filter 192.168.0.0/16
  orlonger
set policy-options policy-statement rip-import term 1 then accept
set policy-options policy-statement rip-import term 2 then reject
```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32
set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 a RIP import policy:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30
user@R1# set lo0 unit 1 family inet address 172.16.0.1/32
user@R1# set lo0 unit 1 family inet address 192.168.1.1/32

```

2. Create the RIP group and add the interface.

To configure RIP in Junos OS, you must configure a group that contains the interfaces on which RIP is enabled.

You do not need to enable RIP on the loopback interface.

```

[edit protocols rip group rip-group]
user@R1# set neighbor fe-1/2/0.1

```

3. Create the routing policy to advertise both direct and RIP-learned routes.


```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group rip-group]
user@R1# set export advertise-routes-through-rip
```

5. Configure the import policy.

```
[edit policy-options policy-statement rip-import]
user@R1# set term 1 from protocol rip
user@R1# set term 1 from route-filter 10.0.0.0/8 orlonger
user@R1# set term 1 from route-filter 192.168.0.0/16 orlonger
user@R1# set term 1 then accept
user@R1# set term 2 then reject
```

6. Apply the import policy.

```
[edit protocols rip]
user@R1# set import rip-import
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    family inet {
      address 10.0.0.1/30;
    }
  }
}
lo0 {
  unit 1 {
    family inet {
      address 172.16.0.1/32;
      address 192.168.1.1/32;
    }
  }
}
```

```

user@R1# show protocols
rip {
  import rip-import;
  group rip-group {
    export advertise-routes-through-rip;
    neighbor fe-1/2/0.1;
  }
}

```

```

user@R1# show policy-options
policy-statement advertise-routes-through-rip {
  term 1 {
    from protocol [ direct rip ];
    then accept;
  }
}
policy-statement rip-import {
  term 1 {
    from {
      protocol rip;
      route-filter 10.0.0.0/8 orlonger;
      route-filter 192.168.0.0/16 orlonger;
    }
    then accept;
  }
  term 2 {
    then reject;
  }
}

```

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

Verification

Confirm that the configuration is working properly.

- [Looking at the Routes That Device R2 Is Advertising to Device R1 on page 90](#)
- [Looking at the Routes That Device R1 Is Receiving from Device R2 on page 91](#)
- [Checking the Routing Table on page 91](#)
- [Testing the Import Policy on page 92](#)

Looking at the Routes That Device R2 Is Advertising to Device R1

Purpose Verify that Device R2 is sending the expected routes.

Action From operational mode, enter the **show route advertising-protocol rip** command.

```

user@R2> show route advertising-protocol rip 10.0.0.2

```

```

inet.0: 11 destinations, 11 routes (11 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

```

```

10.0.0.4/30      *[Direct/0] 2d 01:17:44
                  >   via fe-1/2/0.5
172.16.2.2/32   *[Direct/0] 2d 04:09:52
                  >   via lo0.2
172.16.3.3/32   *[RIP/100] 23:40:02, metric 2, tag 0
                  > to 10.0.0.6 via fe-1/2/0.5
192.168.2.2/32  *[Direct/0] 2d 04:09:52
                  >   via lo0.2
192.168.3.3/32  *[RIP/100] 23:40:02, metric 2, tag 0
                  > to 10.0.0.6 via fe-1/2/0.5

```

Meaning Device R2 is sending 172.16/16 routes to Device R1.

Looking at the Routes That Device R1 Is Receiving from Device R2

Purpose Verify that Device R1 is receiving the expected routes.

Action From operational mode, enter the **show route receive-protocol rip** command.

```

user@R1> show route receive-protocol rip 10.0.0.2

inet.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.4/30      *[RIP/100] 01:06:03, metric 2, tag 0
                  > to 10.0.0.2 via fe-1/2/0.1
192.168.2.2/32   *[RIP/100] 01:06:03, metric 2, tag 0
                  > to 10.0.0.2 via fe-1/2/0.1
192.168.3.3/32   *[RIP/100] 01:06:03, metric 3, tag 0
                  > to 10.0.0.2 via fe-1/2/0.1

```

Meaning The output shows that the 172.16/16 routes are excluded.

Checking the Routing Table

Purpose Verify that the routing table is populated with the expected routes.

Action From operational mode, enter the **show route protocol rip** command.

```

user@R1> show route protocol rip

inet.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.4/30      *[RIP/100] 00:54:34, metric 2, tag 0
                  > to 10.0.0.2 via fe-1/2/0.1
192.168.2.2/32   *[RIP/100] 00:54:34, metric 2, tag 0
                  > to 10.0.0.2 via fe-1/2/0.1
192.168.3.3/32   *[RIP/100] 00:54:34, metric 3, tag 0

```

```

224.0.0.9/32      > to 10.0.0.2 via fe-1/2/0.1
                  *[RIP/100] 00:49:00, metric 1
                  MultiRecv

```

Meaning The output shows that the routes have been learned from Device R2 and Device R3.

If you delete or deactivate the import policy, the routing table contains the 172.16/16 routes.

Testing the Import Policy

Purpose By using the **test policy** command, monitor the number of rejected prefixes.

Action From operational mode, enter the **test policy rip-import 172.16/16** command.

```
user@R1> test policy rip-import 172.16/16
```

```
Policy rip-import: 0 prefix accepted, 1 prefix rejected
```

Meaning The output shows that the policy rejected one prefix.

Release History Table

Release	Description
15.1X49	Note that the functionality of applying policies to RIP routes imported from neighbors described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

Interoperability of RIPv1 and RIPv2 Networks

- [Understanding the Sending and Receiving of RIPv1 and RIPv2 Packets on page 92](#)
- [Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets on page 93](#)

Understanding the Sending and Receiving of RIPv1 and RIPv2 Packets

RIP version 1 (RIPv1) and RIP version 2 (RIPv2) can run simultaneously. This might make sense when you are migrating a RIPv1 network to a RIPv2 network. This also allows interoperation with a device that supports RIPv1 but not RIPv2.

By default, when RIP is enabled on an interface, Junos OS receives both RIPv1 and RIPv2 packets and sends only RIPv2 packets. You can configure this behavior by including the **send** and **receive** statements in the RIP configuration. Note that the functionality of configuring the sending and receiving of RIPv1 and RIPv2 packets described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets

This example shows how to configure whether the RIP update messages conform to RIP version 1 (RIPv1) only, to RIP version 2 (RIPv2) only, or to both versions. You can also disable the sending or receiving of update messages.

- [Requirements on page 93](#)
- [Overview on page 93](#)
- [Configuration on page 93](#)
- [Verification on page 96](#)

Requirements

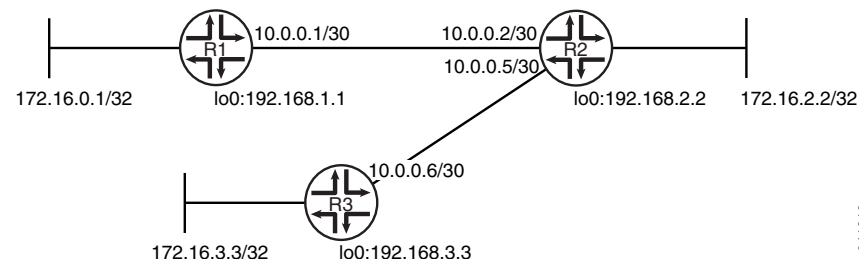
No special configuration beyond device initialization is required before configuring this example.

Overview

By default, when RIP is enabled on an interface, Junos OS receives both RIPv1 and RIPv2 packets and sends only RIPv2 packets.

[Figure 15 on page 93](#) shows the topology used in this example.

Figure 15: Sending and Receiving RIPv1 and RIPv2 Packets Network Topology



In this example, Device R1 is configured to receive only RIPv2 packets.

“[CLI Quick Configuration](#)” on [page 93](#) shows the configuration for all of the devices in [Figure 15 on page 93](#). The section “[Step-by-Step Procedure](#)” on [page 94](#) describes the steps on Device R1.

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, copy and paste the commands into the CLI at the [edit] hierarchy level, and then enter commit from configuration mode.
Device R1	<pre> set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30 set interfaces lo0 unit 1 family inet address 172.16.0.1/32 set interfaces lo0 unit 1 family inet address 192.168.1.1/32 set protocols rip group rip-group export advertise-routes-through-rip </pre>

```

set protocols rip group rip-group neighbor fe-1/2/0.1 receive version-2
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32
set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.2
set protocols rip group rip-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group rip-group export advertise-routes-through-rip
set protocols rip group rip-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 a RIP packet versions that can be received:

1. Configure the network interfaces.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 family inet address 10.0.0.1/30
user@R1# set lo0 unit 1 family inet address 172.16.0.1/32
user@R1# set lo0 unit 1 family inet address 192.168.1.1/32

```

2. Create the RIP groups and add the interfaces.

To configure RIP in Junos OS, you must configure one or more groups that contain the interfaces on which RIP is enabled. You do not need to enable RIP on the loopback interface.

For the interface that is facing Device R2, the **receive version-2** setting causes this interface to accept only RIPv2 packets.

```
[edit protocols rip group rip-group]
user@R1# set neighbor fe-1/2/0.1 receive version-2
```

3. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R1# set from protocol direct
user@R1# set from protocol rip
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group rip-group]
user@R1# set export advertise-routes-through-rip
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    family inet {
      address 10.0.0.1/30;
    }
  }
}
lo0 {
  unit 1 {
    family inet {
      address 172.16.0.1/32;
      address 192.168.1.1/32;
    }
  }
}
```

```
user@R1# show protocols
rip {
  group rip-group {
    export advertise-routes-through-rip;
    neighbor fe-1/2/0.1 {
      receive version-2;
    }
  }
}
```

```
}
```

```
user@R1# show policy-options
policy-statement advertise-routes-through-rip {
  term 1 {
    from protocol [ direct rip ];
    then accept;
  }
}
```

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

Verification

Confirm that the configuration is working properly.

Verifying That the Receive Mode Is Set to RIPv2 Only

Purpose Make sure that the interfacing Device R2 is configured to receive only RIPv2 packets, instead of both RIPv1 and RIPv2 packets.

Action From operational mode, enter the **show rip neighbor** command.

```
user@R1> show rip neighbor
```

Neighbor	Local State	Source Address	Destination Address	Send Mode	Receive Mode	In Met
fe-1/2/0.1	Up	10.0.0.1	224.0.0.9	mcast	v2 only	1

Meaning In the output, the **Receive Mode** field displays **v2 only**. The default **Receive Mode** is **both**.

Release History Table

Release	Description
15.149	Note that the functionality of configuring the sending and receiving of RIPv1 and RIPv2 packets described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

Route Redistribution Between RIP Instances

- [Understanding Route Redistribution Among RIP Instances on page 97](#)
- [Example: Redistributing Routes Between Two RIP Instances on page 98](#)

Understanding Route Redistribution Among RIP Instances

You can redistribute routes among RIP processes. Another way to say this is to export RIP routes from one RIP instance to other RIP instances.

In Junos OS, route redistribution among routing instances is accomplished by using routing table groups, also called RIB groups. Routing table groups allow you to import and export routes from a protocol within one routing table into another routing table. Note that the functionality of redistributing routes among RIP instances described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.



NOTE: In contrast, the policy-based import and export functions allow you import and export routes between different protocols within the same routing table.

Consider the following partial example:

```
protocols {
  rip {
    rib-group inet-to-voice;
  }
}
routing-instances {
  voice {
    protocols {
      rip {
        rib-group voice-to-inet;
      }
    }
  }
}
routing-options {
  rib-groups {
    inet-to-voice {
      import-rib [ inet.0 voice.inet.0 ];
    }
    voice-to-inet {
      import-rib [ voice.inet.0 inet.0 ];
    }
  }
}
```

The way to read the **import-rib** statement is as follows. Take the routes from the protocol (RIP, in this case), and import them into the primary (or local) routing table and also into any other routing tables listed after this. The primary routing table is the routing table where the routing table group is being used. That would be either **inet.0** if used in the main routing instance or **voice.inet.0** if used within the routing instance. In the **inet-to-voice** routing table group, **inet.0** is listed first because this routing table group is used in the main routing instance. In the **voice-to-inet** routing table group, **voice.inet.0** is listed first because this routing table group is used in the voice routing instance.

Example: Redistributing Routes Between Two RIP Instances

This example shows how to configure a RIP routing instance and control the redistribution of RIP routes between the routing instance and the master instance.

- [Requirements on page 98](#)
- [Overview on page 98](#)
- [Configuration on page 98](#)
- [Verification on page 102](#)

Requirements

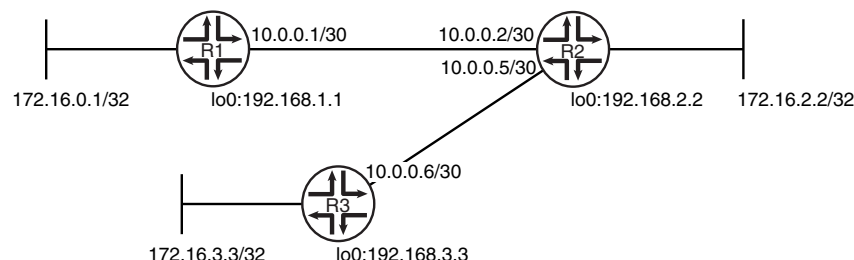
No special configuration beyond device initialization is required before configuring this example.

Overview

When you create a routing instance called **voice**, Junos OS creates a routing table called **voice.inet.0**. The example shows how to install routes learned through the master RIP instance into the **voice.inet.0** routing table. The example also shows how to install routes learned through the voice routing instance into **inet.0**. This is done by configuring routing table groups. RIP routes are installed into each routing table that belongs to a routing table group.

[Figure 16 on page 98](#) shows the topology used in this example.

Figure 16: Redistributing Routes Between RIP Instances Network Topology



“CLI Quick Configuration” on [page 98](#) shows the configuration for all of the devices in [Figure 16 on page 98](#). The section “Step-by-Step Procedure” on [page 99](#) describes the steps on Device R2.

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, copy and paste the commands into the CLI at the **[edit]** hierarchy level, and then enter **commit** from configuration mode.

Device R1

```
set interfaces fe-1/2/0 unit 1 family inet address 10.0.0.1/30
set interfaces lo0 unit 1 family inet address 172.16.0.1/32
set interfaces lo0 unit 1 family inet address 192.168.1.1/32
```

```

set protocols rip group to-R2 export advertise-routes-through-rip
set protocols rip group to-R2 neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet address 10.0.0.2/30
set interfaces fe-1/2/1 unit 5 family inet address 10.0.0.5/30
set interfaces lo0 unit 2 family inet address 192.168.2.2/32
set interfaces lo0 unit 2 family inet address 172.16.2.2/32
set protocols rip rib-group inet-to-voice
set protocols rip group to-R3 export advertise-routes-through-rip
set protocols rip group to-R3 neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept
set routing-instances voice protocols rip group to-R1 export advertise-routes-through-rip
set routing-instances voice interface fe-1/2/0.2
set routing-instances voice protocols rip rib-group voice-to-inet
set routing-instances voice protocols rip group to-R1 neighbor fe-1/2/0.2
set routing-options rib-groups inet-to-voice import-rib inet.0
set routing-options rib-groups inet-to-voice import-rib voice.inet.0
set routing-options rib-groups voice-to-inet import-rib voice.inet.0
set routing-options rib-groups voice-to-inet import-rib inet.0

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet address 10.0.0.6/30
set interfaces lo0 unit 3 family inet address 192.168.3.3/32
set interfaces lo0 unit 3 family inet address 172.16.3.3/32
set protocols rip group to-R2 export advertise-routes-through-rip
set protocols rip group to-R2 neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-rip term 1 from protocol
  rip
set policy-options policy-statement advertise-routes-through-rip term 1 then accept

```

Step-by-Step Procedure The following example requires you to 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 redistribute RIP routes between routing instances:

1. Configure the network interfaces.

```

[edit interfaces]
user@R2# set fe-1/2/0 unit 2 family inet address 10.0.0.2/30

```

```
user@R2# set fe-1/2/1 unit 5 family inet address 10.0.0.5/30
user@R2# set lo0 unit 2 family inet address 192.168.2.2/32
user@R2# set lo0 unit 2 family inet address 172.16.2.2/32
```

2. Create the routing instance, and add one or more interfaces to the routing instance.

```
[edit routing-instances voice]
user@R2# set interface fe-1/2/0.2
```

3. Create the RIP groups and add the interfaces.

```
[edit protocols rip group to-R3]
user@R2# set neighbor fe-1/2/1.5
[edit routing-instances voice protocols rip group to-R1]
user@R2# set neighbor fe-1/2/0.2
```

4. Create the routing table groups.

```
[edit routing-options rib-groups]
user@R2# set inet-to-voice import-rib inet.0
user@R2# set inet-to-voice import-rib voice.inet.0
user@R2# set voice-to-inet import-rib voice.inet.0
user@R2# set voice-to-inet import-rib inet.0
```

5. Apply the routing table groups.

```
[edit protocols rip]
user@R2# set rib-group inet-to-voice
[edit routing-instances voice protocols rip]
user@R2# set rib-group voice-to-inet
```

6. Create the routing policy to advertise both direct and RIP-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-rip term 1]
user@R2# set from protocol direct
user@R2# set from protocol rip
user@R2# set then accept
```

7. Apply the routing policy.

In Junos OS, you can only apply RIP export policies at the group level.

```
[edit protocols rip group to-R3]
user@R2# set export advertise-routes-through-rip
[edit routing-instances voice protocols rip group to-R1]
user@R2# set export advertise-routes-through-rip
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, **show policy-options**, **show routing-instances**, and **show routing-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R2# show interfaces
fe-1/2/0 {
  unit 2 {
    family inet {
      address 10.0.0.2/30;
    }
  }
}
fe-1/2/1 {
  unit 5 {
    family inet {
      address 10.0.0.5/30;
    }
  }
}
lo0 {
  unit 2 {
    family inet {
      address 192.168.2.2/32;
      address 172.16.2.2/32;
    }
  }
}
```

```
user@R2# show protocols
rip {
  rib-group inet-to-voice;
  group to-R3 {
    export advertise-routes-through-rip;
    neighbor fe-1/2/1.5;
  }
}
```

```
user@R2# show policy-options
policy-statement advertise-routes-through-rip {
  term 1 {
    from protocol [ direct rip ];
    then accept;
  }
}
```

```
user@R2# show routing-instances
voice {
  interface fe-1/2/0.2;
  protocols {
    rip {
      rib-group voice-to-inet;
      group to-R1 {
```

```

        export advertise-routes-through-rip;
        neighbor fe-1/2/0.2;
    }
}
}
}

```

```

user@R2# show routing-options
rib-groups {
  inet-to-voice {
    import-rib [ inet.0 voice.inet.0 ];
  }
  voice-to-inet {
    import-rib [ voice.inet.0 inet.0 ];
  }
}

```

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

Verification

Confirm that the configuration is working properly.

Checking the Routing Tables

Purpose Make sure that the routing tables contain the expected routes.

Action From operational mode, enter the **show route protocol rip** command.

```

user@R2> show route protocol rip

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

172.16.0.1/32      * [RIP/100] 01:58:14, metric 2, tag 0
                  > to 10.0.0.1 via fe-1/2/0.2
172.16.3.3/32      * [RIP/100] 02:06:03, metric 2, tag 0
                  > to 10.0.0.6 via fe-1/2/0.5
192.168.1.1/32     * [RIP/100] 01:58:14, metric 2, tag 0
                  > to 10.0.0.1 via fe-1/2/0.2
192.168.3.3/32     * [RIP/100] 02:06:03, metric 2, tag 0
                  > to 10.0.0.6 via fe-1/2/0.5
224.0.0.9/32      * [RIP/100] 01:44:13, metric 1
                  MultiRecv

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

172.16.0.1/32      * [RIP/100] 02:06:03, metric 2, tag 0
                  > to 10.0.0.1 via fe-1/2/0.2
172.16.3.3/32      * [RIP/100] 01:58:14, metric 2, tag 0
                  > to 10.0.0.6 via fe-1/2/0.5
192.168.1.1/32     * [RIP/100] 02:06:03, metric 2, tag 0
                  > to 10.0.0.1 via fe-1/2/0.2
192.168.3.3/32     * [RIP/100] 01:58:14, metric 2, tag 0
                  > to 10.0.0.6 via fe-1/2/0.5

```

224.0.0.9/32	*[RIP/100] 01:44:13, metric 1 MultiRecv
--------------	--

Meaning The output shows that both routing tables contain all of the RIP routes.

Release History Table

Release	Description
15.1X49	Note that the functionality of redistributing routes among RIP instances described in this topic is not supported in Junos OS Releases 15.1X49, 15.1X49-D30, or 15.1X49-D40.

CHAPTER 3

Configuring RIPng

- [Basic RIPng Configuration on page 105](#)
- [RIPng Import Policy on page 113](#)
- [Traffic Control in a RIPng Network on page 126](#)
- [RIPng Timers on page 132](#)
- [Tracing RIPng Traffic on page 138](#)

Basic RIPng Configuration

- [Understanding Basic RIPng Routing on page 105](#)
- [Example: Configuring a Basic RIPng Network on page 105](#)

Understanding Basic RIPng Routing

By default, RIP next generation (RIPng) routes are not redistributed. You must configure export policy to redistribute RIPng routes.

To have a router exchange routes with other routers, you must configure RIPng groups and neighbors. RIPng routes received from routers not configured as RIPng neighbors are ignored. Likewise, RIPng routes are advertised only to routers configured as RIPng neighbors.

Example: Configuring a Basic RIPng Network

This example shows how to configure a basic RIPng network.

- [Requirements on page 105](#)
- [Overview on page 106](#)
- [Configuration on page 106](#)
- [Verification on page 109](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

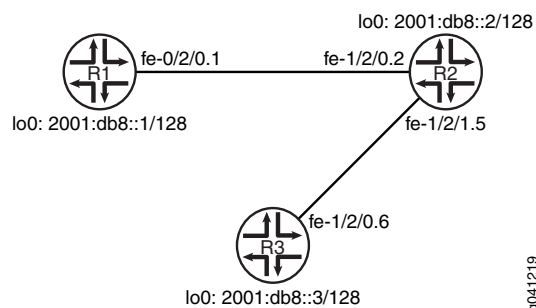
Overview

In this example, you configure a basic RIPng network, create a RIPng group called **ripng-group**, and add the directly connected interfaces to the RIPng group. Then you configure a routing policy to advertise direct routes using the policy statement **advertise-routes-through-ripng**.

By default, Junos OS does not advertise RIPng routes, not even routes that are learned through RIPng. To advertise RIPng routes, you must configure and apply an export routing policy that advertises RIPng-learned and direct routes.

To use RIPng on the device, you must configure RIPng on all of the RIPng interfaces within the network. [Figure 17 on page 106](#) shows the topology used in this example.

Figure 17: Sample RIPng Network Topology



“CLI Quick Configuration” on page 106 shows the configuration for all of the devices in [Figure 17 on page 106](#). The section “Step-by-Step Procedure” on page 107 describes the steps on Device R1.

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 R1

```

set interfaces fe-1/2/0 unit 1 description to-R2
set interfaces fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
set interfaces lo0 unit 1 family inet6 address 2001:db8::1/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
  
```

Device R2

```

set interfaces fe-1/2/0 unit 2 description to-R1
set interfaces fe-1/2/0 unit 2 family inet6 address 2001:db8:0:2::/64 eui-64
  
```

```

set interfaces fe-1/2/1 unit 5 description to-R3
set interfaces fe-1/2/1 unit 5 family inet6 address 2001:db8:0:3::/64 eui-64
set interfaces lo0 unit 2 family inet6 address 2001:db8::2/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.2
set protocols ripng group ripng-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 description to-R2
set interfaces fe-1/2/0 unit 6 family inet6 address 2001:db8:0:4::/64 eui-64
set interfaces lo0 unit 3 family inet6 address 2001:db8::3/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 a basic RIPng network:

1. Configure the network interfaces.

Use the **eui-64** statement to automatically generate the host portion of the interface address and the link-local address.

For the loopback interface, you must assign a 128-bit address.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 description to-R2
user@R1# set fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
user@R1# set lo0 unit 1 family inet6 address 2001:db8::1/128

```

2. Create the RIPng group and add the interface.

To configure RIPng in Junos OS, you must configure a group that contains the interfaces on which RIPng is enabled. You do not need to enable RIPng on the loopback interface.

```

[edit protocols ripng group ripng-group]
user@R1# set neighbor fe-1/2/0.1

```

3. Create the routing policy to advertise both direct and RIPng-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-ripng term 1]
user@R1# set from protocol direct
user@R1# set from protocol ripng
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIPng export policies at the group level.

```
[edit protocols ripng group ripng-group]
user@R1# set export advertise-routes-through-ripng
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    description to-R2;
    family inet6 {
      address 2001:db8:0:1::/64 {
        eui-64;
      }
    }
  }
}
lo0 {
  unit 1 {
    family inet6 {
      address 2001:db8::1/128;
    }
  }
}
```

```
user@R1# show protocols
ripng {
  group ripng-group {
    export advertise-routes-through-ripng;
    neighbor fe-1/2/0.1;
  }
}
```

```
user@R1# show policy-options
policy-statement advertise-routes-through-ripng {
  term 1 {
    from protocol [ direct ripng ];
    then accept;
  }
}
```

```
}
```

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

Verification

Confirm that the configuration is working properly.

- [Checking the Routing Table on page 109](#)
- [Checking the Interface Addresses on page 109](#)
- [Looking at the Routes That Device R1 Is Advertising to Device R2 on page 110](#)
- [Verifying the RIPng-Enabled Interfaces on page 110](#)
- [Looking at the Routes That Device R1 Is Receiving from Device R2 on page 111](#)
- [Verifying the Exchange of RIPng Messages on page 111](#)
- [Verifying Reachability of All Hosts in the RIPng Network on page 112](#)

Checking the Routing Table

Purpose Verify that the routing table is populated with the expected routes.

Action From operational mode, enter the **show route protocol ripng** command.

```
user@R1> show route protocol ripng
inet6.0: 12 destinations, 12 routes (12 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::2/128    * [RIPng/100] 3d 19:24:43, metric 2, tag 0
> to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8::3/128    * [RIPng/100] 3d 19:24:40, metric 3, tag 0
> to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8:0:2::/64  * [RIPng/100] 3d 19:24:43, metric 2, tag 0
> to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8:0:3::/64  * [RIPng/100] 3d 19:24:43, metric 2, tag 0
> to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8:0:4::/64  * [RIPng/100] 3d 19:24:40, metric 3, tag 0
> to fe80::2a0:a514:0:24c via fe-1/2/0.1
ff02::9/128       * [RIPng/100] 3d 19:24:47, metric 1
MultiRecv
```

Meaning The output shows that the routes have been learned from Device R2 and Device R3.

If you were to delete the **from protocol ripng** condition in the routing policy on Device R2, the remote routes from Device R3 would not be learned on Device R1.

Checking the Interface Addresses

Purpose Verify that the **eui-64** statement automatically generated the host portion of the interface address and the link-local address.

Action From operational mode, enter the **show interfaces terse** command.

```
user@R1> show interfaces terse
```

Interface	Admin	Link	Proto	Local	Remote
fe-1/2/0					
fe-1/2/0.1	up	up	inet6	2001:db8:0:1:2a0:a514:0:14c/64	fe80::2a0:a514:0:14c/64
lo0					
lo0.1	up	up	inet6	2001:db8::1	fe80::2a0:a50f:fc56:14c

Meaning The output shows that the interface address on fe-1/2/0.1 includes both the network portion (2001:db8:0:1) and the host portion (2a0:a514:0:14c).

Also, link-local (fe80) addresses are assigned to interfaces fe-1/2/0.1 and lo0.1.

Looking at the Routes That Device R1 Is Advertising to Device R2

Purpose Verify that Device R1 is sending the expected routes.

Action From operational mode, enter the **show route advertising-protocol ripng** command, using Device R1's link-local address as the neighbor address.

```
user@R1> show route advertising-protocol ripng fe80::2a0:a514:0:14c
```

```
inet6.0: 12 destinations, 12 routes (12 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
```

```
2001:db8::1/128    *[Direct/0] 3d 19:45:55
> via lo0.1
2001:db8:0:1::/64 *[Direct/0] 3d 19:45:55
> via fe-1/2/0.1
```

Meaning Device R1 is sending routes to its directly connected networks.

Verifying the RIPng-Enabled Interfaces

Purpose Verify that all RIPng-enabled Interfaces are available and active.

Action From operational mode, enter the **show ripng neighbor** command.

```
user@R1> show ripng neighbor
```

Neighbor	State	Source Address	Dest Address	Send	Recv	In Met
fe-1/2/0.1	Up	fe80::2a0:a514:0:14c	ff02::9	yes	yes	1

Meaning The output shows that the RIPng-enabled interface on Device R1 is operational.

The output also shows the link-local address that is assigned to Device R2's directly connected link-local interface.

In general for this command, the output shows a list of the RIPng neighbors that are configured on the device. Verify the following information:

- Each configured interface is present. Interfaces are listed in alphabetical order.
- Each configured interface is up. The state of the interface is listed in the **State** column. A state of **Up** indicates that the link is passing RIPng traffic. A state of **Dn** indicates that the link is not passing RIPng traffic. In a point-to-point link, this state generally means that either the end point is not configured for RIPng or the link is unavailable.

Looking at the Routes That Device R1 Is Receiving from Device R2

Purpose Verify that Device R1 is receiving the expected routes.

Action From operational mode, enter the **show route receive-protocol ripng** command, using Device R2's directly connected link-local interface address as the neighbor address.

```
user@R1> show route receive-protocol ripng fe80::2a0:a514:0:24c
inet6.0: 12 destinations, 12 routes (12 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::2/128    *[RIPng/100] 3d 19:58:09, metric 2, tag 0
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8::3/128    *[RIPng/100] 3d 19:58:06, metric 3, tag 0
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8:0:2::/64  *[RIPng/100] 3d 19:58:09, metric 2, tag 0
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8:0:3::/64  *[RIPng/100] 3d 19:58:09, metric 2, tag 0
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8:0:4::/64  *[RIPng/100] 3d 19:58:06, metric 3, tag 0
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
```

Meaning Device R1 is receiving from Device R2 all of Device R2's directly connected networks. Device R1 is also receiving from Device R2 all of Device R3's directly connected networks, which Device R2 learned from Device R3 through RIPng.

Verifying the Exchange of RIPng Messages

Purpose Verify that RIPng messages are being sent and received on all RIPng-enabled interfaces.

Action From operational mode, enter the **show ripng statistics** command.

```
user@R1> show ripng statistics
```

```

RIPng info: port 521; holddown 120s.
      rts learned  rts held down  rqsts dropped  resps dropped
              5              0              0              0

fe-1/2/0.1:  5 routes learned; 2 routes advertised; timeout 180s; update interval
30s
Counter              Total    Last 5 min    Last minute
-----
Updates Sent              11632          10          2
Triggered Updates Sent      0           0           0
Responses Sent             0           0           0
Bad Messages              0           0           0
Updates Received           11634          11          2
Bad Route Entries          0           0           0
Updates Ignored            0           0           0
RIPng Requests Received     1           0           0
RIPng Requests Ignored      0           0           0

```

Meaning The output shows the number of RIPng routes learned. It also shows the number of RIPng updates sent and received on the RIPng-enabled interfaces. Verify the following information:

- The number of RIPng routes learned matches the number of expected routes learned. Subnets learned by direct connectivity through an outgoing interface are not listed as RIPng routes.
- RIPng updates are being sent on each RIPng-enabled interface. If no updates are being sent, the routing policy might not be configured to export routes.
- RIPng updates are being received on each RIPng-enabled interface. If no updates are being received, the routing policy might not be configured to export routes on the host connected to that subnet. The lack of updates might also indicate an authentication error.

Verifying Reachability of All Hosts in the RIPng Network

Purpose By using the `traceroute` command on each loopback address in the network, verify that all hosts in the RIPng network are reachable from each Juniper Networks device.

Action From operational mode, enter the `traceroute` command.

```

user@R1> traceroute 2001:db8::3

traceroute6 to 2001:db8::3 (2001:db8::3) from 2001:db8:0:1:2a0:a514:0:14c, 64
hops max, 12 byte packets
 1 2001:db8:0:2:2a0:a514:0:24c (2001:db8:0:2:2a0:a514:0:24c)  8.881 ms  1.175
ms  1.101 ms
 2 2001:db8::3 (2001:db8::3)  1.544 ms  2.445 ms  2.043 ms

```


Meaning Each numbered row in the output indicates a routing hop in the path to the host. The three-time increments indicate the round-trip time (RTT) between the device and the hop for each traceroute packet.

To ensure that the RIPng network is healthy, verify the following information:

- The final hop in the list is the host you want to reach.
- The number of expected hops to the host matches the number of hops in the traceroute output. The appearance of more hops than expected in the output indicates that a network segment is probably unreachable. It might also indicate that the incoming or outgoing metric on one or more hosts has been set unexpectedly.

Related Documentation

- [RIPng Overview on page 24](#)

RIPng Import Policy

- [Understanding RIPng Import Policies to Filter Routes on page 113](#)
- [Example: Applying Policies to RIPng Routes Imported from Neighbors on page 113](#)
- [Example: Testing a Routing Policy with Complex Regular Expressions on page 119](#)

Understanding RIPng Import Policies to Filter Routes

The default RIPng import policy is to accept all received RIPng routes that pass a validity check. To filter routes being imported by the local routing device from its neighbors, include the **import** statement and list the names of one or more policies to be evaluated. If you specify more than one policy, they are evaluated in order (first to last) and the first matching policy is applied to the route. If no match is found, the local routing device does not import any routes.

Example: Applying Policies to RIPng Routes Imported from Neighbors

This example shows how to configure an import policy in a RIPng network.

- [Requirements on page 113](#)
- [Overview on page 113](#)
- [Configuration on page 114](#)
- [Verification on page 117](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

Overview

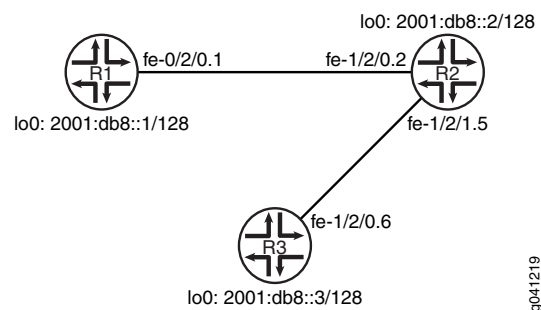
In this example, Device R2 has several extra loopback interface addresses configured to simulate additional networks.

Device R1 has an import policy that accepts the fe80::/64 and 2001:db8::/64 routes and rejects all other routes. This means that the extra networks advertised by Device R2 are not accepted into Device R1's routing table.

An export policy is also shown because an export policy is required as part of the minimum configuration for RIPng.

Figure 18 on page 114 shows the topology used in this example.

Figure 18: RIPng Import Policy Network Topology



"CLI Quick Configuration" on page 114 shows the configuration for all of the devices in Figure 18 on page 114. The section "Step-by-Step Procedure" on page 115 describes the steps on Device R1.

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 R1

```

set interfaces fe-1/2/0 unit 1 description to-R2
set interfaces fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
set interfaces lo0 unit 1 family inet6 address 2001:db8::1/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.1 import ripng-import
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
set policy-options policy-statement ripng-import term 1 from route-filter fe80::/64 orlonger
set policy-options policy-statement ripng-import term 1 from route-filter 2001:db8::/64 orlonger
set policy-options policy-statement ripng-import term 1 then accept
set policy-options policy-statement ripng-import term 2 then reject

```

Device R2

```

set interfaces fe-1/2/0 unit 2 description to-R1
set interfaces fe-1/2/0 unit 2 family inet6 address 2001:db8:0:2::/64 eui-64

```

```

set interfaces fe-1/2/1 unit 5 description to-R3
set interfaces fe-1/2/1 unit 5 family inet6 address 2001:db8:0:3::/64 eui-64
set interfaces lo0 unit 2 family inet6 address 2001:db8::2/128
set interfaces lo0 unit 2 family inet6 address 2002:db8::2/128
set interfaces lo0 unit 2 family inet6 address 2002:db9::2/128
set interfaces lo0 unit 2 family inet6 address 2002:db7::2/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.2
set protocols ripng group ripng-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 description to-R2
set interfaces fe-1/2/0 unit 6 family inet6 address 2001:db8:0:4::/64 eui-64
set interfaces lo0 unit 3 family inet6 address 2001:db8::3/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

**Step-by-Step
Procedure**

The following example requires you to 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 a RIPng import policy:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```

[edit interfaces]
user@R1# set fe-1/2/0 unit 1 description to-R2
user@R1# set fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
user@R1# set lo0 unit 1 family inet6 address 2001:db8::1/128

```

2. Create the RIPng group and add the interface.

To configure RIPng in Junos OS, you must configure a group that contains the interfaces on which RIPng is enabled. You do not need to enable RIPng on the loopback interface.

```

[edit protocols ripng group ripng-group]
user@R1# set neighbor fe-1/2/0.1

```

3. Create the routing policy to advertise both direct and RIPvng-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-ripng term 1]
user@R1# set from protocol direct
user@R1# set from protocol ripng
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIPvng export policies at the group level.

```
[edit protocols ripng group ripng-group]
user@R1# set export advertise-routes-through-ripng
```

5. Configure the import policy.

```
[edit policy-options policy-statement ripng-import]
user@R1# set term 1 from route-filter fe80::/64 orlonger
user@R1# set term 1 from route-filter 2001:db8::/64 orlonger
user@R1# set term 1 then accept
user@R1# set term 2 then reject
```

6. Apply the import policy.

```
[edit protocols ripng group ripng-group]
user@R1# set neighbor fe-1/2/0.1 import ripng-import
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    description to-R2;
    family inet6 {
      address 2001:db8:0:1::/64 {
        eui-64;
      }
    }
  }
}
lo0 {
  unit 1 {
    family inet6 {
      address 2001:db8::1/128;
    }
  }
}
```

```
}
```

```
user@R1# show protocols
ripng {
  group ripng-group {
    export advertise-routes-through-ripng;
    neighbor fe-1/2/0.1 {
      import ripng-import;
    }
  }
}
```

```
user@R1# show policy-options
policy-statement advertise-routes-through-ripng {
  term 1 {
    from protocol [ direct ripng ];
    then accept;
  }
}
policy-statement ripng-import {
  term 1 {
    from {
      route-filter fe80::/64 orlonger;
      route-filter 2001:db8::/64 orlonger;
    }
    then accept;
  }
  term 2 {
    then reject;
  }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Looking at the Neighbor Addresses for Device R2 on page 117](#)
- [Looking at the Routes That Device R2 Is Advertising to Device R1 on page 118](#)
- [Looking at the Routes That Device R1 Is Receiving from Device R2 on page 118](#)
- [Checking the Routing Table on page 119](#)

Looking at the Neighbor Addresses for Device R2

Purpose Determine the neighbor address that Device R2 is using for Device R1.

Action From operational mode, enter the **show ripng neighbor** command.

```
user@R2> show ripng neighbor fe-1/2/0.2
```

Neighbor	State	Source Address	Dest Address	Send	Recv	In Met
-----	-----	-----	-----	-----	-----	-----
fe-1/2/0.2	Up	fe80::2a0:a514:0:24c	ff02::9	yes	yes	1

Meaning Device R2 is using the fe80::2a0:a514:0:24c address to send routes to Device R1.

Looking at the Routes That Device R2 Is Advertising to Device R1

Purpose Verify that Device R2 is sending the expected routes.

Action From operational mode, enter the **show route advertising-protocol ripng** command.

```
user@R2> show route advertising-protocol ripng fe80::2a0:a514:0:24c
inet6.0: 17 destinations, 18 routes (17 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::2/128    *[Direct/0] 3d 22:00:34
> via lo0.2
2001:db8::3/128    *[RIPng/100] 3d 21:47:00, metric 2, tag 0
> to fe80::2a0:a514:0:64c via fe-1/2/1.5
2001:db8:0:2::/64  *[Direct/0] 3d 22:00:34
> via fe-1/2/0.2
2001:db8:0:3::/64  *[Direct/0] 3d 22:00:34
> via fe-1/2/1.5
2001:db8:0:4::/64  *[RIPng/100] 3d 21:47:00, metric 2, tag 0
> to fe80::2a0:a514:0:64c via fe-1/2/1.5
2002:db7::2/128    *[Direct/0] 00:29:05
> via lo0.2
2002:db8::2/128    *[Direct/0] 00:31:49
> via lo0.2
2002:db9::2/128    *[Direct/0] 00:29:05
> via lo0.2
```

Meaning Device R2 is sending the extra loopback interface /128 routes to Device R1.

Looking at the Routes That Device R1 Is Receiving from Device R2

Purpose Verify that Device R1 is receiving the expected routes.

Action From operational mode, enter the **show route receive-protocol ripng** command.

```
user@R1> show route receive-protocol ripng fe80::2a0:a514:0:24c
inet6.0: 9 destinations, 9 routes (9 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::2/128    *[RIPng/100] 3d 21:55:49, metric 2, tag 0
```

```

2001:db8::3/128      > to fe80::2a0:a514:0:24c via fe-1/2/0.1
                    *[RIPng/100] 3d 21:55:46, metric 3, tag 0
                    > to fe80::2a0:a514:0:24c via fe-1/2/0.1

```

Meaning The output shows that the extra loopback interface addresses are excluded.

Checking the Routing Table

Purpose Verify that the routing table is populated with the expected routes.

Action From operational mode, enter the **show route protocol ripng** command.

```

user@R1> show route protocol ripng

inet6.0: 9 destinations, 9 routes (9 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::2/128      *[RIPng/100] 3d 22:01:40, metric 2, tag 0
                    > to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8::3/128      *[RIPng/100] 3d 22:01:37, metric 3, tag 0
                    > to fe80::2a0:a514:0:24c via fe-1/2/0.1
ff02::9/128          *[RIPng/100] 00:00:08, metric 1
                    MultiRecv

```

Meaning The output shows that the routes have been learned from Device R2 and Device R3.

If you delete or deactivate the import policy, the routing table contains the extra loopback interface routes.

Example: Testing a Routing Policy with Complex Regular Expressions

This example shows how to test a routing policy using the **test policy** command to ensure that the policy produces the results that you expect before you apply it in a production environment. Regular expressions, especially complex ones, can be tricky to get right. This example shows how to use the **test policy** command to make sure that your regular expressions have the intended effect.

- [Requirements on page 119](#)
- [Overview on page 120](#)
- [Configuration on page 122](#)
- [Verification on page 125](#)

Requirements

No special configuration beyond device initialization is required before you configure this example.

Overview

This example shows two routing devices with an external BGP (EBGP) connection between them. Device R2 uses the BGP session to send customer routes to Device R1. These static routes have multiple community values attached.

```
user@R2> show route match-prefix 172.16.* detail
```

```
inet.0: 7 destinations, 7 routes (7 active, 0 holddown, 0 hidden)
172.16.1.0/24 (1 entry, 1 announced)
  *Static Preference: 5
    Next hop type: Reject
    Address: 0x8fd0dc4
    Next-hop reference count: 8
    State: <Active Int Ext>
    Local AS: 64511
    Age: 21:32:13
    Validation State: unverified
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I
    Communities: 64510:1 64510:10 64510:11 64510:100 64510:111

172.16.2.0/24 (1 entry, 1 announced)
  *Static Preference: 5
    Next hop type: Reject
    Address: 0x8fd0dc4
    Next-hop reference count: 8
    State: <Active Int Ext>
    Local AS: 64511
    Age: 21:32:13
    Validation State: unverified
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I
    Communities: 64510:2 64510:20 64510:22 64510:200 64510:222

172.16.3.0/24 (1 entry, 1 announced)
  *Static Preference: 5
    Next hop type: Reject
    Address: 0x8fd0dc4
    Next-hop reference count: 8
    State: <Active Int Ext>
    Local AS: 64511
    Age: 21:32:13
    Validation State: unverified
    Task: RT
    Announcement bits (1): 0-KRT
    AS path: I
    Communities: 64510:3 64510:30 64510:33 64510:300 64510:333

172.16.4.0/24 (1 entry, 1 announced)
  *Static Preference: 5
    Next hop type: Reject
    Address: 0x8fd0dc4
    Next-hop reference count: 8
    State: <Active Int Ext>
    Local AS: 64511
```



```

Age: 21:32:13
Validation State: unverified
Task: RT
Announcement bits (1): 0-KRT
AS path: I
Communities: 64510:4 64510:40 64510:44 64510:400 64510:444

```

To test a complex regular expression, Device R2 has a policy called **test-regex** that locates routes. The policy is configured like this:

```

policy-statement test-regex {
  term find-routes {
    from community complex-regex;
    then accept;
  }
  term reject-the-rest {
    then reject;
  }
}
community complex-regex members "^64510:[13].*$";

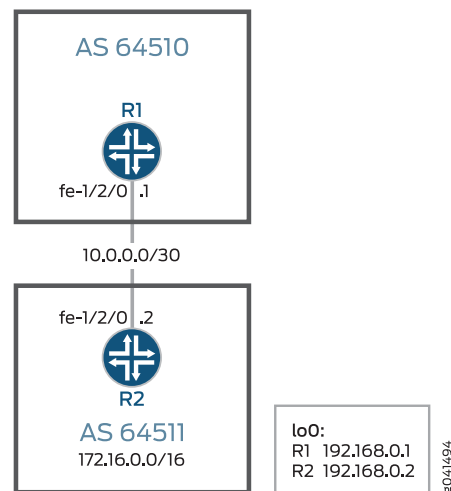
```

This regular expression matches community values beginning with either 1 or 3.

Topology

Figure 19 on page 121 shows the sample network.

Figure 19: Routing Policy Test for Complex Regular Expressions



"CLI Quick Configuration" on page 122 shows the configuration for all of the devices in Figure 19 on page 121.

The section "Step-by-Step Procedure" on page 123 describes the steps on Device R2.

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 R1

```
set interfaces fe-1/2/0 unit 0 family inet address 10.0.0.1/30
set interfaces lo0 unit 0 family inet address 192.168.0.1/32
set protocols bgp group ext type external
set protocols bgp group ext peer-as 64511
set protocols bgp group ext neighbor 10.0.0.2
set routing-options router-id 192.168.0.1
set routing-options autonomous-system 64510
```

Device R2

```
set interfaces fe-1/2/0 unit 0 family inet address 10.0.0.2/30
set interfaces lo0 unit 0 family inet address 192.168.0.2/32
set protocols bgp group ext type external
set protocols bgp group ext peer-as 64510
set protocols bgp group ext neighbor 10.0.0.1
set policy-options policy-statement send-static term 1 from protocol static
set policy-options policy-statement send-static term 1 then accept
set policy-options policy-statement send-static term 2 then reject
set policy-options policy-statement test-regex term find-routes from community
  complex-regex
set policy-options policy-statement test-regex term find-routes then accept
set policy-options policy-statement test-regex term reject-the-rest then reject
set policy-options community complex-regex members "^64510:[13].*$"
set routing-options static route 172.16.1.0/24 reject
set routing-options static route 172.16.1.0/24 community 64510:1
set routing-options static route 172.16.1.0/24 community 64510:10
set routing-options static route 172.16.1.0/24 community 64510:11
set routing-options static route 172.16.1.0/24 community 64510:100
set routing-options static route 172.16.1.0/24 community 64510:111
set routing-options static route 172.16.2.0/24 reject
set routing-options static route 172.16.2.0/24 community 64510:2
set routing-options static route 172.16.2.0/24 community 64510:20
set routing-options static route 172.16.2.0/24 community 64510:22
set routing-options static route 172.16.2.0/24 community 64510:200
set routing-options static route 172.16.2.0/24 community 64510:222
set routing-options static route 172.16.3.0/24 reject
set routing-options static route 172.16.3.0/24 community 64510:3
set routing-options static route 172.16.3.0/24 community 64510:30
set routing-options static route 172.16.3.0/24 community 64510:33
set routing-options static route 172.16.3.0/24 community 64510:300
set routing-options static route 172.16.3.0/24 community 64510:333
set routing-options static route 172.16.4.0/24 reject
set routing-options static route 172.16.4.0/24 community 64510:4
set routing-options static route 172.16.4.0/24 community 64510:40
set routing-options static route 172.16.4.0/24 community 64510:44
set routing-options static route 172.16.4.0/24 community 64510:400
set routing-options static route 172.16.4.0/24 community 64510:444
```

```
set routing-options router-id 192.168.0.2
set routing-options autonomous-system 64511
```

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 Device R2:

1. Configure the interfaces.

```
[edit interfaces]
user@R2# set fe-1/2/0 unit 0 family inet address 10.0.0.2/30
user@R2# set lo0 unit 0 family inet address 192.168.0.2/32
```

2. Configure BGP.

Apply the import policy to the BGP peering session with Device R2.

```
[edit protocols bgp group ext]
user@R2# set type external
user@R2# set peer-as 64510
user@R2# set neighbor 10.0.0.1
```

3. Configure the routing policy that sends static routes.

```
[edit policy-options policy-statement send-static]
user@R2# set term 1 from protocol static
user@R2# set term 1 then accept
user@R2# set term 2 then reject
```

4. Configure the routing policy that tests a regular expression.

```
[edit policy-options policy-statement test-regex]
user@R2# set term find-routes from community complex-regex
user@R2# set term find-routes then accept
user@R2# set term reject-the-rest then reject
[edit policy-options community]
user@R2# set complex-regex members "^64510:[13].*$"
```

5. Configure the static routes and attaches community values.

```
[edit routing-options static route 172.16.1.0/24]
user@R2# set reject
user@R2# set community [ 64510:1 64510:10 64510:11 64510:100 64510:111 ]
[edit routing-options static route 172.16.2.0/24]
user@R2# set reject
user@R2# set community [ 64510:2 64510:20 64510:22 64510:200 64510:222 ]
[edit routing-options static route 172.16.3.0/24]
```

```

user@R2# set reject
user@R2# set community [ 64510:3 64510:30 64510:33 64510:300 64510:333 ]
[edit routing-options static route 172.16.4.0/24]
user@R2# set reject
user@R2# set community [ 64510:4 64510:40 64510:44 64510:400 64510:444 ]

```

6. Configure the autonomous system (AS) number and the router ID.

This affects Device R2's routing table, and has no impact on Device R1 and Device R3.

```

[edit routing-options ]
user@R2# set router-id 192.168.0.2
user@R2# set autonomous-system 64511

```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, **show policy-options**, 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@R2# show interfaces
fe-1/2/0 {
  unit 0 {
    family inet {
      address 10.0.0.2/30;
    }
  }
}
lo0 {
  unit 0 {
    family inet {
      address 192.168.0.2/32;
    }
  }
}

```

```

user@R2# show protocols
bgp {
  group ext {
    type external;
    peer-as 64510;
    neighbor 10.0.0.1;
  }
}

```

```

user@R2# show policy-options
policy-statement send-static {
  term 1 {
    from protocol static;
    then accept;
  }
}

```

```

    }
    term 2 {
        then reject;
    }
}
policy-statement test-regex {
    term find-routes {
        from community complex-regex;
        then accept;
    }
    term reject-the-rest {
        then reject;
    }
}
community complex-regex members "^64510:[13].*$";

```

```

user@R2# show routing-options
static {
    route 172.16.1.0/24 {
        reject;
        community [ 64510:1 64510:10 64510:11 64510:100 64510:111 ];
    }
    route 172.16.2.0/24 {
        reject;
        community [ 64510:2 64510:20 64510:22 64510:200 64510:222 ];
    }
    route 172.16.3.0/24 {
        reject;
        community [ 64510:3 64510:30 64510:33 64510:300 64510:333 ];
    }
    route 172.16.4.0/24 {
        reject;
        community [ 64510:4 64510:40 64510:44 64510:400 64510:444 ];
    }
}
router-id 192.168.0.2;
autonomous-system 64511;

```

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

Verification

Confirm that the configuration is working properly.

Test to See Which Communities Match the Regular Expression

Purpose You can test the regular expression and its policy by using the **test policy policy-name** command.

Action 1. On Device R2, run the **test policy test-regex 0/0** command.

```
user@R2> test policy test-regex 0/0
```

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

172.16.1.0/24      *[Static/5] 1d 00:32:50
                   Reject
172.16.3.0/24      *[Static/5] 1d 00:32:50
                   Reject

Policy test-regex: 2 prefix accepted, 5 prefix rejected
```

- On Device R2, change the regular expression to match a community value containing any number of instances of the digit 2.

```
[edit policy-options community complex-regex]
user@R2# delete members "^64510:[13].*$"
user@R2# set members "^65020:2+ $"
user@R2# commit
```

- On Device R2, rerun the **test policy test-regex 0/0** command.

```
user@R2> test policy test-regex 0/0

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

172.16.2.0/24      *[Static/5] 1d 00:31:36
                   Reject

Policy test-regex: 1 prefix accepted, 6 prefix rejected
```

Meaning The 172.16.1.0 /24 and 172.16.3.0/24 routes both have communities attached that match the `^64510:[13].*$` expression. The 172.16.2.0/24 route has communities that match the `^65020:2+ $` expression.

- Related Documentation**
- [Understanding Routing Policy Tests](#)
 - [Understanding How to Define BGP Communities and Extended Communities](#)
 - [Understanding AS Path Regular Expressions for Use as Routing Policy Match Conditions](#)

Traffic Control in a RIPng Network

- [Understanding RIPng Traffic Control with Metrics for Optimizing the Path Cost on page 127](#)
- [Example: Configuring the Metric Value Added to Imported RIPng Routes to Control the Route Selection Process on page 128](#)

Understanding RIPng Traffic Control with Metrics for Optimizing the Path Cost

To tune a RIPng network and to control traffic flowing through the network, you increase or decrease the cost of the paths through the network. RIPng provides two ways to modify the path cost: an incoming metric and an outgoing metric, which are each set to 1 by default. In other words, by default, the metric of routes that RIPng imports from a neighbor or exports to a neighbor is incremented by 1. These routes include those learned from RIPng as well as those learned from other protocols. The metrics are attributes that specify the cost of any route advertised through a host. By increasing or decreasing the metrics—and thus the cost—of links throughout the network, you can control packet transmission across the network.

The incoming metric modifies the cost of an individual segment when a route across the segment is imported into the routing table. For example, if you set the incoming metric on the segment to **3**, the individual segment cost along the link is changed from 1 to **3**. The increased cost affects all route calculations through that link. Other routes that were previously excluded because of a high hop count might now be selected into the router's forwarding table.

The outgoing metric modifies the path cost for all the routes advertised out of a particular interface. Unlike the incoming metric, the outgoing metric modifies the routes that other routers are learning and thereby controls the way they send traffic.

If an exported route was learned from a member of the same RIPng group, the metric associated with that route is the normal RIPng metric. For example, a RIPng route with a metric of 5 learned from a neighbor configured with an incoming metric of 2 is advertised with a combined metric of 7 when advertised to neighbors in the same group. However, if this route was learned from a RIPng neighbor in a different group or from a different protocol, the route is advertised with the metric value configured in the outgoing metric for that group.

You might want to increase the metric of routes to decrease the likelihood that a particular route is selected and installed in the routing table. This process is sometimes referred to as *route poisoning*. Some reasons that you might want to poison a route are that the route is relatively expensive to use, or it has relatively low bandwidth.

A route with a higher metric than another route becomes the active route only when the lower-metric route becomes unavailable. In this way, the higher-metric route serves as a backup path.

One way to increase the metric of imported routes is to configure an import policy. Another way is to include the **metric-in** statement in the RIPng neighbor configuration. One way to increase the metric of export routes is to configure an export policy. Another way is to include the **metric-out** statement in the RIPng neighbor configuration.

Example: Configuring the Metric Value Added to Imported RIPng Routes to Control the Route Selection Process

This example shows how to change the default metric to be added to incoming routes to control the route selection process.

- [Requirements on page 128](#)
- [Overview on page 128](#)
- [Configuration on page 128](#)
- [Verification on page 131](#)

Requirements

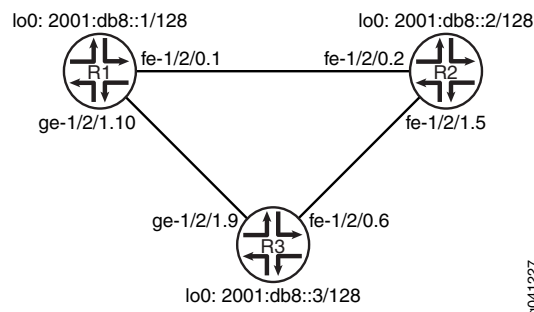
No special configuration beyond device initialization is required before configuring this example.

Overview

Normally, when multiple routes are available, RIPng selects the route with the lowest hop count. Changing the default metric enables you to control the route selection process such that a route with a higher hop count can be preferred over of a route with a lower hop count.

[Figure 20 on page 128](#) shows the topology used in this example.

Figure 20: RIPng Incoming Metrics Network Topology



Device R1 has two potential paths to reach 2001:db8::2/128. The default behavior is to send traffic out the 2001:db8:0:1::/64 interface facing Device R2. Suppose, though, that the path through Device R3 is less expensive to use or has higher bandwidth links. This example shows how to use the **metric-in** statement to ensure that Device R1 uses the path through Device R3 to reach 2001:db8::2/128. “[CLI Quick Configuration](#)” on [page 128](#) shows the configuration for all of the devices in [Figure 20 on page 128](#). The section “[Step-by-Step Procedure](#)” on [page 129](#) describes the steps on Device R1.

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 R1

```

set interfaces fe-1/2/0 unit 1 description to-R2
set interfaces fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
set interfaces ge-1/2/1 unit 10 description to-R3
set interfaces ge-1/2/1 unit 10 family inet6 address 2001:db8:0:5::/64 eui-64
set interfaces lo0 unit 1 family inet6 address 2001:db8::1/128
set protocols ripng group primary export advertise-routes-through-ripng
set protocols ripng group primary neighbor ge-1/2/1.10
set protocols ripng group secondary export advertise-routes-through-ripng
set protocols ripng group secondary neighbor fe-1/2/0.1 metric-in 4
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

Device R2

```

set interfaces fe-1/2/0 unit 2 family inet6 address 2001:db8:0:2::/64 eui-64
set interfaces fe-1/2/1 unit 5 description to-R3
set interfaces fe-1/2/1 unit 5 family inet6 address 2001:db8:0:3::/64 eui-64
set interfaces lo0 unit 2 family inet6 address 2001:db8::2/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.2
set protocols ripng group ripng-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

Device R3

```

set interfaces fe-1/2/0 unit 6 family inet6 address 2001:db8:0:4::/64 eui-64
set interfaces ge-1/2/1 unit 9 description to-R1
set interfaces ge-1/2/1 unit 9 family inet address 10.0.0.9/30
set interfaces ge-1/2/1 unit 9 family inet6 address 2001:db8:0:6::/64 eui-64
set interfaces lo0 unit 3 family inet6 address 2001:db8::3/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.6
set protocols ripng group ripng-group neighbor ge-1/2/1.9
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept

```

Step-by-Step Procedure The following example requires you to 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 a RIPng metrics:

1. Configure the network interfaces.

```
[edit interfaces]
user@R1# set fe-1/2/0 unit 1 description to-R2
user@R1# set fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
user@R1# set ge-1/2/1 unit 10 description to-R3
user@R1# set ge-1/2/1 unit 10 family inet6 address 2001:db8:0:5::/64 eui-64
user@R1# set lo0 unit 1 family inet6 address 2001:db8::1/128
```

2. Create the RIPng groups and add the interfaces.

To configure RIPng in Junos OS, you must configure one or more groups that contain the interfaces on which RIPng is enabled. You do not need to enable RIPng on the loopback interface.

For the interface that is facing Device R2, the **metric-in 4** setting causes this route to be less likely to be chosen as the active route.

```
[edit protocols ripng]
user@R1# set group primary neighbor ge-1/2/1.10
user@R1# set group secondary neighbor fe-1/2/0.1 metric-in 4
```

3. Create the routing policy to advertise both direct and RIPng-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-ripng term 1]
user@R1# set from protocol direct
user@R1# set from protocol ripng
user@R1# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIPng export policies at the group level.

```
[edit protocols ripng]
user@R1# set group primary export advertise-routes-through-ripng
user@R1# set group secondary export advertise-routes-through-ripng
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    description to-R2;
    family inet6 {
      address 2001:db8:0:1::/64 {
        eui-64;
      }
    }
  }
}
```

```

    }
  }
  ge-1/2/1 {
    unit 10 {
      description to-R3;
      family inet6 {
        address 2001:db8:0:5::/64 {
          eui-64;
        }
      }
    }
  }
}
lo0 {
  unit 1 {
    family inet6 {
      address 2001:db8::1/128;
    }
  }
}
}

```

```

user@R1# show protocols
ripng {
  group primary {
    export advertise-routes-through-ripng;
    neighbor ge-1/2/0.10;
  }
  group secondary {
    export advertise-routes-through-ripng;
    neighbor fe-1/2/0.1 {
      metric-in 4;
    }
  }
}

```

```

user@R1# show policy-options
policy-statement advertise-routes-through-ripng {
  term 1 {
    from protocol [ direct ripng ];
    then accept;
  }
}

```

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

Verification

Confirm that the configuration is working properly.

- [Verifying That the Expected Route Is Active on page 132](#)
- [Removing the metric-in Statement on page 132](#)

Verifying That the Expected Route Is Active

Purpose Make sure that Device R1 uses the path through Device R3 to reach 2001:db8:0:2:2a0:a514:0:24c/128.

Action From operational mode, enter the **show route 2001:db8:0:2:2a0:a514:0:24c** command.

```
user@R1> show route 2001:db8:0:2:2a0:a514:0:24c
inet6.0: 16 destinations, 17 routes (16 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8:0:2::/64  *[RIPng/100] 01:54:35, metric 3, tag 0
                  > to fe80::2a0:a514:0:94c via ge-1/2/1.10
```

Meaning The **to fe80::2a0:a514:0:94c via ge-1/2/1.10** output shows that Device R1 uses the path through Device R3 to reach 2001:db8:0:2:2a0:a514:0:24c/128. The metric for this route is 3.

Removing the metric-in Statement

Purpose Delete or deactivate the metric-in statement to see what happens to the 2001:db8:0:2:2a0:a514:0:24c/128 route.

Action 1. From configuration mode, deactivate the **metric-in** statement.

```
[edit protocols ripng group secondary neighbor fe-1/2/0.1]
user@R1# deactivate metric-in
user@R1# commit
```

2. From operational mode, enter the **show route 2001:db8:0:2:2a0:a514:0:24c** command.

```
user@R1> show route 2001:db8:0:2:2a0:a514:0:24c
inet6.0: 16 destinations, 17 routes (16 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8:0:2::/64  *[RIPng/100] 00:00:02, metric 2, tag 0
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
```

Meaning The **to fe80::2a0:a514:0:24c via fe-1/2/0.1** output shows that Device R1 uses the path through Device R2 to reach 2001:db8:0:2:2a0:a514:0:24c/128. The metric for this route is 2.

RIPng Timers

- [Example: Configuring RIPng Update Interval on page 133](#)

Example: Configuring RIPng Update Interval

This example shows how to configure the RIPng update interval and how to monitor the impact of the change.

- [Requirements on page 133](#)
- [Overview on page 133](#)
- [Configuration on page 133](#)
- [Verification on page 136](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

Overview

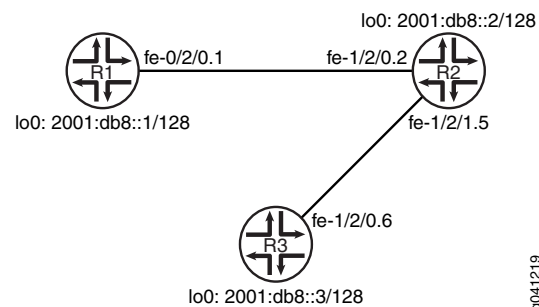
In this example, Device R2 has an update interval of 60 seconds for its neighbor Device R1, and an update interval of 10 seconds for its neighbor Device R3.

This example is not necessarily practical, but it is shown for demonstration purposes. Generally, we recommend against changing the RIPng timers, unless the effects of a change are well understood. Normally, the default values are best left in effect for standard operations.

An export policy is also shown because an export policy is required as part of the minimum configuration for RIPng.

[Figure 21 on page 133](#) shows the topology used in this example.

Figure 21: RIPng Timers Network Topology



“CLI Quick Configuration” on page 133 shows the configuration for all of the devices in [Figure 21 on page 133](#). The section “Step-by-Step Procedure” on page 134 describes the steps on Device R2.

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 R1

```
set interfaces fe-1/2/0 unit 1 description to-R2
set interfaces fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
set interfaces lo0 unit 1 family inet6 address 2001:db8::1/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
```

Device R2

```
set interfaces fe-1/2/0 unit 2 description to-R1
set interfaces fe-1/2/0 unit 2 family inet6 address 2001:db8:0:2::/64 eui-64
set interfaces fe-1/2/1 unit 5 description to-R3
set interfaces fe-1/2/1 unit 5 family inet6 address 2001:db8:0:3::/64 eui-64
set interfaces lo0 unit 2 family inet6 address 2001:db8::2/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.2 update-interval 60
set protocols ripng group ripng-group neighbor fe-1/2/1.5 update-interval 10
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
```

Device R3

```
set interfaces fe-1/2/0 unit 6 description to-R2
set interfaces fe-1/2/0 unit 6 family inet6 address 2001:db8:0:4::/64 eui-64
set interfaces lo0 unit 3 family inet6 address 2001:db8::3/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
```

Step-by-Step Procedure The following example requires you to 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 the RIPng update interval:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```
[edit interfaces]
user@R2# set fe-1/2/0 unit 2 description to-R1
user@R2# set fe-1/2/0 unit 2 family inet6 address 2001:db8:0:2::/64 eui-64
user@R2# set fe-1/2/1 unit 5 description to-R3
user@R2# set fe-1/2/1 unit 5 family inet6 address 2001:db8:0:3::/64 eui-64
user@R2# set lo0 unit 2 family inet6 address 2001:db8::2/128
```

2. Configure different update intervals for the two RIPng neighbors.

To configure RIPng in Junos OS, you must configure a group that contains the interfaces on which RIPng is enabled. You do not need to enable RIPng on the loopback interface.

```
[edit protocols ripng group ripng-group]
user@R2# set neighbor fe-1/2/0.2 update-interval 60
user@R2# set neighbor fe-1/2/1.5 update-interval 10
```

3. Create the routing policy to advertise both direct and RIPng-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-ripng term 1]
user@R2# set from protocol direct
user@R2# set from protocol ripng
user@R2# set then accept
```

4. Apply the routing policy.

In Junos OS, you can only apply RIPng export policies at the group level.

```
[edit protocols ripng group ripng-group]
user@R2# set export advertise-routes-through-ripng
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```
user@R2# show interfaces
fe-1/2/0 {
  unit 2 {
    description to-R1;
    family inet6 {
      address 2001:db8:0:2::/64 {
        eui-64;
      }
    }
  }
}
fe-1/2/1 {
  unit 5 {
```

```
description to-R3;
family inet6 {
    address 2001:db8:0:3::/64 {
        eui-64;
    }
}
}
lo0 {
    unit 2 {
        family inet6 {
            address 2001:db8::2/128;
        }
    }
}
```

```
user@R2# show protocols
ripng {
    group ripng-group {
        export advertise-routes-through-ripng;
        neighbor fe-1/2/0.2 {
            update-interval 60;
        }
        neighbor fe-1/2/1.5 {
            update-interval 10;
        }
    }
}
```

```
user@R2# show policy-options
policy-statement advertise-routes-through-ripng {
    term 1 {
        from protocol [ direct ripng ];
        then accept;
    }
}
```

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

Verification

Confirm that the configuration is working properly.

- [Checking the RIPng Updates Sent by Device R2 on page 136](#)
- [Checking the RIPng Updates Received by Device R2 on page 137](#)
- [Checking the RIPng Updates Received by Device R3 on page 138](#)

Checking the RIPng Updates Sent by Device R2

Purpose Make sure that the RIPng update packets are sent at the expected interval.

Action From operational mode, enter the **show ripng statistics** command.

```
user@R2> show ripng statistics
```

```
RIPng info: port 521; holddown 120s.
```

```
  rts learned  rts held down  rqsts dropped  resps dropped
           4             0             0             0
```

```
fe-1/2/0.2: 2 routes learned; 5 routes advertised; timeout 180s; update interval
60s
```

Counter	Total	Last 5 min	Last minute
Updates Sent	1	1	1
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
Updates Received	1	0	0
Bad Route Entries	0	0	0
Updates Ignored	0	0	0
RIPng Requests Received	0	0	0
RIPng Requests Ignored	0	0	0

```
fe-1/2/1.5: 2 routes learned; 5 routes advertised; timeout 180s; update interval
10s
```

Counter	Total	Last 5 min	Last minute
Updates Sent	6	2	2
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
Updates Received	2	0	0
Bad Route Entries	0	0	0
Updates Ignored	0	0	0
RIPng Requests Received	0	0	0
RIPng Requests Ignored	0	0	0

Meaning The **update interval** field shows that the interval is 60 seconds for its neighbor Device R1 and 10 seconds for its neighbor Device R3. The **Updates Sent** field shows that Device R2 is sending updates to Device R1 at roughly 1/6 of the rate that it is sending updates to Device R3.

Checking the RIPng Updates Received by Device R2

Purpose Make sure that the RIPng update packets are sent at the expected interval.

Action From operational mode, enter the **show ripng statistics** command.

```
user@R1> show ripng statistics
```

```
RIPng info: port 521; holddown 120s.
```

```
  rts learned  rts held down  rqsts dropped  resps dropped
           5             8             0             0
```

```
fe-1/2/0.1: 5 routes learned; 2 routes advertised; timeout 180s; update interval
30s
```

Counter	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	6	5	2
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
Updates Received	3	3	1
Bad Route Entries	0	0	0
Updates Ignored	0	0	0
RIPng Requests Received	0	0	0
RIPng Requests Ignored	0	0	0

Meaning The **Updates Received** field shows the number of updates received from Device R2.

Checking the RIPng Updates Received by Device R3

Purpose Make sure that the RIPng update packets are sent at the expected interval.

Action From operational mode, enter the **show ripng statistics** command.

```
user@R3> show ripng statistics
```

```
RIPng info: port 521; holddown 120s.
```

```
    rts learned  rts held down  rqsts dropped  resps dropped
           5             0             0             0
```

```
fe-1/2/0.6: 5 routes learned; 2 routes advertised; timeout 180s; update interval
30s
```

Counter	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	5	5	2
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
Updates Received	16	15	6
Bad Route Entries	0	0	0
Updates Ignored	0	0	0
RIPng Requests Received	0	0	0
RIPng Requests Ignored	0	0	0

Meaning The **Updates Received** field shows the number of updates received from Device R2.

See Also • [Understanding RIP Timers on page 42](#)

Tracing RIPng Traffic

- [Understanding RIPng Protocol Traffic Trace Operations on page 139](#)
- [Example: Tracing RIPng Protocol Traffic on page 140](#)

Understanding RIPng Protocol Traffic Trace Operations

You can trace various RIPng protocol traffic to help debug RIP protocol issues.

To trace RIP protocol traffic, include the **traceoptions** statement at the **[edit protocols ripng]** hierarchy level:

```
traceoptions {
  file filename <files number> <size size> <world-readable | no-world-readable>;
  flag flag <flag-modifier> <disable>;
}
```

You can specify the following RIPng protocol-specific trace options using the **flag** statement:

- **error**—RIPng error packets
- **expiration**—RIPng route expiration processing
- **holddown**—RIPng hold-down processing
- **nsr-synchronization**—Nonstop routing synchronization events
- **packets**—All RIPng packets
- **request**—RIPng information packets
- **trigger**—RIPng triggered updates
- **update**—RIPng update packets

You can optionally specify one or more of the following flag modifiers:

- **detail**—Detailed trace information
- **receive**—Packets being received
- **send**—Packets being transmitted



NOTE: Use the **detail** flag modifier with caution as this might cause the CPU to become very busy.

Global tracing options are inherited from the configuration set by the **traceoptions** statement at the **[edit routing-options]** hierarchy level. You can override the following global trace options for the RIPng protocol using the **traceoptions flag** statement included at the **[edit protocols ripng]** hierarchy level:

- **all**—All tracing operations
- **general**—All normal operations and routing table changes (a combination of the normal and route trace operations)
- **normal**—Normal events
- **policy**—Policy processing

- **route**—Routing information
- **state**—State transitions
- **task**—Routing protocol task processing
- **timer**—Routing protocol timer processing



NOTE: Use the trace flag all with caution as this might cause the CPU to become very busy.

See Also • *Example: Tracing Global Routing Protocol Operations.*

Example: Tracing RIPng Protocol Traffic

This example shows how to trace RIPng protocol operations.

- [Requirements on page 140](#)
- [Overview on page 140](#)
- [Configuration on page 141](#)
- [Verification on page 143](#)

Requirements

No special configuration beyond device initialization is required before configuring this example.

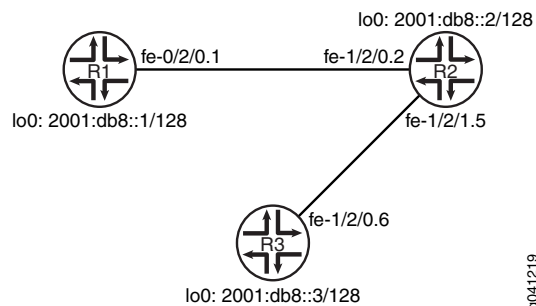
Overview

In this example, Device R1 is set to trace routing information updates.

An export policy is also shown because an export policy is required as part of the minimum configuration for RIPng.

[Figure 22 on page 140](#) shows the topology used in this example.

Figure 22: RIPng Trace Operations Network Topology



[“CLI Quick Configuration” on page 141](#) shows the configuration for all of the devices in [Figure 22 on page 140](#). The section [“Step-by-Step Procedure” on page 142](#) describes the steps on Device R1.

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 R1

```
set interfaces fe-1/2/0 unit 1 description to-R2
set interfaces fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
set interfaces lo0 unit 1 family inet6 address 2001:db8::1/128
set protocols ripng traceoptions file ripng-trace-file
set protocols ripng traceoptions flag route
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.1
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
```

Device R2

```
set interfaces fe-1/2/0 unit 2 description to-R1
set interfaces fe-1/2/0 unit 2 family inet6 address 2001:db8:0:2::/64 eui-64
set interfaces fe-1/2/1 unit 5 description to-R3
set interfaces fe-1/2/1 unit 5 family inet6 address 2001:db8:0:3::/64 eui-64
set interfaces lo0 unit 2 family inet6 address 2001:db8::2/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.2
set protocols ripng group ripng-group neighbor fe-1/2/1.5
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
```

Device R3

```
set interfaces fe-1/2/0 unit 6 description to-R2
set interfaces fe-1/2/0 unit 6 family inet6 address 2001:db8:0:4::/64 eui-64
set interfaces lo0 unit 3 family inet6 address 2001:db8::3/128
set protocols ripng group ripng-group export advertise-routes-through-ripng
set protocols ripng group ripng-group neighbor fe-1/2/0.6
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  direct
set policy-options policy-statement advertise-routes-through-ripng term 1 from protocol
  ripng
set policy-options policy-statement advertise-routes-through-ripng term 1 then accept
```

Step-by-Step Procedure The following example requires you to 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 the RIPng update interval:

1. Configure the network interfaces.

This example shows multiple loopback interface addresses to simulate attached networks.

```
[edit interfaces]
user@R1# set fe-1/2/0 unit 1 description to-R2
user@R1# set fe-1/2/0 unit 1 family inet6 address 2001:db8:0:1::/64 eui-64
user@R1# set lo0 unit 1 family inet6 address 2001:db8::1/128
```

2. Configure the RIPng group, and add the interface to the group.

To configure RIPng in Junos OS, you must configure a group that contains the interfaces on which RIPng is enabled. You do not need to enable RIPng on the loopback interface.

```
[edit protocols ripng group ripng-group]
user@R1# set neighbor fe-1/2/0.1
```

3. Configure RIPng tracing operations.

```
[edit protocols ripng traceoptions]
user@R1# set file ripng-trace-file
user@R1# set flag route
```

4. Create the routing policy to advertise both direct and RIPng-learned routes.

```
[edit policy-options policy-statement advertise-routes-through-ripng term 1]
user@R1# set from protocol direct
user@R1# set from protocol ripng
user@R1# set then accept
```

5. Apply the routing policy.

In Junos OS, you can only apply RIPng export policies at the group level.

```
[edit protocols ripng group ripng-group]
user@R1# set export advertise-routes-through-ripng
```

Results From configuration mode, confirm your configuration by entering the **show interfaces**, **show protocols**, and **show policy-options** commands. If the output does not display the intended configuration, repeat the configuration instructions in this example to correct it.

```

user@R1# show interfaces
fe-1/2/0 {
  unit 1 {
    description to-R2;
    family inet6 {
      address 2001:db8:0:1::/64 {
        eui-64;
      }
    }
  }
}
lo0 {
  unit 1 {
    family inet6 {
      address 2001:db8::1/128;
    }
  }
}

```

```

user@R1# show protocols
ripng {
  traceoptions {
    file ripng-trace-file;
    flag route;
  }
  group ripng-group {
    export advertise-routes-through-ripng;
    neighbor fe-1/2/0.1;
  }
}

```

```

user@R1# show policy-options
policy-statement advertise-routes-through-ripng {
  term 1 {
    from protocol [ direct ripng ];
    then accept;
  }
}

```

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

Verification

Confirm that the configuration is working properly.

Checking the Log File

Purpose Make sure that the RIPng route updates are logged in the configured log file.

Action 1. Deactivate the extra loopback interface address on Device R3.

```
[edit interfaces lo0 unit 3 family inet6]
```

```
user@R3# deactivate address 2001:db8::3/128
user@R3# commit
```

2. From operational mode, enter the **show log ripng-trace-file** command with the **| match 2001:db8::3** option.

```
user@R1> show log ripng-trace-file | match 2001:db8::3
```

```
Mar 6 14:57:03.516867 2001:db8::3/128: metric-in: 3, change: 3 -> 3; # gw:
1, pkt_upd_src fe80::2a0:a514:0:24c, inx: 0, rte_upd_src fe80::2a0:a514:0:24c
Mar 6 14:57:32.786286 2001:db8::3/128: metric-in: 3, change: 3 -> 3; # gw:
1, pkt_upd_src fe80::2a0:a514:0:24c, inx: 0, rte_upd_src fe80::2a0:a514:0:24c
Mar 6 14:58:02.584669 2001:db8::3/128: metric-in: 3, change: 3 -> 3; # gw:
1, pkt_upd_src fe80::2a0:a514:0:24c, inx: 0, rte_upd_src fe80::2a0:a514:0:24c
Mar 6 14:58:30.213894 2001:db8::3/128: metric-in: 3, change: 3 -> 3; # gw:
1, pkt_upd_src fe80::2a0:a514:0:24c, inx: 0, rte_upd_src fe80::2a0:a514:0:24c
Mar 6 14:59:00.115110 2001:db8::3/128: metric-in: 3, change: 3 -> 3; # gw:
1, pkt_upd_src fe80::2a0:a514:0:24c, inx: 0, rte_upd_src fe80::2a0:a514:0:24c
Mar 6 14:59:05.826644 Setting RIPng rtbit on route 2001:db8::3/128, tsi =
0xbb69880
Mar 6 14:59:13.014652 2001:db8::3/128: metric-in: 16, change: 3 -> 16; # gw:
1, pkt_upd_src fe80::2a0:a514:0:24c, inx: 0, rte_upd_src fe80::2a0:a514:0:24c
Mar 6 14:59:13.015132 CHANGE 2001:db8::3/128 nhid 566 gw
fe80::2a0:a514:0:24c RIPng pref 100/0 metric 3/0 fe-1/2/0.1 **Delete Int>
Mar 6 14:59:13.015197 Best route to 2001:db8::3/128 got deleted. Doing route
calculation on the stored rte-info
```

Meaning The output shows that the route to 2001:db8::3/128 was deleted.

CHAPTER 4

Troubleshooting

- [Troubleshooting Network Issues on page 145](#)
- [Monitoring RIP Traffic on page 151](#)

Troubleshooting Network Issues

- [Working with Problems on Your Network on page 145](#)
- [Isolating a Broken Network Connection on page 146](#)
- [Identifying the Symptoms of a Broken Network Connection on page 147](#)
- [Isolating the Causes of a Network Problem on page 148](#)
- [Taking Appropriate Action for Resolving the Network Problem on page 149](#)
- [Evaluating the Solution to Check Whether the Network Problem Is Resolved on page 150](#)

Working with Problems on Your Network

Problem **Description:** This checklist provides links to troubleshooting basics, an example network, and includes a summary of the commands you might use to diagnose problems with the router and network.

Table 5: Checklist for Working with Problems on Your Network

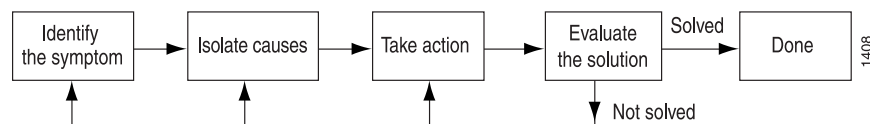
Tasks	Command or Action
"Isolating a Broken Network Connection" on page 146	
1. Identifying the Symptoms of a Broken Network Connection on page 147	<code>ping (ip-address hostname)</code> <code>show route (ip-address hostname)</code> <code>tracert (ip-address hostname)</code>
2. Isolating the Causes of a Network Problem on page 148	<code>show < configuration interfaces protocols route ></code>
3. Taking Appropriate Action for Resolving the Network Problem on page 149	<code>[edit]</code> <code>delete routing options static route destination-prefix</code> <code>commit and-quit</code> <code>show route destination-prefix</code>

Table 5: Checklist for Working with Problems on Your Network (continued)

Tasks	Command or Action
4. Evaluating the Solution to Check Whether the Network Problem Is Resolved on page 150	<pre>show route (ip-address hostname) ping (ip-address hostname) count 3 traceroute (ip-address hostname)</pre>

Isolating a Broken Network Connection

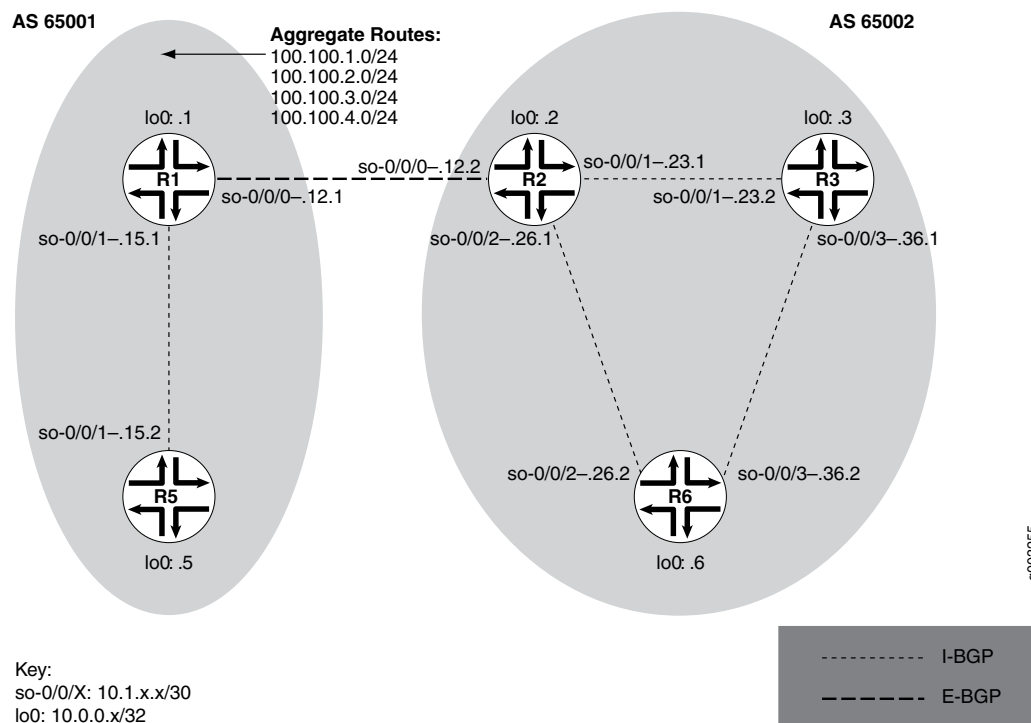
By applying the standard four-step process illustrated in [Figure 23 on page 146](#), you can isolate a failed node in the network. Note that the functionality described in this section is not supported in versions 15.1X49, 15.1X49-D30, or 15.1X49-D40.

Figure 23: Process for Diagnosing Problems in Your Network

Before you embark on the four-step process, however, it is important that you are prepared for the inevitable problems that occur on all networks. While you might find a solution to a problem by simply trying a variety of actions, you can reach an appropriate solution more quickly if you are systematic in your approach to the maintenance and monitoring of your network. To prepare for problems on your network, understand how the network functions under normal conditions, have records of baseline network activity, and carefully observe the behavior of your network during a problem situation.

[Figure 24 on page 147](#) shows the network topology used in this topic to illustrate the process of diagnosing problems in a network.

Figure 24: Network with a Problem



The network in Figure 24 on page 147 consists of two autonomous systems (ASs). AS 65001 includes two routers, and AS 65002 includes three routers. The border router (R1) in AS 65001 announces aggregated prefixes **100.100/24** to the AS 65002 network. The problem in this network is that R6 does not have access to R5 because of a loop between R2 and R6.

To isolate a failed connection in your network, follow the steps in these topics:

- [Identifying the Symptoms of a Broken Network Connection on page 147](#)
- [Isolating the Causes of a Network Problem on page 148](#)
- [Taking Appropriate Action for Resolving the Network Problem on page 149](#)
- [Taking Appropriate Action for Resolving the Network Problem on page 149](#)
- [Evaluating the Solution to Check Whether the Network Problem Is Resolved on page 150](#)

Identifying the Symptoms of a Broken Network Connection

Problem **Description:** The symptoms of a problem in your network are usually quite obvious, such as the failure to reach a remote host.

Solution To identify the symptoms of a problem on your network, start at one end of your network and follow the routes to the other end, entering all or one of the following Junos OS command-line interfaces (CLI) operational mode commands:

```

user@host> ping (ip-address | host-name)
user@host> show route (ip-address | host-name)
user@host> traceroute (ip-address | host-name)

```

Sample Output

```

user@R6> ping 10.0.0.5
PING 10.0.0.5 (10.0.0.5): 56 data bytes
36 bytes from 10.1.26.1: Time to live exceeded
Vr HL TOS Len ID Flg off TTL Pro cks Src Dst
 4 5 00 0054 e2db 0 0000 01 01 a8c6 10.1.26.2 10.0.0.5

36 bytes from 10.1.26.1: Time to live exceeded
Vr HL TOS Len ID Flg off TTL Pro cks Src Dst
 4 5 00 0054 e2de 0 0000 01 01 a8c3 10.1.26.2 10.0.0.5

36 bytes from 10.1.26.1: Time to live exceeded
Vr HL TOS Len ID Flg off TTL Pro cks Src Dst
 4 5 00 0054 e2e2 0 0000 01 01 a8bf 10.1.26.2 10.0.0.5

^C
--- 10.0.0.5 ping statistics ---
3 packets transmitted, 0 packets received, 100% packet loss

user@R6> show route 10.0.0.5

inet.0: 20 destinations, 20 routes (20 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.5/32          *[IS-IS/165] 00:02:39, metric 10
                    > to 10.1.26.1 via so-0/0/2.0

user@R6> traceroute 10.0.0.5
traceroute to 10.0.0.5 (10.0.0.5), 30 hops max, 40 byte packets
 1 10.1.26.1 (10.1.26.1) 0.649 ms 0.521 ms 0.490 ms
 2 10.1.26.2 (10.1.26.2) 0.521 ms 0.537 ms 0.507 ms
 3 10.1.26.1 (10.1.26.1) 0.523 ms 0.536 ms 0.514 ms
 4 10.1.26.2 (10.1.26.2) 0.528 ms 0.551 ms 0.523 ms
 5 10.1.26.1 (10.1.26.1) 0.531 ms 0.550 ms 0.524 ms

```

Meaning

The sample output shows an unsuccessful **ping** command in which the packets are being rejected because the time to live is exceeded. The output for the **show route** command shows the interface (**10.1.26.1**) that you can examine further for possible problems. The **traceroute** command shows the loop between **10.1.26.1 (R2)** and **10.1.26.2 (R6)**, as indicated by the continuous repetition of the two interface addresses.

Isolating the Causes of a Network Problem

Problem Description: A particular symptom can be the result of one or more causes. Narrow down the focus of your search to find each individual cause of the unwanted behavior.

Solution To isolate the cause of a particular problem, enter one or all of the following Junos OS CLI operational mode command:

```
user@host> show < configuration | bgp | interfaces | isis | ospf | route >
```

Your particular problem may require the use of more than just the commands listed above. See the appropriate command reference for a more exhaustive list of commonly used operational mode commands.

Sample Output

```
user@R6> show interfaces terse
Interface           Admin Link Proto Local Remote
so-0/0/0            up   up   inet  10.1.56.2/30
so-0/0/0.0          up   up   inet  10.1.56.2/30
                    up   up   iso
so-0/0/2            up   up   inet  10.1.26.2/30
so-0/0/2.0          up   up   inet  10.1.26.2/30
                    up   up   iso
so-0/0/3            up   up   inet  10.1.36.2/30
so-0/0/3.0          up   up   inet  10.1.36.2/30
                    up   up   iso
[...Output truncated...]
```

The following sample output is from R2:

```
user@R2> show route 10.0.0.5
inet.0: 22 destinations, 25 routes (22 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.5/32          *[Static/5] 00:16:21
> to 10.1.26.2 via so-0/0/2.0
[BGP/170] 3d 20:23:35, MED 5, localpref 100
AS path: 65001 I
> to 10.1.12.1 via so-0/0/0.0
```

Meaning

The sample output shows that all interfaces on R6 are up. The output from R2 shows that a static route [Static/5] configured on R2 points to R6 (10.1.26.2) and is the preferred route to R5 because of its low preference value. However, the route is looping from R2 to R6, as indicated by the missing reference to R5 (10.1.15.2).

Taking Appropriate Action for Resolving the Network Problem

Problem Description: The appropriate action depends on the type of problem you have isolated. In this example, a static route configured on R2 is deleted from the [routing-options] hierarchy level. Other appropriate actions might include the following:

- Solution**
- Check the local router's configuration and edit it if appropriate.
 - Troubleshoot the intermediate router.
 - Check the remote host configuration and edit it if appropriate.
 - Troubleshoot routing protocols.
 - Identify additional possible causes.

To resolve the problem in this example, enter the following Junos OS CLI commands:

```
[edit]
user@R2# delete routing-options static route destination-prefix
user@R2# commit and-quit
user@R2# show route destination-prefix
```

Sample Output

```
[edit]
user@R2# delete routing-options static route 10.0.0.5/32

[edit]
user@R2# commit and-quit
commit complete
Exiting configuration mode

user@R2> show route 10.0.0.5

inet.0: 22 destinations, 24 routes (22 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.5/32          *[BGP/170] 3d 20:26:17, MED 5, localpref 100
                    AS path: 65001 I
                    > to 10.1.12.1 via so-0/0/0.0
```

Meaning

The sample output shows the static route deleted from the `[routing-options]` hierarchy and the new configuration committed. The output for the `show route` command now shows the BGP route as the preferred route, as indicated by the asterisk (*).

Evaluating the Solution to Check Whether the Network Problem Is Resolved

- Problem Description:** If the problem is solved, you are finished. If the problem remains or a new problem is identified, start the process over again.
- You can address possible causes in any order. In relation to the network in [“Isolating a Broken Network Connection” on page 146](#), we chose to work from the local router toward the remote router, but you might start at a different point, particularly if you have reason to believe that the problem is related to a known issue, such as a recent change in configuration.

Solution To evaluate the solution, enter the following Junos OS CLI commands:

```
user@host> show route (ip-address | host-name)
user@host> ping (ip-address | host-name)
user@host> traceroute (ip-address | host-name)
```

Sample Output

```
user@R6> show route 10.0.0.5

inet.0: 20 destinations, 20 routes (20 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.5/32          *[BGP/170] 00:01:35, MED 5, localpref 100, from 10.0.0.2
                    AS path: 65001 I
                    > to 10.1.26.1 via so-0/0/2.0

user@R6> ping 10.0.0.5
PING 10.0.0.5 (10.0.0.5): 56 data bytes
64 bytes from 10.0.0.5: icmp_seq=0 ttl=253 time=0.866 ms
64 bytes from 10.0.0.5: icmp_seq=1 ttl=253 time=0.837 ms
64 bytes from 10.0.0.5: icmp_seq=2 ttl=253 time=0.796 ms
^C
--- 10.0.0.5 ping statistics ---
3 packets transmitted, 3 packets received, 0% packet loss
round-trip min/avg/max/stddev = 0.796/0.833/0.866/0.029 ms

user@R6> traceroute 10.0.0.5
traceroute to 10.0.0.5 (10.0.0.5), 30 hops max, 40 byte packets
 1 10.1.26.1 (10.1.26.1) 0.629 ms 0.538 ms 0.497 ms
 2 10.1.12.1 (10.1.12.1) 0.534 ms 0.538 ms 0.510 ms
 3 10.0.0.5 (10.0.0.5) 0.776 ms 0.705 ms 0.672 ms
```

Meaning

The sample output shows that there is now a connection between **R6** and **R5**. The **show route** command shows that the BGP route to **R5** is preferred, as indicated by the asterisk (*). The **ping** command is successful and the **traceroute** command shows that the path from **R6** to **R5** is through **R2** (10.1.26.1), and then through **R1** (10.1.12.1).

Monitoring RIP Traffic

- [Monitoring RIP Routing Information on page 151](#)
- [Verifying a RIP Configuration on page 153](#)
- [Verifying the Exchange of RIP Messages on page 154](#)

Monitoring RIP Routing Information

Purpose



NOTE: This topic applies only to the J-Web Application package.

Use the monitoring functionality to monitor RIP routing on routing devices.

Action To view RIP routing information in the J-Web interface, select **Monitor > Routing > RIP Information**.

To view RIP routing information in the CLI, enter the following CLI commands:

- **show rip statistics**
- **show rip neighbor**

Meaning [Table 6 on page 152](#) summarizes key output fields in the RIP routing display in the J-Web interface.

Table 6: Summary of Key RIP Routing Output Fields

Field	Values	Additional Information
RIP Statistics		
Protocol Name	The RIP protocol name.	
Port number	The port on which RIP is enabled.	
Hold down time	The interval during which routes are neither advertised nor updated.	
Global routes learned	Number of RIP routes learned on the logical interface.	
Global routes held down	Number of RIP routes that are not advertised or updated during the hold-down interval.	
Global request dropped	Number of requests dropped.	
Global responses dropped	Number of responses dropped.	
RIP Neighbors		
Neighbor	Name of the RIP neighbor.	This value is the name of the interface on which RIP is enabled. Click the name to see the details for this neighbor.
State	State of the RIP connection: Up or Dn (Down).	
Source Address	Local source address.	This value is the configured address of the interface on which RIP is enabled.
Destination Address	Destination address.	This value is the configured address of the immediate RIP adjacency.

Table 6: Summary of Key RIP Routing Output Fields (continued)

Field	Values	Additional Information
Send Mode	The mode of sending RIP messages.	
Receive Mode	The mode in which messages are received.	
In Metric	Value of the incoming metric configured for the RIP neighbor.	

Verifying a RIP Configuration

To verify a RIP configuration, perform the following tasks:

- [Verifying the RIP-Enabled Interfaces on page 153](#)
- [Verifying Reachability of All Hosts in the RIP Network on page 153](#)

Verifying the RIP-Enabled Interfaces

Purpose Verify that all the RIP-enabled interfaces are available and active.

Action From the CLI, enter the **show rip neighbor** command.

Sample Output

```
user@host> show rip neighbor
```

Source Neighbor	Destination State	Send Address	Receive Address	In	Mode	Mode	Met
ge-0/0/0.0	Dn (null)		(null)		mcast	both	1
ge-0/0/1.0	Up	192.168.220.5	224.0.0.9		mcast	both	1

Meaning The output shows a list of the RIP neighbors that are configured on the device. Verify the following information:

- Each configured interface is present. Interfaces are listed in alphabetical order.
- Each configured interface is up. The state of the interface is listed in the **Destination State** column. A state of **Up** indicates that the link is passing RIP traffic. A state of **Dn** indicates that the link is not passing RIP traffic. In a point-to-point link, this state generally means that either the end point is not configured for RIP or the link is unavailable.

Verifying Reachability of All Hosts in the RIP Network

Purpose By using the traceroute tool on each loopback address in the network, verify that all hosts in the RIP network are reachable from each Juniper Networks device.

Action For each device in the RIP network:

1. In the J-Web interface, select **Troubleshoot>Traceroute**.
2. In the Remote Host box, type the name of a host for which you want to verify reachability from the device.
3. Click **Start**. Output appears on a separate page.

Sample Output

```
1 172.17.40.254 (172.17.40.254) 0.362 ms 0.284 ms 0.251 ms
2 routera-fxp0.englab.mycompany.net (192.168.71.246) 0.251 ms 0.235 ms 0.200 ms
```

Meaning Each numbered row in the output indicates a routing hop in the path to the host. The three-time increments indicate the round-trip time (RTT) between the device and the hop for each traceroute packet.

To ensure that the RIP network is healthy, verify the following information:

- The final hop in the list is the host you want to reach.
- The number of expected hops to the host matches the number of hops in the traceroute output. The appearance of more hops than expected in the output indicates that a network segment is probably unreachable. It might also indicate that the incoming or outgoing metric on one or more hosts has been set unexpectedly.

Verifying the Exchange of RIP Messages

Purpose Verify that RIP messages are being sent and received on all RIP-enabled interfaces.

Action From the CLI, enter the **show rip statistics** command.

Sample Output

```
user@host> show rip statistics
RIPv2 info: port 520; holddown 120s.
      rts learned  rts held down  rqsts dropped  resps dropped
              10              0              0              0

t1-0/0/2.0: 0 routes learned; 13 routes advertised; timeout 120s; update interval
45s
Counter                Total    Last 5 min  Last minute
-----
Updates Sent            2855         11         2
Triggered Updates Sent    5          0          0
Responses Sent           0          0          0
Bad Messages             0          0          0
RIPv1 Updates Received    0          0          0
```

```

RIPv1 Bad Route Entries          0          0          0
RIPv1 Updates Ignored            0          0          0
RIPv2 Updates Received          41          0          0
RIPv2 Bad Route Entries          0          0          0
RIPv2 Updates Ignored            0          0          0
Authentication Failures          0          0          0
RIP Requests Received            0          0          0
RIP Requests Ignored             0          0          0

ge-0/0/1.0: 10 routes learned; 3 routes advertised; timeout 180s; update interval
30s
Counter              Total    Last 5 min  Last minute
-----
Updates Sent          2855         11          2
Triggered Updates Sent  3           0           0
Responses Sent        0           0           0
Bad Messages          1           0           0
RIPv1 Updates Received 0           0           0
RIPv1 Bad Route Entries 0           0           0
RIPv1 Updates Ignored  0           0           0
RIPv2 Updates Received 2864         11          2
RIPv2 Bad Route Entries 14           0           0
RIPv2 Updates Ignored  0           0           0
Authentication Failures 0           0           0
RIP Requests Received  0           0           0
RIP Requests Ignored   0           0           0

```

Meaning The output shows the number of RIP routes learned. It also shows the number of RIP updates sent and received on the RIP-enabled interfaces. Verify the following information:

- The number of RIP routes learned matches the number of expected routes learned. Subnets learned by direct connectivity through an outgoing interface are not listed as RIP routes.
- RIP updates are being sent on each RIP-enabled interface. If no updates are being sent, the routing policy might not be configured to export routes.
- RIP updates are being received on each RIP-enabled interface. If no updates are being received, the routing policy might not be configured to export routes on the host connected to that subnet. The lack of updates might also indicate an authentication error.

**Related
Documentation**

- [RIP Configuration Overview on page 27](#)
- [show rip statistics on page 239](#) in the CLI Explorer
- [show rip neighbor on page 236](#) in the CLI Explorer
- [traceroute](#) in the CLI Explorer
- [RIP Overview on page 19](#)
- [Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets on page 93](#)

PART 1

Configuration Statements and Operational Commands

- [RIP Configuration Statements on page 159](#)
- [RIPng Configuration Statements on page 195](#)
- [RIP Operational Commands on page 213](#)
- [RIPng Operational Commands on page 445](#)

CHAPTER 5

RIP Configuration Statements

- [any-sender](#) on page 160
- [authentication-key \(Protocols RIP\)](#) on page 161
- [authentication-type \(Protocols RIP\)](#) on page 162
- [bfd-liveness-detection \(Protocols RIP\)](#) on page 164
- [check-zero](#) on page 167
- [demand-circuit \(Protocols RIP\)](#) on page 168
- [dynamic-peers](#) on page 169
- [export](#) on page 170
- [graceful-restart \(Protocols RIP\)](#) on page 171
- [group \(Protocols RIP\)](#) on page 172
- [holddown \(Protocols RIP\)](#) on page 174
- [import \(Protocols RIP\)](#) on page 175
- [interface-type \(Protocols RIP\)](#) on page 176
- [max-retrans-time](#) on page 177
- [message-size](#) on page 178
- [metric-in \(Protocols RIP\)](#) on page 179
- [metric-out](#) on page 180
- [neighbor](#) on page 181
- [peer \(Protocols RIP\)](#) on page 182
- [preference \(Protocols RIP\)](#) on page 183
- [receive \(Protocols RIP\)](#) on page 184
- [rib-group \(Protocols RIP\)](#) on page 185
- [rip](#) on page 186
- [route-timeout \(Protocols RIP\)](#) on page 187
- [routing-instances \(Multiple Routing Entities\)](#) on page 188
- [send \(Protocols RIP\)](#) on page 190
- [traceoptions \(Protocols RIP\)](#) on page 191
- [update-interval \(Protocols RIP\)](#) on page 194

any-sender

Syntax	<code>any-sender;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 8.0. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Disable strict sender address checks.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

authentication-key (Protocols RIP)

Syntax	<code>authentication-key <i>password</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols <i>rip</i>], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <i>rip</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>], [edit protocols <i>rip</i>], [edit protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols <i>rip</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>]</pre>
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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Require authentication for RIP route queries received on an interface.
Options	<i>password</i> —Authentication password. If the password does not match, the packet is rejected. The password can be from 1 through 16 contiguous characters long and can include any ASCII strings.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring Route Authentication for RIP on page 36

authentication-type (Protocols RIP)

Syntax	<code>authentication-type type;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Configure the type of authentication for RIP route queries received on an interface.
Default	If you do not include this statement and the authentication-key statement, RIP authentication is disabled.
Options	<p>type—Authentication type:</p> <ul style="list-style-type: none"> md5—Use the MD5 algorithm to create an encoded checksum of the packet. The encoded checksum is included in the transmitted packet. The receiving routing device uses the authentication key to verify the packet, discarding it if the digest does not match. This algorithm provides a more secure authentication scheme. none—Disable authentication. If none is configured, the configured authentication key is ignored. simple—Use a simple password. The password is included in the transmitted packet, which makes this method of authentication relatively insecure. The password can be from 1 through 16 contiguous letters or digits long.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Example: Configuring Route Authentication for RIP on page 36

- [authentication-key on page 161](#)

bfd-liveness-detection (Protocols RIP)

Syntax

```

bfd-liveness-detection {
  authentication {
    algorithm algorithm-name;
    key-chain key-chain-name;
    loose-check;
  }
  detection-time {
    threshold milliseconds;
  }
  minimum-interval milliseconds;
  minimum-receive-interval milliseconds;
  multiplier number;
  no-adaptation;
  transmit-interval {
    minimum-interval milliseconds;
    threshold milliseconds;
  }
  version (1 | automatic);
}

```

Hierarchy Level

```

[edit logical-systems logical-system-name protocols rip group group-name],
[edit logical-systems logical-system-name routing-instances routing-instance-name protocols
  rip group group-name neighbor neighbor-name],
[edit protocols rip group group-name],
[edit routing-instances routing-instance-name protocols rip group group-name neighbor
  neighbor-name]

```

Release Information

Statement introduced in Junos OS Release 8.0.

Options **detection-time threshold** and **transmit-interval threshold** introduced in Junos OS Release 8.2.

Support for logical systems introduced in Junos OS Release 8.3.

Option **no-adaptation** introduced in Junos OS Release 9.0.

Statement introduced in Junos OS Release 9.0 for EX Series switches.

Options **authentication algorithm**, **authentication key-chain**, and **authentication loose-check** introduced in Junos OS Release 9.6.

Options **authentication algorithm**, **authentication key-chain**, and **authentication loose-check** introduced in Junos OS Release 9.6 for EX Series switches.

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

Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description

Configure bidirectional failure detection timers and authentication.

The remaining statements are explained separately. See [CLI Explorer](#).

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 is not 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.

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 specify the minimum transmit and receive intervals separately using the **transmit-interval minimum-interval** and **minimum-receive-interval** statements.

Range: 1 through 255,000 milliseconds

minimum-receive-interval *milliseconds*—Configure the minimum interval after which the local 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.

Range: 1 through 255,000 milliseconds

multiplier *number*—Configure the number of hello packets not received by a neighbor that causes the originating interface to be declared down.

Range: 1 through 255

Default: 3

no-adaptation—Configure 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 ($2^{32} - 1$)

transmit-interval minimum-interval *milliseconds*—Configure a minimum interval after which the local routing device transmits hello packets to a neighbor. Optionally, instead of using this statement, you can configure the minimum transmit interval using the **minimum-interval** statement.

Range: 1 through 255,000

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

Default: automatic

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

Related Documentation	<ul style="list-style-type: none">• Example: Configuring BFD for RIP on page 56• Example: Configuring BFD Authentication for RIP on page 63
------------------------------	--

check-zero

Syntax	(check-zero no-check-zero);
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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 12.1 for the QFX Series.</p>
Description	<p>Check whether the reserved fields in a RIP packet are zero:</p> <ul style="list-style-type: none"> • check-zero—Discard version 1 packets that have nonzero values in the reserved fields and version 2 packets that have nonzero values in the fields that must be zero. This default behavior implements the RIP version 1 and version 2 specifications. • no-check-zero—Receive RIP version 1 packets with nonzero values in the reserved fields or RIP version 2 packets with nonzero values in the fields that must be zero. This is in spite of the fact that they are being sent in violation of the specifications in RFC 1058 and RFC 2453.
Default	check-zero
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	


demand-circuit (Protocols RIP)

Syntax	<code>demand-circuit;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip group <i>group-name</i>], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
Release Information	Statement introduced in Release 11.1 of Junos OS.
Description	Configure a neighboring interface to act as a RIP demand circuit. To complete the demand circuit, you must configure both ends of the pair as demand circuits. When configured, the device sends RIP information only when changes occur in the routing database.
Default	Disabled. You must explicitly configure two neighboring interfaces to act as a RIP demand circuit.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring RIP Demand Circuits on page 52 • RIP Demand Circuits Overview on page 49 • max-retrans-time on page 177

dynamic-peers

Syntax	<code>dynamic-peers;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 11.4.
Description	Configure an interface to have dynamic peers in a point-to-multipoint RIP network.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Example: Configuring Point-to-Multipoint RIP Networks on page 80

export

Syntax	<code>export [<i>policy-names</i>];</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>],</p> <p>[edit protocols rip group <i>group-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-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>
Description	<p>Apply a policy to routes being exported to the neighbors.</p> <p>By default, RIP does not export routes it has learned to its neighbors. To enable RIP to export routes, apply one or more export policies.</p> <p>If no routes match the policies, the local routing device does not export any routes to its neighbors. Export policies override any metric values determined through calculations involving the values configured with the metric-in and metric-out statements.</p>
	<p> NOTE: The export policy on RIP does not support manipulating routing information of the next hop.</p>
Options	<i>policy-names</i> —Name of one or more policies.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> import on page 175

graceful-restart (Protocols RIP)

Syntax	<pre>graceful-restart { disable; restart-time <i>seconds</i>; }</pre>
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols rip], [edit protocols rip]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure graceful restart for RIP.
Options	disable —Disables graceful restart for RIP. The remaining statement is explained separately. See CLI Explorer .
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>High Availability Feature Guide</i>

group (Protocols RIP)

```
Syntax  group group-name {
        bfd-liveness-detection {
            authentication {
                algorithm algorithm-name;
                key-chain key-chain-name;
                loose-check;
            }
            detection-time {
                threshold milliseconds;
            }
            minimum-interval milliseconds;
            minimum-receive-interval milliseconds;
            transmit-interval {
                threshold milliseconds;
                minimum-interval milliseconds;
            }
            multiplier number;
            version (0 | 1 | automatic);
        }
        demand-circuit;
        export policy;
        max-retrans-time seconds;
        metric-out metric;
        preference number;
        route-timeout seconds;
        update-interval seconds;
        neighbor neighbor-name {
            authentication-key password;
            authentication-type type;
            bfd-liveness-detection {
                authentication {
                    algorithm algorithm-name;
                    key-chain key-chain-name;
                    loose-check;
                }
                detection-time {
                    threshold milliseconds;
                }
                minimum-interval milliseconds;
                minimum-receive-interval milliseconds;
                transmit-interval {
                    threshold milliseconds;
                    minimum-interval milliseconds;
                }
                multiplier number;
                version (0 | 1 | automatic);
            }
            (check-zero | no-check-zero);
            demand-circuit;
            import policy-name;
            max-retrans-time seconds;
        }
    }
```

```

    message-size number;
    metric-in metric;
    metric-out metric;
    receive receive-options;
    route-timeout seconds;
    send send-options;
    update-interval seconds;
  }
}

```

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

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 12.1 for the QFX Series.
 Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description Configure a set of RIP neighbors that share an export policy and metric. The export policy and metric govern what routes to advertise to neighbors in a given group. Each group must contain at least one neighbor. You should create a group for every export policy.

Options *group-name*—Name of a group, up to 16 characters long.
 The remaining statements are explained separately. See [CLI Explorer](#).

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

Related Documentation

- *Example: Configuring RIP*

holddown (Protocols RIP)

Syntax	<code>holddown seconds;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>rip],</code> <code>[edit protocols rip],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols rip]</code>
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 12.1 for the QFX Series.
Description	<p>Configure how long the expired route is retained in the routing table before being removed.</p> <p>When the hold-down timer runs on RIP demand circuits, routes are advertised as unreachable on other interfaces. When the hold-down timer expires, the route is removed from the routing table if all destinations detect that the route is unreachable or the remaining destinations are down.</p>
Options	seconds —Estimated time to wait before making updates to the routing table. Range: 10 through 180 seconds Default: 180 seconds
Required Privilege Level	routing —To view this statement in the configuration. routing-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Example: Configuring RIP Timers on page 43• RIP Demand Circuits Overview on page 49

import (Protocols RIP)

Syntax	<code>import [<i>policy-names</i>];</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Apply one or more policies to routes being imported by the local routing device from neighbors.
Options	<i>policy-names</i> —Name of one or more policies.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Applying Policies to RIP Routes Imported from Neighbors on page 86 • Junos OS Routing Policies, Firewall Filters, and Traffic Policers Feature Guide for Routing Devices • export on page 170

interface-type (Protocols RIP)

Syntax	<code>interface-type p2mp;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 11.4.
Description	<p>Configure the type of interface in a RIP network.</p> <p>This statement enables a RIP device to have single or multiple peers through an interface.</p>
Options	p2mp —Configure an interface in a RIP network as a point-to-multipoint interface.
Required Privilege Level	<code>interface</code> —To view this statement in the configuration. <code>interface-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Example: Configuring Point-to-Multipoint RIP Networks on page 80

max-retrans-time

Syntax	<code>max-retrans-time <i>seconds</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip group <i>group-name</i>], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
Release Information	Statement introduced in Junos OS Release 11.1.
Description	<p>RIP demand circuits send update messages every 5 seconds to an unresponsive peer. Configure the retransmission timer to limit the number of times the demand circuit resends update messages to an unresponsive peer. If the configured retransmission threshold is reached, routes from the next hop router are marked as unreachable and the hold-down timer starts. You must configure a pair of RIP demand circuits for this timer to take effect.</p> <p>To determine the number of times to resend the update message, use the following calculation:</p> <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;"> $5 \text{ seconds} \times \text{number of retransmissions} = \text{retransmission seconds}$ </div>
Options	<p>seconds—The total amount of time the demand circuit resends update messages to an unresponsive peer. The seconds range corresponds to sending an update message a minimum of 1 time (5 seconds) and a maximum of 36 times (180 seconds).</p> <p>Range: 5 through 180 seconds</p> <p>Default: 5 seconds</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring RIP Demand Circuits on page 52 • RIP Demand Circuits Overview on page 49 • demand-circuit on page 168

message-size

Syntax	<code>message-size <i>number</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols <i>rip</i>], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols <i>rip</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>], [edit protocols <i>rip</i>], [edit protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols <i>rip</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> <i>neighbor</i> <i>neighbor-name</i>]</pre>
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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Specify the number of route entries to be included in every RIP update message. To ensure interoperability with other vendors' equipment, use the standard of 25 route entries per message.
Options	<p><i>number</i>—Number of route entries per update message.</p> <p>Range: 25 through 255 entries</p> <p>Default: 25 entries</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

metric-in (Protocols RIP)

Syntax	<code>metric-in <i>metric</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Specify the metric to add to incoming routes when the routing device advertises into RIP routes that were learned from other protocols. Use this statement to configure the routing device to prefer RIP routes learned through a specific neighbor.
Options	<p><i>metric</i>—Metric value.</p> <p>Range: 1 through 16</p> <p>Default: 1</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring the Metric Value Added to Imported RIP Routes on page 74

metric-out

Syntax	<code>metric-out <i>metric</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Specify the metric value to add to routes transmitted to the neighbor. Use this statement to control how other routing devices prefer RIP routes sent from this neighbor.
Options	<i>metric</i> —Metric value. Range: 1 through 16 Default: 1
Required Privilege Level	routing —To view this statement in the configuration. routing-control —To add this statement to the configuration.

neighbor

Syntax

```
neighbor neighbor-name {
  authentication-key password;
  authentication-type type;
  bfd-liveness-detection {
    authentication {
      algorithm algorithm-name;
      key-chain key-chain-name;
      loose-check;
    }
    detection-time {
      threshold milliseconds;
    }
    minimum-interval milliseconds;
    minimum-receive-interval milliseconds;
    transmit-interval {
      threshold milliseconds;
      minimum-interval milliseconds;
    }
    multiplier number;
    version (0 | 1 | automatic);
  }
  (check-zero | no-check-zero);
  demand-circuit;
  import policy-name;
  max-retrans-time seconds;
  message-size number;
  metric-in metric;
  metric-out metric;
  receive receive-options;
  route-timeout seconds;
  send send-options;
  update-interval seconds;
}
```

Hierarchy Level

```
[edit logical-systems logical-system-name protocols rip group group-name],
[edit logical-systems logical-system-name routing-instances routing-instance-name protocols
  rip group group-name],
[edit protocols rip group group-name],
[edit routing-instances routing-instance-name protocols rip group group-name]
```

Release Information

Statement introduced before Junos OS Release 7.4.
Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description

Configure neighbor-specific RIP parameters, thereby overriding the defaults set for the routing device.

Options

neighbor-name—Name of an interface over which a routing device communicates to its neighbors.

The remaining statements are explained separately. See [CLI Explorer](#).

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

peer (Protocols RIP)

Syntax	<code>peer <i>IP address</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 11.4.
Description	Configure a static peer for an interface in a point-to-multipoint RIP network.
Options	<i>address</i> —IP address of the static peer to be configured.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Example: Configuring Point-to-Multipoint RIP Networks on page 80

preference (Protocols RIP)

Syntax	<code>preference <i>preference</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>rip group <i>group-name</i>],</code> <code>[edit protocols rip group <i>group-name</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>]</code>
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>
Description	<p>Specify the preference of external routes learned by RIP as compared to those learned from other routing protocols.</p> <p>By default, Junos OS assigns a preference of 100 to routes that originate from RIP. When Junos OS determines a route's preference to become the active route, the software selects the route with the lowest preference and installs this route into the forwarding table.</p>
Options	<p><i>preference</i>—Preference value. A lower value indicates a more preferred route.</p> <p>Range: 0 through 4,294,967,295 ($2^{32} - 1$)</p> <p>Default: 100</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Route Preferences Overview</i>

receive (Protocols RIP)

Syntax	<code>receive <i>receive-options</i>;</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols rip],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit protocols rip],</p> <p>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols rip],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Configure RIP receive options.
Options	<p><i>receive-options</i>—One of the following:</p> <ul style="list-style-type: none"> both—Accept both RIP version 1 and version 2 packets. none—Do not receive RIP packets. version-1—Accept only RIP version 1 packets. version-2—Accept only RIP version 2 packets. <p>Default: both</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets on page 93 send on page 190

rib-group (Protocols RIP)

Syntax	<code>rib-group <i>group-name</i>;</code>
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip]
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 12.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Description	Install RIP routes into multiple routing tables by configuring a routing table group.
Options	<i>group-name</i> —Name of the routing table group.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Example: Redistributing Routes Between Two RIP Instances on page 98

rip

Syntax	<code>rip {...}</code>
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols], [edit protocols], [edit routing-instances <i>routing-instance-name</i> protocols]
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 12.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Description	Enable RIP routing on the routing device.
Default	RIP is disabled on the routing device.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Example: Configuring RIP</i>

route-timeout (Protocols RIP)

Syntax	<code>route-timeout seconds;</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip], [edit protocols rip group <i>group-name</i>], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>]</p>
Release Information	<p>Statement introduced in Junos OS Release 7.6. Statement introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 12.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Configure the route timeout interval for RIP. If a route is not refreshed after being installed in the routing table by the specified timeout interval, the route is marked as invalid and is removed from the routing table after the hold-down period expires.
Options	<p>seconds—Estimated time to wait before making updates to the routing table. Range: 30 through 360 seconds Default: 180 seconds</p>
Required Privilege Level	<p>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring RIP Timers on page 43 • RIP Demand Circuits Overview on page 49

routing-instances (Multiple Routing Entities)

Syntax	<code>routing-instances <i>routing-instance-name</i> { ... }</code>
Hierarchy Level	<code>[edit],</code> <code>[edit logical-systems <i>logical-system-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. remote-vtep-v6-list statement introduced in Junos OS Release 17.3 for MX Series routers with MPC and MIC interfaces.
Description	<p>Configure an additional routing entity for a router. You can create multiple instances of BGP, IS-IS, OSPF, OSPFv3, and RIP for a router. You can also create multiple routing instances for separating routing tables, routing policies, and interfaces for individual wholesale subscribers (retailers) in a Layer 3 wholesale network.</p> <p>Each routing instance consist of the following:</p> <ul style="list-style-type: none"> • A set of routing tables • A set of interfaces that belong to these routing tables • A set of routing option configurations <p>Each routing instance has a unique name and a corresponding IP unicast table. For example, if you configure a routing instance with the name my-instance, its corresponding IP unicast table is <code>my-instance.inet.0</code>. All routes for my-instance are installed into <code>my-instance.inet.0</code>.</p> <p>Routes are installed into the default routing instance <code>inet.0</code> by default, unless a routing instance is specified.</p> <p>In Junos OS Release 9.0 and later, you can no longer specify a routing-instance name of <i>master</i>, <i>default</i>, or <i>bgp</i> or include special characters within the name of a routing instance.</p> <p>In Junos OS Release 9.6 and later, you can include a slash (/) in a routing-instance name only if a logical system is not configured. That is, you cannot include the slash character in a routing-instance name if a logical system other than the default is explicitly configured. Routing-instance names, further, are restricted from having the form <code>__.*__</code> (beginning and ending with underscores). The colon <code>:</code> character cannot be used when multitopology routing (MTR) is enabled.</p>
Default	Routing instances are disabled for the router.
Options	<p><i>routing-instance-name</i>—Name of the routing instance. This must be a non-reserved string of not more than 128 characters.</p> <p><i>remote-vtep-list</i>—Configure static remote VXLAN tunnel endpoints.</p>

remote-vtep-v6-list—Configure static IPv6 remote VXLAN tunnel endpoints.

Required Privilege	routing—To view this statement in the configuration.
Level	routing-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Example: Configuring Interprovider Layer 3 VPN Option A</i>• <i>Example: Configuring Interprovider Layer 3 VPN Option B</i>• <i>Example: Configuring Interprovider Layer 3 VPN Option C</i>

send (Protocols RIP)

Syntax	<code>send <i>send-options</i>;</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols rip],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit protocols rip],</p> <p>[edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols rip],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-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 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Configure RIP send options.
Options	<p><i>send-options</i>—One of the following:</p> <ul style="list-style-type: none"> broadcast—Broadcast RIP version 2 packets (RIP version 1 compatible). multicast—Multicast RIP version 2 packets. This is the default. none—Do not send RIP updates. version-1—Broadcast RIP version 1 packets. <p>Default: multicast</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Example: Configuring the Sending and Receiving of RIPv1 and RIPv2 Packets on page 93 receive on page 184

traceoptions (Protocols RIP)

Syntax	<pre>traceoptions { file <i>filename</i> <files <i>number</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i> <flag-modifier> <disable>; }</pre>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip]</p>
Release Information	<p>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 12.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Set RIP protocol-level tracing options.



NOTE: The **traceoptions** statement is not supported on QFabric systems.

Default	The default RIP protocol-level trace options are inherited from the global traceoptions statement.
Options	<p>disable—(Optional) Disable the tracing operation. One use of this option is to disable a single operation when you have defined a broad group of tracing operations, such as all.</p> <p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks. We recommend that you place RIP tracing output in the file <code>/var/log/rip-log</code>.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then, the oldest trace file is overwritten. If you specify a maximum number of files, you must also specify a maximum file size with the size option.</p> <p>Range: 2 through 1000 files Default: 10 files</p> <p>flag <i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements.</p>

RIP Tracing Options

- **auth**—RIP authentication
- **error**—RIP error packets
- **expiration**—RIP route expiration processing
- **holddown**—RIP hold-down processing
- **nsr-synchronization**—Nonstop routing synchronization events
- **packets**—All RIP packets
- **request**—RIP information packets such as request, poll, and poll entry packets
- **trigger**—RIP triggered updates
- **update**—RIP update packets

Global Tracing Options

- **all**—All tracing operations
- **general**—A combination of the **normal** and **route** trace operations
- **normal**—All normal operations

Default: If you do not specify this option, only unusual or abnormal operations are traced.

- **policy**—Policy operations and actions
- **route**—Routing table changes
- **state**—State transitions
- **task**—Routing protocol task processing
- **timer**—Routing protocol timer processing

flag-modifier—(Optional) Modifier for the tracing flag. You can specify one or more of these modifiers:

- **detail**—Provide detailed trace information.
- **receive**—Trace the packets being received.
- **receive-detail**—Provide detailed trace information for packets being received.
- **send**—Trace the packets being transmitted.
- **send-detail**—Provide detailed trace information for packets being transmitted.

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

size size—(Optional) Maximum size of each trace file, in kilobytes (KB) or megabytes (MB). 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. If you specify a maximum file size, you must also 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.

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

Related Documentation	<ul style="list-style-type: none">• <i>Example: Tracing RIP Protocol Traffic</i>
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update-interval (Protocols RIP)

Syntax	<code>update-interval seconds;</code>
Hierarchy Level	<pre> [edit logical-systems <i>logical-system-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols rip], [edit protocols rip group <i>group-name</i>], [edit protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols rip group <i>group-name</i> neighbor <i>neighbor-name</i>] </pre>
Release Information	<p>Statement introduced in Junos OS Release 7.6.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Statement introduced in Junos OS Release 12.1 for the QFX Series.</p> <p>Statement introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Configure the interval at which routes learned by RIP are sent to neighbors. This timer controls the interval between routing updates. This timer is set to 30 seconds, by default, with a small random amount of time added when the timer is reset. This added time prevents congestion that can happen if all routing devices update their neighbors simultaneously.
Options	<p>seconds—Estimated time to wait before making updates to the routing table.</p> <p>Range: 10 through 60 seconds</p> <p>Default: 30 seconds</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Example: Configuring RIP Timers on page 43

CHAPTER 6

RIPng Configuration Statements

- [export \(Protocols RIPng\) on page 196](#)
- [graceful-restart \(Protocols RIPng\) on page 197](#)
- [group \(Protocols RIPng\) on page 198](#)
- [holddown \(Protocols RIPng\) on page 199](#)
- [import \(Protocols RIPng\) on page 200](#)
- [metric-in \(Protocols RIPng\) on page 201](#)
- [metric-out \(Protocols RIPng\) on page 202](#)
- [neighbor \(Protocols RIPng\) on page 203](#)
- [preference \(Protocols RIPng\) on page 204](#)
- [receive \(Protocols RIPng\) on page 205](#)
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- [route-timeout \(Protocols RIPng\) on page 207](#)
- [routing-instances \(Multiple Routing Entities\) on page 208](#)
- [send \(Protocols RIPng\) on page 209](#)
- [traceoptions \(Protocols RIPng\) on page 210](#)
- [update-interval \(Protocols RIPng\) on page 212](#)

export (Protocols RIPng)

Syntax	<code>export [<i>policy-names</i>];</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i>],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i>],</p> <p>[edit protocols ripng group <i>group-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	<p>Apply a policy or list of policies to routes being exported to the neighbors.</p> <p>By default, RIPng does not export routes it has learned to its neighbors. To have RIPng export routes, apply one or more export policies. To apply export policies and to filter routes being exported from the local routing device to its neighbors, include the export statement and list the name of the policy to be evaluated.</p> <p>You can define one or more export policies. If no routes match the policies, the local routing device does not export any routes to its neighbors. Export policies override any metric values determined through calculations involving the values configured with the metric-in and metric-out statements.</p>
Options	<i>policy-names</i> —Name of one or more policies.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • import on page 200

graceful-restart (Protocols RIPng)

Syntax	<pre>graceful-restart { disable; restart-time <i>seconds</i>; }</pre>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng], [edit protocols ripng], [edit routing-instances <i>routing-instance-name</i> protocols ripng]</p>
Release Information	<p>Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Configure graceful restart for RIPng.
Options	<p>disable—Disables graceful restart for RIPng.</p> <p>The remaining statement is explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>High Availability Feature Guide</i>

group (Protocols RIPvng)

Syntax	<pre> group <i>group-name</i> { export [<i>policy-names</i>]; metric-out <i>metric</i>; neighbor <i>neighbor-name</i> { import <i>policy-name</i>; metric-in <i>metric</i>; receive <none>; route-timeout <i>seconds</i>; send <none>; update-interval <i>seconds</i>; } preference <i>number</i>; route-timeout <i>seconds</i>; update-interval <i>seconds</i>; } </pre>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols ripng],</p> <p>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng],</p> <p>[edit protocols ripng],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols ripng]</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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	<p>Configure a set of RIPvng neighbors that share an export policy and metric. The export policy and metric govern what routes to advertise to neighbors in a given group.</p> <p>Each group must contain at least one neighbor. You should create a group for each export policy that you have.</p>
Options	<p><i>group-name</i>—Name of a group, up to 16 characters long.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

holddown (Protocols RIPng)

Syntax	<code>holddown <i>seconds</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols ripng],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng],</code> <code>[edit protocols ripng],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols ripng]</code>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Configure how long the expired route is retained in the routing table before being removed.
Options	<p><i>seconds</i>—Estimated time to wait before removing expired routes from the routing table.</p> <p>Default: 180 seconds</p> <p>Range: 10 through 180 seconds</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring RIPng Update Interval on page 133

import (Protocols RIPng)

Syntax	<code>import [<i>policy-names</i>];</code>
Hierarchy Level	<pre> [edit logical-systems <i>logical-system-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols ripng], [edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols ripng], [edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>] </pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Apply one or more policies to routes being imported into the local routing device from its neighbors.
Options	<i>policy-names</i> —Name of one or more policies.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Applying Policies to RIPng Routes Imported from Neighbors on page 113 • export on page 196

metric-in (Protocols RIPng)

Syntax	<code>metric-in <i>metric</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols ripng], [edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols ripng], [edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Specify the metric to add to incoming routes when advertising into RIPng routes that were learned from other protocols. Use this statement to configure the routing device to prefer RIPng routes learned through a specific neighbor.
Options	<p><i>metric</i>—Metric value.</p> <p>Range: 1 through 16</p> <p>Default: 1</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring the Metric Value Added to Imported RIPng Routes to Control the Route Selection Process on page 128

metric-out (Protocols RIPng)

Syntax	<code>metric-out <i>metric</i>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	<p>Specify the metric value to add to routes transmitted to the neighbor. Use this statement to control how other routing devices prefer RIPng routes sent from this neighbor.</p> <p>When an export policy is configured, RIPng exports all learned routes to neighbors configured with the neighbor statement.</p> <p>If a route being exported was learned from a member of the same RIPng group, the metric associated with that route (unless modified by an export policy) is the normal RIPng metric. For example, a RIPng route with a metric of 5 learned from a neighbor configured with a metric-in value of 2 is advertised with a combined metric of 7 when advertised to RIPng neighbors in the same group. However, if this route was learned from a RIPng neighbor in a different group or from a different protocol, the route is advertised with the metric value configured for that group with the metric-out statement. The default value for metric-out is 1.</p> <p>To modify the metric for routes advertised outside a group, include the metric-out statement.</p>
Options	<p>metric—Metric value.</p> <p>Range: 1 through 16</p> <p>Default: 1</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Example: Configuring the Metric Value Added to Imported RIPng Routes to Control the Route Selection Process on page 128 Understanding RIPng Traffic Control with Metrics for Optimizing the Path Cost on page 127

neighbor (Protocols RIPng)

Syntax	<pre>neighbor <i>neighbor-name</i> { import [<i>policy-names</i>]; metric-in <i>metric</i>; receive <none>; route-timeout <i>seconds</i>; send <none>; update-interval <i>seconds</i>; }</pre>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i>], [edit protocols ripng group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i>]</pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	<p>Configure neighbor-specific RIPng parameters, thereby overriding the defaults set for the routing device.</p>
Options	<p><i>neighbor-name</i>—Name of an interface over which a routing device communicates to its neighbors.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

preference (Protocols RIPng)

Syntax	<code>preference <i>preference</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code>ripng group <i>group-name</i>],</code> <code>[edit protocols ripng group <i>group-name</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Support for routing instances introduced in Junos OS Release 9.0.
Description	<p>Specify the preference of external routes learned by RIPng as compared to those learned from other routing protocols.</p> <p>By default, Junos OS assigns a preference of 100 to routes that originate from RIPng. When Junos OS determines that a route is to become the active route, the software selects the route with the lowest preference and installs this route into the forwarding table.</p> <p>To modify the default RIPng preference value, include the preference statement.</p>
Options	<p>preference—Preference value. A lower value indicates a more preferred route.</p> <p>Range: 0 through 4,294,967,295 ($2^{32} - 1$)</p> <p>Default: 100</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

receive (Protocols RIPng)

Syntax	<code>receive <none>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols ripng], [edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols ripng], [edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Enable or disable receiving of update messages.
Options	<p>none—(Optional) Disable receiving update messages.</p> <p>Default: Enabled</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • send on page 209

ripng

Syntax	ripng {...}
Hierarchy Level	[edit logical-systems <i>logical-system-name</i> protocols], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols], [edit protocols], [edit routing-instances <i>routing-instance-name</i> protocols]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Support for routing instances introduced in Junos OS Release 9.0.
Description	Enable RIPng routing on the routing device.
Default	RIPng is disabled on the routing device.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

route-timeout (Protocols RIPng)

Syntax	<code>route-timeout <i>seconds</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols ripng],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng],</code> <code>[edit protocols ripng],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols ripng]</code>
Release Information	<p>Statement introduced in Junos OS Release 7.6.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Configure the route timeout interval for RIPng.
Options	<p><i>seconds</i>—Estimated time to wait before making updates to the routing table.</p> <p>Range: 30 through 360 seconds</p> <p>Default: 180 seconds</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring RIPng Update Interval on page 133

routing-instances (Multiple Routing Entities)

Syntax	<code>routing-instances <i>routing-instance-name</i> { ... }</code>
Hierarchy Level	<code>[edit],</code> <code>[edit logical-systems <i>logical-system-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. remote-vtep-v6-list statement introduced in Junos OS Release 17.3 for MX Series routers with MPC and MIC interfaces.
Description	<p>Configure an additional routing entity for a router. You can create multiple instances of BGP, IS-IS, OSPF, OSPFv3, and RIP for a router. You can also create multiple routing instances for separating routing tables, routing policies, and interfaces for individual wholesale subscribers (retailers) in a Layer 3 wholesale network.</p> <p>Each routing instance consist of the following:</p> <ul style="list-style-type: none"> • A set of routing tables • A set of interfaces that belong to these routing tables • A set of routing option configurations <p>Each routing instance has a unique name and a corresponding IP unicast table. For example, if you configure a routing instance with the name my-instance, its corresponding IP unicast table is <code>my-instance.inet.0</code>. All routes for my-instance are installed into <code>my-instance.inet.0</code>.</p> <p>Routes are installed into the default routing instance <code>inet.0</code> by default, unless a routing instance is specified.</p> <p>In Junos OS Release 9.0 and later, you can no longer specify a routing-instance name of <i>master</i>, <i>default</i>, or <i>bgp</i> or include special characters within the name of a routing instance.</p> <p>In Junos OS Release 9.6 and later, you can include a slash (/) in a routing-instance name only if a logical system is not configured. That is, you cannot include the slash character in a routing-instance name if a logical system other than the default is explicitly configured. Routing-instance names, further, are restricted from having the form <code>__.*__</code> (beginning and ending with underscores). The colon <code>:</code> character cannot be used when multitopology routing (MTR) is enabled.</p>
Default	Routing instances are disabled for the router.
Options	<p><i>routing-instance-name</i>—Name of the routing instance. This must be a non-reserved string of not more than 128 characters.</p> <p><i>remote-vtep-list</i>—Configure static remote VXLAN tunnel endpoints.</p>

remote-vtep-v6-list—Configure static IPv6 remote VXLAN tunnel endpoints.

Required Privilege Level	routing—To view this statement in the configuration.
	routing-control—To add this statement to the configuration.
Related Documentation	• <i>Example: Configuring Interprovider Layer 3 VPN Option A</i>
	• <i>Example: Configuring Interprovider Layer 3 VPN Option B</i>
	• <i>Example: Configuring Interprovider Layer 3 VPN Option C</i>

send (Protocols RIPng)

Syntax	<code>send <none>;</code>
Hierarchy Level	<pre>[edit logical-systems <i>logical-system-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> protocols ripng group <i>group-name</i> <i>neighbor neighbor-name</i>], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instances-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>], [edit protocols ripng], [edit protocols ripng group <i>group-name</i> <i>neighbor neighbor-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols ripng], [edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>]</pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Enable or disable sending of update messages.
Options	<p>none—(Optional) Disable sending of update messages.</p> <p>Default: Enabled</p>
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
Related Documentation	• receive on page 205

traceoptions (Protocols RIPng)

Syntax	<pre> traceoptions { file <i>filename</i> <files <i>number</i>> <size <i>size</i>> <world-readable no-world-readable>; flag <i>flag</i> <flag-modifier> <disable>; } </pre>
Hierarchy Level	<pre> [edit logical-systems <i>logical-system-name</i> protocols ripng], [edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols ripng], [edit protocols ripng], [edit routing-instances <i>routing-instance-name</i> protocols ripng] </pre>
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>Support for routing instances introduced in Junos OS Release 9.0.</p>
Description	Set RIPng protocol-level tracing options.
Default	The default RIPng protocol-level trace options are inherited from the global traceoptions statement.
Options	<p>disable—(Optional) Disable the tracing operation. One use of this option is to disable a single operation when you have defined a broad group of tracing operations, such as all.</p> <p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks. We recommend that you place RIPng tracing output in the file <code>/var/log/ripng-log</code>.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files. When a trace file named trace-file reaches its maximum size, it is renamed trace-file.0, then trace-file.1, and so on, until the maximum number of trace files is reached. Then, the oldest trace file is overwritten. If you specify a maximum number of files, you must also specify a maximum file size with the size option.</p> <p>Range: 2 through 1000 files</p> <p>Default: 10 files</p> <p>flag <i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements.</p> <p>RIPng Tracing Options</p> <ul style="list-style-type: none"> error—RIPng error packets expiration—RIPng route expiration processing holddown—RIPng hold-down processing

- **nsr-synchronization**—Nonstop routing synchronization events
- **packets**—All RIPng packets
- **request**—RIPng information packets such as request, poll, and poll entry packets
- **trigger**—RIPng triggered updates
- **update**—RIPng update packets

Global Tracing Options

- **all**—All tracing operations
- **general**—A combination of the **normal** and **route** trace operations
- **normal**—All normal operations

Default: If you do not specify this option, only unusual or abnormal operations are traced.

- **policy**—Policy operations and actions
- **route**—Routing table changes
- **state**—State transitions
- **task**—Routing protocol task processing
- **timer**—Routing protocol timer processing

flag-modifier—(Optional) Modifier for the tracing flag. You can specify one or more of these modifiers:

- **detail**—Provide detailed trace information.
- **receive**—Trace the packets being received.
- **receive-detail**—Provide detailed trace information for packets being received.
- **send**—Trace the packets being transmitted.
- **send-detail**—Provide detailed trace information for packets being transmitted.

no-world-readable—(Optional) Do not allow any user to read 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. If you specify a maximum file size, you must also 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.

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

Related Documentation

- [Example: Tracing RIPng Protocol Traffic on page 140](#)

update-interval (Protocols RIPng)

Syntax update-interval *seconds*;

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

Release Information Statement introduced in Junos OS Release 7.6.
Statement introduced in Junos OS Release 9.0 for EX Series switches.
Support for routing instances introduced in Junos OS Release 9.0.

Description Configure the interval at which routes learned by RIPng are sent to neighbors.

Options *seconds*—Estimated time to wait before making updates to the routing table.
Range: 10 through 60 seconds
Default: 30 seconds

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

Related Documentation

- [Example: Configuring RIP Timers on page 43](#)

CHAPTER 7

RIP Operational Commands

- clear rip general-statistics
- clear rip statistics
- restart
- show policy
- show policy conditions
- show rip general-statistics
- show rip neighbor
- show rip statistics
- show route
- show route active-path
- show route advertising-protocol
- show route all
- show route best
- show route brief
- show route detail
- show route exact
- show route export
- show route extensive
- show route forwarding-table
- show route hidden
- show route inactive-path
- show route instance
- show route next-hop
- show route output
- show route protocol
- show route receive-protocol
- show route table

- `show route terse`
- `test policy`

clear rip general-statistics

List of Syntax	Syntax on page 215 Syntax (EX Series Switches and QFX Series) on page 215
Syntax	<pre>clear rip general-statistics <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches and QFX Series)	<pre>clear rip general-statistics</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> <p>Command introduced in Junos OS Release 12.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Clear RIP general statistics.
Options	<p>none—Clear RIP general statistics.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • show rip general-statistics on page 234
List of Sample Output	clear rip general-statistics on page 215
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear rip general-statistics

```
user@host> clear rip general-statistics
```

clear rip statistics

List of Syntax	Syntax on page 216 Syntax (EX Series Switches and QFX Series) on page 216
Syntax	<pre>clear rip statistics <instance (all <i>instance-name</i>)> <logical-system (all <i>logical-system-name</i>)> <neighbor> <peer (all <i>address</i>)></pre>
Syntax (EX Series Switches and QFX Series)	<pre>clear rip statistics <instance (all <i>instance-name</i>)> <neighbor></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Command introduced in Junos OS Release 12.1 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Description	Clear RIP statistics.
Options	<p>none—Reset RIP counters for all neighbors for all routing instances.</p> <p>instance (all <i>instance-name</i>)—(Optional) Clear RIP statistics for all instances or for the specified routing instance only.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p>neighbor—(Optional) Clear RIP statistics for the specified neighbor only.</p> <p>peer (all <i>address</i>)—(Optional) Clear RIP statistics for a single peer or all peers.</p>
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none">• show rip statistics on page 239
List of Sample Output	clear rip statistics on page 217
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear rip statistics

```
user@host> clear rip statistics
```

restart

- List of Syntax**
- [Syntax on page 218](#)
 - [Syntax \(ACX Series Routers\) on page 218](#)
 - [Syntax \(EX Series Switches\) on page 218](#)
 - [Syntax \(MX Series Routers\) on page 219](#)
 - [Syntax \(QFX Series\) on page 219](#)
 - [Syntax \(Routing Matrix\) on page 219](#)
 - [Syntax \(TX Matrix Routers\) on page 220](#)
 - [Syntax \(TX Matrix Plus Routers\) on page 220](#)
 - [Syntax \(QFX Series\) on page 220](#)

Syntax `restart`

```
<adaptive-services | ancpd-service | application-identification | audit-process |
  auto-configuration | captive-portal-content-delivery | ce-l2tp-service | chassis-control |
  class-of-service | clksyncd-service | database-replication | datapath-trace-service
  | dhcp-service | diameter-service | disk-monitoring | dynamic-flow-capture |
  ecc-error-logging | ethernet-connectivity-fault-management
  | ethernet-link-fault-management | event-processing | firewall |
  general-authentication-service | gracefully | iccp-service | idp-policy | immediately
  | interface-control | ipsec-key-management | kernel-health-monitoring | kernel-replication
  | l2-learning | l2cpd-service | l2tp-service | l2tp-universal-edge | lacp | license-service
  | link-management | local-policy-decision-function | mac-validation | mib-process |
  mounstd-service | mpls-traceroute | mspd | multicast-snooping | named-service | nfsd-service
  | packet-triggered-subscribers | peer-selection-service | pgm | pic-services-logging |
  pki-service | ppp | ppp-service | pppoe | protected-system-domain-service |
  redundancy-interface-process | remote-operations | root-system-domain-service | routing
  <logical-system logical-system-name> | sampling | sbc-configuration-process | sdk-service
  | service-deployment | services | snmp | soft | static-subscribers | statistics-service |
  subscriber-management | subscriber-management-helper | tunnel-oamd | usb-control |
  vrrp | web-management>
<gracefully | immediately | soft>
```

Syntax (ACX Series Routers) `restart`

```
<adaptive-services | audit-process | auto-configuration | autoinstallation | chassis-control |
  class-of-service | clksyncd-service | database-replication | dhcp-service | diameter-service
  | disk-monitoring | dynamic-flow-capture | ethernet-connectivity-fault-management |
  ethernet-link-fault-management | event-processing | firewall |
  general-authentication-service | gracefully | immediately | interface-control |
  ipsec-key-management | l2-learning | lacp | link-management | mib-process | mounstd-service
  | mpls-traceroute | mspd | named-service | nfsd-service | pgm | pki-service | ppp | pppoe |
  redundancy-interface-process | remote-operations | routing | sampling | sdk-service
  | secure-neighbor-discovery | service-deployment | services | snmp | soft | statistics-service |
  subscriber-management | subscriber-management-helper | tunnel-oamd | vrrp>
```

Syntax (EX Series Switches) `restart`

```
<autoinstallation | chassis-control | class-of-service | database-replication | dhcp |
  dhcp-service | diameter-service | dot1x-protocol | ethernet-link-fault-management |
  ethernet-switching | event-processing | firewall | general-authentication-service |
```

```
interface-control | kernel-health-monitoring | kernel-replication | l2-learning | lacp |
license-service | link-management | lldpd-service | mib-process | mounstd-service |
multicast-snooping | pgm | redundancy-interface-process | remote-operations | routing |
secure-neighbor-discovery | service-deployment | sflow-service | snmp | vrrp |
web-management>
```

Syntax (MX Series Routers)

```
restart
<adaptive-services | ancpd-service | application-identification | audit-process |
auto-configuration | bbe-stats-service | captive-portal-content-delivery | ce-l2tp-service
| chassis-control | class-of-service | clksyncd-service | database-replication |
datapath-trace-service | dhcp-service | diameter-service | disk-monitoring |
dynamic-flow-capture | ecc-error-logging | ethernet-connectivity-fault-management |
ethernet-link-fault-management | event-processing | firewall |
general-authentication-service | gracefully | iccp-service | idp-policy | immediately
| interface-control | ipsec-key-management | kernel-health-monitoring | kernel-replication
| l2-learning | l2cpd-service | l2tp-service | l2tp-universal-edge | lacp | license-service |
link-management | local-policy-decision-function | mac-validation | mib-process |
mounstd-service | mpls-traceroute | mspd | multicast-snooping | named-service | nfsd-service
| packet-triggered-subscribers | peer-selection-service | pgm | pic-services-logging |
pki-service | ppp | ppp-service | pppoe | protected-system-domain-service |
redundancy-interface-process | remote-operations | root-system-domain-service | routing
| routing <logical-system logical-system-name> | sampling | sbc-configuration-process |
sdk-service | service-deployment | services | snmp | soft | static-subscribers
| statistics-service | subscriber-management | subscriber-management-helper | tunnel-oam |
usb-control | vrrp | web-management>
<all-members>
<gracefully | immediately | soft>
<local>
<member member-id>
```

Syntax (QFX Series)

```
restart
<adaptive-services | audit-process | chassis-control | class-of-service | dialer-services |
diameter-service | dlsd | ethernet-connectivity | event-processing | fibre-channel | firewall
| general-authentication-service | igmp-host-services | interface-control |
ipsec-key-management | isdn-signaling | l2ald | l2-learning | l2tp-service | mib-process |
named-service | network-access-service | nstrace-process | pgm | ppp | pppoe |
redundancy-interface-process | remote-operations | logical-system-name> | routing |
sampling | secure-neighbor-discovery | service-deployment | snmp | usb-control |
web-management>
<gracefully | immediately | soft>
```

Syntax (Routing Matrix)

```
restart
<adaptive-services | audit-process | chassis-control | class-of-service | disk-monitoring |
dynamic-flow-capture | ecc-error-logging | event-processing | firewall | interface-control
| ipsec-key-management | kernel-replication | l2-learning | l2tp-service | lacp |
link-management | mib-process | pgm | pic-services-logging | ppp | pppoe |
redundancy-interface-process | remote-operations | routing <logical-system
logical-system-name> | sampling | service-deployment | snmp>
<all | all-lcc | lcc number>
<gracefully | immediately | soft>
```

Syntax (TX Matrix Routers)	<pre>restart <adaptive-services audit-process chassis-control class-of-service dhcp-service diameter-service disk-monitoring dynamic-flow-capture ecc-error-logging event-processing firewall interface-control ipsec-key-management kernel-replication l2-learning l2tp-service lacp link-management mib-process pgm pic-services-logging ppp pppoe redundancy-interface-process remote-operations routing <logical-system logical-system-name> sampling service-deployment snmp statistics-service> <all-chassis all-lcc lcc number scc> <gracefully immediately soft></pre>
Syntax (TX Matrix Plus Routers)	<pre>restart <adaptive-services audit-process chassis-control class-of-service dhcp-service diameter-service disk-monitoring dynamic-flow-capture ecc-error-logging event-processing firewall interface-control ipsec-key-management kernel-replication l2-learning l2tp-service lacp link-management mib-process pgm pic-services-logging ppp pppoe redundancy-interface-process remote-operations routing <logical-system logical-system-name> sampling service-deployment snmp statistics-service> <all-chassis all-lcc all-sfc lcc number sfc number> <gracefully immediately soft></pre>
Syntax (QFX Series)	<pre>restart <adaptive-services audit-process chassis-control class-of-service dialer-services diameter-service dlsf ethernet-connectivity event-processing fibre-channel firewall general-authentication-service igmp-host-services interface-control ipsec-key-management isdn-signaling l2ald l2-learning l2tp-service mib-process named-service network-access-service nstrace-process pgm ppp pppoe redundancy-interface-process remote-operations logical-system-name> routing sampling secure-neighbor-discovery service-deployment snmp usb-control web-management> <gracefully immediately soft></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> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series routers.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p> <p>Options added:</p> <ul style="list-style-type: none"> • dynamic-flow-capture in Junos OS Release 7.4. • dlsf in Junos OS Release 7.5. • event-processing in Junos OS Release 7.5. • ppp in Junos OS Release 7.5. • l2ald in Junos OS Release 8.0. • link-management in Junos Release 8.0. • pgcp-service in Junos OS Release 8.4.

- **sbcc-configuration-process** in Junos OS Release 9.5.
- **services pgcp gateway** in Junos OS Release 9.6.
- **sfc** and **all-sfc** for the TX Matrix Router in Junos OS Release 9.6.
- **bbe-stats-service** in Junos OS Release 18.4R1 on MX Series routers.
- **kernel-health-monitoring** in Junos OS Release 19.1R1.

Description Restart a Junos OS process.



CAUTION: Never restart a software process unless instructed to do so by a customer support engineer. A restart might cause the router or switch to drop calls and interrupt transmission, resulting in possible loss of data.

Options **none**—Same as **gracefully**.

adaptive-services—(Optional) Restart the configuration management process that manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection services (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Restart the software process on all chassis.

all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process on all T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process on all T1600 routers connected to the TX Matrix Plus router.

all-members—(MX Series routers only) (Optional) Restart the software process for all members of the Virtual Chassis configuration.

all-sfc—(TX Matrix Plus routers only) (Optional) For a TX Matrix Plus router, restart the software processes for the TX Matrix Plus router (or switch-fabric chassis).

ancpd-service—(Optional) Restart the Access Node Control Protocol (ANCP) process, which works with a special Internet Group Management Protocol (IGMP) session to collect outgoing interface mapping events in a scalable manner.

application-identification—(Optional) Restart the process that identifies an application using intrusion detection and prevention (IDP) to allow or deny traffic based on applications running on standard or nonstandard ports.

audit-process—(Optional) Restart the RADIUS accounting process that gathers statistical data that can be used for general network monitoring, analyzing, and tracking usage patterns, for billing a user based on the amount of time or type of services accessed.

auto-configuration—(Optional) Restart the Interface Auto-Configuration process.

autoinstallation—(EX Series switches only) (Optional) Restart the autoinstallation process.

bbe-stats-service—(MX Series routers only) (Optional) Restart bbe-statsd, the BBE statistics collection and management process.

captive-portal-content-delivery—(Optional) Restart the HTTP redirect service by specifying the location to which a subscriber's initial Web browser session is redirected, enabling initial provisioning and service selection for the subscriber.

ce-l2tp-service—(M10, M10i, M7i, and MX Series routers only) (Optional) Restart the Universal Edge Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.

chassis-control—(Optional) Restart the chassis management process.

class-of-service—(Optional) Restart the class-of-service (CoS) process, which controls the router's or switch's CoS configuration.

clksyncd-service—(Optional) Restart the external clock synchronization process, which uses synchronous Ethernet (SyncE).

database-replication—(EX Series switches and MX Series routers only) (Optional) Restart the database replication process.

datapath-trace-service—(Optional) Restart the packet path tracing process.

dhcp—(EX Series switches only) (Optional) Restart the software process for a Dynamic Host Configuration Protocol (DHCP) server. A DHCP server allocates network IP addresses and delivers configuration settings to client hosts without user intervention.

dhcp-service—(Optional) Restart the Dynamic Host Configuration Protocol process.

dialer-services—(EX Series switches only) (Optional) Restart the ISDN dial-out process.

diameter-service—(Optional) Restart the diameter process.

disk-monitoring—(Optional) Restart disk monitoring, which checks the health of the hard disk drive on the Routing Engine.

dls—(QFX Series only) (Optional) Restart the data link switching (DLSw) service.

dot1x-protocol—(EX Series switches only) (Optional) Restart the port-based network access control process.

dynamic-flow-capture—(Optional) Restart the dynamic flow capture (DFC) process, which controls DFC configurations on Monitoring Services III PICs.

ecc-error-logging—(Optional) Restart the error checking and correction (ECC) process, which logs ECC parity errors in memory on the Routing Engine.

ethernet-connectivity-fault-management—(Optional) Restart the process that provides IEEE 802.1ag Operation, Administration, and Management (OAM) connectivity fault

management (CFM) database information for CFM maintenance association end points (MEPs) in a CFM session.

ethernet-link-fault-management—(EX Series switches and MX Series routers only) (Optional) Restart the process that provides the OAM link fault management (LFM) information for Ethernet interfaces.

ethernet-switching—(EX Series switches only) (Optional) Restart the Ethernet switching process.

event-processing—(Optional) Restart the event process (eventd).

fibre-channel—(QFX Series only) (Optional) Restart the Fibre Channel process.

firewall—(Optional) Restart the firewall management process, which manages the firewall configuration and enables accepting or rejecting packets that are transiting an interface on a router or switch.

general-authentication-service—(EX Series switches and MX Series routers only) (Optional) Restart the general authentication process.

gracefully—(Optional) Restart the software process.

iccp-service—(Optional) Restart the Inter-Chassis Communication Protocol (ICCP) process.

idp-policy—(Optional) Restart the intrusion detection and prevention (IDP) protocol process.

immediately—(Optional) Immediately restart the software process.

interface-control—(Optional) Restart the interface process, which controls the router's or switch's physical interface devices and logical interfaces.

ipsec-key-management—(Optional) Restart the IPsec key management process.

isdn-signaling—(QFX Series only) (Optional) Restart the ISDN signaling process, which initiates ISDN connections.

kernel-health-monitoring—(Optional) Restart the Routing Engine kernel health monitoring process, which enables health parameter data to be sent from kernel components to data collection applications. When you change the polling interval through `sysctl kern.jkhmd_polling_time_secs`, you must restart the kernel health monitoring process for the new polling interval to take effect.

kernel-replication—(Optional) Restart the kernel replication process, which replicates the state of the backup Routing Engine when graceful Routing Engine switchover (GRES) is configured.

l2-learning—(Optional) Restart the Layer 2 address flooding and learning process.

l2cpd-service—(Optional) Restart the Layer 2 Control Protocol process, which enables features such as Layer 2 protocol tunneling and nonstop bridging.

l2tp-service— (M10, M10i, M7i, and MX Series routers only) (Optional) Restart the Layer 2 Tunneling Protocol (L2TP) process, which sets up client services for establishing Point-to-Point Protocol (PPP) tunnels across a network and negotiating Multilink PPP if it is implemented.

l2tp-universal-edge— (MX Series routers only) (Optional) Restart the L2TP process, which establishes L2TP tunnels and PPP sessions through L2TP tunnels.

lACP— (Optional) Restart the Link Aggregation Control Protocol (LACP) process. LACP provides a standardized means for exchanging information between partner systems on a link to allow their link aggregation control instances to reach agreement on the identity of the LAG to which the link belongs, and then to move the link to that LAG, and to enable the transmission and reception processes for the link to function in an orderly manner.

lcc *number*— (TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process for a specific T640 router that is connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process for a specific router that is 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.

license-service— (EX Series switches only) (Optional) Restart the feature license management process.

link-management— (TX Matrix and TX Matrix Plus routers and EX Series switches only) (Optional) Restart the Link Management Protocol (LMP) process, which establishes and maintains LMP control channels.

lldpd-service— (EX Series switches only) (Optional) Restart the Link Layer Discovery Protocol (LLDP) process.

local— (MX Series routers only) (Optional) Restart the software process for the local Virtual Chassis member.

local-policy-decision-function— (Optional) Restart the process for the Local Policy Decision Function, which regulates collection of statistics related to applications and application groups and tracking of information about dynamic subscribers and static interfaces.

mac-validation— (Optional) Restart the Media Access Control (MAC) validation process, which configures MAC address validation for subscriber interfaces created on demux interfaces in dynamic profiles on MX Series routers.

member *member-id*—(MX Series routers only) (Optional) Restart the software process for a specific member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

mib-process—(Optional) Restart the Management Information Base (MIB) version II process, which provides the router's MIB II agent.

mobile-ip—(Optional) Restart the Mobile IP process, which configures Junos OS Mobile IP features.

mountd-service—(EX Series switches and MX Series routers only) (Optional) Restart the service for NFS mount requests.

mpls-traceroute—(Optional) Restart the MPLS Periodic Traceroute process.

mspd—(Optional) Restart the Multiservice process.

multicast-snooping—(EX Series switches and MX Series routers only) (Optional) Restart the multicast snooping process, which makes Layer 2 devices, such as VLAN switches, aware of Layer 3 information, such as the media access control (MAC) addresses of members of a multicast group.

named-service—(Optional) Restart the DNS Server process, which is used by a router or a switch to resolve hostnames into addresses.

network-access-service—(QFX Series only) (Optional) Restart the network access process, which provides the router's Challenge Handshake Authentication Protocol (CHAP) authentication service.

nfsd-service—(Optional) Restart the Remote NFS Server process, which provides remote file access for applications that need NFS-based transport.

packet-triggered-subscribers—(Optional) Restart the packet-triggered subscribers and policy control (PTSP) process, which allows the application of policies to dynamic subscribers that are controlled by a subscriber termination device.

peer-selection-service—(Optional) Restart the Peer Selection Service process.

pgcp-service—(Optional) Restart the pgcpd service process running on the Routing Engine. This option does not restart pgcpd processes running on mobile station PICs. To restart pgcpd processes running on mobile station PICs, use the **services pgcp gateway** option.

pgm—(Optional) Restart the process that implements the Pragmatic General Multicast (PGM) protocol for assisting in the reliable delivery of multicast packets.

pic-services-logging—(Optional) Restart the logging process for some PICs. With this process, also known as fsad (the file system access daemon), PICs send special logging information to the Routing Engine for archiving on the hard disk.

pki-service—(Optional) Restart the PKI Service process.

ppp—(Optional) Restart the Point-to-Point Protocol (PPP) process, which is the encapsulation protocol process for transporting IP traffic across point-to-point links.

ppp-service—(Optional) Restart the Universal edge PPP process, which is the encapsulation protocol process for transporting IP traffic across universal edge routers.

pppoe—(Optional) Restart the Point-to-Point Protocol over Ethernet (PPPoE) process, which combines PPP that typically runs over broadband connections with the Ethernet link-layer protocol that allows users to connect to a network of hosts over a bridge or access concentrator.

protected-system-domain-service—(Optional) Restart the Protected System Domain (PSD) process.

redundancy-interface-process—(Optional) Restart the ASP redundancy process.

remote-operations—(Optional) Restart the remote operations process, which provides the ping and traceroute MIBs.

root-system-domain-service—(Optional) Restart the Root System Domain (RSD) service.

routing—(ACX Series routers, QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the routing protocol process.

routing <logical-system *logical-system-name*>—(Optional) Restart the routing protocol process, which controls the routing protocols that run on the router or switch and maintains the routing tables. Optionally, restart the routing protocol process for the specified logical system only.

sampling—(Optional) Restart the sampling process, which performs packet sampling based on particular input interfaces and various fields in the packet header.

sbc-configuration-process—(Optional) Restart the session border controller (SBC) process of the border signaling gateway (BSG).

scc—(TX Matrix routers only) (Optional) Restart the software process on the TX Matrix router (or switch-card chassis).

sdk-service—(Optional) Restart the SDK Service process, which runs on the Routing Engine and is responsible for communications between the SDK application and Junos OS. Although the SDK Service process is present on the router, it is turned off by default.

secure-neighbor-discovery—(QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the secure Neighbor Discovery Protocol (NDP) process, which provides support for protecting NDP messages.

sfc *number*—(TX Matrix Plus routers only) (Optional) Restart the software process on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

service-deployment—(Optional) Restart the service deployment process, which enables Junos OS to work with the Session and Resource Control (SRC) software.

services—(Optional) Restart a service.

services pgcp gateway *gateway-name*—(Optional) Restart the pgcpd process for a specific border gateway function (BGF) running on an MS-PIC. This option does not restart the pgcpd process running on the Routing Engine. To restart the pgcpd process on the Routing Engine, use the **pgcp-service** option.

sflow-service—(EX Series switches only) (Optional) Restart the flow sampling (sFlow technology) process.

snmp—(Optional) Restart the SNMP process, which enables the monitoring of network devices from a central location and provides the router's or switch's SNMP master agent.

soft—(Optional) Reread and reactivate the configuration without completely restarting the software processes. For example, BGP peers stay up and the routing table stays constant. Omitting this option results in a graceful restart of the software process.

static-subscribers—(Optional) Restart the static subscribers process, which associates subscribers with statically configured interfaces and provides dynamic service activation and activation for these subscribers.

statistics-service—(Optional) Restart the process that manages the Packet Forwarding Engine statistics.

subscriber-management—(Optional) Restart the Subscriber Management process.

subscriber-management-helper—(Optional) Restart the Subscriber Management Helper process.

tunnel-oamd—(Optional) Restart the Tunnel OAM process, which enables the Operations, Administration, and Maintenance of Layer 2 tunneled networks. Layer 2 protocol tunneling (L2PT) allows service providers to send Layer 2 protocol data units (PDUs) across the provider's cloud and deliver them to Juniper Networks EX Series Ethernet Switches that are not part of the local broadcast domain.

usb-control—(MX Series routers) (Optional) Restart the USB control process.

vrrp—(ACX Series routers, EX Series switches, and MX Series routers only) (Optional) Restart the Virtual Router Redundancy Protocol (VRRP) process, which enables hosts on a LAN to make use of redundant routing platforms on that LAN without requiring more than the static configuration of a single default route on the hosts.

web-management—(QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the Web management process.

Required Privilege Level reset

Related Documentation • *Overview of Junos OS CLI Operational Mode Commands*

List of Sample Output [restart interface-control gracefully on page 228](#)

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

`restart interface-control gracefully`

```
user@host> restart interface-control gracefully
Interface control process started, pid 41129
```

show policy

List of Syntax	Syntax on page 229 Syntax (EX Series Switches) on page 229
Syntax	<pre>show policy <logical-system (all <i>logical-system-name</i>)> <<i>policy-name</i>> <<i>statistics</i> ></pre>
Syntax (EX Series Switches)	<pre>show policy <<i>policy-name</i>></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> <p>statistics option introduced in Junos OS Release 16.1 for MX Series routers.</p>
Description	Display information about configured routing policies.
Options	<p>none—List the names of all configured routing policies.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>policy-name</i>—(Optional) Show the contents of the specified policy.</p> <p>statistics—(Optional) Use in conjunction with the test policy command to show the length of time (in microseconds) required to evaluate a given policy and the number of times it has been executed. This information can be used, for example, to help structure a policy so it is evaluated efficiently. Timers shown are per route; times are not cumulative. Statistics are incremented even when the router is learning (and thus evaluating) routes from peering routers.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show policy damping test policy on page 442
List of Sample Output	show policy on page 230 show policy policy-name on page 230 show policy statistics policy-name on page 230 show policy (Multicast Scoping) on page 231 show policy (Route Filter and source Address Filter Lists) on page 231

Output Fields Table 7 on page 230 lists the output fields for the **show policy** command. Output fields are listed in the approximate order in which they appear.

Table 7: *show policy* Output Fields

Field Name	Field Description
<i>policy-name</i>	Name of the policy listed.
<i>term</i>	Name of the user-defined policy term. The term name unnamed is used for policy elements that occur outside of user defined terms
<i>from</i>	Match condition for the policy.
<i>then</i>	Action for the policy.

Sample Output

show policy

```
user@host> show policy
Configured policies:
__vrf-export-red-internal__
__vrf-import-red-internal__
red-export
rf-test-policy
multicast-scoping
```

show policy policy-name

```
user@host> show policy vrf-import-red-internal
Policy vrf-import-red-internal:
  from
    203.0.113.0/28 accept
    203.0.113.32/28 accept
  then reject
```

show policy statistics policy-name

```
user@host> show policy statistics iBGP-v4-RR-Import
Policy iBGP-v4-RR-Import:
  [1243328] Term Lab-Infra:
    from [1243328 0] proto BGP
      [28 0] route filter:
        10.11.0.0/8 orlonger
        10.13.0.0/8 orlonger
    then [28 0] accept
  [1243300] Term External:
    from [1243300 1] proto BGP
      [1243296 0] community Ext-Com1 [64496:1515 ]
      [1243296 0] prefix-list-filter Customer-Routes
      [1243296 0] aspath AS6221
      [1243296 1] route filter:
```

```

172.16.49.0/12 orlonger
172.16.50.0/12 orlonger
172.16.51.0/12 orlonger
172.16.52.0/12 orlonger
172.16.56.0/12 orlonger
172.16.60.0/12 orlonger
then [1243296 2] community + Ext-Com2 [64496:2000 ] [1243296 0] accept
[4] Term Final:
then [4 0] reject

```

show policy (Multicast Scoping)

```
user@host> show policy multicast-scoping
```

```

Policy multicast-scoping:
  from
    multicast-scope == 8
  then
    accept

```

show policy (Route Filter and source Address Filter Lists)

```
user@host> show policy rf-test-policy
```

```

Policy rf-test-policy:
  Term term1:
    from source-address-filter-list saf-list-1
    source-address filter:
      192.0.2.0/29 longer
      192.0.2.64/28 exact
      192.0.2.128/28 exact
      192.0.2.160/28 orlonger
  Term term2:
    from route-filter-list rf-list-1
    route filter:
      198.51.100.0/29 upto 198.51.100.0/30
      198.51.100.8/29 upto 198.51.100.8/30 accept
  Term unnamed:
    then reject

```

show policy conditions

Syntax	<pre>show policy conditions <condition-name> <detail> <dynamic> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switches)	<pre>show policy conditions <condition-name> <detail> <dynamic></pre>
Release Information	<p>Command introduced in Junos OS Release 9.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	<p>Display all the configured conditions as well as the routing tables with which the configuration manager is interacting. If the detail keyword is included, the output also displays dependent routes for each condition.</p>
Options	<p>none—Display all configured conditions and associated routing tables.</p> <p>condition-name—(Optional) Display information about the specified condition only.</p> <p>detail—(Optional) Display the specified level of output.</p> <p>dynamic—(Optional) Display information about the conditions in the dynamic database.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show policy conditions detail on page 233
Output Fields	<p>Table 8 on page 232 lists the output fields for the show policy conditions command. Output fields are listed in the approximate order in which they appear.</p>

Table 8: show policy conditions Output Fields

Field Name	Field Description	Level of Output
Condition	Name of configured condition.	All levels
event	Condition type. If the if-route-exists option is configured, the event type is: Existence of a route in a specific routing table.	All levels

Table 8: show policy conditions Output Fields (continued)

Field Name	Field Description	Level of Output
Dependent routes	List of routes dependent on the condition, along with the latest generation number.	detail
Condition tables	List of routing tables associated with the condition, along with the latest generation number and number of dependencies.	All levels
If-route-exists conditions	List of conditions configured to look for a route in the specified table.	All levels

Sample Output

show policy conditions detail

```

user@host> show policy conditions detail

Configured conditions:
Condition cond1, event: Existence of a route in a specific routing table
Dependent routes:
  172.16.4.4/32, generation 3
  6.6.6.6/32, generation 3
  10.10.10.10/32, generation 3

Condition cond2, event: Existence of a route in a specific routing table
Dependent routes:
None

Condition tables:
Table inet.0, generation 4, dependencies 3, If-route-exists conditions: cond1
(static) cond2 (static)

```

show rip general-statistics

List of Syntax [Syntax on page 234](#)
[Syntax \(EX Series Switches and QFX Series\) on page 234](#)

Syntax `show rip general-statistics`
`<logical-system (all | logical-system-name)>`

Syntax (EX Series Switches and QFX Series) `show rip general-statistics`

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.
 Command introduced in Junos OS Release 12.1 for the QFX Series.
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description Display brief RIP statistics.

Options **none**—Display brief RIP statistics.
logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level view

Related Documentation

- [clear rip general-statistics on page 215](#)

List of Sample Output [show rip general-statistics on page 235](#)

Output Fields [Table 9 on page 234](#) lists the output fields for the **show rip general-statistics** command. Output fields are listed in the approximate order in which they appear.

Table 9: show rip general-statistics Output Fields

Field Name	Field Description
bad msgs	Number of invalid messages received.
no rcv intf	Number of packets received with no matching interface.
curr memory	Amount of memory currently used by RIP.
max memory	Most memory used by RIP.

Sample Output

show rip general-statistics

```
user@host> show rip general-statistics
```

```
RIPv2 I/O info:
```

bad msgs	:	0
no recv intf	:	0
curr memory	:	0
max memory	:	0

show rip neighbor

List of Syntax [Syntax on page 236](#)
 [Syntax \(EX Series Switches and QFX Series\) on page 236](#)

Syntax show rip neighbor
 <instance (all | *instance-name*)>
 <logical-system (all | *logical-system-name*)>
 <name>

Syntax (EX Series Switches and QFX Series) show rip neighbor
 <instance (all | *instance-name*)>
 <name>

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.
 Command introduced in Junos OS Release 12.1 for the QFX Series.
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.

Description Display information about RIP neighbors.

Options **none**—Display information about all RIP neighbors for all instances.

instance (all | *instance-name*)—(Optional) Display RIP neighbor information for all instances or for only the specified routing instance.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Display detailed information about only the specified RIP neighbor.

Required Privilege Level view

List of Sample Output [show rip neighbor on page 237](#)
 [show rip neighbor \(With Demand Circuits Configured\) on page 237](#)

Output Fields [Table 10 on page 237](#) lists the output fields for the **show rip neighbor** command. Output fields are listed in the approximate order in which they appear.

Table 10: show rip neighbor Output Fields

Field Name	Field Description
Neighbor	Name of the RIP neighbor. NOTE: Beginning with Junos OS Release 11.1, when you configure demand circuits, the output displays a demand circuit (DC) flag next to neighbor interfaces configured for demand circuits. If you configure demand circuits at the [edit protocols rip group group-name neighbor neighbor-name] hierarchy level, the output shows only the neighboring interface that you specifically configured as a demand circuit. If you configure demand circuits at the [edit protocols rip group group-name] hierarchy level, all of the interfaces in the group are configured as demand circuits. Therefore, the output shows all of the interfaces in that group as demand circuits.
State	State of the connection: Up or Dn (Down).
Source Address	Address of the port on the local router.
Destination Address	Address of the port on the remote router.
Send Mode	Send options: broadcast , multicast , none , or version 1 .
Receive Mode	Type of packets to accept: both , none , version 1 , or version 2 .
In Met	Metric added to incoming routes when advertising into RIP routes that were learned from other protocols.

Sample Output

show rip neighbor

```
user@host> show rip neighbor
```

Neighbor	Local State	Source Address	Destination Address	Send Mode	Receive Mode	In Met
ge-2/3/0.0	Up	192.168.9.105	192.168.9.107	bcast	both	1
at-5/1/1.42	Dn	(null)	(null)	mcast	v2 only	3
at-5/1/0.42	Dn	(null)	(null)	mcast	both	3
at-5/1/0.0	Up	198.51.100.0	224.0.0.9	mcast	both	3
so-0/0/0.0	Up	192.168.9.97	224.0.0.9	mcast	both	3

show rip neighbor (With Demand Circuits Configured)

```
user@host> show rip neighbor
```

Neighbor	Local State	Source Address	Destination Address	Send Mode	Receive Mode	In Met
so-0/1/0.0(DC)	Up	10.10.10.2	224.0.0.9	mcast	both	1
so-0/2/0.0(DC)	Up	192.0.2.2	224.0.0.9	mcast	both	1

show rip statistics

List of Syntax	Syntax on page 239 Syntax (EX Series Switches and QFX Series) on page 239
Syntax	<pre>show rip statistics <instance (all <i>instance-name</i>)> <logical-system (all <i>logical-system-name</i>)> <name> <peer (all <i>address</i>)></pre>
Syntax (EX Series Switches and QFX Series)	<pre>show rip statistics <instance (all <i>instance-name</i>)> <name></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> <p>Command introduced in Junos OS Release 12.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Display RIP statistics about messages sent and received on an interface, as well as information received from advertisements from other routing devices.
Options	<p>none—Display RIP statistics for all routing instances.</p> <p>instance (all <i>instance-name</i>)—(Optional) Display RIP statistics for all instances or for only the specified routing instance.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p>name—(Optional) Display detailed information about only the specified RIP neighbor.</p> <p>peer (all <i>address</i>)—(Optional) Display RIP statistics for a single peer or all peers.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear rip statistics on page 216
List of Sample Output	show rip statistics on page 241
Output Fields	Table 11 on page 240 lists the output fields for the show rip statistics command. Output fields are listed in the approximate order in which they appear.

Table 11: show rip statistics Output Fields

Field Name	Field Description
RIP info	<p>Information about RIP on the specified interface:</p> <ul style="list-style-type: none"> • port—UDP port number used for RIP. • update interval—Interval between routing table updates, in seconds. • holddown—Hold-down interval, in seconds. • timeout—Timeout interval, in seconds. • restart in progress—Graceful restart status. Displayed when RIP is or has been in the process of graceful restart. • restart time—Estimated time for the graceful restart to finish, in seconds. • restart will complete in—Remaining time for the graceful restart to finish, in seconds. • rts learned—Number of routes learned through RIP. • rts held down—Number of routes held down by RIP. • rqsts dropped—Number of received request packets that were dropped. • resps dropped—Number of received response packets that were dropped.
logical-interface	<p>Name of the logical interface and its statistics:</p> <ul style="list-style-type: none"> • routes learned—Number of routes learned on the logical interface. • routes advertised—Number of routes advertised by the logical interface.
Counter	<p>List of counter types:</p> <ul style="list-style-type: none"> • Updates Sent—Number of update messages sent. • Triggered Updates Sent—Number of triggered update messages sent. • Responses Sent—Number of response messages sent. • Bad Messages—Number of invalid messages received. • RIPv1 Updates Received—Number of RIPv1 update messages received. • RIPv1 Bad Route Entries—Number of RIPv1 invalid route entry messages received. • RIPv1 Updates Ignored—Number of RIPv1 update messages ignored. • RIPv2 Updates Received—Number of RIPv2 update messages received. • RIPv2 Bad Route Entries—Number of RIPv2 invalid route entry messages received. • RIPv2 Updates Ignored—Number of RIPv2 update messages that were ignored. • Authentication Failures—Number of received update messages that failed authentication. • RIP Requests Received—Number of RIP request messages received. • RIP Requests Ignored—Number of RIP request messages ignored.
Total	Total number of packets for the selected counter.
Last 5 min	Number of packets for the selected counter in the most recent 5-minute period.
Last minute	Number of packets for the selected counter in the most recent 1-minute period.

Sample Output

show rip statistics

```
user@host> show rip statistics so-0/0/0.0
```

```
RIP info: port 520; update interval: 30s; holddown 180s; timeout 120s
restart in progress: restart time 60s; restart will complete in 55s
```

```
   rts learned   rts held down   rqsts dropped   resps dropped
           0             0             0             0
```

```
so-0/0/0.0: 0 routes learned; 501 routes advertised
```

Counter	Total	Last 5 min	Last minute
-----	-----	-----	-----
Updates Sent	0	0	0
Triggered Updates Sent	0	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
RIPv1 Updates Received	0	0	0
RIPv1 Bad Route Entries	0	0	0
RIPv1 Updates Ignored	0	0	0
RIPv2 Updates Received	0	0	0
RIPv2 Bad Route Entries	0	0	0
RIPv2 Updates Ignored	0	0	0
Authentication Failures	0	0	0
RIP Requests Received	0	0	0
RIP Requests Ignored	0	0	0

show route

List of Syntax [Syntax on page 242](#)
[Syntax \(EX Series Switches\) on page 242](#)

Syntax

```
show route
<all>
<destination-prefix>
<logical-system (all | logical-system-name)>
<private>
<te-ipv4-prefix-ip te-ipv4-prefix-ip>
<te-ipv4-prefix-node-ip te-ipv4-prefix-node-ip>
<te-ipv4-prefix-node-iso te-ipv4-prefix-node-iso>
```

Syntax (EX Series Switches)

```
show route
<all>
<destination-prefix>
<private>
```

Release Information

Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.
 Option **private** introduced in Junos OS Release 9.5.
 Option **private** introduced in Junos OS Release 9.5 for EX Series switches.
 Command introduced in Junos OS Release 15.1R3 on MX Series routers for enhanced subscriber management.
 Option **display-client-data** introduced in Junos OS Release 16.2R1 on MX80, MX104, MX240, MX480, MX960, MX2010, MX2020, vMX Series routers.
 Options **te-ipv4-prefix-ip**, **te-ipv4-prefix-node-ip**, and **te-ipv4-prefix-node-iso** introduced in Junos OS Release 17.2R1 on MX Series and PTX Series.

Description Display the active entries in the routing tables.

Options

none—Display brief information about all active entries in the routing tables.

all—(Optional) Display information about all routing tables, including private, or internal, routing tables.

destination-prefix—(Optional) Display active entries for the specified address or range of addresses.

logical-system (all | logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.

private—(Optional) Display information only about all private, or internal, routing tables.

display-client-data —(Optional) Display client id and cookie information for routes installed by the routing protocol process client applications.

te-ipv4-prefix-ip *te-ipv4-prefix-ip*—(Optional) Display IPv4 address of the traffic-engineering prefix, without the mask length if present in the routing table.

te-ipv4-prefix-node-ip *te-ipv4-prefix-node-ip*—(Optional) Display all prefixes that have originated from the traffic-engineering node. You can filter IPv4 node addresses from the traffic-engineered routes in the **lsdist.0** table.

te-ipv4-prefix-node-iso *te-ipv4-prefix-node-iso*—(Optional) Display all prefixes that have originated from the traffic-engineering node. You can filter IPv4 routes with the specified ISO circuit ID from the **lsdist.0** table.

Required Privilege Level

view

Related Documentation

- *Understanding IS-IS Configuration*
- *Example: Configuring IS-IS*
- *Examples: Configuring Internal BGP Peering*
- *Examples: Configuring External BGP Peering*
- *Examples: Configuring OSPF Routing Policy*
- *Verifying and Managing Junos OS Enhanced Subscriber Management*

List of Sample Output

[show route on page 246](#)
[show route \(VPN\) on page 247](#)
[show route \(with Destination Prefix\) on page 247](#)
[show route destination-prefix detail on page 247](#)
[show route extensive on page 247](#)
[show route extensive \(ECMP\) on page 248](#)
[show route extensive \(Multipath Resolution\) on page 248](#)
[show route \(Enhanced Subscriber Management\) on page 253](#)
[show route \(IPv6 Flow Specification\) on page 253](#)
[show route display-client-data detail on page 253](#)
[show route te-ipv4-prefix-ip on page 254](#)
[show route te-ipv4-prefix-ip extensive on page 255](#)
[show route te-ipv4-prefix-node-iso on page 257](#)
[show route te-ipv4-prefix-node-iso extensive on page 258](#)
[show route te-ipv4-prefix-node-iso detail on page 260](#)

Output Fields

[Table 12 on page 243](#) describes the output fields for the **show route** command. Output fields are listed in the approximate order in which they appear.

Table 12: show route Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).

Table 12: show route Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active). • holddown (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. <p>However, if you have configured advertisement of multiple routes (with the add-path or advertise-inactive 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"> • hidden (routes that are not used because of a routing policy).
<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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only. For example, 10.1.1.195:NoCtrlWord:1:1:Local/96): <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote.
[<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"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • -—A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.</p>
<i>weeks:days hours:minutes:seconds</i>	How long the route been known (for example, 2w4d 13:11:14 , or 2 weeks, 4 days, 13 hours, 11 minutes, and 14 seconds).

Table 12: show route Output Fields (continued)

Field Name	Field Description
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"> • I—IGP. • E—EGP. • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—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. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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>
encapsulated	Extended next-hop encoding capability enabled for the specified BGP community for routing IPv4 traffic over IPv6 tunnels. When BGP receives routes without the tunnel community, IPv4-Over IPv6 tunnels are not created and BGP routes are resolved without encapsulation.
Route Labels	Stack of labels carried in the BGP route update.
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—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. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
to	<p>Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.</p> <p>If the destination is Discard, traffic is dropped.</p>

Table 12: show route Output Fields (continued)

Field Name	Field Description
via	<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 Selected. This field can also contain the following information:</p> <ul style="list-style-type: none"> • 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. • Balance—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. • lsp-path-name—Name of the LSP used to reach the next hop. • label-action—MPLS label and operation occurring at the next hop. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label). For VPNs, expect to see multiple push 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).
Private unicast	(Enhanced subscriber management for MX Series routers) Indicates that an access-internal route is managed by enhanced subscriber management. By contrast, access-internal routes <i>not</i> managed by enhanced subscriber management are displayed with associated next-hop and media access control (MAC) address information.
balance	Distribution of the load based on the underlying operational interface bandwidth for equal-cost multipaths (ECMP) across the nexthop gateways in percentages.

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 (VPN)

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 192.0.2.0
```

```
13979:665001.inet.0: 871 destinations, 3556 routes (871 active, 0 holddown, 0 hidden)
```

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

```
192.0.2.0/24      [BGP/170] 00:28:32, localpref 100, from 10.9.9.160
                  AS path: 13980 ?, validation-state: unverified
                  > 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 ?, validation-state: unverified
                  > 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 (with Destination Prefix)

```
user@host> show route 192.168.0.0/12
```

```
inet.0: 10 destinations, 10 routes (9 active, 0 holddown, 1 hidden)
```

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

```
192.168.0.0/12    *[Static/5] 2w4d 12:54:27
                  > to 192.168.167.254 via fxp0.0
```

show route destination-prefix detail

```
user@host> show route 198.51.100.0 detail
```

```
inet.0: 15 destinations, 20 routes (15 active, 0 holddown, 0 hidden)
```

```
198.51.100.0/24 (2 entries, 2 announced)
```

```
*BGP Preference: 170/-101
```

```
...
```

```
BGP-Static Preference: 4294967292
```

```
Next hop type: Discard
```

```
Address: 0x9041ae4
```

```
Next-hop reference count: 2
```

```
State: <NoReadvrt Int Ext AlwaysFlash>
```

```
Inactive reason: Route Preference
```

```
Local AS: 200
```

```
Age: 4d 1:40:40
```

```
Validation State: unverified
```

```
Task: RT
```

```
Announcement bits (1): 2-BGP_RT_Background
```

```
AS path: 4 5 6 I
```

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
203.0.113.1
  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: 64510 Peer AS: 64511
  Age: 3 Metric2: 1
  Validation State: unverified
  Task: BGP_64510.10.0.0.30+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:64502:100 encapsulation:0L:14 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 extensive (ECMP)

```

user@host> show route extensive
*IS-IS Preference: 15
  Level: 1
  Next hop type: Router, Next hop index: 1048577
  Address: 0xFFFFFFFF
  Next-hop reference count: YY
  Next hop: 198.51.100.2 via ae1.0 balance 43%, selected
  Session Id: 0x141
  Next hop: 192.0.2.2 via ae0.0 balance 57%

```

show route extensive (Multipath Resolution)

```

user@host> show route extensive
inet.0: 37 destinations, 37 routes (36 active, 0 holddown, 1 hidden)
10.1.1.2/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.1.1.2/32 -> {indirect(1048574)}
  *Static Preference: 5
  Next hop type: Indirect, Next hop index: 0
  Address: 0xb39d1b0

```



```

Next-hop reference count: 2
Next hop type: Router, Next hop index: 581
Next hop: 10.1.1.2 via ge-2/0/1.0, selected
Session Id: 0x144
Next hop: 10.2.1.2 via ge-2/0/2.0, selected
Session Id: 0x145
Protocol next hop: 10.1.1.1
Indirect next hop: 0xb2b20f0 1048574 INH Session ID: 0x143
State: <Active Int Ext>
Age: 2:53 Metric2: 0
Validation State: unverified
Task: RT
Announcement bits (2): 0-KRT 2-Resolve tree 1
AS path: I
Indirect next hops: 1
    Protocol next hop: 10.1.1.1
    Indirect next hop: 0xb2b20f0 1048574 INH Session ID: 0x143

    Indirect path forwarding next hops: 2
        Next hop type: Router
        Next hop: 10.1.1.2 via ge-2/0/1.0
        Session Id: 0x144
        Next hop: 10.2.1.2 via ge-2/0/2.0
        Session Id: 0x145
10.1.1.1/32 Originating RIB: inet.0
    Node path count: 1
    Node flags: 1
    Forwarding nexthops: 2 (Merged)
    Nexthop: 10.1.1.2 via ge-2/0/1.0
    Nexthop: 10.2.1.2 via ge-2/0/2.0

```

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

```
user@host> show route 198.51.100.1 active-path extensive
```

```

inet.0: 1000061 destinations, 1000082 routes (1000061 active, 0 holddown, 0 hidden)
198.51.100.1/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 198.51.100.1/32 -> {indirect(1051215)}
unicast reverse-path: 0
[ae0.0 ae1.0]
Page 0 idx 0, (group Internet-IPv4 type External) Type 1 val 0xbb2e53d8 (adv_entry)
Advertised metrics:
Nexthop: Self
AS path: [500] 410 I
Communities:
Path 198.51.100.1 from 10.0.0.11 Vector len 4. Val: 0
*BGP Preference: 170/-101
Next hop type: Indirect, Next hop index: 0
Address: 0x2e9aacdc
Next-hop reference count: 500000
Source: 10.0.0.11
Next hop type: Router, Next hop index: 0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 25, Push 20(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 20: None;
Label element ptr: 0xb5dc1780
Label parent element ptr: 0x18d48080
Label element references: 2
Label element child references: 0

```

```
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 25, Push 22(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 22: None;
Label element ptr: 0xb5dc1700
Label parent element ptr: 0x18d41000
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 24, Push 48(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 48: None;
Label element ptr: 0x18d40800
Label parent element ptr: 0x18d49780
Label element references: 3
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 24, Push 49(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 49: None;
Label element ptr: 0xb5dc1680
Label parent element ptr: 0x18d48f00
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Label operation: Push 3851, Push 25, Push 21(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 21: None;
Label element ptr: 0xb5dc1600
Label parent element ptr: 0x18d44d80
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Label operation: Push 3851, Push 25, Push 25(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 25: None;
Label element ptr: 0xb5dc1580
Label parent element ptr: 0x18d3da80
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1, selected
Label operation: Push 3851, Push 24, Push 68(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 68: None;
Label element ptr: 0x18d41500
Label parent element ptr: 0x18d49000
Label element references: 3
Label element child references: 0
```

```

Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Label operation: Push 3851, Push 24, Push 69(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 69: None;
Label element ptr: 0xb5dc1500
Label parent element ptr: 0x18d48300
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Protocol next hop: 10.0.0.11
Label operation: Push 3851
Label TTL action: prop-ttl
Load balance label: Label 3851: None;
Indirect next hop: 0x1883e200 1051215 INH Session ID: 0xb0d
State:
Local AS: 500 Peer AS: 500
Age: 1:40:03 Metric2: 2
Validation State: unverified
Task: BGP_500.10.0.0.11
Announcement bits (5): 0-KRT 8-KRT 9-BGP_RT_Background 10-Resolve tree 5 11-Resolve
tree 8
AS path: 410 I
Accepted
Route Label: 3851
Localpref: 100
Router ID: 10.0.0.11
Indirect next hops: 1
Protocol next hop: 10.0.0.11 Metric: 2
Label operation: Push 3851
Label TTL action: prop-ttl
Load balance label: Label 3851: None;
Indirect next hop: 0x1883e200 1051215 INH Session ID: 0xb0d
Indirect path forwarding next hops (Merged): 8
Next hop type: Router
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
10.0.0.11/32 Originating RIB: inet.3
Metric: 1 Node path count: 4
Node flags: 1
Indirect nexthops: 4
Protocol Nexthop: 10.0.0.4 Metric: 1 Push 24
Indirect nexthop: 0x1880f200 1048597 INH Session ID: 0xb0c
Path forwarding nexthops link: 0x36120400

```

```
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.4/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
Protocol Nexthop: 10.0.0.5 Metric: 1 Push 24
Indirect nexthop: 0x18810000 1048596 INH Session ID: 0xb0b
Path forwarding nexthops link: 0x1545be00
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.5/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
Protocol Nexthop: 10.0.0.6 Metric: 1 Push 25
Indirect nexthop: 0x1880e600 1048588 INH Session ID: 0xb0a
Path forwarding nexthops link: 0x3611f440
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.6/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
Protocol Nexthop: 10.0.0.7 Metric: 1 Push 25
Indirect nexthop: 0x1880dc00 1048586 INH Session ID: 0xb09
Path forwarding nexthops link: 0x15466d80
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.7/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
```

```

Nextthop: 10.0.13.3 via ae1.0
Session Id: 0

```

show route (Enhanced Subscriber Management)

```

user@host> show route

inet.0: 41 destinations, 41 routes (40 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

198.51.100.11/24    *[Access-internal/12] 00:00:08
                  > to #0 10.0.0.1.93.65 via demux0.1073741824
198.51.100.12/24    *[Access-internal/12] 00:00:08
                  Private unicast

```

show route (IPv6 Flow Specification)

```

user@host> show route

inet6.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::10:255:185:19/128
                  *[Direct/0] 05:11:27
                  > via lo0.0
2001:db8::11:11:11:0/120
                  *[BGP/170] 00:28:58, localpref 100
                  AS path: 2000 I, validation-state: unverified
                  > to 2001:db8::13:14:2:2 via ge-1/1/4.0
2001:db8::13:14:2:0/120*[Direct/0] 00:45:07
                  > via ge-1/1/4.0
2001:db8::13:14:2:1/128*[Local/0] 00:45:18
                  Local via ge-1/1/4.0
fe80::2a0:a50f:fc71:71d5/128
                  *[Direct/0] 05:11:27
                  > via lo0.0
fe80::5e5e:abff:feb0:933e/128
                  *[Local/0] 00:45:18
                  Local via ge-1/1/4.0

inet6flow.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::11:11:11:10/128,* ,proto=6,dstport=80,srcport=65535/term:1
                  *[BGP/170] 00:28:58, localpref 100, from 2001:db8::13:14:2:2
                  AS path: 2000 I, validation-state: unverified
                  Fictitious
2001:db8::11:11:11:30/128,* ,icmp6-type=128,len=100,dscp=10/term:2
                  *[BGP/170] 00:20:54, localpref 100, from 2001:db8::13:14:2:2
                  AS path: 2000 I, validation-state: unverified
                  Fictitious

```

show route display-client-data detail

```

user@host> show route 198.51.100.0/24 display-client-data detail

inet.0: 59 destinations, 70 routes (59 active, 0 holddown, 0 hidden)
198.51.100.0/24 (1 entry, 1 announced)

```

```

State: <FlashAll>
*BGP-Static Preference: 5/-101
  Next hop type: Indirect, Next hop index: 0
  Address: 0xa5c2af8
  Next-hop reference count: 2
  Next hop type: Router, Next hop index: 1641
  Next hop: 192.0.2.1 via ge-2/1/1.0, selected
  Session Id: 0x160
  Protocol next hop: 192.0.2.1
  Indirect next hop: 0xa732cb0 1048621 INH Session ID: 0x17e
  State: <Active Int Ext AlwaysFlash NSR-incapable Programmed>
  Age: 3:13      Metric2: 0
  Validation State: unverified
  Announcement bits (3): 0-KRT 5-LDP 6-Resolve tree 3
  AS path: I
  Client id: 1, Cookie: 1

```

show route te-ipv4-prefix-ip

```
user@host> show route te-ipv4-prefix-ip 10.10.10.10
```

```

lsdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

```

```

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
  }/1152
      * [IS-IS/15] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0101.0101.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0202.0202.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0303.0303.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0404.0404.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0505.0505.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0606.0606.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0707.0707.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      * [IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152

```

```
*[IS-IS/18] 00:01:01
Fictitious
```

show route te-ipv4-prefix-ip extensive

```
user@host>show route te-ipv4-prefix-ip 10.10.10.10 extensive
Isdist.0: 298 destinations, 298 routes (298 active, 0 holddown, 0 hidden)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 298
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0101.0101.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 298
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0xe0, Algo: 0>

PREFIX { Node { AS:64496 ISO:0100.0202.0202.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 298
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0303.0303.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
```

```

Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0404.0404.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0505.0505.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0606.0606.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0707.0707.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)

```



```

*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0x40, Algo: 0

```

show route te-ipv4-prefix-node-iso

```

user@host> show route te-ipv4-prefix-node-iso 0100.0a0a.0a0a.00

Isdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
}/1152
          *[IS-IS/15] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.1.1.1/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.2.2.2/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.3.3.3/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.4.4.4/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.5.5.5/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious

```

```

Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.6.6.6/32 } ISIS-L2:0
}/1152
      *[IS-IS/18] 00:05:20
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.7.7.7/32 } ISIS-L2:0
}/1152
      *[IS-IS/18] 00:05:20
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152
      *[IS-IS/18] 00:05:20
      Fictitious

```

show route te-ipv4-prefix-node-iso extensive

```

user@host> show route te-ipv4-prefix-node-iso 0100.0a0a.0a0a.00 extensive

1sdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.1.1.1/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1001, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.2.2.2/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:

```

```

        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1002, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.3.3.3/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1003, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.4.4.4/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1004, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.5.5.5/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1005, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.6.6.6/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2

```

```

Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 283
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 6:47
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1006, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.7.7.7/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1007, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

```

show route te-ipv4-prefix-node-iso detail

```

user@host> show route te-ipv4-prefix-node-iso 0100.0a0a.0a0a.00 detail

Isdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496

```

```

Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.1.1.1/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1001, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.2.2.2/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1002, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.3.3.3/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1003, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.4.4.4/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4

```

```

        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:54
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1004, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.5.5.5/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:54
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1005, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.6.6.6/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:54
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1006, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.7.7.7/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:54
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1007, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)

```

```
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 283
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0x40, Algo: 0
```

show route active-path

List of Syntax	Syntax on page 264 Syntax (EX Series Switches) on page 264
Syntax	<pre>show route active-path <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route active-path <brief detail extensive terse></pre>
Release Information	Command introduced in Junos OS Release 8.0. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display all active routes for destinations. An active route is a route that is selected as the best path. Inactive routes are not displayed.
Options	<p>none—Display all active routes.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route active-path on page 264 show route active-path brief on page 265 show route active-path detail on page 265 show route active-path extensive on page 266 show route active-path terse on page 268
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 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 172.16.100.1 via so-2/1/3.0
172.16.100.1/24    *[Direct/0] 00:18:36
                  > via so-2/1/3.0
172.16.100.1/32    *[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 264](#).

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: 172.16.100.1 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

172.16.100.0/24 (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

172.16.100.1/32 (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 -> {172.16.100.1}
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: 172.16.100.1 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

172.16.100.1/24 (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

172.16.100.1/32 (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			>100.0	
*	10.255.71.50/32	I	15	10		>172.16.100.1.	
*	172.16.100.0/24	D	0			>so-2/1/3.0	
*	172.16.100.2/32	L	0			Local	
*	192.168.64.0/21	D	0			>fxp0.0	
*	192.168.70.19/32	L	0			Local	

show route advertising-protocol

Syntax	<pre>show route advertising-protocol <i>protocol neighbor-address</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Release Information	Command introduced before Junos OS Release 7.4.
Description	Display the routing information as it has been prepared for advertisement to a particular neighbor of a particular dynamic routing protocol.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>neighbor-address</i>—Address of the neighboring router to which the route entry is being transmitted.</p> <p><i>protocol</i>—Protocol transmitting the route:</p> <ul style="list-style-type: none"> • bgp—Border Gateway Protocol • dvmrp—Distance Vector Multicast Routing Protocol • msdp—Multicast Source Discovery Protocol • pim—Protocol Independent Multicast • rip—Routing Information Protocol • ripng—Routing Information Protocol next generation
Additional Information	<p>Routes displayed are routes that the routing table has exported into the routing protocol and that have been filtered by the associated protocol's export routing policy statements. Starting with Junos OS Release 13.3, you can display the routing instance table foo for any address family, on a VPN route reflector, or a VPN AS boundary router that is advertising local VPN routes. However, If you do not specify the table in the command, the output displays each VRF prefix twice.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • <i>Example: Configuring the MED Attribute That Determines the Exit Point in an AS</i>
List of Sample Output	<p>show route advertising-protocol bgp (Layer 3 VPN) on page 272</p> <p>show route advertising-protocol bgp detail on page 272</p>

[show route advertising-protocol bgp detail \(Aggregate Extended Community Bandwidth\) on page 272](#)
[show route advertising-protocol bgp detail \(Labeled Unicast\) on page 273](#)
[show route advertising-protocol bgp detail \(Layer 2 VPN\) on page 273](#)
[show route advertising-protocol bgp detail \(Layer 3 VPN\) on page 273](#)
[show route advertising-protocol bgp extensive all \(Next Hop Self with RIB-out IP Address\) on page 274](#)

Output Fields Table 13 on page 270 lists the output fields for the **show route advertising-protocol** command. Output fields are listed in the approximate order in which they appear.

Table 13: show route advertising-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
<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"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy) 	All levels
Prefix	Destination prefix.	brief none
<i>destination-prefix (entry, announced)</i>	Destination prefix. The entry value is the number of routes for this destination, and the announced value is the number of routes being announced for this destination.	detail extensive
BGP group and type	BGP group name and type (Internal or External).	detail extensive
Route Distinguisher	Unique 64-bit prefix augmenting each IP subnet.	detail extensive
Advertised Label	Incoming label advertised by the Label Distribution Protocol (LDP). When an IP packet enters a label-switched path (LSP), the ingress router examines the packet and assigns it a label based on its destination, placing the label in the packet's header. The label transforms the packet from one that is forwarded based on its IP routing information to one that is forwarded based on information associated with the label.	detail extensive
Label-Base, range	First label in a block of labels and label block size. A remote PE router uses this first label when sending traffic toward the advertising PE router.	detail extensive
VPN Label	Virtual private network (VPN) label. Packets are sent between CE and PE routers by advertising VPN labels. VPN labels transit over either a Resource Reservation Protocol (RSVP) or a Label Distribution Protocol (LDP) label-switched path (LSP) tunnel.	detail extensive

Table 13: show route advertising-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
Nexthop	<p>Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.</p> <p>If the next-hop advertisement to the peer is Self, and the RIB-out next hop is a specific IP address, the RIB-out IP address is included in the extensive output. See show route advertising-protocol bgp extensive all (Next Hop Self with RIB-out IP Address) on page 274.</p>	All levels
MED	Multiple exit discriminator value included in the route.	brief
Lclpref or Localpref	Local preference value included in the route.	All levels
Queued	When BGP route prioritization is enabled and a route is present in a priority queue, this shows which priority queue the route is in.	All levels except brief
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"> • I—IGP. • E—EGP. • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—Brackets enclose the local AS number associated with the AS path if configured on the router, or if AS path prepending is configured. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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
Route Labels	Stack of labels carried in the BGP route update.	detail extensive
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 for the show route detail command for all possible values for this field.	detail extensive
AIGP	Accumulated interior gateway protocol (AIGP) BGP attribute.	detail extensive

Table 13: show route advertising-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
Attrset AS	Number, local preference, and path of the autonomous system (AS) that originated the route. These values are stored in the Attrset attribute at the originating router.	detail extensive
Layer2-info:encaps	Layer 2 encapsulation (for example, VPLS).	detail extensive
control flags	Control flags: none or Site Down .	detail extensive
mtu	Maximum transmission unit (MTU) of the Layer 2 circuit.	detail extensive

Sample Output

show route advertising-protocol bgp (Layer 3 VPN)

```

user@host> show route advertising-protocol bgp 10.255.14.171

VPN-A.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.172/32 Self              1      100 I
VPN-B.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.181/32 Self              2      100 I

```

show route advertising-protocol bgp detail

```

user@host> show route advertising-protocol bgp 111.222.1.3 detail

bgp20.inet.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
111.222.1.11/32 (1 entry, 1 announced)
  BGP group pe-pe type Internal
  Route Distinguisher: 111.255.14.11:69
  Advertised Label: 100000
  next hop: Self
  Localpref: 100
  AS path: 2 I
  Communities: target:69:20
  AIGP 210
111.8.0.0/16 (1 entry, 1 announced)
  BGP group pe-pe type Internal
  Route Distinguisher: 111.255.14.11:69
  Advertised Label: 100000
  Next hop: Self
  Localpref: 100
  AS path: 2 I
  Communities: target:69:20
  AIGP 210

```

show route advertising-protocol bgp detail (Aggregate Extended Community Bandwidth)

```

user@host> show route advertising-protocol bgp 10.0.4.2 10.0.2.0/30 detail

inet.0: 20 destinations, 26 routes (20 active, 0 holddown, 0 hidden)
* 10.0.2.0/30 (2 entries, 1 announced)

```



```
BGP group external2 type External
  Nexthop: Self
  AS path: [65000] 65001 I
  Communities: bandwidth:65000:80000000
```

show route advertising-protocol bgp detail (Labeled Unicast)

```
user@host>show route advertising bgp 1.1.1.3 detail

inet.0: 69 destinations, 70 routes (69 active, 0 holddown, 0 hidden)
* 1.1.1.8/32 (2 entries, 2 announced)
BGP group ibgp type Internal
Route Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: 1.1.1.4
MED: 7
Localpref: 100
AS path: [5] I
Cluster ID: 3.3.3.3
Originator ID: 1.1.1.1
Entropy label capable
inet6.0: 26 destinations, 28 routes (26 active, 0 holddown, 0 hidden)
* 100::1/128 (2 entries, 1 announced)
BGP group ibgp type Internal
Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: ::ffff:1.1.1.4
Localpref: 100
AS path: [5] I
Cluster ID: 3.3.3.3
Originator ID: 1.1.1.1
```

show route advertising-protocol bgp detail (Layer 2 VPN)

```
user@host> show route advertising-protocol bgp 192.168.24.1 detail

vpn-a.12vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
192.168.16.1:1:1:1/96 (1 entry, 1 announced)
  BGP group int type Internal
    Route Distinguisher: 192.168.16.1:1
    Label-base : 32768, range : 3
    Nexthop: Self
    Localpref: 100
    AS path: I
    Communities: target:65412:100
    AIGP 210
    Layer2-info: encaps:VLAN, control flags:, mtu:
```

show route advertising-protocol bgp detail (Layer 3 VPN)

```
user@host> show route advertising-protocol bgp 10.255.14.176 detail

vpna.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
* 10.49.0.0/30 (1 entry, 1 announced)
  BGP group ibgp type Internal
    Route Distinguisher: 10.255.14.174:2
    VPN Label: 101264
    Nexthop: Self
    Localpref: 100
    AS path: I
    Communities: target:200:100
```

```
AIGP 210
AttrSet AS: 100
  Localpref: 100
  AS path: I
...
```

show route advertising-protocol bgp extensive all (Next Hop Self with RIB-out IP Address)

```
user@host> show route advertising-protocol bgp 200.0.0.2 170.0.1.0/24 extensive all
inet.0: 13 destinations, 19 routes (13 active, 0 holddown, 6 hidden)
  170.0.1.0/24 (2 entries, 1 announced)
    BGP group eBGP-INTEROP type External
      Nexthop: Self (rib-out 10.100.3.2)
      AS path: [4713] 200 I
...
```

show route all

List of Syntax	Syntax on page 275 Syntax (EX Series Switches) on page 275
Syntax	<pre>show route all <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route all</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 information about all routes in all routing tables, including private, or internal, tables.
Options	<p>none—Display information about all routes in all routing tables, including private, or internal, tables.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • show route brief on page 280 • show route detail on page 282
List of Sample Output	show route all on page 275
Output Fields	In Junos OS Release 9.5 and later, only the output fields for the show route all command display all routing tables, including private, or hidden, routing tables. The output field table of the show route 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 best

List of Syntax	Syntax on page 277 Syntax (EX Series Switches) on page 277
Syntax	<pre>show route best <i>destination-prefix</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route best <i>destination-prefix</i> <brief detail extensive terse></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	<p>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.</p>
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p><i>destination-prefix</i>—Address or range of addresses.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • show route brief on page 280 • show route detail on page 282
List of Sample Output	<p>show route best on page 278</p> <p>show route best detail on page 278</p> <p>show route best extensive on page 279</p> <p>show route best terse on page 279</p>
Output Fields	<p>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.</p>

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 278](#).

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

List of Syntax	Syntax on page 280 Syntax (EX Series Switches) on page 280
Syntax	<pre>show route brief <destination-prefix> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switches)	<pre>show route brief <destination-prefix></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display brief information about the active entries in the routing tables.
Options	none —Display all active entries in the routing table. destination-prefix —(Optional) Display active entries for the specified address or range of addresses. logical-system (all logical-system-name) —(Optional) Perform this operation on all logical systems or on a particular logical system.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show route all on page 275• show route best on page 277
List of Sample Output	show route brief on page 280
Output Fields	For information about output fields, see the Output Field table of the show route 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
172.16.233.5/32 *[OSPF/10] 1w5d 20:30:29, metric 1
MultiRecv

```

show route detail

List of Syntax	Syntax on page 282 Syntax (EX Series Switches) on page 282
Syntax	<pre>show route detail <destination-prefix> [logical-system (all logical-system-name)]</pre>
Syntax (EX Series Switches)	<pre>show route detail <destination-prefix></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> <p>Command introduced in Junos OS Release 13.2X51-D15 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Display detailed information about the active entries in the routing tables.
Options	<p>none—Display all active entries in the routing table on all systems.</p> <p>destination-prefix—(Optional) Display active entries for the specified address or range of addresses.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route detail on page 293 show route detail (with BGP Multipath) on page 299 show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 300 show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 300 show route detail (Flexible VXLAN Tunnel Profile) on page 301
Output Fields	<p>Table 14 on page 282 describes the output fields for the show route detail command. Output fields are listed in the approximate order in which they appear.</p>

Table 14: 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.

Table 14: show route detail Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy)
<i>route-destination</i> (entry, announced)	<p>Route destination (for example:10.0.0.1/24). The entry value is the number of routes for this destination, and the announced 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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote. • source—Source of the advertisement: Local or Remote.
<i>label stacking</i>	<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"> • S=0 route 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). • If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).

Table 14: show route detail Output Fields (continued)

Field Name	Field Description
[protocol, preference]	<p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • - —A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value.</p> <p>Preference2 values are signed integers, that is, Preference2 values can be either positive or negative values. However, Junos OS evaluates Preference2 values as unsigned integers that are represented by positive values. Based on the Preference2 values, Junos OS evaluates a preferred route differently in the following scenarios:</p> <ul style="list-style-type: none"> • Both Signed Preference2 values <ul style="list-style-type: none"> • Route A = -101 • Route B = -156 <p>Where both the Preference2 values are signed, Junos OS evaluates only the unsigned value of Preference2 and Route A, which has a lower Preference2 value is preferred.</p> • Unsigned Preference2 values <p>Now consider both unsigned Preference2 values:</p> <ul style="list-style-type: none"> • Route A = 4294967096 • Route B = 200 <p>Here, Junos OS considers the lesser Preference2 value and Route B with a Preference2 value of 200 is preferred because it is less than 4294967096.</p> • Combination of signed and unsigned Preference2 values <p>When Preference2 values of two routes are compared, and for one route the Preference2 is a signed value, and for the other route it is an unsigned value, Junos OS prefers the route with the positive Preference2 value over the negative Preference2 value. For example, consider the following signed and unsigned Preference2 values:</p> <ul style="list-style-type: none"> • Route A = -200 • Route B = 200 <p>In this case, Route B with a Preference2 value of 200 is preferred although this value is greater than -200, because Junos OS evaluates only the unsigned value of the Preference2 value.</p>
Level	(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.
Route Distinguisher	IP subnet augmented with a 64-bit prefix.
PMSI	Provider multicast service interface (MVPN routing table).

Table 14: show route detail Output Fields (continued)

Field Name	Field Description
Next-hop type	Type of next hop. For a description of possible values for this field, see Table 15 on page 288 .
Next-hop reference count	Number of references made to the next hop.
Flood nexthop branches exceed maximum message	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.
Source	IP address of the route source.
Next hop	Network layer address of the directly reachable neighboring system.
via	<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 Selected. This field can also contain the following information:</p> <ul style="list-style-type: none"> • 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. • Balance—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.
Label-switched-path <i>lsp-path-name</i>	Name of the LSP used to reach the next hop.
Label operation	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Interface	(Local only) Local interface name.
Protocol next hop	Network layer address of the remote routing device that advertised the prefix. This address is used to derive a forwarding next hop.
Indirect next hop	Index designation used to specify the mapping between protocol next hops, tags, kernel export policy, and the forwarding next hops.
State	State of the route (a route can be in more than one state). See Table 16 on page 290 .
Local AS	AS number of the local routing device.
Age	How long the route has been known.
AIGP	Accumulated interior gateway protocol (AIGP) BGP attribute.

Table 14: show route detail Output Fields (continued)

Field Name	Field Description
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	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. For sample output, see show route table .
Task	Name of the protocol that has added the route.
Announcement bits	The number of BGP peers or protocols to which Junos OS has announced this route, followed by the list of the recipients of the announcement. Junos OS can also announce the route to the KRT for installing the route into the Packet Forwarding Engine, to a resolve tree, a L2 VC, or even a VPN. For example, n-Resolve inet indicates that the specified route is used for route resolution for next hops found in the routing table. <ul style="list-style-type: none"> n—An index used by Juniper Networks customer support only.
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"> I—IGP. E—EGP. Recorded—The AS path is recorded by the sample process (sampled). ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> []—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. []—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. { }—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. ()—Parentheses enclose a confederation. ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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 14: show route detail Output Fields (continued)

Field Name	Field Description
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—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. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
ORR Generation-ID	Displays the optimal route reflection (ORR) generation identifier. ISIS and OSPF interior gateway protocol (IGP) updates filed whenever any of the corresponding ORR route has its metric valued changed, or if the ORR route is added or deleted.
FECs bound to route	Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.
Primary Upstream	When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.
RPF Nexthops	When multipoint LDP with MoFRR is configured, the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.
Label	Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.
weight	Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.
VC Label	MPLS label assigned to the Layer 2 circuit virtual connection.
MTU	Maximum transmission unit (MTU) of the Layer 2 circuit.
VLAN ID	VLAN identifier of the Layer 2 circuit.
Prefixes bound to route	Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.
Communities	Community path attribute for the route. See Table 17 on page 292 for all possible values for this field.
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).
control flags	Control flags: none or Site Down .
mtu	Maximum transmission unit (MTU) information.

Table 14: show route detail Output Fields (continued)

Field Name	Field Description
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.
status vector	Layer 2 VPN and VPLS network layer reachability information (NLRI).
Accepted Multipath	Current active path when BGP multipath is configured.
Accepted LongLivedStale	The LongLivedStale flag indicates that the route was marked LLGR-stale by this router, as part of the operation of LLGR receiver mode. Either this flag or the LongLivedStaleImport flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag.
Accepted LongLivedStaleImport	<p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy. Either this flag or the LongLivedStale flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag.</p> <p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and import into the inet.0 routing table</p>
ImportAccepted LongLivedStaleImport	<p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and imported into the inet.0 routing table</p> <p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy.</p>
Accepted MultipathContrib	Path currently contributing to BGP multipath.
Localpref	Local preference value included in the route.
Router ID	BGP router ID as advertised by the neighbor in the open message.
Primary Routing Table	In a routing table group, the name of the primary routing table in which the route resides.
Secondary Tables	In a routing table group, the name of one or more secondary tables in which the route resides.

[Table 15 on page 288](#) describes all possible values for the Next-hop Types output field.

Table 15: Next-hop Types Output Field Values

Next-Hop Type	Description
Broadcast (bcast)	Broadcast next hop.
Deny	Deny next hop.
Discard	Discard next hop.
Dynamic List	Dynamic list next hop

Table 15: Next-hop Types Output Field Values (continued)

Next-Hop Type	Description
Flood	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.
Hold	Next hop is waiting to be resolved into a unicast or multicast type.
Indexed (idxd)	Indexed next hop.
Indirect (indr)	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.
Interface	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.
Local (locl)	Local address on an interface. This next-hop type causes packets with this destination address to be received locally.
Multicast (mcst)	Wire multicast next hop (limited to the LAN).
Multicast discard (mdsc)	Multicast discard.
Multicast group (mgrp)	Multicast group member.
Receive (recv)	Receive.
Reject (rjct)	Discard. An ICMP unreachable message was sent.
Resolve (rslv)	Resolving next hop.
Routed multicast (mcrt)	Regular multicast next hop.
Router	<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"> • Must not be a direct or local subnet for the routing device. • Must have a next hop that is directly connected to the routing device.

Table 15: Next-hop Types Output Field Values (continued)

Next-Hop Type	Description
Software	Next hop added to the Routing Engine forwarding table for remote IP addresses with prefix /32 for Junos OS Evolved only.
Table	Routing table next hop.
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 16 on page 290 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 16: 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.

Table 16: State Output Field Values (continued)

Value	Description
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.
Int	Interior route.
Int Ext	BGP route received from an internal BGP peer or a BGP confederation peer.
Interior > Exterior > Exterior via Interior	Direct, static, IGP, or EBGp path is available.
Local Preference	Path with a higher local preference value is available.
Martian	Route is a martian (ignored because it is obviously invalid).
MartianOK	Route exempt from martian filtering.
Next hop address	Path with lower metric next hop is available.
No difference	Path from neighbor with lower IP address is available.
NoReadvrt	Route not to be advertised.
NotBest	Route not chosen because it does not have the lowest MED.
Not Best in its group	Incoming BGP AS is not the best of a group (only one AS can be the best).
NotInstall	Route not to be installed in the forwarding table.
Number of gateways	Path with a greater number of next hops is available.
Origin	Path with a lower origin code is available.
Pending	Route pending because of a hold-down configured on another route.
Programmed	Route installed programatically by on-box or off-box applications using API.
Release	Route scheduled for release.
RIB preference	Route from a higher-numbered routing table is available.

Table 16: State Output Field Values (continued)

Value	Description
Route Distinguisher	64-bit prefix added to IP subnets to make them unique.
Route Metric or MED comparison	Route with a lower metric or MED is available.
Route Preference	Route with lower preference value is available
Router ID	Path through a neighbor with lower ID is available.
Secondary	Route not a primary route.
Unusable path	Path is not usable because of one of the following conditions: <ul style="list-style-type: none"> The route is damped. The route is rejected by an import policy. The route is unresolved.
Update source	Last tiebreaker is the lowest IP address value.
ProtectionCand	Indicates paths requesting protection.
ProtectionPath	Indicates the route entry that can be used as a protection path.

Table 17 on page 292 describes the possible values for the Communities output field.

Table 17: 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 0. 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.
bandwidth: local AS number:link-bandwidth-number	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.
domain-id	Unique configurable number that identifies the OSPF domain.
domain-id-vendor	Unique configurable number that further identifies the OSPF domain.
<i>link-bandwidth-number</i>	Link-bandwidth number: from 0 through 4,294,967,295 (bytes per second).
<i>local AS number</i>	Local AS number: from 1 through 65,535.
<i>options</i>	1 byte. Currently this is only used if the route type is 5 or 7. Setting the least significant bit in the field indicates that the route carries a type 2 metric.

Table 17: Communities Output Field Values (continued)

Value	Description
origin	(Used with VPNs) Identifies where the route came from.
ospf-route-type	1 byte, encoded as 1 or 2 for intra-area routes (depending on whether the route came from a type 1 or a type 2 LSA); 3 for summary routes; 5 for external routes (area number must be 0); 7 for NSSA routes; or 129 for sham link endpoint addresses.
route-type-vendor	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x8000 . The format is area-number:ospf-route-type:options .
rte-type	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x0306 . The format is area-number:ospf-route-type:options .
target	Defines which VPN the route participates in; target has the format 32-bit IP address:16-bit number . For example, 10.19.0.0:100.
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
        ORR Generation-ID: 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
        ORR Generation-ID: 1
    Task: OSPF
        Announcement bits (2): 0-KRT 3-Resolve tree 2
        AS path: I

...

172.16.233.2/32 (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

...

172.16.233.22/32 (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: 172.16.0.2 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: 172.16.0.2 via lt-1/2/0.7 weight 0x1
             Label-switched-path R2-to-R200-p2mp
             Label operation: Pop
             Next hop: 172.16.0.2 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.0.0.0.0+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.0.0.0.0+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: 12 circuit
      Announcement bits (1): 0-LDP
      AS path: I
      VC Label 100000, MTU 1500, VLAN ID 512

inet.0: 45 destinations, 47 routes (44 active, 0 holddown, 1 hidden)
1.1.1.3/32 (1 entry, 1 announced)
    *IS-IS Preference: 18
      Level: 2
      Next hop type: Router, Next hop index: 580
      Address: 0x9db6ed0
      Next-hop reference count: 8
      Next hop: 10.1.1.6 via lt-1/0/10.5, selected
      Session Id: 0x18a
      State: <Active Int>
      Local AS: 2
      Age: 1:32 Metric: 10
      Validation State: unverified
      ORR Generation-ID: 1
      Task: IS-IS
      Announcement bits (3): 0-KRT 5-Resolve tree 4 6-Resolve_IGP_FRR
task
      AS path: I

inet.0: 61 destinations, 77 routes (61 active, 1 holddown, 0 hidden)
1.1.1.1/32 (2 entries, 1 announced)
    *OSPF Preference: 10
      Next hop type: Router, Next hop index: 673
      Address: 0xc008830
      Next-hop reference count: 3
      Next hop: 10.1.1.1 via ge-0/0/2.0, selected
      Session Id: 0x1b7
      State: <Active Int>
      Local AS: 1
      Age: 3:06:59 Metric: 100
      Validation State: unverified
      ORR Generation-ID: 1
      Area: 0.0.0.0
      Task: OSPF
      Announcement bits (2): 1-KRT 9-Resolve tree 2
      AS path: I

```

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: 172.16.1.2
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: 172.16.1.3

```

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 label detail (Multipoint LDP with Multicast-Only Fast Reroute)

```

user@host> show route label 301568 detail

```

```

mpls.0: 18 destinations, 18 routes (18 active, 0 holddown, 0 hidden)
301568 (1 entry, 1 announced)
  *LDP Preference: 9
    Next hop type: Flood
    Address: 0x2735208
    Next-hop reference count: 3
    Next hop type: Router, Next hop index: 1397
    Address: 0x2735d2c
    Next-hop reference count: 3
    Next hop: 1.3.8.2 via ge-1/2/22.0
    Label operation: Pop
    Load balance label: None;
    Next hop type: Router, Next hop index: 1395
    Address: 0x2736290
    Next-hop reference count: 3
    Next hop: 1.3.4.2 via ge-1/2/18.0
    Label operation: Pop
    Load balance label: None;
    State: <Active Int AckRequest MulticastRPF>
    Local AS: 10
    Age: 54:05 Metric: 1
    Validation State: unverified
    Task: LDP
    Announcement bits (1): 0-KRT
    AS path: I
    FECs bound to route: P2MP root-addr 172.16.1.1, grp: 232.1.1.1,
src: 192.168.219.11
    Primary Upstream : 172.16.1.3:0--172.16.1.2:0
      RPF Nexthops :
        ge-1/2/15.0, 1.2.94.1, Label: 301568, weight: 0x1
        ge-1/2/14.0, 1.2.3.1, Label: 301568, weight: 0x1
    Backup Upstream : 172.16.1.3:0--172.16.1.6:0
      RPF Nexthops :
        ge-1/2/20.0, 1.2.96.1, Label: 301584, weight: 0xffff
        ge-1/2/19.0, 1.3.6.1, Label: 301584, weight: 0xffff

```

show route detail (Flexible VXLAN Tunnel Profile)

```

user@host> show route 192.168.0.2 detail
...
CUSTOMER_0001.inet.0: 5618 destinations, 6018 routes (5618 active, 0 holddown, 0
hidden)
192.168.0.2/32 (1 entry, 1 announced)
  *Static Preference: 5/100
    Next hop type: Router, Next hop index: 74781
    Address: 0x5d9b03cc
    Next-hop reference count: 363
    Next hop: via fti0.6, selected
    Session Id: 0x24c8
    State: <Active Int NSR-incapable OpaqueData Programmed>
    Age: 1:25:53
    Validation State: unverified
      Tag: 10000001 Tag2: 1
    Announcement bits (2): 1-KRT 3-Resolve tree 30
    AS path: I
    Flexible IPv6 VXLAN tunnel profile
      Action: Encapsulate

```

```
Interface: fti0.6 (Index: 10921)
VNI: 10000001
Source Prefix: 2001:db8:255::2/128
Source UDP Port Range: 54614 - 60074
Destination Address: 2001:db8:80:1:1:1:0:1
Destination UDP Port: 4790
VXLAN Flags: 0x08
```

```
...
```

show route exact

List of Syntax	Syntax on page 303 Syntax (EX Series Switches) on page 303
Syntax	<pre>show route exact <i>destination-prefix</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route exact <i>destination-prefix</i> <brief detail extensive terse></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 only the routes that exactly match the specified address or range of addresses.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p><i>destination-prefix</i>—Address or range of addresses.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route exact on page 303 show route exact detail on page 304 show route exact extensive on page 304 show route exact terse on page 304
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 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

List of Syntax	Syntax on page 305 Syntax (EX Series Switches) on page 305
Syntax	<pre>show route export <brief detail> <instance <instance-name> routing-table-name> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switches)	<pre>show route export <brief detail> <instance <instance-name> routing-table-name></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 policy-based route export information. Policy-based export simplifies the process of exchanging route information between routing instances.
Options	<p>none—(Same as brief.) Display standard information about policy-based export for all instances and routing tables on all systems.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>instance <instance-name>—(Optional) Display a particular routing instance for which policy-based export is currently enabled.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p>routing-table-name—(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 show route export inet command).</p>
Required Privilege Level	view
List of Sample Output	show route export on page 306 show route export detail on page 306 show route export instance detail on page 307
Output Fields	<p>Table 18 on page 306 lists the output fields for the show route export command. Output fields are listed in the approximate order in which they appear.</p>

Table 18: 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.	brief none
Export	Whether the table is currently exporting routes to other tables: Y or N (Yes or No).	brief none
Import	Tables currently importing routes from the originator table. (Not displayed for tables that are not exporting any routes.)	detail
Flags	(instance keyword only) Flags for this feature on this instance: <ul style="list-style-type: none"> config auto-policy—The policy was deduced from the configured IGP export policies. cleanup—Configuration information for this instance is no longer valid. config—The instance was explicitly configured. 	detail
Options	(instance keyword only) Configured option displays the type of routing tables the feature handles: <ul style="list-style-type: none"> unicast—Indicates <i>instance.inet.0</i>. multicast—Indicates <i>instance.inet.2</i>. unicast multicast—Indicates <i>instance.inet.0</i> and <i>instance.inet.2</i>. 	detail
Import policy	(instance keyword only) Policy that route export uses to construct the import-export matrix. Not displayed if the instance type is vrf .	detail
Instance	(instance keyword only) Name of the routing instance.	detail
Type	(instance keyword only) Type of routing instance: forwarding , non-forwarding , or vrf .	detail

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           Type: non-forwarding
Instance: red             Type: non-forwarding
```

show route extensive

List of Syntax	Syntax on page 308 Syntax (EX Series Switches) on page 308
Syntax	<pre>show route extensive <destination-prefix> [logical-system (all logical-system-name)]</pre>
Syntax (EX Series Switches)	<pre>show route extensive <destination-prefix></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 extensive information about the active entries in the routing tables.
Options	<p>none—Display all active entries in the routing table.</p> <p>destination-prefix—(Optional) Display active entries for the specified address or range of addresses.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route extensive on page 315 show route extensive (Access Route) on page 322 show route extensive (BGP PIC Edge) on page 323 show route extensive (FRR and LFA) on page 323 show route extensive (IS-IS) on page 324 show route extensive (Route Reflector) on page 324 show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 325 show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 325 show route extensive (Flexible VXLAN Tunnel Profile) on page 326
Output Fields	<p>Table 19 on page 308 describes the output fields for the show route extensive command. Output fields are listed in the approximate order in which they appear.</p>

Table 19: show route extensive Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).

Table 19: show route extensive Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active). • holddown (routes that are in the pending state before being declared inactive). • hidden (routes that are not used because of a routing policy).
<i>route-destination</i> (entry, announced)	<p>Route destination (for example: 10.0.0.1/24). The entry value is the number of route for this destination, and the announced 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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote.
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"> • S=0 route 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). • If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).
[protocol, preference]	<p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • - —A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.</p>

Table 19: show route extensive Output Fields (continued)

Field Name	Field Description
Level	(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.
Route Distinguisher	IP subnet augmented with a 64-bit prefix.
PMSI	Provider multicast service interface (MVPN routing table).
Next-hop type	Type of next hop. For a description of possible values for this field, see the Output Field table in the show route detail command.
Next-hop reference count	Number of references made to the next hop.
Flood nexthop branches exceed maximum message	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.
Source	IP address of the route source.
Next hop	Network layer address of the directly reachable neighboring system.
via	<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 Selected. This field can also contain the following information:</p> <ul style="list-style-type: none"> • 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. • Balance—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.
Label-switched-path lsp-path-name	Name of the LSP used to reach the next hop.
Label operation	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Offset	Whether the metric has been increased or decreased by an offset value.
Interface	(Local only) Local interface name.
Protocol next hop	Network layer address of the remote routing device that advertised the prefix. This address is used to recursively derive a forwarding next hop.

Table 19: *show route extensive* Output Fields (continued)

Field Name	Field Description
<i>label-operation</i>	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Indirect next hops	<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 Indirect next hop: weight 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"> • 0x1 indicates active next hops. • 0x4000 indicates passive next hops.
State	State of the route (a route can be in more than one state). See the Output Field table in the show route detail command.
Session ID	The BFD session ID number that represents the protection using MPLS fast reroute (FRR) and loop-free alternate (LFA).
Weight	<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 show route table.</p>

Table 19: 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"> • Active preferred—Currently active route was selected over this route. • 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. • Cluster list length—Path with a shorter cluster list length is available. • Forwarding use only—Path is only available for forwarding purposes. • IGP metric—Path through the next hop with a lower IGP metric is available. • IGP metric type—Path with a lower OSPF link-state advertisement type is available. • Interior > Exterior > Exterior via Interior—Direct, static, IGP, or EBGp path is available. • Local preference—Path with a higher local preference value is available. • Next hop address—Path with a lower metric next hop is available. • No difference—Path from a neighbor with a lower IP address is available. • Not Best in its group—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). • Number of gateways—Path with a higher number of next hops is available. • Origin—Path with a lower origin code is available. • OSPF version—Path does not support the indicated OSPF version. • RIB preference—Route from a higher-numbered routing table is available. • Route distinguisher—64-bit prefix added to IP subnets to make them unique. • Route metric or MED comparison—Route with a lower metric or MED is available. • Route preference—Route with a lower preference value is available. • Router ID—Path through a neighbor with a lower ID is available. • Unusable path—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. • Update source—Last tiebreaker is the lowest IP address value.
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 show route table.</p>

Table 19: show route extensive Output Fields (continued)

Field Name	Field Description
Task	Name of the protocol that has added the route.
Announcement bits	<p>List of protocols that are consumers of the route. Using the following output as an example, Announcement bits (3): 0-KRT 5-Resolve tree 2 8-BGP RT Background there are (3) announcement bits to reflect the three clients (protocols) that have state for this route: Kernel (0-KRT), 5 (resolution tree process 2), and 8 (BGP).</p> <p>The notation <i>n</i>-Resolve inet 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.</p>
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"> • I—IGP. • E—EGP. • Recorded—The AS path is recorded by the sample process (sampled). • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—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. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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>
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—Indicates that origin validation is not enabled for the BGP peers. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
FECs bound to route	Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.
AS path: I <Originator>	(For route reflected output only) Originator ID attribute set by the route reflector.

Table 19: show route extensive Output Fields (continued)

Field Name	Field Description
route status	<p>Indicates the status of a BGP route:</p> <ul style="list-style-type: none"> • Accepted—The specified BGP route is imported by the default BGP policy. • Import—The route is imported into a Layer 3 VPN routing instance. • Import-Protect—A remote instance egress that is protected. • Multipath—A BGP multipath active route. • MultipathContrib—The route is not active but contributes to the BGP multipath. • Protect—An egress route that is protected. • Stale—A route that is marked stale due to graceful restart.
Primary Upstream	When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.
RPF Nexthops	When multipoint LDP with MoFRR is configured, the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.
Label	Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.
weight	Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.
VC Label	MPLS label assigned to the Layer 2 circuit virtual connection.
MTU	Maximum transmission unit (MTU) of the Layer 2 circuit.
VLAN ID	VLAN identifier of the Layer 2 circuit.
Cluster list	(For route reflected output only) Cluster ID sent by the route reflector.
Originator ID	(For route reflected output only) Address of router that originally sent the route to the route reflector.
Prefixes bound to route	Forwarding Equivalent Class (FEC) bound to this route. Applicable only to routes installed by LDP.
Communities	Community path attribute for the route. See the Output Field table in the show route detail command for all possible values for this field.
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).
control flags	Control flags: none or Site Down.
mtu	Maximum transmission unit (MTU) information.
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.

Table 19: show route extensive Output Fields (continued)

Field Name	Field Description
status vector	Layer 2 VPN and VPLS network layer reachability information (NLRI).
Localpref	Local preference value included in the route.
Router ID	BGP router ID as advertised by the neighbor in the open message.
Primary Routing Table	In a routing table group, the name of the primary routing table in which the route resides.
Secondary Tables	In a routing table group, the name of one or more secondary tables in which the route resides.
Originating RIB	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.
Node path count	Number of nodes in the path.
Forwarding nexthops	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)
203.0.113.10/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 203.0.113.10/16 -> {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: 64496
    Age: 1:34:06
    Task: RT
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I

203.0.113.30/30 (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: 64496
    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: 64496
        Age: 1:32:40    Metric: 1
        Area: 0.0.0.0
        Task: OSPF
        AS path: I

203.0.113.103/32 (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: 644969
        Age: 1:32:43
        Task: IF
        Announcement bits (1): 3-Resolve tree 2
        AS path: I

...

203.0.113.203/30 (1 entry, 1 announced)
TSI:
KRT in-kernel 203.0.113.203/30 -> {203.0.113.216}
    *OSPF Preference: 10
        Next-hop reference count: 9
        Next hop: via so-0/3/0.0
        Next hop: 203.0.113.216 via ge-3/1/0.0, selected
        State: <Active Int>
        Local AS: 64496
        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

...

198.51.100.2/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 198.51.100.2/32 -> {}
    *PIM Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 64496
        Age: 1:34:08
        Task: PIM Recv
        Announcement bits (2): 0-KRT 3-Resolve tree 2
        AS path: I

...

198.51.100.22/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 198.51.100.22/32 -> {}
    *IGMP Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>

```

```

        Local AS:    64496
        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)

203.0.113.103/32 (1 entry, 1 announced)
  State: <FlashAll>
  *RSVP   Preference: 7
          Next-hop reference count: 6
          Next hop: 203.0.113.216 via ge-3/1/0.0 weight 0x1, selected
          Label-switched-path green-r1-r3
          Label operation: Push 100096
          State: <Active Int>
          Local AS:    64496
          Age: 1:28:12   Metric: 2
          Task: RSVP
          Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
          AS path: I

203.0.113.238/32 (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:    64496
          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:    64496
          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: 64496
        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)
  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: 198.51.100.2 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: 198.51.100.2 via lt-1/2/0.7 weight 0x1
          Label-switched-path R2-to-R200-p2mp
          Label operation: Pop
          Next hop: 198.51.100.2 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)
        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: 203.0.113.216 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: 203.0.113.103

```

```

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: 203.0.113.103 Metric: 2
    Push 800012
    Indirect next hop: 87272e4 1048574
    Indirect path forwarding next hops: 1
        Next hop: 203.0.113.216 via ge-3/1/0.0 weight 0x1

    203.0.113.103/32 Originating RIB: inet.3
        Metric: 2                                Node path count: 1
        Forwarding nexthops: 1
            Nexthop: 203.0.113.216 via ge-3/1/0.0

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

2001:db8::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:    64496
    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:    64496
    Age: 1:34:07
    Task: IF
    AS path: I

ff02::2/128 (1 entry, 1 announced)
TSI:
KRT in-kernel ff02::2/128 -> {}
    *PIM    Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS:    64496
        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-kernel ff02::d/128 -> {}

```

```

    *PIM      Preference: 0
              Next-hop reference count: 18
              State: <Active NoReadvrt Int>
              Local AS: 64496
              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-kernel ff02::16/128 -> {}
    *MLD      Preference: 0
              Next-hop reference count: 18
              State: <Active NoReadvrt Int>
              Local AS: 64496
              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)

203.0.113.103:1:3:1/96 (1 entry, 1 announced)
    *BGP      Preference: 170/-101
              Route Distinguisher: 203.0.113.103:1
              Next-hop reference count: 7
              Source: 203.0.113.103
              Protocol next hop: 203.0.113.103
              Indirect next hop: 2 no-forward
              State: <Secondary Active Int Ext>
              Local AS: 64496 Peer AS: 64496
              Age: 1:28:12 Metric2: 1
              Task: BGP_69.203.0.113.103+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: 203.0.113.103
              Primary Routing Table bgp.l2vpn.0

203.0.113.152:1:1:1/96 (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: 203.0.113.152
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

203.0.113.152:1:5:1/96 (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: 203.0.113.152
        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:, mtu: 0
        Label-base: 800008, range: 8, status-vector: 0x9F

...

l2circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
TSI:

203.0.113.163: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: 203.0.113.163 Indirect next hop: 86af000 296
        State: <Active Int>
        Local AS: 64499
        Age: 10:21
        Task: l2 circuit
        Announcement bits (1): 0-LDP
        AS path: I
        VC Label 100000, MTU 1500, VLAN ID 512

203.0.113.55/24 (1 entry, 1 announced)
TSI:
KRT queued (pending) add
    198.51.100.0/24 -> {Push 300112}
        *BGP Preference: 170/-101
            Next hop type: Router
            Address: 0x925c208
            Next-hop reference count: 2
            Source: 203.0.113.9
            Next hop: 203.0.113.9 via ge-1/2/0.15, selected
            Label operation: Push 300112
            Label TTL action: prop-ttl
            State: <Active Ext>

```

```

Local AS: 64509 Peer AS: 65539
Age: 1w0d 23:06:56
AIGP: 25
Task: BGP_65539.203.0.113.9+56732
Announcement bits (1): 0-KRT
AS path: 65539 64508 I
Accepted
Route Label: 300112
Localpref: 100
Router ID: 213.0.113.99

```

show route extensive (Access Route)

```
user@host> show route 203.0.113.102 extensive
```

```

inet.0: 39256 destinations, 39258 routes (39255 active, 0 holddown, 1 hidden)
203.0.113.102/32 (1 entry, 1 announced)
TSI:
KRT in-kerne1 203.0.113.102/32 -> {192.0.2.2}
OSPF area : 0.0.0.0, LSA ID : 203.0.113.102, LSA type : Extern
  *Access Preference: 13
    Next-hop reference count: 78472
    Next hop: 192.0.2.2 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

```

```
user@host> show route 2001:db8:4641:1::/48 extensive
```

```

inet6.0: 75 destinations, 81 routes (75 active, 0 holddown, 0 hidden)
2001:db8:4641:1::/48 (1 entry, 1 announced)
TSI:
KRT in-kerne1 2001:db8:4641:1::/48 -> {#0 0.13.1.0.0.1}
  *Access Preference: 13
    Next hop type: Router, Next hop index: 74548
    Address: 0x1638c1d8
    Next-hop reference count: 6
    Next hop: #0 0.13.1.0.0.1 via demux0.1073753267, selected
    Session Id: 0x0
    State: <Active Int>
    Age: 4:17
    Validation State: unverified
    Task: RPD Unix Domain Server./var/run/rpd_serv.local
    Announcement bits (2): 0-KRT 4-Resolve tree 2
    AS path: I
2001:db8:4641:1::/128 (1 entry, 1 announced)
TSI:
KRT in-kerne1 2001:db8:4641:1::/128 -> {#0 0.13.1.0.0.1}
  *Access-internal Preference: 12
    Next hop type: Router, Next hop index: 74548
    Address: 0x1638c1d8
    Next-hop reference count: 6
    Next hop: #0 0.13.1.0.0.1 via demux0.1073753267, selected
    Session Id: 0x0
    State: <Active Int>
    Age: 4:17

```

```

Validation State: unverified
Task: RPD Unix Domain Server./var/run/rpd_serv.local
Announcement bits (2): 0-KRT 4-Resolve tree 2
AS path: I

```

show route extensive (BGP PIC Edge)

```

user@host> show route 198.51.100.6 extensive

ed.inet.0: 6 destinations, 9 routes (6 active, 0 holddown, 0 hidden)
 198.51.100.6/32 (3 entries, 2 announced)
    State: <CalcForwarding>
    TSI:
    KRT in-kerne1 198.51.100.6/32 -> {indirect(1048574), indirect(1048577)}
    Page 0 idx 0 Type 1 val 9219e30
    Nexthop: Self
    AS path: [2] 3 I
    Communities: target:2:1
    Path 198.51.100.6 from 198.51.100.4 Vector len 4. Val: 0
..
    #Multipath Preference: 255
    Next hop type: Indirect
    Address: 0x93f4010
    Next-hop reference count: 2
..
    Protocol next hop: 198.51.1001.4
    Push 299824
    Indirect next hop: 944c000 1048574 INH Session ID: 0x3
    Indirect next hop: weight 0x1
    Protocol next hop: 198.51.100.5
    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 203.0.113.20 extensive

inet.0: 46 destinations, 49 routes (45 active, 0 holddown, 1 hidden)
 203.0.113.20/24 (2 entries, 1 announced)
    State: FlashAll
    TSI:
    KRT in-kerne1 203.0.113.20/24 -> {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: 203.0.113.112 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: 203.0.113.122 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: 64500
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: 203.0.113.112 via ge-2/1/8.0, selected
Session Id: 0x201
State: Int
Inactive reason: Route Preference
Local AS: 64500
Age: 5:35 Metric: 3
Area: 0.0.0.0
Task: OSPF
AS path: I

```

show route extensive (IS-IS)

```
user@host> show route extensive
```

```

IS-IS Preference: 15
Level: 1
Next hop type: Router, Next hop index: 1048577
Address: 0xFFFFFFFF
Next-hop reference count: YY
Next hop: 203.0.113.22 via ae1.0 balance 43%, selected
Session Id: 0x141
Next hop: 203.0.113.22 via ae0.0 balance 57%

```

show route extensive (Route Reflector)

```
user@host> show route extensive
```

```

203.0.113.0/8 (1 entry, 1 announced)

TSI:
KRT in-kernel 203.0.113.0/8 -> {indirect(40)}
  *BGP Preference: 170/-101
    Source: 192.168.4.214
    Protocol next hop: 198.51.100.192 Indirect next hop: 84ac908 40
    State: <Active Int Ext>
    Local AS: 65548 Peer AS: 65548
    Age: 3:09 Metric: 0 Metric2: 0
    Task: BGP_65548.192.168.4.214+1033
    Announcement bits (2): 0-KRT 4-Resolve inet.0
    AS path: 65544 64507 I <Originator>
    Cluster list: 198.51.100.1
    Originator ID: 203.0.113.88
    Communities: 7777:7777

```

```

Localpref: 100
Router ID: 203.0.113.4
Indirect next hops: 1
    Protocol next hop: 203.0.113.192 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: 64511
              Age: 8:20      Metric: 1
              Task: LDP
              Announcement bits (1): 0-KRT
              AS path: I
              FECs bound to route: P2MP root-addr 203.0.113.166, grp 203.0.113.1,
src 192.168.142.2

```

show route label detail (Multipoint LDP with Multicast-Only Fast Reroute)

```

user@host> show route label 301568 detail

mpls.0: 18 destinations, 18 routes (18 active, 0 holddown, 0 hidden)
301568 (1 entry, 1 announced)
    *LDP      Preference: 9
              Next hop type: Flood
              Address: 0x2735208
              Next-hop reference count: 3
              Next hop type: Router, Next hop index: 1397
              Address: 0x2735d2c
              Next-hop reference count: 3
              Next hop: 203.0.113.82 via ge-1/2/22.0
              Label operation: Pop
              Load balance label: None;
              Next hop type: Router, Next hop index: 1395
              Address: 0x2736290
              Next-hop reference count: 3
              Next hop: 203.0.113.2 via ge-1/2/18.0
              Label operation: Pop
              Load balance label: None;
              State: <Active Int AckRequest MulticastRPF>
              Local AS: 64500

```

```

Age: 54:05      Metric: 1
Validation State: unverified
Task: LDP
Announcement bits (1): 0-KRT
AS path: I
FECs bound to route: P2MP root-addr 198.51.100.1, grp: 203.0.113.1,
src: 192.168.219.11
Primary Upstream : 198.51.100.3:0--198.51.100.2:0
RPF Nexthops :
    ge-1/2/15.0, 10.2.94.1, Label: 301568, weight: 0x1
    ge-1/2/14.0, 10.2.3.1, Label: 301568, weight: 0x1
Backup Upstream : 198.51.100.3:0--198.51.100.6:0
RPF Nexthops :
    ge-1/2/20.0, 198.51.100.96, Label: 301584, weight: 0xffff
    ge-1/2/19.0, 198.51.100.36, Label: 301584, weight: 0xffff

```

show route extensive (Flexible VXLAN Tunnel Profile)

```

user@host> show route 192.168.0.2 extensive
...
CUSTOMER_0001.inet.0: 5618 destinations, 6018 routes (5618 active, 0 holddown, 0
hidden)

192.168.0.2/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 192.168.0.2/32 -> {fti0.6 Flags NSR-incapable}
Opaque data client: FLEX-TNL
Address: 0xd00eee8
Opaque-data reference count: 2
Opaque data: Flexible IPv6 VXLAN tunnel profile
    *Static Preference: 5/100
        Next hop type: Router, Next hop index: 74781
        Address: 0x5d9b03cc
        Next-hop reference count: 363
        Next hop: via fti0.6, selected
        Session Id: 0x24c8
        State: <Active Int NSR-incapable OpaqueData Programmed>
        Age: 1:34:00
        Validation State: unverified
            Tag: 10000001   Tag2: 1
        Announcement bits (2): 1-KRT 3-Resolve tree 30
        AS path: I
        Flexible IPv6 VXLAN tunnel profile
            Action: Encapsulate
            Interface: fti0.6 (Index: 10921)
            VNI: 10000001
            Source Prefix: 2001:db8:255::2/128
            Source UDP Port Range: 54614 - 60074
            Destination Address: 2001:db8:80:1:1:1:0:1
            Destination UDP Port: 4790
            VXLAN Flags: 0x08
...

```

show route forwarding-table

- List of Syntax** [Syntax on page 327](#)
 [Syntax \(MX Series Routers\) on page 327](#)
 [Syntax \(TX Matrix and TX Matrix Plus Routers\) on page 327](#)

Syntax show route forwarding-table
 <detail | extensive | summary>
 <all>
 <ccc *interface-name*>
 <destination *destination-prefix*>
 <family *family* | matching *matching*>
 <interface-name *interface-name*>
 <label *name*>
 <matching *matching*>
 <multicast>
 <table (default | *logical-system-name/routing-instance-name* | *routing-instance-name*)>
 <vlan (all | *vlan-name*)>
 <vpn *vpn*>

Syntax (MX Series Routers) show route forwarding-table
 <detail | extensive | summary>
 <all>
 <bridge-domain (all | *domain-name*)>
 <ccc *interface-name*>
 <destination *destination-prefix*>
 <family *family* | matching *matching*>
 <interface-name *interface-name*>
 <label *name*>
 <learning-vlan-id *learning-vlan-id*>
 <matching *matching*>
 <multicast>
 <table (default | *logical-system-name/routing-instance-name* | *routing-instance-name*)>
 <vlan (all | *vlan-name*)>
 <vpn *vpn*>

Syntax (TX Matrix and TX Matrix Plus Routers) show route forwarding-table
 <detail | extensive | summary>
 <all>
 <ccc *interface-name*>
 <destination *destination-prefix*>
 <family *family* | matching *matching*>
 <interface-name *interface-name*>
 <matching *matching*>
 <label *name*>
 <lcc *number*>
 <multicast>
 <table *routing-instance-name*>
 <vpn *vpn*>

- Release Information** Command introduced before Junos OS Release 7.4.
Option **bridge-domain** introduced in Junos OS Release 7.5
Option **learning-vlan-id** introduced in Junos OS Release 8.4
Options **all** and **vlan** introduced in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.3 for the QFX Series.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX 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: **bridge (ccc | destination | detail | extensive | interface-name | label | learning-vlan-id | matching | multicast | summary | table | vlan | vpn)**, **ethernet-switching**, **evpn**, **fibre-channel**, **fmembers**, **inet**, **inet6**, **iso**, **mcsnoop-inet**, **mcsnoop-inet6**, **mpls**, **satellite-inet**, **satellite-inet6**, **satellite-vpls**, **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 —(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

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[show route forwarding-table vpls \(Broadcast, unknown unicast, and multicast \(BUM\) hashing is enabled\) on page 340](#)

[show route forwarding-table vpls \(Broadcast, unknown unicast, and multicast \(BUM\) hashing is enabled with MAC Statistics\) on page 340](#)
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Output Fields [Table 20 on page 330](#) 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 20: 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 table logical-system-name/routing-instance-name 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

Table 20: show route forwarding-table Output Fields (continued)

Field Name	Field Description	Level of Output
Enabled protocols	<p>The features and protocols that have been enabled for a given routing table. This field can contain the following values:</p> <ul style="list-style-type: none"> • BUM hashing—BUM hashing is enabled. • MAC Stats—Mac Statistics is enabled. • Bridging—Routing instance is a normal layer 2 bridge. • No VLAN—No VLANs are associated with the bridge domain. • All VLANs—The vlan-id all statement has been enabled for this bridge domain. • Single VLAN—Single VLAN ID is associated with the bridge domain. • MAC action drop—New MACs will be dropped when the MAC address limit is reached. • Dual VLAN—Dual VLAN tags are associated with the bridge domain • No local switching—No local switching is enabled for this routing instance.. • Learning disabled—Layer 2 learning is disabled for this routing instance. • MAC limit reached—The maximum number of MAC addresses that was configured for this routing instance has been reached. • VPLS—The VPLS protocol is enabled. • No IRB I2-copy—The no-irb-layer-2-copy feature is enabled for this routing instance. • ACKed by all peers—All peers have acknowledged this routing instance. • BUM Pruning—BUM pruning is enabled on the VPLS instance. • Def BD VXLAN—VXLAN is enabled for the default bridge domain. • EVPN—EVPN protocol is enabled for this routing instance. • Def BD OVSDb—Open vSwitch Database (OVSDb) is enabled on the default bridge domain. • Def BD Ingress replication—VXLAN ingress node replication is enabled on the default bridge domain. • L2 backhaul—Layer 2 backhaul is enabled. • FRR optimize—Fast reroute optimization • MAC pinning—MAC pinning is enabled for this bridge domain. • MAC Aging Timer—The MAC table aging time is set per routing instance. • EVPN VXLAN—This routing instance supports EVPN with VXLAN encapsulation. • PBBN—This routing instance is configured as a provider backbone bridged network. • PBN—This routing instance is configured as a provider bridge network. • ETREE—The ETREE protocol is enabled on this EVPN routing instance. • ARP/NDP suppression—EVPN ARP NDP suppression is enabled in this routing instance. • Def BD EVPN VXLAN—EVPN VXLAN is enabled for the default bridge domain. • MPLS control word—Control word is enabled for this MPLS routing instance. 	All levels
Address family	Address family (for example, IP, IPv6, ISO, MPLS, and VPLS).	All levels
Destination	Destination of the route.	detail extensive

Table 20: show route forwarding-table Output Fields (continued)

Field Name	Field Description	Level of Output
Route Type (Type)	<p>How the route was placed into the forwarding table. When the detail keyword is used, the route type might be abbreviated (as shown in parentheses):</p> <ul style="list-style-type: none"> • cloned (clon)—(TCP or multicast only) Cloned route. • destination (dest)—Remote addresses directly reachable through an interface. • destination down (iddn)—Destination route for which the interface is unreachable. • interface cloned (ifcl)—Cloned route for which the interface is unreachable. • route down (ifdn)—Interface route for which the interface is unreachable. • ignore (ignr)—Ignore this route. • interface (intf)—Installed as a result of configuring an interface. • permanent (perm)—Routes installed by the kernel when the routing table is initialized. • user—Routes installed by the routing protocol process or as a result of the configuration. 	All levels
Route Reference (RtRef)	Number of routes to reference.	detail extensive
Flags	<p>Route type flags:</p> <ul style="list-style-type: none"> • none—No flags are enabled. • accounting—Route has accounting enabled. • cached—Cache route. • incoming-iface interface-number—Check against incoming interface. • prefix load balance—Load balancing is enabled for this prefix. • rt nh decoupled—Route has been decoupled from the next hop to the destination. • sent to PFE—Route has been sent to the Packet Forwarding Engine. • static—Static route. 	extensive
Next hop	<p>IP address of the next hop to the destination.</p> <p>NOTE: For static routes that use point-to-point (P2P) outgoing interfaces, the next-hop address is not displayed in the output.</p>	detail extensive

Table 20: show route forwarding-table Output Fields (continued)

Field Name	Field Description	Level of Output
Next hop Type (Type)	<p>Next-hop type. When the detail keyword is used, the next-hop type might be abbreviated (as indicated in parentheses):</p> <ul style="list-style-type: none"> • broadcast (bcst)—Broadcast. • deny—Deny. • discard (dscd)—Discard. • hold—Next hop is waiting to be resolved into a unicast or multicast type. • indexed (idxd)—Indexed next hop. • indirect (indr)—Indirect next hop. • local (locl)—Local address on an interface. • routed multicast (mcrst)—Regular multicast next hop. • multicast (mcst)—Wire multicast next hop (limited to the LAN). • multicast discard (mdsc)—Multicast discard. • multicast group (mgrp)—Multicast group member. • receive (rcv)—Receive. • reject (rjct)—Discard. An ICMP unreachable message was sent. • resolve (rslv)—Resolving the next hop. • 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. 	detail extensive
Index	Software index of the next hop that is used to route the traffic for a given prefix.	detail extensive none
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.	extensive
Reference (NhRef)	Number of routes that refer to this next hop.	detail extensive none
Next-hop interface (Netif)	Interface used to reach the next hop.	detail extensive none
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 Balance field description).	extensive
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.	extensive
RPF interface	List of interfaces from which the prefix can be accepted. Reverse path forwarding (RPF) information is displayed only when rpf-check is configured on the interface.	extensive

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	
172.16.1.0/24	ifdn	0		rslv	608	1	ge-2/0/1.0
172.16.1.0/32	iddn	0	172.16.1.0	recv	606	1	ge-2/0/1.0
172.16.1.1/32	user	0		rjct	46	4	
172.16.1.1/32	intf	0	172.16.1.1	loc1	607	2	
172.16.1.1/32	iddn	0	172.16.1.1	loc1	607	2	
172.16.1.255/32	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	loc1	615	2	
10.0.0.1/32	dest	0	10.0.0.1	loc1	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	loc1	611	2	
10.1.1.1/32	iddn	0	10.1.1.1	loc1	611	2	
10.1.1.255/32	iddn	0	ff:ff:ff:ff:ff:ff	bcst	609	1	ge-2/0/1.0
10.206.0.0/16	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	loc1	417	2	
10.209.2.131/32	dest	0	10.209.2.131	loc1	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			loc1 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	loc1	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	loc1	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	loc1	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		rs1v	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	loc1	135	2	
10.0.0.4/32	dest	0	10.0.0.4	loc1	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
  Flags: sent to PFE
  Next-hop type: unicast
  Nexthop: 172.16.4.4
  Next-hop type: unicast
  Next-hop interface: so-1/1/0.0
  Nexthop: 145.12.1.2
  Next-hop type: unicast
  Next-hop interface: so-0/1/2.0
  Route interface-index: 0
  Index: 262143  Reference: 1
  Index: 335      Reference: 2
  Weight: 22     Balance: 3
  Index: 337      Reference: 2
  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
  Flags: sent to PFE
  Nexthop: 00:00:5E:00:53:1b
  Next-hop type: unicast
  Next-hop interface: fxp0.0
  Route interface-index: 0
  Index: 132      Reference: 4

Destination: default
  Route type: permanent
  Route reference: 0
  Flags: none
  Next-hop type: reject
  Route interface-index: 0
  Index: 14       Reference: 1

Destination: 127.0.0.1/32
  Route type: interface
  Route reference: 0
  Flags: sent to PFE
  Nexthop: 127.0.0.1
  Next-hop type: local
  Route interface-index: 0
  Index: 320      Reference: 1
...

Routing table: private1__inet [Index 1]
Internet:

Destination: default
  Route type: permanent
  Route reference: 0
  Flags: sent to PFE
  Next-hop type: reject
  Route interface-index: 0
  Index: 46       Reference: 1

Destination: 10.0.0.0/8
  Route type: interface
  Route reference: 0
  Flags: sent to PFE
  Next-hop type: resolve
  Next-hop interface: fxp1.0
  Route interface-index: 3
  Index: 136      Reference: 1

```



```

...

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
  Nexthop: 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 192.0.2.2/30;
    }
  }
}

```

```
}
}
```

```
user@host> show route forwarding-table extensive
```

```
Routing table: inet [Index 0]
Internet:
...
...
Destination: 192.0.2.3/32
Route type: destination
Route reference: 0                      Route interface-index: 67
Flags: sent to PFE
Nexthop: 192.0.2.3
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 (dynamic list next hop)

The **show route forwarding table** output shows the two next hop elements for a multihomed EVPN destination.

```
user@host> show route forwarding-table label 299952 extensive
```

```
MPLS:

Destination: 299952
Route type: user
Route reference: 0                      Route interface-index: 0
Multicast RPF nh index: 0
P2mpidx: 0
Flags: sent to PFE, rt nh decoupled
Next-hop type: indirect                 Index: 1048575 Reference: 2
Nexthop:
Next-hop type: composite                Index: 601      Reference: 2
Next-hop type: indirect                 Index: 1048574 Reference: 3
Nexthop: 1.0.0.4
Next-hop type: Push 301632, Push 299776(top) Index: 600 Reference: 2
Load Balance Label: None
Next-hop interface: ge-0/0/1.0
Next-hop type: indirect                 Index: 1048577 Reference: 3
Nexthop: 1.0.0.4
Next-hop type: Push 301344, Push 299792(top) Index: 619 Reference: 2
Load Balance Label: None
Next-hop interface: ge-0/0/1.0
```

After one of the PE router has been disabled in the EVPN multihomed network, the same **show route forwarding table** output command shows one next hop element and one empty next hop element.

```
user@host> show route forwarding-table label 299952 extensive
```

```
Routing table: default.mpls [Index 0]
MPLS:

Destination: 299952
Route type: user
```

```

Route reference: 0                      Route interface-index: 0
Multicast RPF nh index: 0
P2mpidx: 0
Flags: sent to PFE, rt nh decoupled
Next-hop type: indirect                 Index: 1048575 Reference: 2
Nexthop:
Next-hop type: composite                Index: 601      Reference: 2
Next-hop type: indirect                Index: 1048577 Reference: 3
Nexthop: 1.0.0.4
Next-hop type: Push 301344, Push 299792(top) Index: 619 Reference: 2
Load Balance Label: None
Next-hop interface: ge-0/0/1.0

```

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 mpls ccc ge-0/0/1.1004

```
user@host> show route forwarding-table mpls ccc ge-0/0/1.1004
```

```

Routing table: default.mpls
MPLS:
Destination      Type RtRef Next hop      Type Index NhRef Netif
ge-0/0/1.1004    (CCC) user  0                ulst 1048577 2
                  comp    754    3
                  comp    755    3
                  comp    756    3

Routing table: __mpls-oam__.mpls
MPLS:
Destination      Type RtRef Next hop      Type Index NhRef Netif
default          perm  0                dscd  556    1

```

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                flood 353    1
default          perm  0                rjct  298    1

```

```

fe-0/1/0.0      dynm    0      flood  355    1
00:00:5E:00:53:1f/48      <<<<<Remote CE

                                dynm    0      indr   351    4
                                Push 800000, Push 100002(top)

so-0/0/0.0
00:00:5E:00:53:1f/48      <<<<<<Local CE

                                dynm    0      ucst   354    2 fe-0/1/0.0

```

show route forwarding-table vpls (Broadcast, unknown unicast, and multicast (BUM) hashing is enabled)

```

user@host> show route forwarding-table vpls

Routing table: green.vpls
VPLS:
Enabled protocols: BUM hashing
Destination      Type RtRef Next hop      Type Index  NhRef Netif
default          perm  0          172.16.3.2    dscd   519      1
lsi.1048832      intf  0          172.16.3.2    indr  1048574   4
                                Push 262145    621    2

ge-3/0/0.0
00:00:5E:00:53:01/48 user    0          ucst   590      5 ge-2/3/9.0
0x30003/51      user    0          comp   627      2
ge-2/3/9.0      intf    0          ucst   590      5 ge-2/3/9.0
ge-3/1/3.0      intf    0          ucst   619      4 ge-3/1/3.0
0x30002/51      user    0          comp   600      2
0x30001/51      user    0          comp   597      2

```

show route forwarding-table vpls (Broadcast, unknown unicast, and multicast (BUM) hashing is enabled with MAC Statistics)

```

user@host> show route forwarding-table vpls

Routing table: green.vpls
VPLS:
Enabled protocols: BUM hashing, MAC Stats
Destination      Type RtRef Next hop      Type Index  NhRef Netif
default          perm  0          172.16.3.2    dscd   519      1
lsi.1048834      intf  0          172.16.3.2    indr  1048574   4
                                Push 262145    592    2

ge-3/0/0.0
00:19:e2:25:d0:01/48 user    0          ucst   590      5 ge-2/3/9.0
0x30003/51      user    0          comp   630      2
ge-2/3/9.0      intf    0          ucst   590      5 ge-2/3/9.0
ge-3/1/3.0      intf    0          ucst   591      4 ge-3/1/3.0
0x30002/51      user    0          comp   627      2
0x30001/51      user    0          comp   624      2

```

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          Route interface-index: 72

```

```

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             Route interface-index: 0
Flags: none
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: 00:00:5E:00:53:01/48
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: 00:00:5E:00:53:04/48
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: 00:00:5E:00:53:05/48
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
172.16.0.1/32    user     0          dscd    561    2
172.16.2.0/24    intf     0          rslv    771    1 ge-1/2/0.3
172.16.2.0/32    dest     0 172.16.2.0      recv    769    1 ge-1/2/0.3
172.16.2.1/32    intf     0 172.16.2.1      locl    770    2
172.16.2.1/32    dest     0 172.16.2.1      locl    770    2
172.16.2.2/32    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
172.16.2.255/32 dest     0 172.16.2.255    bcst    768    1 ge-1/2/0.3
172.16.233.0/4   perm     1          mdsc    562    1
172.16.233.1/32  perm     0 172.16.233.1    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	loc1	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						
172.16.233.0/4	perm	2		mdsc	5	3
172.16.233.1/32	perm	0	172.16.233.1	mcst	1	8
172.16.233.5/32	user	1	172.16.233.5	mcst	1	8
255.255.255.255/32	perm	0		bcst	2	3

On QFX5200, the results for this command look like this:

```
show route forwarding-table family mpls
```

```
Routing table: default.mpls
```

```
MPLS:
```

```
Destination Type RtRef Next hop Type Index NhRef Netif
```

```
default perm 0 dscd 65 1
```

```
0 user 0 recv 64 4
```

```
1 user 0 recv 64 4
```

```
2 user 0 recv 64 4
```

```
13 user 0 recv 64 4
```

```
300384 user 0 9.1.1.1 Pop 1711 2 xe-0/0/34.0
```

```
300384(S=0) user 0 9.1.1.1 Pop 1712 2 xe-0/0/34.0
```

```
300400 user 0 ulst 131071 2
```

```
10.1.1.2 Pop 1713 1 xe-0/0/38.0
```

```
172.16.11.2 Pop 1714 1 xe-0/0/40.0
```

```
300400(S=0) user 0 ulst 131072 2
```

```
10.1.1.2 Pop 1715 1 xe-0/0/38.0
```

```
172.16.11.2 Pop 1716 1 xe-0/0/40.0
```

```
Routing table: __mpls-oam__.mpls
```

```
MPLS:
```

```
Destination Type RtRef Next hop Type Index NhRef Netif
```

```
default perm 0 dscd 1681 1
```


show route hidden

Syntax	<pre>show route hidden <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Release Information	Command introduced before Junos OS Release 7.4.
Description	Display only hidden route information. A hidden route is unusable, even if it is the best path.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • Understanding Hidden Routes
List of Sample Output	show route hidden on page 345 show route hidden detail on page 346 show route hidden extensive on page 346 show route hidden terse on page 347
Output Fields	For information about output fields, see the output field table 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 hidden

```
user@host> show route hidden

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
127.0.0.1/32      [Direct/0] 04:26:38
                  > via lo0.0

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
```

```

10.5.5.5/32      [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: 100 I
                  Unusable
10.12.1.0/24     [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: 100 I
                  Unusable
10.12.80.4/30    [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: I
                  Unusable
...

```

show route hidden detail

```

user@host> show route hidden detail

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
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>
        Local AS:      1
        Age: 4:27:37
        Task: IF
        AS path: I

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete

10.5.5.5/32 (1 entry, 0 announced)
    BGP    Preference: 170/-101
           Route Distinguisher: 10.4.4.4:4
           Next hop type: Unusable
           Next-hop reference count: 6
           State: <Secondary Hidden Int Ext>
           Local AS:      1 Peer AS:      1
           Age: 3:45:09
           Task: BGP_1.10.4.4.4+2493
           AS path: 100 I
           Communities: target:1:999
           VPN Label: 100064
           Localpref: 100
           Router ID: 10.4.4.4
           Primary Routing Table bgp.13vpn.0
...

```

show route hidden extensive

The output for the **show route hidden extensive** command is identical to that of the **show route hidden detail** command. For sample output, see [show route hidden detail on page 346](#).

show route hidden terse

```
user@host> show route hidden 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
127.0.0.1/32	D 0			>1o0.0	

```
private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
```

```
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
10.5.5.5/32	B 170	100		Unusable	100 I
10.12.1.0/24	B 170	100		Unusable	100 I
10.12.80.4/30	B 170	100		Unusable	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
```

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

A Destination	P Prf	Metric 1	Metric 2	Next hop	AS path
10.4.4.4:4:10.5.5.5/32	B 170	100		Unusable	100 I
10.4.4.4:4:10.12.1.0/24	B 170	100		Unusable	100 I
10.4.4.4:4:10.12.80.4/30	B 170	100		Unusable	I

```
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

List of Syntax	Syntax on page 348 Syntax (EX Series Switches) on page 348
Syntax	<pre>show route inactive-path <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route inactive-path <brief detail extensive terse></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display routes for destinations that have no active route. An inactive route is a route that was not selected as the best path.
Options	<p>none—Display all inactive routes.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>logical-system (all <i>logical-system-name</i>)—(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">• show route active-path on page 264
List of Sample Output	show route inactive-path on page 348 show route inactive-path detail on page 349 show route inactive-path extensive on page 350 show route inactive-path terse on page 350
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 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 349](#).

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           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 instance

List of Syntax	Syntax on page 352 Syntax (EX Series Switches and QFX Series) on page 352
Syntax	<pre>show route instance <brief detail summary> <instance-name> <logical-system (all logical-system-name)> <operational></pre>
Syntax (EX Series Switches and QFX Series)	<pre>show route instance <brief detail summary> <instance-name> <operational></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> <p>Command introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Display routing instance information.
Options	<p>none—(Same as brief) Display standard information about all routing instances.</p> <p>brief detail summary—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief. (These options are not available with the operational keyword.)</p> <p>instance-name—(Optional) Display information for all routing instances whose name begins with this string (for example, cust1, cust11, and cust111 are all displayed when you run the show route instance cust1 command).</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p>operational—(Optional) Display operational routing instances.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • <i>Example: Transporting IPv6 Traffic Across IPv4 Using Filter-Based Tunneling</i> • <i>Example: Configuring the Helper Capability Mode for OSPFv3 Graceful Restart</i>
List of Sample Output	show route instance on page 354 show route instance detail (Graceful Restart Complete) on page 354

[show route instance detail \(Graceful Restart Incomplete\) on page 356](#)

[show route instance detail \(VPLS Routing Instance\) on page 358](#)

[show route instance operational on page 358](#)

[show route instance summary on page 358](#)

Output Fields Table 21 on page 353 lists the output fields for the **show route instance** command. Output fields are listed in the approximate order in which they appear.

Table 21: 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	(operational keyword only) Names of all operational routing instances.	—
Type	Type of routing instance: forwarding , l2vpn , no-forwarding , vpls , virtual-router , or vrf .	All levels
State	State of the routing instance: active or inactive .	brief detail none
Interfaces	Name of interfaces belonging to this routing instance.	brief detail none
Restart State	Status of graceful restart for this instance: Pending or Complete .	detail
Path selection timeout	Maximum amount of time, in seconds, remaining until graceful restart is declared complete. The default is 300 .	detail
Tables	Tables (and number of routes) associated with this routing instance.	brief detail none
Route-distinguisher	Unique route distinguisher associated with this routing instance.	detail
Vrf-import	VPN routing and forwarding instance import policy name.	detail
Vrf-export	VPN routing and forwarding instance export policy name.	detail
Vrf-import-target	VPN routing and forwarding instance import target community name.	detail
Vrf-export-target	VPN routing and forwarding instance export target community name.	detail
Vrf-edge-protection-id	Context identifier configured for edge-protection.	detail
Fast-reroute-priority	Fast reroute priority setting for a VPLS routing instance: high , medium , or low . The default is low .	detail
Restart State	Restart state: <ul style="list-style-type: none"> Pending:protocol-name—List of protocols that have not yet completed graceful restart for this routing table. Complete—All protocols have restarted for this routing table. 	detail

Table 21: show route instance Output Fields (continued)

Field Name	Field Description	Level of Output
Primary rib	Primary table for this routing instance.	brief none summary
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 ]
  Vrf-edge-protection-id: 166.1.3.1 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

L2VPN	l2vpn	BGP-L.inet6.0	0/0/0
		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 next-hop

List of Syntax	Syntax on page 360 Syntax (EX Series Switches) on page 360
Syntax	<pre>show route next-hop <i>next-hop</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route next-hop <i>next-hop</i> <brief detail extensive terse></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 entries in the routing table that are being sent to the specified next-hop address.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>next-hop</i>—Next-hop address.</p>
Required Privilege Level	view
List of Sample Output	show route next-hop on page 360 show route next-hop detail on page 361 show route next-hop extensive on page 363 show route next-hop terse on page 365
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 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.12vpn.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			>192.168.71.254	
* 10.209.0.0/16	S	5			>192.168.71.254	
* 172.16.0.0/12	S	5			>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 output

List of Syntax	Syntax on page 366 Syntax (EX Series Switches) on page 366
Syntax	<pre>show route output (address <i>ip-address</i> interface <i>interface-name</i>) <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route output (address <i>ip-address</i> interface <i>interface-name</i>) <brief detail extensive terse></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	<p>Display the entries in the routing table learned through static routes and interior gateway protocols that are to be sent out the interface with either the specified IP address or specified name.</p> <p>To view routes advertised to a neighbor or received from a neighbor for the BGP protocol, use the show route advertising-protocol bgp and show route receive-protocol bgp commands instead.</p>
Options	<p>address <i>ip-address</i>—Display entries in the routing table that are to be sent out the interface with the specified IP address.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>interface <i>interface-name</i>—Display entries in the routing table that are to be sent out the interface with the specified name.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route output address on page 367 show route output address detail on page 367 show route output address extensive on page 368 show route output address terse on page 368 show route output interface on page 368 show route output interface detail on page 369 show route output interface extensive on page 369 show route output interface terse on page 369

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 output address

```
user@host> show route output address 172.16.36.1/24

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

172.16.36.0/24          *[Direct/0] 00:19:56
                        > via so-0/1/2.0
                        [OSPF/10] 00:19:55, metric 1
                        > via so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output address detail

```
user@host> show route output address 172.16.36.1 detail

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
172.16.36.0/24 (2 entries, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via so-0/1/2.0, selected
    State: <Active Int>
    Age: 23:00
    Task: IF
    AS path: I
  OSPF Preference: 10
    Next-hop reference count: 1
    Next hop: via so-0/1/2.0, selected
    State: <Int>
    Inactive reason: Route Preference
    Age: 22:59      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)

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output address extensive

The output for the **show route output address extensive** command is identical to that of the **show route output address detail** command. For sample output, see [show route output address detail on page 367](#).

show route output address terse

```
user@host> show route output address 172.16.36.1 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
* 172.16.36.0/24    D  0                >so-0/1/2.0
                        0 10                >so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output interface

```
user@host> show route output interface so-0/1/2.0

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

10.255.71.240/32    *[OSPF/10] 00:13:00, metric 2
                    via so-0/1/2.0
                    > via so-0/3/2.0
10.255.71.241/32    *[OSPF/10] 00:13:10, metric 1
                    > via so-0/1/2.0
172.16.14.0/24      *[OSPF/10] 00:05:11, 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
172.16.16.0/24      *[OSPF/10] 00:13:10, metric 2
                    > via so-0/1/2.0
172.16.36.0/24      *[Direct/0] 00:13:21
                    > via so-0/1/2.0
                    [OSPF/10] 00:13:20, metric 1
                    > via so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
private1__inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output interface detail

```
user@host> show route output interface so-0/1/2.0 detail
```

```
inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
10.255.71.240/32 (1 entry, 1 announced)
    *OSPF   Preference: 10
           Next-hop reference count: 2
           Next hop: via so-0/1/2.0
           Next hop: via so-0/3/2.0, selected
           State: <Active Int>
           Age: 14:52      Metric: 2
           Area: 0.0.0.0
           Task: OSPF
           Announcement bits (1): 0-KRT
           AS path: I
10.255.71.241/32 (1 entry, 1 announced)
    *OSPF   Preference: 10
           Next-hop reference count: 4
           Next hop: via so-0/1/2.0, selected
           State: <Active Int>
           Age: 15:02      Metric: 1
           Area: 0.0.0.0
           Task: OSPF
           Announcement bits (1): 0-KRT
           AS path: I
...
```

show route output interface extensive

The output for the **show route output interface extensive** command is identical to that of the **show route output interface detail** command. For sample output, see [show route output interface detail on page 369](#).

show route output interface terse

```
user@host> show route output interface so-0/1/2.0 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
*	10.255.71.240/32	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	
*	172.16.14.0/24	0	10	3		35.1.1.2	

```
>so-0/1/2.0
so-0/3/2.0
* 172.16.16.0/24      0 10      2      >so-0/1/2.0
* 172.16.36.0/24      D  0      >so-0/1/2.0
                     0 10      1      >so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route protocol

List of Syntax [Syntax on page 371](#)
 [Syntax \(EX Series Switches\) on page 371](#)

Syntax `show route protocol protocol`
 `<brief | detail | extensive | terse>`
 `<logical-system (all | logical-system-name)>`

Syntax (EX Series Switches) `show route protocol protocol`
 `<brief | detail | extensive | terse>`

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.
 ospf2 and **ospf3** options introduced in Junos OS Release 9.2.
 ospf2 and **ospf3** options introduced in Junos OS Release 9.2 for EX Series switches.
 flow option introduced in Junos OS Release 10.0.
 flow option introduced in Junos OS Release 10.0 for EX Series switches.

Description Display the route entries in the routing table that were learned from a particular protocol.

Options **brief | detail | extensive | terse**—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to **brief**.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

protocol—Protocol from which the route was learned:

- **access**—Access route for use by DHCP application
- **access-internal**—Access-internal route for use by DHCP application
- **aggregate**—Locally generated aggregate route
- **arp**—Route learned through the Address Resolution Protocol
- **atmvpn**—Asynchronous Transfer Mode virtual private network
- **bgp**—Border Gateway Protocol
- **ccc**—Circuit cross-connect
- **direct**—Directly connected route
- **dvmrp**—Distance Vector Multicast Routing Protocol
- **esis**—End System-to-Intermediate System
- **flow**—Locally defined flow-specification route
- **frr**—Precomputed protection route or backup route used when a link goes down

- **isis**—Intermediate System-to-Intermediate System
- **ldp**—Label Distribution Protocol
- **l2circuit**—Layer 2 circuit
- **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.

Required Privilege Level view

List of Sample Output [show route protocol access on page 373](#)
[show route protocol access-internal extensive on page 373](#)
[show route protocol arp on page 373](#)
[show route protocol bgp on page 374](#)
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[show route protocol bgp detail \(Labeled Unicast\) on page 375](#)
[show route protocol bgp detail \(Aggregate Extended Community Bandwidth\) on page 375](#)
[show route protocol bgp extensive on page 376](#)
[show route protocol bgp terse on page 377](#)
[show route protocol direct on page 377](#)

[show route protocol frr on page 378](#)
[show route protocol l2circuit detail on page 378](#)
[show route protocol l2vpn extensive on page 379](#)
[show route protocol ldp on page 380](#)
[show route protocol ldp extensive on page 380](#)
[show route protocol ospf \(Layer 3 VPN\) on page 381](#)
[show route protocol ospf detail on page 382](#)
[show route protocol rip on page 382](#)
[show route protocol rip detail on page 382](#)
[show route protocol ripng table inet6 on page 383](#)
[show route protocol static detail on page 383](#)

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 detail (Labeled Unicast)

```

user@host> show route protocol bgp 1.1.1.8/32 detail

inet.0: 45 destinations, 46 routes (45 active, 0 holddown, 0 hidden)
1.1.1.8/32 (2 entries, 2 announced)
State:
*BGP Preference: 1/-101
Next hop type: Indirect, Next hop index: 0
Address: 0xc007f30
Next-hop reference count: 2
Source: 1.1.1.1
Next hop type: Router, Next hop index: 614
Next hop: 20.1.1.2 via ge-0/0/1.0, selected
Label-switched-path lsp1
Label operation: Push 1000126, Push 1000125, Push 1000124, Push 1000123, Push
299872(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 1000126: None; Label 1000125: None; Label 1000124: None;
Label 1000123: None; Label 299872: None;
Label element ptr: 0xc007860
Label parent element ptr: 0xc0089a0
Label element references: 1
Label element child references: 0
Label element lsp id: 0
Session Id: 0x140
Protocol next hop: 1.1.1.4
Label operation: Push 1000126, Push 1000125, Push 1000124, Push 1000123(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl, prop-ttl
Load balance label: Label 1000126: None; Label 1000125: None; Label 1000124: None;
Label 1000123: None;
Indirect next hop: 0xae8d300 1048576 INH Session ID: 0x142
State:
Local AS: 5 Peer AS: 5
Age: 22:43 Metric2: 2
Validation State: unverified
Task: BGP_5.1.1.1.1
Announcement bits (2): 0-KRT 7-Resolve tree 2
AS path: I
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Localpref: 100
Router ID: 1.1.1.1

```

show route protocol bgp detail (Aggregate Extended Community Bandwidth)

```

user@host> show route 10.0.2.0 protocol bgp detail

inet.0: 20 destinations, 26 routes (20 active, 0 holddown, 0 hidden)
10.0.2.0/30 (2 entries, 1 announced)
*BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
Address: 0xb618990

```

```

Next-hop reference count: 3
Source: 10.0.1.1
Next hop: 10.0.0.2 via ge-0/0/0.0 balance 40%
Session Id: 0x0
Next hop: 10.0.1.1 via ge-0/0/1.0 balance 60%, selected
Session Id: 0x0
State: <Active Ext>
Local AS: 65000 Peer AS: 65001
Age: 20:33
Validation State: unverified
Task: BGP_65001.10.0.1.1
Announcement bits (3): 0-KRT 2-BGP_Listen.0.0.0.0+179
3-BGP_RT_Background
AS path: 65001 I
Communities: bandwidth:65000:60000000
Accepted Multipath
Localpref: 100
Router ID: 128.49.121.137
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 595
Address: 0xb7a1330
Next-hop reference count: 9
Source: 10.0.0.2
Next hop: 10.0.0.2 via ge-0/0/0.0, selected
Session Id: 0x141
State: <NotBest Ext>
Inactive reason: Not Best in its group - Active preferred
Local AS: 65000 Peer AS: 65001
Age: 20:33
Validation State: unverified
Task: BGP_65001.10.0.0.2
AS path: 65001 I
Communities: bandwidth:65000:40000000
Accepted MultipathContrib
Localpref: 100
Router ID: 128.49.121.132

```

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          >172.16.100.1 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

172.16.8.0/24      *[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
172.16.30.0/24    *[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

```

```

2001:db8::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-kerne1 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-kerne1 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: 64500
            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: 64500
              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: 64500
              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: 64500
              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: 64500
              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
172.16.233.5/32   *[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
172.16.233.5/32   *[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
172.16.233.9/32   *[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 receive-protocol

List of Syntax	Syntax on page 385 Syntax (EX Series Switches) on page 385
Syntax	<pre>show route receive-protocol <i>protocol neighbor-address</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)</pre>
Syntax (EX Series Switches)	<pre>show route receive-protocol <i>protocol neighbor-address</i> <brief detail extensive terse></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 routing information as it was received through a particular neighbor using a particular dynamic routing protocol.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>protocol neighbor-address</i>—Protocol transmitting the route (bgp, dvmrp, msdp, pim, rip, or ripng) and address of the neighboring router from which the route entry was received.</p>
Additional Information	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.
Required Privilege Level	view
List of Sample Output	show route receive-protocol bgp on page 388 show route receive-protocol bgp extensive on page 388 show route receive-protocol bgp table extensive on page 389 show route receive-protocol bgp logical-system extensive on page 389 show route receive-protocol bgp detail (Layer 2 VPN) on page 390 show route receive-protocol bgp extensive (Layer 2 VPN) on page 390 show route receive-protocol bgp (Layer 3 VPN) on page 391 show route receive-protocol bgp detail (Layer 3 VPN) on page 391 show route receive-protocol bgp detail (Long-Lived Graceful Restart) on page 392 show route receive-protocol bgp detail (Labeled Unicast) on page 393 show route receive-protocol bgp extensive (Layer 3 VPN) on page 393 Show route receive protocol (Segment Routing Traffic Engineering) on page 394

Output Fields Table 22 on page 386 describes the output fields for the **show route receive-protocol** command. Output fields are listed in the approximate order in which they appear.

Table 22: 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
<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"> • active • holddown (routes that are in pending state before being declared inactive) • hidden (routes that are not used because of a routing policy) 	All levels
Prefix	Destination prefix.	none brief
MED	Multiple exit discriminator value included in the route.	none brief
<i>destination-prefix</i> (entry, announced)	Destination prefix. The entry value is the number of routes for this destination, and the announced value is the number of routes being announced for this destination.	detail extensive
Accepted LongLivedStale	The LongLivedStale flag indicates that the route was marked LLGR-stale by this router, as part of the operation of LLGR receiver mode. Either this flag or the LongLivedStaleImport flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag.	detail extensive
Accepted LongLivedStaleImport	The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy. Either this flag or the LongLivedStale flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag. Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and import into the inet.0 routing table	detail extensive
ImportAccepted LongLivedStaleImport	Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and imported into the inet.0 routing table The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy.	detail extensive
Route Distinguisher	64-bit prefix added to IP subnets to make them unique.	detail extensive
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.	detail extensive

Table 22: show route receive-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
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.	detail extensive
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
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"> • I—IGP. • E—EGP. • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—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. • []—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. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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
Route Labels	Stack of labels carried in the BGP route update.	detail extensive
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 show route detail 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 Attrset attribute at the originating routing device.	detail extensive

Table 22: show route receive-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).	detail extensive
control flags	Control flags: none or Site Down.	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
172.16.1.0/24 (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
172.16.163.0/16 (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
172.16.164.0/16 (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
172.16.195.0/24 (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	Lc1pref	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

* 172.16.44.0/24 (1 entry, 1 announced)
  Accepted
  Route Label: 300096
  Nexthop: 10.0.0.9
  AS path: 13979 I
  AIGP: 203

* 172.16.55.0/24 (1 entry, 1 announced)
```

```

Accepted
Route Label: 300112
Nexthop: 10.0.0.9
AS path: 13979 7018 I
AIGP: 25

* 172.16.66.0/24 (1 entry, 1 announced)
Accepted
Route Label: 300144
Nexthop: 10.0.0.9
AS path: 13979 7018 I

* 172.16.99.0/24 (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    Lc1pref AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
mpls.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
frame-vpn.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref 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    Lc1pref 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    Lc1pref AS path
inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
VPN-A.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref 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    Lc1pref 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    Lc1pref AS path
mpls.0: 9 destinations, 9 routes (9 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
bgp.l3vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref 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 detail (Long-Lived Graceful Restart)

```
user@host> show route receive-protocol bgp 10.4.12.11 detail
```

```

bgp.l2vpn.0: 38 destinations, 39 routes (37 active, 0 holddown, 1 hidden)
* 172.16.1.4:100:172.16.1.4/96 AD (1 entry, 1 announced)
  Accepted LongLivedStale LongLivedStaleImport
  Nexthop: 10.4.12.11
  Localpref: 100
  AS path: I

```


show route receive-protocol bgp detail (Labeled Unicast)

```

user@host> show route receive-protocol bgp 1.1.1.1 detail

inet.0: 45 destinations, 46 routes (45 active, 0 holddown, 0 hidden)
* 1.1.1.8/32 (2 entries, 2 announced)
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: 1.1.1.4
Localpref: 100
AS path: I
Entropy label capable, next hop field matches route next hop

inet.3: 15 destinations, 21 routes (6 active, 0 holddown, 14 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

mpls.0: 11 destinations, 11 routes (11 active, 0 holddown, 0 hidden)

inet6.0: 26 destinations, 28 routes (26 active, 0 holddown, 0 hidden)
* 100::1/128 (2 entries, 2 announced)
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: ::ffff:1.1.1.4
Localpref: 100
AS path: I

inet6.3: 22 destinations, 23 routes (22 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
  172.16.1.0/24 (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
  172.16.163.0/16 (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
  172.16.164.0/16 (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
  172.16.195.0/24 (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 receive protocol (Segment Routing Traffic Engineering)

```

show route receive protocol bgp 10.1.1.4

bgp.inetcolor.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

* 50-4.4.4.4-1234<sr6>/96 (1 entry, 0 announced)
  Import Accepted
  Distinguisher: 50
  Color: 1234
  Nexthop: 10.1.1.4
  Localpref: 100
  AS path: 3 I
  Communities: target:1.1.1.1:1

inetcolor.0: 6 destinations, 7 routes (6 active, 0 holddown, 0 hidden)
* 4.4.4.4-1234<c6>/64 (1 entry, 1 announced)
  Import Accepted
  Color: 1234
  Nexthop: 10.1.1.4
  Localpref: 100
  AS path: 3 I
  Communities: target:1.1.1.1:1

user@host# run show route receive-protocol bgp 5001:1::4

bgp.inet6color.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

* 50-2001:1::4-1234<sr6>/192 (1 entry, 0 announced)
  Import Accepted
  Distinguisher: 50
  Color: 1234
  Nexthop: ::ffff:1.1.1.4
  Localpref: 100
  AS path: 3 I
  Communities: target:1.1.1.1:1

inet6color.0: 6 destinations, 7 routes (6 active, 0 holddown, 0 hidden)
* 2001::5-1234<c6>/160 (1 entry, 1 announced)
  Import Accepted
  Color: 1234
  Nexthop: ::ffff:1.1.1.5
  Localpref: 100
  AS path: 3 I
  Communities: target:2:1

```

show route table

List of Syntax	Syntax on page 395 Syntax (EX Series Switches, QFX Series Switches) on page 395
Syntax	<pre>show route table <i>routing-table-name</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches, QFX Series Switches)	<pre>show route table <i>routing-table-name</i> <brief detail extensive terse></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> <p>Statement introduced in Junos OS Release 14.1X53-D15 for QFX Series switches.</p> <p>Show route table evpn statement introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.</p>
Description	Display the route entries in a particular routing table.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>routing-table-name</i>—Display route entries for all routing tables whose names begin with this string (for example, inet.0 and inet6.0 are both displayed when you run the show route table inet command).</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show route summary
List of Sample Output	show route table bgp.l2.vpn on page 407 show route table bgp.l3vpn.0 on page 407 show route table bgp.l3vpn.0 detail on page 407 show route table bgp.rtarget.0 (When Proxy BGP Route Target Filtering Is Configured) on page 409 show route table bgp.evpn.0 on page 409 show route table evpna.evpn.0 on page 410 show route table inet.0 on page 410 show route table inet.3 on page 410 show route table inet.3 protocol ospf on page 410

[show route table inet6.0 on page 411](#)
[show route table inet6.3 on page 411](#)
[show route table inetcolor.0 on page 411](#)
[show route table inetflow detail on page 412](#)
[show route table inetflow.0 extensive \(BGP Flowspec Redirect to IP\) on page 413](#)
[show route table lsdist.0 extensive on page 414](#)
[show route table l2circuit.0 on page 416](#)
[show route table lsdist.0 on page 416](#)
[show route table mpls on page 416](#)
[show route table mpls extensive on page 417](#)
[show route table mpls.0 on page 417](#)
[show route table mpls.0 detail \(PTX Series\) on page 418](#)
[show route table mpls.0 ccc ge-0/0/1.1004 detail on page 418](#)
[show route table mpls.0 protocol evpn on page 420](#)
[show route table mpls.0 protocol ospf on page 426](#)
[show route table mpls.0 extensive \(PTX Series\) on page 426](#)
[show route table mpls.0 \(RSVP Route—Transit LSP\) on page 427](#)
[show route table vpls_1 detail on page 427](#)
[show route table vpn-a on page 428](#)
[show route table vpn-a.mdt.0 on page 428](#)
[show route table VPN-A detail on page 428](#)
[show route table VPN-AB.inet.0 on page 429](#)
[show route table VPN_blue.mvpn-inet6.0 on page 429](#)
[show route table vrf1.mvpn.0 extensive on page 430](#)
[show route table inetflow detail on page 430](#)
[show route table bgp.evpn.0 extensive |no-more \(EVPN\) on page 433](#)
[show route table default-switch.evpn.0 extensive on page 436](#)
[show route table evpn1.evpn-mcsn on page 437](#)
[show route table evpn1 \(Multihomed Proxy MAC and IP Address\) on page 437](#)

Output Fields [Table 12 on page 243](#) describes the output fields for the **show route table** command. Output fields are listed in the approximate order in which they appear.

Table 23: show route table Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).

Table 23: show route table Output Fields (continued)

Field Name	Field Description
Restart complete	<p>All protocols have restarted for this routing table.</p> <p>Restart state:</p> <ul style="list-style-type: none"> • Pending;protocol-name—List of protocols that have not yet completed graceful restart for this routing table. • Complete—All protocols have restarted for this routing table. <p>For example, if the output shows-</p> <ul style="list-style-type: none"> • LDP.inet.0 : 5 routes (4 active, 1 holddown, 0 hidden) Restart Pending: OSPF LDP VPN <p>This indicates that OSPF, LDP, and VPN protocols did not restart for the LDP.inet.0 routing table.</p> <ul style="list-style-type: none"> • vpls_1.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden) Restart Complete <p>This indicates that all protocols have restarted for the vpls_1.l2vpn.0 routing table.</p>
number destinations	Number of destinations for which there are routes in the routing table.
number routes	<p>Number of routes in the routing table and total number of routes in the following states:</p> <ul style="list-style-type: none"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy)

Table 23: show route table Output Fields (continued)

Field Name	Field Description
<i>route-destination</i> (entry, announced)	<p>Route destination (for example:10.0.0.1/24). The entry value is the number of routes for this destination, and the announced 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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote. • inclusive multicast Ethernet tag route—Type of route destination represented by (for example, 3:100.100.100.10:100::0::10::100.100.100.10/384): <ul style="list-style-type: none"> • route distinguisher—(8 octets) Route distinguisher (RD) must be the RD of the EVPN instance (EVI) that is advertising the NLRI. • Ethernet tag ID—(4 octets) Identifier of the Ethernet tag. Can set to 0 or to a valid Ethernet tag value. • IP address length—(1 octet) Length of IP address in bits. • originating router's IP address—(4 or 16 octets) Must set to the provider edge (PE) device's IP address. This address should be common for all EVIs on the PE device, and may be the PE device's loopback address.
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"> • S=0 route 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). • If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).
[<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"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • -—A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.</p>

Table 23: show route table Output Fields (continued)

Field Name	Field Description
Level	(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.
Route Distinguisher	IP subnet augmented with a 64-bit prefix.
PMSI	Provider multicast service interface (MVPN routing table).
Next-hop type	Type of next hop. For a description of possible values for this field, see Table 15 on page 288 .
Next-hop reference count	Number of references made to the next hop.
Flood nexthop branches exceed maximum message	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.
Source	IP address of the route source.
Next hop	Network layer address of the directly reachable neighboring system.
via	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 Selected . This field can also contain the following information: <ul style="list-style-type: none"> • 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. • Balance—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.
Label-switched-path <i>lsp-path-name</i>	Name of the LSP used to reach the next hop.
Label operation	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Interface	(Local only) Local interface name.
Protocol next hop	Network layer address of the remote routing device that advertised the prefix. This address is used to derive a forwarding next hop.
Indirect next hop	Index designation used to specify the mapping between protocol next hops, tags, kernel export policy, and the forwarding next hops.
State	State of the route (a route can be in more than one state). See Table 16 on page 290 .

Table 23: show route table Output Fields (continued)

Field Name	Field Description
Local AS	AS number of the local routing devices.
Age	How long the route has been known.
AI GP	Accumulated interior gateway protocol (AI GP) BGP attribute.
Metric <i>n</i>	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	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.
Task	Name of the protocol that has added the route.
Announcement bits	<p>The number of BGP peers or protocols to which Junos OS has announced this route, followed by the list of the recipients of the announcement. Junos OS can also announce the route to the kernel routing table (KRT) for installing the route into the Packet Forwarding Engine, to a resolve tree, a Layer 2 VC, or even a VPN. For example, <i>n-Resolve inet</i> indicates that the specified route is used for route resolution for next hops found in the routing table.</p> <ul style="list-style-type: none"> <i>n</i>—An index used by Juniper Networks customer support only.
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"> I—IGP. E—EGP. Recorded—The AS path is recorded by the sample process (sampled). ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> []—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. []—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. { }—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. ()—Parentheses enclose a confederation. ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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 23: show route table Output Fields (continued)

Field Name	Field Description
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—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. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
FECs bound to route	Indicates point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.
Primary Upstream	When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, indicates the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.
RPF Nexthops	When multipoint LDP with MoFRR is configured, indicates the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.
Label	Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.
weight	Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.
VC Label	MPLS label assigned to the Layer 2 circuit virtual connection.
MTU	Maximum transmission unit (MTU) of the Layer 2 circuit.
VLAN ID	VLAN identifier of the Layer 2 circuit.
Prefixes bound to route	Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.
Communities	Community path attribute for the route. See Table 17 on page 292 for all possible values for this field.
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).
control flags	Control flags: none or Site Down .
mtu	Maximum transmission unit (MTU) information.
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.
status vector	Layer 2 VPN and VPLS network layer reachability information (NLRI).

Table 23: show route table Output Fields (continued)

Field Name	Field Description
Accepted Multipath	Current active path when BGP multipath is configured.
Accepted LongLivedStale	The LongLivedStale flag indicates that the route was marked LLGR-stale by this router, as part of the operation of LLGR receiver mode. Either this flag or the LongLivedStaleImport flag might be displayed for a route. Neither of these flags is displayed at the same time as the Stale (ordinary GR stale) flag.
Accepted LongLivedStaleImport	<p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy. Either this flag or the LongLivedStale flag might be displayed for a route. Neither of these flags is displayed at the same time as the Stale (ordinary GR stale) flag.</p> <p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and import into the inet.0 routing table</p>
ImportAccepted LongLivedStaleImport	<p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and imported into the inet.0 routing table</p> <p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy.</p>
Accepted MultipathContrib	Path currently contributing to BGP multipath.
Localpref	Local preference value included in the route.
Router ID	BGP router ID as advertised by the neighbor in the open message.
Primary Routing Table	In a routing table group, the name of the primary routing table in which the route resides.
Secondary Tables	In a routing table group, the name of one or more secondary tables in which the route resides.

[Table 15 on page 288](#) describes all possible values for the Next-hop Types output field.

Table 24: Next-hop Types Output Field Values

Next-Hop Type	Description
Broadcast (bcast)	Broadcast next hop.
Deny	Deny next hop.
Discard	Discard next hop.
Flood	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.

Table 24: Next-hop Types Output Field Values (continued)

Next-Hop Type	Description
Hold	Next hop is waiting to be resolved into a unicast or multicast type.
Indexed (idxd)	Indexed next hop.
Indirect (indr)	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.
Interface	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.
Local (locl)	Local address on an interface. This next-hop type causes packets with this destination address to be received locally.
Multicast (mcst)	Wire multicast next hop (limited to the LAN).
Multicast discard (mdsc)	Multicast discard.
Multicast group (mgrp)	Multicast group member.
Receive (recv)	Receive.
Reject (rjct)	Discard. An ICMP unreachable message was sent.
Resolve (rslv)	Resolving next hop.
Routed multicast (mcrtr)	Regular multicast next hop.
Router	<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 a next-hop type router, the route must meet the following criteria:</p> <ul style="list-style-type: none"> • Must not be a direct or local subnet for the routing device. • Must have a next hop that is directly connected to the routing device.
Table	Routing table next hop.
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 16 on page 290 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 25: 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.
Int	Interior route.
Int Ext	BGP route received from an internal BGP peer or a BGP confederation peer.
Interior > Exterior > Exterior via Interior	Direct, static, IGP, or EBGp path is available.

Table 25: State Output Field Values (continued)

Value	Description
Local Preference	Path with a higher local preference value is available.
Martian	Route is a martian (ignored because it is obviously invalid).
MartianOK	Route exempt from martian filtering.
Next hop address	Path with lower metric next hop is available.
No difference	Path from neighbor with lower IP address is available.
NoReadvrt	Route not to be advertised.
NotBest	Route not chosen because it does not have the lowest MED.
Not Best in its group	Incoming BGP AS is not the best of a group (only one AS can be the best).
NotInstall	Route not to be installed in the forwarding table.
Number of gateways	Path with a greater number of next hops is available.
Origin	Path with a lower origin code is available.
Pending	Route pending because of a hold-down configured on another route.
Release	Route scheduled for release.
RIB preference	Route from a higher-numbered routing table is available.
Route Distinguisher	64-bit prefix added to IP subnets to make them unique.
Route Metric or MED comparison	Route with a lower metric or MED is available.
Route Preference	Route with lower preference value is available.
Router ID	Path through a neighbor with lower ID is available.
Secondary	Route not a primary route.
Unusable path	Path is not usable because of one of the following conditions: <ul style="list-style-type: none"> • The route is damped. • The route is rejected by an import policy. • The route is unresolved.
Update source	Last tiebreaker is the lowest IP address value.

Table 17 on page 292 describes the possible values for the Communities output field.

Table 26: 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 0. 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.
bandwidth: local AS number:link-bandwidth-number	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.
domain-id	Unique configurable number that identifies the OSPF domain.
domain-id-vendor	Unique configurable number that further identifies the OSPF domain.
<i>link-bandwidth-number</i>	Link-bandwidth number: from 0 through 4,294,967,295 (bytes per second).
<i>local AS number</i>	Local AS number: from 1 through 65,535.
<i>options</i>	1 byte. Currently this is only used if the route type is 5 or 7. Setting the least significant bit in the field indicates that the route carries a type 2 metric.
origin	(Used with VPNs) Identifies where the route came from.
<i>ospf-route-type</i>	1 byte, encoded as 1 or 2 for intra-area routes (depending on whether the route came from a type 1 or a type 2 LSA); 3 for summary routes; 5 for external routes (area number must be 0); 7 for NSSA routes; or 129 for sham link endpoint addresses.
route-type-vendor	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x8000. The format is area-number:ospf-route-type:options .
rte-type	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x0306. The format is area-number:ospf-route-type:options .
target	Defines which VPN the route participates in; target has the format 32-bit IP address:16-bit number . For example, 10.19.0.0:100.
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.
evpn-mcast-flags	Identifies the value in the multicast flags extended community and whether snooping is enabled. A value of 0x1 indicates that the route supports IGMP proxy.

Table 26: Communities Output Field Values (continued)

Value	Description
evpn-l2-info	Identifies whether Multihomed Proxy MAC and IP Address Route Advertisement is enabled. A value of 0x20 indicates that the proxy bit is set. . Use the show bridge mac-ip-table extensive statement to determine whether the MAC and IP address route was learned locally or from a PE device.

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)

10.255.245.12:1:172.16.4.0/8 (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 bgp.evpn.0

```

user@host> show route table bgp.evpn.0

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

2:100.100.100.2:100::0::00:26:88:5f:67:b0/304
    * [BGP/170] 11:00:05, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1
2:100.100.100.2:100::0::00:51:51:51:51:51/304
    * [BGP/170] 11:00:05, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1
2:100.100.100.3:100::0::00:52:52:52:52:52/304
    * [BGP/170] 10:59:58, localpref 100, from 100.100.100.3
        AS path: I, validation-state: unverified
        > to 100.64.13.3 via ge-2/0/8.0, label-switched-path R0toR2
2:100.100.100.3:100::0::a8:d0:e5:5b:01:c8/304
    * [BGP/170] 10:59:58, localpref 100, from 100.100.100.3
        AS path: I, validation-state: unverified
        > to 100.64.13.3 via ge-2/0/8.0, label-switched-path R0toR2
3:100.100.100.2:100::1000::100.100.100.2/304
    * [BGP/170] 11:00:16, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1
3:100.100.100.2:100::2000::100.100.100.2/304
    * [BGP/170] 11:00:16, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1

```

show route table evpn.0

```

user@host> show route table evpn.0

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

3:100.100.100.10:100::0::10::100.100.100.10/384
    *[EVPN/170] 01:37:09
    Indirect
3:100.100.100.2:100::2000::100.100.100.2/304
    *[EVPN/170] 01:37:12
    Indirect

```

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 172.16.5.254 via fxp0.0
10.0.0.1/32        *[Direct/0] 00:51:58
                   > via at-5/3/0.0
10.0.0.2/32        *[Local/0] 00:51:58
                   Local
10.12.12.21/32     *[Local/0] 00:51:57
                   Reject
10.13.13.13/32     *[Direct/0] 00:51:58
                   > via t3-5/2/1.0
10.13.13.14/32     *[Local/0] 00:51:58
                   Local
10.13.13.21/32     *[Local/0] 00:51:58
                   Local
10.13.13.22/32     *[Direct/0] 00:33:59
                   > via t3-5/2/0.0
127.0.0.1/32       [Direct/0] 00:51:58
                   > via lo0.0
10.222.5.0/24      *[Direct/0] 00:51:58
                   > via fxp0.0
10.222.5.81/32     *[Local/0] 00:51:58
                   Local

```

show route table inet.3

```

user@host> show route table inet.3

inet.3: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.5/32        *[LDP/9] 00:25:43, metric 10, tag 200
                   to 10.2.94.2 via lt-1/2/0.49
                   > to 10.2.3.2 via lt-1/2/0.23

```

show route table inet.3 protocol ospf

```

user@host> show route table inet.3 protocol ospf

```

```
inet.3: 9 destinations, 18 routes (9 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.1.1.20/32      [L-OSPF/10] 1d 00:00:56, metric 2
> to 10.0.10.70 via lt-1/2/0.14, Push 800020
  to 10.0.6.60 via lt-1/2/0.12, Push 800020, Push 800030(top)
1.1.1.30/32      [L-OSPF/10] 1d 00:01:01, metric 3
> to 10.0.10.70 via lt-1/2/0.14, Push 800030
  to 10.0.6.60 via lt-1/2/0.12, Push 800030
1.1.1.40/32      [L-OSPF/10] 1d 00:01:01, metric 4
> to 10.0.10.70 via lt-1/2/0.14, Push 800040
  to 10.0.6.60 via lt-1/2/0.12, Push 800040
1.1.1.50/32      [L-OSPF/10] 1d 00:01:01, metric 5
> to 10.0.10.70 via lt-1/2/0.14, Push 800050
  to 10.0.6.60 via lt-1/2/0.12, Push 800050
1.1.1.60/32      [L-OSPF/10] 1d 00:01:01, metric 6
> to 10.0.10.70 via lt-1/2/0.14, Push 800060
  to 10.0.6.60 via lt-1/2/0.12, Pop
```

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 inetcolor.0

```
user@host> show route table inetcolor.0

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

7.7.7.7-7000<c>/64
*[SPRING-TE/8] 00:22:49, metric 1, metric2 10
> to 11.1.1.2 via et-0/0/0.1, Push 801007, Push 801003, Push
```

```

801002(top)
Push 801002(top)
Push 801002(top)
Push 801002(top)
801005(top)
Push 801005(top)
Push 801005(top)
Push 801005(top)
100.90.90.90-7000<c>/64
*[SPRING-TE/8] 00:22:49, metric 1, metric2 10
801002(top)
Push 801002(top)
Push 801002(top)
Push 801002(top)
801005(top)
Push 801005(top)
Push 801005(top)
Push 801005(top)
> to 21.204.1.2 via et-0/0/2.4, Push 801007, Push 801006,
Push 801005(top)

```

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: 64502 Peer AS: 64500
             Age: 4
             Task: BGP_64500.10.12.99.5+3792
             Announcement bits (1): 0-Flow
             AS path: 64500 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: 64502

```

```

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 inetflow.0 extensive (BGP Flowspec Redirect to IP)

```

user@host> show route table inetflow.0 extensive

inetflow.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
2.2.2.2,*/term:1 (1 entry, 1 announced)
TSI:
KRT in dfwd;
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xb209500 (adv_entry)
Advertised metrics:
Nexthop: 21.1.4.5
Localpref: 100
AS path: [100] I
Communities: redirect-to-ip:21.1.4.5:0
Action(s): accept,count
*Flow Preference: 5
Next hop type: Indirect, Next hop index: 0
Address: 0xa2b931c
Next-hop reference count: 1Next hop:
State: <Active> L
ocal AS: 69
Age: 2
Validation State: unverified
Task: RT Flow
Announcement bits (1): 0-Flow
AS path: I
Communities: redirect-to-ip:21.1.4.5:0

```

```

user@host> show route table inetflow.) extensive

inetflow.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
2.2.2.2,*/term:1 (1 entry, 1 announced)
TSI:
KRT in dfwd;
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xb209500 (adv_entry)
Advertised metrics:
Nexthop: 21.1.4.5
Localpref: 100
AS path: [100] I
Communities: redirect-to-nexthop
Action(s): accept,count
*Flow Preference: 5
Next hop type: Indirect, Next hop index: 0
Address: 0xa2b931c
Next-hop reference count: 1
Next hop:
State: <Active>
Local AS: 69
Age: 2
Validation State: unverified
Task: RT Flow
Announcement bits (1): 0-Flow
AS path: I
Communities: redirect-to-nexthop

```

```

regress@10.102.178.210> show route table inetflow.0 extensive
inetflow.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
4.4.4.4,*/term:1 (1 entry, 1 announced)
TSI:
KRT in dfwd;
Action(s): accept,count
*BGP Preference: 170/-101
Next hop type: Fictitious, Next hop index: 0
Address: 0xc5e3c30
Next-hop reference count: 3
Next hop: 21.1.4.5
State: <Active Int Ext>
Local AS: 100 Peer AS: 100
Age: 10
Validation State: unverified
Task: BGP_100.1.1.1+179
Announcement bits (1): 0-Flow
AS path: I
Communities: redirect-to-nexthop
Accepted
Localpref: 100
Router ID: 1.1.1.1

```

show route table lsdist.0 extensive

```

user@host> show route table lsdist.0 extensive

lsdist.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
NODE { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 ISIS-L1:0 }/1152
(1 entry, 1 announced)
TSI:
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xa62f378 (adv_entry)
  Advertised metrics:
    Nexthop: Self
    Localpref: 100
    AS path: [4170512532] I
    Communities:
Path NODE { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 ISIS-L1:0 }
Vector len 4. Val: 0
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0x95dfc64
    Next-hop reference count: 9
    State: <Active NotInstall>
    Local AS: 4170512532
    Age: 6:05
    Validation State: unverified
    Task: IS-IS
    Announcement bits (1): 0-BGP_RT_Background
    AS path: I
    IPv4 Router-ids:
      128.220.11.197
    Area membership:
      47 00 05 80 ff f8 00 00 00 01 08 00 01
    SPRING-Capabilities:
      - SRGB block [Start: 800000,
Range: 256, Flags: 0xc0]
    SPRING-Algorithms:
      - Algo: 0
LINK { Local { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 }.{

```

```

IPv4:8.65.1.105 } Remote { AS:4170512532 BGP-LS ID:4170512532 ISO:4284.3300.5067)
TSI:
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xa62f3cc (adv_entry)
  Advertised metrics:
    Nexthop: Self
    Localpref: 100
    AS path: [4170512532] I
    Communities:
Path LINK { Local { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 }.{
  IPv4:8.65.1.105 } Remote { AS:4170512532 BGP-LS ID:4170512532 ISO:4284.33000
    *IS-IS Preference: 15
      Level: 1
      Next hop type: Fictitious, Next hop index: 0
      Address: 0x95dfc64
      Next-hop reference count: 9
      State: <Active NotInstall>
      Local AS: 4170512532
      Age: 6:05
      Validation State: unverified
      Task: IS-IS
      Announcement bits (1): 0-BGP_RT_Background
      AS path: I
      Color: 32768
      Maximum bandwidth: 1000Mbps
      Reservable bandwidth: 1000Mbps
      Unreserved bandwidth by priority:
        0 1000Mbps
        1 1000Mbps
        2 1000Mbps
        3 1000Mbps
        4 1000Mbps
        5 1000Mbps
        6 1000Mbps
        7 1000Mbps
      Metric: 10
      TE Metric: 10
      LAN IPV4 Adj-SID - Label: 299776, Flags: 0x30,
Weight: 0, Nbr: 10.220.1.83

PREFIX { Node { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 } {
  IPv4:128.220.11.197/32 } ISIS-L1:0 }/1152 (1 entry, 1 announced) TSI: Page 0 idx
  0, (group ibgp type Internal) Type 1 val 0xa62f43c (adv_entry)
    Advertised metrics:
      Nexthop: Self
      Localpref: 100
      AS path: [4170512532] I
      Communities:
Path PREFIX { Node { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 }
{ IPv4:128.220.11.197/32 } ISIS-L1:0 } Vector len 4. Val: 0
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0x95dfc64
    Next-hop reference count: 9
    State:<Active NotInstall>
    Local AS: 4170512532
    Age: 6:05
    Validation State: unverified
    Task: IS-IS
    Announcement bits (1): 0-BGP_RT_Background

```

AS path: I

Prefix SID: 67, Flags: 0x40, Algo: 0

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 lsdist.0

```

user@host> show route table lsdist.0

lsdist.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

LINK { Local { AS:4 BGP-LS ID:100 IPv4:4.4.4.4 }.{ IPv4:4.4.4.4 } Remote { AS:4
BGP-LS ID:100 IPv4:7.7.7.7 }.{ IPv4:7.7.7.7 } Undefined:0 }/1152
    *[BGP-LS-EPE/170] 00:20:56
    Fictitious
LINK { Local { AS:4 BGP-LS ID:100 IPv4:4.4.4.4 }.{ IPv4:4.4.4.4 IfIndex:339 }
Remote { AS:4 BGP-LS ID:100 IPv4:7.7.7.7 }.{ IPv4:7.7.7.7 } Undefined:0 }/1152
    *[BGP-LS-EPE/170] 00:20:56
    Fictitious
LINK { Local { AS:4 BGP-LS ID:100 IPv4:4.4.4.4 }.{ IPv4:50.1.1.1 } Remote { AS:4
BGP-LS ID:100 IPv4:5.5.5.5 }.{ IPv4:50.1.1.2 } Undefined:0 }/1152
    *[BGP-LS-EPE/170] 00:20:56
    Fictitious

```

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

```



```

1024          Receive
              *[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: 18 destinations, 19 routes (18 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

0          *[MPLS/0] 11:39:56, metric 1
          to table inet.0
0(S=0)     *[MPLS/0] 11:39:56, metric 1
          to table mpls.0
1          *[MPLS/0] 11:39:56, metric 1
          Receive
2          *[MPLS/0] 11:39:56, metric 1
          to table inet6.0
2(S=0)     *[MPLS/0] 11:39:56, metric 1
          to table mpls.0
13         *[MPLS/0] 11:39:56, metric 1
          Receive
303168     *[EVPN/7] 11:00:49, routing-instance pbbn10, route-type
Ingress-MAC, ISID 0
          to table pbbn10.evpn-mac.0
303184     *[EVPN/7] 11:00:53, routing-instance pbbn10, route-type
Ingress-IM, ISID 1000
          to table pbbn10.evpn-mac.0
          [EVPN/7] 11:00:53, routing-instance pbbn10, route-type
Ingress-IM, ISID 2000
          to table pbbn10.evpn-mac.0
303264     *[EVPN/7] 11:00:53, remote-pe 100.100.100.2, routing-instance
pbbn10, route-type Egress-IM, ISID 1000
          > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303280     *[EVPN/7] 11:00:53, remote-pe 100.100.100.2, routing-instance
pbbn10, route-type Egress-IM, ISID 2000
          > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303328     *[EVPN/7] 11:00:49, remote-pe 100.100.100.2, routing-instance
pbbn10, route-type Egress-MAC, ISID 0
          > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303344     *[EVPN/7] 11:00:49, remote-pe 100.100.100.2, routing-instance

```

```

pbbn10, route-type Egress-MAC, ISID 0
    > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303360      *[EVPN/7] 11:00:47, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC 00:26:88:5f:67:b0
    > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303376      *[EVPN/7] 11:00:47, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC 00:51:51:51:51:51
    > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303392      *[EVPN/7] 11:00:35, remote-pe 100.100.100.3, routing-instance
pbbn10, route-type Egress-MAC, ISID 0
    > to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2
303408      *[EVPN/7] 11:00:35, remote-pe 100.100.100.3, routing-instance
pbbn10, route-type Egress-MAC, ISID 0
    > to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2
303424      *[EVPN/7] 11:00:33, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC a8:d0:e5:5b:01:c8
    > to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2
303440      *[EVPN/7] 11:00:33, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC 00:52:52:52:52:52
    > to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2

```

show route table mpls.0 detail (PTX Series)

```

user@host> show route table mpls.0 detail
ge-0/0/2.600 (1 entry, 1 announced)
    *L2VPN Preference: 7
        Next hop type: Indirect
        Address: 0x9438f34
        Next-hop reference count: 2
        Next hop type: Router, Next hop index: 567
        Next hop: 10.0.0.1 via ge-0/0/1.0, selected
        Label operation: Push 299808
        Label TTL action: prop-ttl
        Load balance label: Label 299808:None;
        Session Id: 0x1
        Protocol next hop: 10.255.255.1
        Label operation: Push 299872 Offset: 252
        Label TTL action: no-prop-ttl
        Load balance label: Label 299872:Flow label PUSH;
        Composite next hop: 0x9438ed8 570 INH Session ID: 0x2
        Indirect next hop: 0x9448208 262142 INH Session ID: 0x2
        State: <Active Int>
        Age: 21 Metric2: 1
        Validation State: unverified
        Task: Common L2 VC
        Announcement bits (2): 0-KRT 2-Common L2 VC
        AS path: I

```

show route table mpls.0 ccc ge-0/0/1.1004 detail

```

user@host> show route table mpls.0 ccc ge-0/0/1.1004 detail
mpls.0: 121 destinations, 121 routes (121 active, 0 holddown, 0 hidden)
ge-0/0/1.1004 (1 entry, 1 announced)
    *EVPN Preference: 7
        Next hop type: List, Next hop index: 1048577
        Address: 0xdc14770
        Next-hop reference count: 3

```

```

Next hop: ELNH Address 0xd011e30
  Next hop type: Indirect, Next hop index: 0
  Address: 0xd011e30
  Next-hop reference count: 3
  Protocol next hop: 100.100.100.1
  Label operation: Push 301952
  Composite next hop: 0xd011dc0 754 INH Session ID: 0x146
  Indirect next hop: 0xb69a890 1048615 INH Session ID: 0x146
    Next hop type: Router, Next hop index: 735
    Address: 0xd00e530
    Next-hop reference count: 23
    Next hop: 100.46.1.2 via ge-0/0/5.0
    Label-switched-path pe4_to_pe1
    Label operation: Push 300320
    Label TTL action: prop-ttl
    Load balance label: Label 300320: None;
    Label element ptr: 0xd00e580
    Label parent element ptr: 0x0
    Label element references: 18
    Label element child references: 16
    Label element lsp id: 5
Next hop: ELNH Address 0xd012070
  Next hop type: Indirect, Next hop index: 0
  Address: 0xd012070
  Next-hop reference count: 3
  Protocol next hop: 100.100.100.2
  Label operation: Push 301888
  Composite next hop: 0xd012000 755 INH Session ID: 0x143
  Indirect next hop: 0xb69a9a0 1048641 INH Session ID: 0x143
    Next hop type: Router, Next hop index: 716
    Address: 0xd00e710
    Next-hop reference count: 23
    Next hop: 100.46.1.2 via ge-0/0/5.0
    Label-switched-path pe4_to_pe2
    Label operation: Push 300304
    Label TTL action: prop-ttl
    Load balance label: Label 300304: None;
    Label element ptr: 0xd00e760
    Label parent element ptr: 0x0
    Label element references: 15
    Label element child references: 13
    Label element lsp id: 6
Next hop: ELNH Address 0xd0121f0, selected
  Next hop type: Indirect, Next hop index: 0
  Address: 0xd0121f0
  Next-hop reference count: 3
  Protocol next hop: 100.100.100.3
  Label operation: Push 301984
  Composite next hop: 0xd012180 756 INH Session ID: 0x145
  Indirect next hop: 0xb69aab0 1048642 INH Session ID: 0x145
    Next hop type: Router, Next hop index: 801
    Address: 0xd010ed0
    Next-hop reference count: 32
    Next hop: 100.46.1.2 via ge-0/0/5.0
    Label-switched-path pe4_to_pe3
    Label operation: Push 300336
    Label TTL action: prop-ttl
    Load balance label: Label 300336: None;
    Label element ptr: 0xd0108c0
    Label parent element ptr: 0x0

```

```

Label element references: 22
Label element child references: 20
Label element lsp id: 7
State: < Active Int >
Age: 2:06:50
Validation State: unverified
Task: evpn global task
Announcement bits (1): 1-KRT
AS path: I

```

show route table mpls.0 protocol evpn

```
user@host>show route table mpls.0 protocol evpn
```

```

mpls.0: 121 destinations, 121 routes (121 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

299872          *[EVPN/7] 02:30:58, routing-instance mhevpn, route-type
Ingress-IM, vlan-id 10
                to table mhevpn.evpn-mac.0
300016          *[EVPN/7] 02:30:38, routing-instance VS-1, route-type
Ingress-IM, vlan-id 110
                to table VS-1.evpn-mac.0
300032          *[EVPN/7] 02:30:38, routing-instance VS-1, route-type
Ingress-IM, vlan-id 120
                to table VS-1.evpn-mac.0
300048          *[EVPN/7] 02:30:38, routing-instance VS-1, route-type
Ingress-IM, vlan-id 130
                to table VS-1.evpn-mac.0
300064          *[EVPN/7] 02:30:38, routing-instance VS-2, route-type
Ingress-IM, vlan-id 210
                to table VS-2.evpn-mac.0
300080          *[EVPN/7] 02:30:38, routing-instance VS-2, route-type
Ingress-IM, vlan-id 220
                to table VS-2.evpn-mac.0
300096          *[EVPN/7] 02:30:38, routing-instance VS-2, route-type
Ingress-IM, vlan-id 230
                to table VS-2.evpn-mac.0
300112          *[EVPN/7] 02:27:06, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:44:44:44:44:44:44:44
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300128          *[EVPN/7] 02:29:22, routing-instance mhevpn, route-type
Ingress-Aliasing
                to table mhevpn.evpn-mac.0
300144          *[EVPN/7] 02:27:06, routing-instance VS-1, route-type
Egress-MAC, ESI 00:44:44:44:44:44:44:44
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300160          *[EVPN/7] 02:29:22, routing-instance VS-1, route-type
Ingress-Aliasing
                to table VS-1.evpn-mac.0
300176          *[EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:44:44:44:44:44:44:44
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300192          *[EVPN/7] 02:29:22, routing-instance VS-2, route-type
Ingress-Aliasing
                to table VS-2.evpn-mac.0
300208          *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-IM, vlan-id 120
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300224          *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance

```

```

mhevpn, route-type Egress-IM, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300240      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-IM, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300256      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-IM, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300272      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-IM, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300288      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-IM, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300304      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-IM, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300320      *[EVPN/7] 02:27:06, routing-instance VS-1, route-type
Egress-MAC, ESI 00:11:11:11:11:11:11:11:11
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300336      *[EVPN/7] 02:27:06, routing-instance VS-1, route-type
Egress-MAC, ESI 00:33:33:33:33:33:33:33:33
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300368      *[EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:33:33:33:33:33:33:33:33
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300384      *[EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:11:11:11:11:11:11:11:11
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300416      *[EVPN/7] 02:27:06, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:33:33:33:33:33:33:33:33
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300432      *[EVPN/7] 02:27:06, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:11:11:11:11:11:11:11:11
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300480      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300496      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300560      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance

```

```

VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300592 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300608 * [EVPN/7] 02:29:23
> via ge-0/0/1.1001, Pop
300624 * [EVPN/7] 02:29:23
> via ge-0/0/1.2001, Pop
301232 * [EVPN/7] 02:29:17
> via ge-0/0/1.1002, Pop
301296 * [EVPN/7] 02:29:10
> via ge-0/0/1.1003, Pop
301312 * [EVPN/7] 02:27:06
> via ae10.2003, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301360 * [EVPN/7] 02:29:01
> via ge-0/0/1.1004, Pop
301408 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
vpws1004, route-type Egress, vlan-id 2004
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301456 * [EVPN/7] 02:27:06
> via ae10.1010, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301552 * [EVPN/7] 02:27:07, routing-instance VS-1, route-type
Egress-MAC, ESI 00:22:22:22:22:22:22:22:22
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301568 * [EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:22:22:22:22:22:22:22:22
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301648 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
vpws1010, route-type Egress, vlan-id 2010
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301664 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301680 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301696 * [EVPN/7] 02:27:07, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:22:22:22:22:22:22:22:22
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301712 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301728 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301744 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-IM, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301760 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
vpws1010, route-type Egress, vlan-id 2010
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301776 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301792 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-IM, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

```

```

301808          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
vpws1004, route-type Egress, vlan-id 2004
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301824          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-IM, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301840          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1002, route-type Egress, vlan-id 2002
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301856          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1003, route-type Egress, vlan-id 2003
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301872          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1003, route-type Egress Protection, vlan-id 2003
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301888          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1010, route-type Egress Protection, vlan-id 1010
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301904          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-IM, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301920          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-IM, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301936          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-IM, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301952          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-SH, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301968          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-IM, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301984          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-SH, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302000          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-IM, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302016          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-SH, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302032          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302048          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302064          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302080          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302096          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302112          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

```

```

302128          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302144          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302160          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-IM, vlan-id 120
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302176          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-IM, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302192          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-IM, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302208          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-SH, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302224          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-IM, vlan-id 120
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302240          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-SH, vlan-id 120
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302256          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-IM, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302272          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-SH, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302288          *[EVPN/7] 02:27:06, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302304          *[EVPN/7] 02:27:06, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302320          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302336          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302352          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
vpws1004, route-type Egress, vlan-id 2004
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302368          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-IM, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302384          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-SH, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302400          *[EVPN/7] 02:26:21
> via ge-0/0/1.3001, Pop
302432          *[EVPN/7] 02:26:21, remote-pe 100.100.100.3, routing-instance
vpws3001, route-type Egress, vlan-id 40000
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302448          *[EVPN/7] 02:26:21, remote-pe 100.100.100.1, routing-instance
vpws3001, route-type Egress, vlan-id 40000
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302464          *[EVPN/7] 02:26:20, remote-pe 100.100.100.2, routing-instance

```



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vpws3001, route-type Egress, vlan-id 40000
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302480      *[EVPN/7] 02:26:14
> via ge-0/0/1.3016, Pop
302512      *[EVPN/7] 02:26:14, remote-pe 100.100.100.1, routing-instance
vpws3016, route-type Egress, vlan-id 40016
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302528      *[EVPN/7] 02:26:14, remote-pe 100.100.100.2, routing-instance
vpws3016, route-type Egress, vlan-id 40016
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302560      *[EVPN/7] 02:26:06
> via ae10.3011, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302592      *[EVPN/7] 02:26:07, remote-pe 100.100.100.1, routing-instance
vpws3011, route-type Egress, vlan-id 401100
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302608      *[EVPN/7] 02:26:07, remote-pe 100.100.100.2, routing-instance
vpws3011, route-type Egress, vlan-id 401100
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302624      *[EVPN/7] 02:26:07, remote-pe 100.100.100.3, routing-instance
vpws3011, route-type Egress Protection, vlan-id 301100
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302656      *[EVPN/7] 02:25:59
> via ae10.3006, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302688      *[EVPN/7] 02:26:00, remote-pe 100.100.100.2, routing-instance
vpws3006, route-type Egress, vlan-id 400600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302704      *[EVPN/7] 02:26:00, remote-pe 100.100.100.1, routing-instance
vpws3006, route-type Egress, vlan-id 400600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302720      *[EVPN/7] 02:25:59, remote-pe 100.100.100.3, routing-instance
vpws3006, route-type Egress, vlan-id 400600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302736      *[EVPN/7] 02:25:59, remote-pe 100.100.100.3, routing-instance
vpws3006, route-type Egress Protection, vlan-id 300600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ge-0/0/1.1001      *[EVPN/7] 02:29:23
> via ge-0/0/1.2001
ge-0/0/1.2001      *[EVPN/7] 02:29:23
> via ge-0/0/1.1001
ge-0/0/1.1002      *[EVPN/7] 02:27:06
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ae10.2003          *[EVPN/7] 02:29:10
> via ge-0/0/1.1003
ge-0/0/1.1003      *[EVPN/7] 02:27:06
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
> via ae10.2003
ge-0/0/1.1004      *[EVPN/7] 02:27:06
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ae10.1010          *[EVPN/7] 02:27:06
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
ge-0/0/1.3001      *[EVPN/7] 02:26:20
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

```

```

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
ge-0/0/1.3016 to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
               *[EVPN/7] 02:26:13
               > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
ae10.3011      *[EVPN/7] 02:26:06
               > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
ae10.3006      *[EVPN/7] 02:25:59
               > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3

```

show route table mpls.0 protocol ospf

```

user@host> show route table mpls.0 protocol ospf

mpls.0: 29 destinations, 29 routes (29 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

299952      *[L-OSPF/10] 23:59:42, metric 0
             > to 10.0.10.70 via lt-1/2/0.14, Pop
               to 10.0.6.60 via lt-1/2/0.12, Swap 800070, Push 800030(top)
299952(S=0) *[L-OSPF/10] 23:59:42, metric 0
             > to 10.0.10.70 via lt-1/2/0.14, Pop
               to 10.0.6.60 via lt-1/2/0.12, Swap 800070, Push 800030(top)
299968      *[L-OSPF/10] 23:59:48, metric 0
             > to 10.0.6.60 via lt-1/2/0.12, Pop

```

show route table mpls.0 extensive (PTX Series)

```

user@host> show route table mpls.0 extensive

ge-0/0/2.600 (1 entry, 1 announced)
TSI:
KRT in-kernel ge-0/0/2.600.0      /32 -> {composite(570)}
    *L2VPN Preference: 7
      Next hop type: Indirect
      Address: 0x9438f34
      Next-hop reference count: 2
      Next hop type: Router, Next hop index: 567
      Next hop: 10.0.0.1 via ge-0/0/1.0, selected
      Label operation: Push 299808
      Label TTL action: prop-ttl
      Load balance label: Label 299808:None;
      Session Id: 0x1
      Protocol next hop: 10.255.255.1
      Label operation: Push 299872 Offset: 252
      Label TTL action: no-prop-ttl
      Load balance label: Label 299872:Flow label PUSH;
      Composite next hop: 0x9438ed8 570 INH Session ID: 0x2
      Indirect next hop: 0x9448208 262142 INH Session ID: 0x2
      State: <Active Int>
      Age: 47      Metric2: 1
      Validation State: unverified
      Task: Common L2 VC
      Announcement bits (2): 0-KRT 2-Common L2 VC
      AS path: I

```

```

Composite next hops: 1
  Protocol next hop: 10.255.255.1 Metric: 1
  Label operation: Push 299872 Offset: 252
  Label TTL action: no-prop-ttl
  Load balance label: Label 299872:Flow label PUSH;
  Composite next hop: 0x9438ed8 570 INH Session ID: 0x2
  Indirect next hop: 0x9448208 262142 INH Session ID: 0x2
  Indirect path forwarding next hops: 1
    Next hop type: Router
    Next hop: 10.0.0.1 via ge-0/0/1.0
    Session Id: 0x1
  10.255.255.1/32 Originating RIB: inet.3
  Metric: 1 Node path count: 1
  Forwarding nexthops: 1
    Nexthop: 10.0.0.1 via ge-0/0/1.0

```

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 10.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
300352(S=0) *[RSVP/7/1] 00:08:00, metric 1
            > to 10.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
300384     *[RSVP/7/2] 00:05:20, metric 1
            > to 10.64.1.106 via ge-1/0/0.0, Pop
300384(S=0) *[RSVP/7/2] 00:05:20, metric 1
            > to 10.64.1.106 via ge-1/0/0.0, Pop

```

show route table vpls_1 detail

```
user@host> show route table vpls_1 detail
```

```

vpls_1.12vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

172.16.1.11:1000:1:1/96 (1 entry, 1 announced)
*L2VPN Preference: 170/-1
Receive table: vpls_1.12vpn.0
Next-hop reference count: 2
State: <Active Int Ext>
Age: 4:29:47 Metric2: 1
Task: vpls_1-12vpn
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
192.168.16.1:1:1:1/96
    *[VPN/7] 05:48:27
    Discard
192.168.24.1:1:2:1/96
    *[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
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

```

```

1:10.255.2.202:65536:10.255.2.202/432
                  *[BGP/170] 00:02:37, localpref 100, from 10.255.2.202
                  AS path: I
                  > via so-0/1/3.0
1:10.255.2.203:65536:10.255.2.203/432
                  *[BGP/170] 00:02:37, localpref 100, from 10.255.2.203
                  AS path: I
                  > via so-0/1/0.0
1:10.255.2.204:65536:10.255.2.204/432
                  *[MVPN/70] 00:57:23, metric2 1
                  Indirect
5:10.255.2.202:65536:128:::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

```

```

6:10.255.2.203:65536:64500:128:::10.12.53.12:128:ffff::1/432
    *[PIM/105] 00:02:37
        Multicast (IPv6)
7:10.255.2.202:65536:64500:128:::192.168.90.2:128:ffff::1/432
    *[MVPN/70] 00:02:37, metric2 1
        Indirect

```

show route table vrf1.mvpn.0 extensive

```

user@host> show route table vrf1.mvpn.0 extensive

1:10.255.50.77:1:10.255.50.77/240 (1 entry, 1 announced)
    *MVPN    Preference: 70
        PMSI: Flags 0x0: Label 0: RSVP-TE:
Session_13[10.255.50.77:0:25624:10.255.50.77]
    Next hop type: Indirect
    Address: 0xbb2c944
    Next-hop reference count: 360
    Protocol next hop: 10.255.50.77
    Indirect next hop: 0x0 - INH Session ID: 0x0
    State: <Active Int Ext>
    Age: 53:03      Metric2: 1
    Validation State: unverified
    Task: mvpn global task
    Announcement bits (3): 0-PIM.vrf1 1-mvpn global task 2-rt-export

    AS path: I

```

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: 64502 Peer AS: 64500
        Age: 4
        Task: BGP_64500.10.12.99.5+3792
        Announcement bits (1): 0-Flow
        AS path: 64500 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: 64502
        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@host> 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
```

```
10.1.1.2:100:10.1.1.2/96 AD
    *[VPLS/170] 1d 03:11:03, metric2 1
    Indirect
10.1.1.4:100:10.1.1.4/96 AD
    *[BGP/170] 1d 03:11:02, localpref 100, from 10.1.1.4
    AS path: I, validation-state: unverified
    > via ge-1/2/1.5
10.1.1.2:100:1:0/96 MH
    *[VPLS/170] 1d 03:11:03, metric2 1
    Indirect
10.1.1.4:100:1:0/96 MH
    *[BGP/170] 1d 03:11:02, localpref 100, from 10.1.1.4
    AS path: I, validation-state: unverified
    > via ge-1/2/1.5
10.1.1.4:NoCtrlWord:5:100:100:10.1.1.2:10.1.1.4/176
    *[VPLS/7] 1d 03:11:02, metric2 1
    > via ge-1/2/1.5
10.1.1.4:NoCtrlWord:5:100:100:10.1.1.4:10.1.1.2/176
    *[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)
```

```
10.0.0.0/32 (3 entries, 1 announced)
    State: <OnList CalcForwarding>
```

```
TSI:
```

```
KRT in-kernel 10.0.0.0/32 -> {composite(1048575)} Page 0 idx 1 Type 1 val 0x934342c
```

```
    Nexthop: Self
    AS path: [2] I
    Communities: target:2:1
Path 10.0.0.0 from 10.3.0.0 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: 10.2.0.0
    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_172.16.2.0.0+34549
    AS path: I
```

```

Communities: target:2:1
Import Accepted
VPN Label: 16
Localpref: 0
Router ID: 10.2.0.0
Primary Routing Table bgp.13vpn.0
Composite next hops: 1
    Protocol next hop: 10.2.0.0 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
BGP Preference: 170/-1
Route Distinguisher: 2:1
Next hop type: Indirect
Address: 0x9347028
Next-hop reference count: 3
Source: 10.3.0.0
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: 10.3.0.0
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_172.16.3.0.0+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: 10.3.0.0
Primary Routing Table bgp.13vpn.0
Composite next hops: 1
    Protocol next hop: 10.3.0.0 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

```



```

10.3.0.0/32 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: 10.2.0.0
Push 16
Composite next hop: 0x25805988 - INH Session ID: 0x193c
Indirect next hop: 0x23eea900 - INH Session ID: 0x193c Weight 0x1

Protocol next hop: 10.3.0.0
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 table bgp.evpn.0 extensive |no-more (EVPN)

```

show route table bgp.evpn.0 extensive | no-more
bgp.evpn.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
2:1000:10::100::00:aa:aa:aa:aa:aa/304 (1 entry, 0 announced)
*BGP Preference: 170/-101
Route Distinguisher: 1000:10
Next hop type: Indirect
Address: 0x9420fd0
Next-hop reference count: 12
Source: 10.2.3.4
Protocol next hop: 10.2.3.4
Indirect next hop: 0x2 no-forward INH Session ID: 0x0
State: Local AS: 17 Peer AS:17 Age:21:12 Metric2:1 Validation State:
unverified
Task: BGP_17.1.2.3.4+50756
AS path: I
Communities: target:1111:8388708 encapsulation0:0:0:0:3
Import Accepted
Route Label: 100
ESI: 00:00:00:00:00:00:00:00:00
Localpref: 100
Router ID: 10.2.3.4

```

```

Secondary Tables: default-switch.evpn.0
Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
        Next hop type: Router
        Next hop: 10.10.10.1 via xe-0/0/1.0
        Session Id: 0x2
    1.2.3.4/32 Originating RIB: inet.0
        Metric: 1                      Node path count: 1
        Forwarding nexthops: 2
        Nexthop: 10.92.78.102 via em0.0

2:1000:10::200::00:bb:bb:bb:bb:bb/304 (1 entry, 0 announced)
  *BGP   Preference: 170/-101
        Route Distinguisher: 1000:10
        Next hop type: Indirect
        Address: 0x9420fd0
        Next-hop reference count: 12
        Source: 10.2.3.4
        Protocol next hop: 10.2.3.4
        Indirect next hop: 0x2 no-forward INH Session ID: 0x0
        State: Local AS:17 Peer AS:17 Age:19:43 Metric2:1 Validation
State:unverified
        Task: BGP_17.1.2.3.4+50756
        AS path: I
        Communities: target:2222:22 encapsulation0:0:0:0:3
        Import Accepted
        Route Label: 200
        ESI: 00:00:00:00:00:00:00:00:00:00:00
        Localpref: 100
        Router ID: 10.2.3.4
        Secondary Tables: default-switch.evpn.0
        Indirect next hops: 1
            Protocol next hop: 10.2.3.4 Metric: 1
            Indirect next hop: 0x2 no-forward INH Session ID: 0x0
            Indirect path forwarding next hops: 1
                Next hop type: Router
                Next hop: 10.10.10.1 via xe-0/0/1.0
                Session Id: 0x2
            10.2.3.4/32 Originating RIB: inet.0
                Metric: 1                      Node path count: 1
                Forwarding nexthops: 2
                Nexthop: 10.92.78.102 via em0.0

2:1000:10::300::00:cc:cc:cc:cc:cc/304 (1 entry, 0 announced)
  *BGP   Preference: 170/-101
        Route Distinguisher: 1000:10
        Next hop type: Indirect
        Address: 0x9420fd0
        Next-hop reference count: 12
        Source: 10.2.3.4
        Protocol next hop: 10.2.3.4
        Indirect next hop: 0x2 no-forward INH Session ID: 0x0
        State: Local AS:17 Peer AS:17 Age:17:21 Metric2:1 Validation State:
unverified Task: BGP 17,1,2,3,4+50756
        AS path: I
        Communities: target:3333:33 encapsulation0:0:0:0:3
        Import Accepted
        Route Label: 300

```

```

ESI: 00:00:00:00:00:00:00:00:00
Localpref: 100
Router ID: 10.2.3.4
Secondary Tables: default-switch.evpn.0
Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
        Next hop type: Router
        Next hop: 10.10.10.1 via xe-0/0/1.0
        Session Id: 0x2
    10.2.3.4/32 Originating RIB: inet.0
        Metric: 1 Node path count: 1
        Forwarding nexthops: 2
            Nexthop: 10.92.78.102 via em0.0

3:1000:10::100::1.2.3.4/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    PMSI: Flags 0x0: Label 100: Type INGRESS-REPLICATION 1.2.3.4
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS:17 Peer AS:17 Age:37:01 Metric2:1 Validation State:
unverified Task: BGP 17.1.2.3.4+50756
    AS path: I
    Communities: target:1111:8388708 encapsulation0:0:0:0:3
    Import Accepted
    Localpref: 100
    Router ID: 10.2.3.4
    Secondary Tables: default-switch.evpn.0
    Indirect next hops: 1
        Protocol next hop: 10.2.3.4 Metric: 1
        Indirect next hop: 0x2 no-forward INH Session ID: 0x0
        Indirect path forwarding next hops: 1
            Next hop type: Router
            Next hop: 10.10.10.1 via xe-0/0/1.0
            Session Id: 0x2
        10.2.3.4/32 Originating RIB: inet.0
            Metric: 1 Node path count: 1
            Forwarding nexthops: 2
                Nexthop: 10.92.78.102 via em0.0

3:1000:10::200::1.2.3.4/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    PMSI: Flags 0x0: Label 200: Type INGRESS-REPLICATION 1.2.3.4
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS: 17 Peer AS: 17 Age:35:22 Metric2:1 Validation
State:unverified Task: BGP 17.1.2.3.4+50756
    AS path:I Communities: target:2222:22 encapsulation):0:0:0:0:3

```

```

Import Accepted
  Localpref: 100
  Router ID: 10.2.3.4
  Secondary Tables: default-switch.evpn.0
  Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
      Next hop type: Router
      Next hop: 10.10.10.1 via xe-0/0/1.0
      Session Id: 0x2
    10.2.3.4/32 Originating RIB: inet.0
      Metric: 1 Node path count: 1
      Forwarding nexthops: 2
        Nexthop: 10.92.78.102 via em0.0

3:1000:10::300::1.2.3.4/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
  Route Distinguisher: 1000:10
  PMSI: Flags 0x0: Label 300: Type INGRESS-REPLICATION 1.2.3.4
  Next hop type: Indirect
  Address: 0x9420fd0
  Next-hop reference count: 12
  Source: 10.2.3.4
  Protocol next hop: 10.2.3.4
  Indirect next hop: 0x2 no-forward INH Session ID: 0x0
  State: Local AS: 17 Peer AS: 17 Age 35:22 Metric2:1 Validation State:
unverified Task: BGP 17.1.2.3.4+5075
  6 AS path: I Communities: target:3333:33 encapsulation0:0:0:0:3
Import Accepted Localpref:100
  Router ID: 10.2.3.4
  Secondary Tables: default-switch.evpn.0
  Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
      Next hop type: Router
      Next hop: 10.10.10.1 via xe-0/0/1.0
      Session Id: 0x2
    10.2.3.4/32 Originating RIB: inet.0
      Metric: 1 Node path count: 1
      Forwarding nexthops: 2
        Nexthop: 10.92.78.102 via em0.0

```

show route table default-switch.evpn.0 extensive

The following shows the partial output listing for the EVPN VNI table.

```
user@host> show route table default-switch.evpn.0 extensive
```

```

3:1000:10::100::00:aa:aa:aa:aa:aa/304 (1 entry, 1 announced)
  *BGP Preference: 170/-101
  Route Distinguisher: 10.255.0.1:00
  PMSI: Flags 0x0: Label 100: Type INGRESS-REPLICATION 1.2.3.4
  Next hop type: Indirect, Next hop index: 0
  Address: 0xcebfad0
  Next-hop reference count: 26
  Source: 10.255.0.1
  Protocol next hop: 10.255.0.1
  Indirect next hop: 0x2 no-forward INH Session ID: 0x0

```

```

        State: <Secondary Active Int Ext>
Local AS: 100 Peer AS: 100
Age: 1:35:30 Metric2: 2
Validation State: unverified
Task: BGP_100.10.255.0.1
Announcement bits (1): 0-default-switch-evpn
AS path: I
Communities: target:100:100 encapsulation:vxlan (0x8)
evpn-mcast-flags:0x1:snooping-enabled
. . .

```

show route table evpn1.evpn-mcsn

The following shows the output listing for the multicast information used by the rpd and mcsnoopd.

```

user@host> show route table default-switch.evpn-mcsn.1
default-switch.evpn-mcsn.1: 9 destinations, 9 routes (9 active, 0 holddown, 0
hidden)
+ = Active Route, - = Last Active, * = Both

0.14,0.0,0.0/48      *[Multicast/180] 00:01:02
                    to 1.1.1.1 via vtep.32770
                    to 1.2.2.2 via vtep.32771
                    to 1.6.6.6 via vtep.32769
                    to 1.3.3.3 via vtep.32772
0.14,0.0,0.0,224.0.0.0/52*[Multicast/180] 00:01:02
                    to 1.1.1.1 via vtep.32770
                    to 1.2.2.2 via vtep.32771
                    to 1.6.6.6 via vtep.32769
0.14,0.0,0.0,225.1.1.1/80*[Multicast/180] 00:00:06
                    to 1.1.1.1 via vtep.32770
                    to 1.2.2.2 via vtep.32771
                    to 1.6.6.6 via vtep.32769
                    to 1.3.3.3 via vtep.32772

```

show route table evpn1 (Multihomed Proxy MAC and IP Address)

The following shows a partial output listing for an EVPN instance. This indicates when Multihomed Proxy MAC and IP Address Route Advertisement is enabled.

```

user@host> show route table evpn-1
2:666:11010003::1002::00:00:00:00:00:02::102.1.1.2/304 MAC/IP (1 entry, 1
announced)
TSI:
Page 0 idx 0, (group vteps type Internal) Type 1 val 0xb20eb10 (adv_entry)
  Advertised metrics:
    Nexthop: 103.1.1.1
    Localpref: 100
    AS path: [666] I
Communities: target:666:1002 evpn-12-info:0x20:proxy (mtu 0)
Path 2:666:11010003::1002::00:00:00:00:00:02::102.1.1.2 Vector len 4. Val: 0
  *EVPN Preference: 170
    Next hop type: Indirect, Next hop index: 0
    Address: 0xc3a9cf0
    Next-hop reference count: 36
    Protocol next hop: 103.1.1.1

```

```
Indirect next hop: 0x0 - INH Session ID: 0x0  
State: <Active Int Ext>
```

show route terse

List of Syntax [Syntax on page 439](#)
[Syntax \(EX Series Switches\) on page 439](#)

Syntax `show route terse`
`<logical-system (all | logical-system-name)>`

Syntax (EX Series Switches) `show route terse`

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.

Description Display a high-level summary of the routes in the routing table.



NOTE: For BGP routes, the `show route terse` command displays the local preference attribute and MED instead of the metric1 and metric2 values. This is mostly due to historical reasons.

To display the metric1 and metric2 value of a BGP route, use the [show route extensive](#) command.

Options **none**—Display a high-level summary of the routes in the routing table.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level view

List of Sample Output [show route terse on page 441](#)

Output Fields [Table 27 on page 439](#) describes the output fields for the `show route terse` command. Output fields are listed in the approximate order in which they appear.

Table 27: 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.

Table 27: show route terse Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy)
<i>route key</i>	Key for the state of the route: <ul style="list-style-type: none"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • -—A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route.
A	Active route. An asterisk (*) indicates this is the active route.
V	Validation status of the route: <ul style="list-style-type: none"> • ?—Not evaluated. Indicates that the route was not learned through BGP. • I—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. • N—Unknown. Indicates that the prefix is not among the prefixes or prefix ranges in the database. • V—Valid. Indicates that the prefix and autonomous system pair are found in the database.
<i>Destination</i>	Destination of the route.
P	Protocol through which the route was learned: <ul style="list-style-type: none"> • A—Aggregate • B—BGP • C—CCC • D—Direct • G—GMPLS • I—IS-IS • L—L2CKT, L2VPN, LDP, Local • K—Kernel • M—MPLS, MSDP • O—OSPF • P—PIM • R—RIP, RIPng • S—Static • T—Tunnel
Prf	Preference value of the route. In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.

Table 27: show route terse Output Fields (continued)

Field Name	Field Description
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.
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"> I—IGP. E—EGP. ?—Incomplete; typically, the AS path was aggregated.

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
* ? 172.16.1.1/32      0 10      1          >10.0.0.2
?                               B 170      100          >10.0.0.2      I
  unverified
* ? 172.16.1.1/32      D 0      0          >10.0.0.2
* V 2.2.0.2/32         B 170      110          >10.0.0.2      200 I
  valid
* ? 10.0.0.0/30        D 0      0          >10.0.0.2
?                               B 170      100          >10.0.0.2      I
  unverified
* ? 10.0.0.1/32        L 0      0          Local
* ? 10.0.0.4/30        B 170      100          >10.0.0.2      I
  unverified
* ? 10.0.0.8/30        B 170      100          >10.0.0.2      I
  unverified
* I 172.16.1.1/32       B 170      90          >10.0.0.2      200 I
  invalid
* N 192.168.2.3/32     B 170      100          >10.0.0.2      200 I
  unknown
* ? 172.16.233.5/32    0 10      1          >10.0.0.2      MultiRecv

```

test policy

Syntax	<code>test policy <i>policy-name</i> <i>prefix</i></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Test a policy configuration to determine which prefixes match routes in the routing table.
	<div>  <p>NOTE: If you are using the <code>test policy</code> command on a logical system, you must first set the CLI to the logical system context. For example, if you want to test a routing policy that is configured on logical system R2, first run the <code>set cli logical-system R2</code> command.</p> </div>
Options	<p><i>policy-name</i>—Name of a policy.</p> <p><i>prefix</i>—Destination prefix to match.</p>
Additional Information	<p>All prefixes in the default unicast routing table (inet.0) that match prefixes that are the same as or longer than the specific prefix are processed by the from clause in the specified policy. All prefixes accepted by the policy are displayed. The test policy command evaluates a policy differently from the BGP import process. When testing a policy that contains an interface match condition in the from clause, the test policy command uses the match condition. In contrast, BGP does not use the interface match condition when evaluating the policy against routes learned from internal BGP (IBGP) or external BGP (EGBP) multihop peers.</p> <p>When testing a policy, you can see the length of time (in microseconds) required to evaluate the policy and the number of times it has been executed by running the <code>show policy <i>policy-name</i> statistics</code> command.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Understanding Routing Policy Tests • Example: Testing a Routing Policy with Complex Regular Expressions on page 119 • show policy on page 229
List of Sample Output	test policy on page 443

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

test policy

```
user@host> test policy test-statics 172.16.0.1/8

inet.0: 44 destinations, 44 routes (44 active, 0 holddown, 0 hidden)
Prefixes passing policy:

172.16.3.0/8      *[BGP/170] 16:22:46, localpref 100, from 10.255.255.41
                  AS Path: 50888 I
                  > to 10.11.4.32 via en0.2, label-switched-path l2
172.16.3.1/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
172.16.3.2/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
172.16.3.3/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
172.16.3.4/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
Policy test-statics: 5 prefixes accepted, 0 prefixes rejected
```


CHAPTER 8

RIPng Operational Commands

- clear ripng general-statistics
- clear ripng statistics
- restart
- show policy
- show policy conditions
- show ripng general-statistics
- show ripng neighbor
- show ripng statistics
- show route
- show route active-path
- show route advertising-protocol
- show route all
- show route best
- show route brief
- show route detail
- show route exact
- show route export
- show route extensive
- show route forwarding-table
- show route hidden
- show route inactive-path
- show route instance
- show route next-hop
- show route output
- show route protocol
- show route receive-protocol
- show route table

- `show route terse`
- `test policy`

clear ripng general-statistics

List of Syntax	Syntax on page 447 Syntax (EX Series Switches) on page 447
Syntax	<pre>clear ripng general-statistics <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>clear ripng general-statistics</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	Clear RIP next generation (RIPng) general statistics.
Options	<p>none—Clear RIPng general statistics.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • show ripng general-statistics on page 465
List of Sample Output	clear ripng general-statistics on page 447
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear ripng general-statistics

```
user@host> clear ripng general-statistics
```

clear ripng statistics

List of Syntax	Syntax on page 448 Syntax (EX Series Switch) on page 448
Syntax	<pre>clear ripng statistics <instance name> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switch)	<pre>clear ripng statistics <instance name></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Clear RIP next-generation (RIPng) statistics.
Options	none —Reset RIPng counters for all neighbors for all routing instances. instance —(Optional) Reset RIPng counters for the specified instance. logical-system (all logical-system-name) —(Optional) Perform this operation on all logical systems or on a particular logical system. name —(Optional) Reset RIPng counters for the specified neighbor.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none">• show ripng statistics on page 469
List of Sample Output	clear ripng statistics on page 448
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear ripng statistics

```
user@host> clear ripng statistics
```


restart

- List of Syntax**
- Syntax on page 449
 - Syntax (ACX Series Routers) on page 449
 - Syntax (EX Series Switches) on page 449
 - Syntax (MX Series Routers) on page 450
 - Syntax (QFX Series) on page 450
 - Syntax (Routing Matrix) on page 450
 - Syntax (TX Matrix Routers) on page 451
 - Syntax (TX Matrix Plus Routers) on page 451
 - Syntax (QFX Series) on page 451

Syntax restart
 <adaptive-services | ancpd-service | application-identification | audit-process |
 auto-configuration | captive-portal-content-delivery | ce-l2tp-service | chassis-control |
 class-of-service | clksyncd-service | database-replication | datapath-trace-service
 | dhcp-service | diameter-service | disk-monitoring | dynamic-flow-capture |
 ecc-error-logging | ethernet-connectivity-fault-management
 | ethernet-link-fault-management | event-processing | firewall |
 general-authentication-service | gracefully | iccp-service | idp-policy | immediately
 | interface-control | ipsec-key-management | kernel-health-monitoring | kernel-replication
 | l2-learning | l2cpd-service | l2tp-service | l2tp-universal-edge | lacp | license-service
 | link-management | local-policy-decision-function | mac-validation | mib-process |
 mounstd-service | mpls-traceroute | mspd | multicast-snooping | named-service | nfsd-service
 | packet-triggered-subscribers | peer-selection-service | pgm | pic-services-logging |
 pki-service | ppp | ppp-service | pppoe | protected-system-domain-service |
 redundancy-interface-process | remote-operations | root-system-domain-service | routing
 <logical-system *logical-system-name*> | sampling | sbc-configuration-process | sdk-service
 | service-deployment | services | snmp | soft | static-subscribers | statistics-service |
 subscriber-management | subscriber-management-helper | tunnel-oamd | usb-control |
 vrrp | web-management>
 <gracefully | immediately | soft>

Syntax (ACX Series Routers) restart
 <adaptive-services | audit-process | auto-configuration | autoinstallation | chassis-control |
 class-of-service | clksyncd-service | database-replication | dhcp-service | diameter-service
 | disk-monitoring | dynamic-flow-capture | ethernet-connectivity-fault-management |
 ethernet-link-fault-management | event-processing | firewall |
 general-authentication-service | gracefully | immediately | interface-control |
 ipsec-key-management | l2-learning | lacp | link-management | mib-process | mounstd-service
 | mpls-traceroute | mspd | named-service | nfsd-service | pgm | pki-service | ppp | pppoe |
 redundancy-interface-process | remote-operations | routing | sampling | sdk-service
 | secure-neighbor-discovery | service-deployment | services | snmp | soft | statistics-service |
 subscriber-management | subscriber-management-helper | tunnel-oamd | vrrp>

Syntax (EX Series Switches) restart
 <autoinstallation | chassis-control | class-of-service | database-replication | dhcp |
 dhcp-service | diameter-service | dot1x-protocol | ethernet-link-fault-management |
 ethernet-switching | event-processing | firewall | general-authentication-service |

```
interface-control | kernel-health-monitoring | kernel-replication | l2-learning | lacp |
license-service | link-management | lldpd-service | mib-process | mounstd-service |
multicast-snooping | pgm | redundancy-interface-process | remote-operations | routing |
secure-neighbor-discovery | service-deployment | sflow-service | snmp | vrrp |
web-management>
```

Syntax (MX Series Routers)

```
restart
<adaptive-services | ancpd-service | application-identification | audit-process |
auto-configuration | bbe-stats-service | captive-portal-content-delivery | ce-l2tp-service
| chassis-control | class-of-service | clksyncd-service | database-replication |
datapath-trace-service | dhcp-service | diameter-service | disk-monitoring |
dynamic-flow-capture | ecc-error-logging | ethernet-connectivity-fault-management |
ethernet-link-fault-management | event-processing | firewall |
general-authentication-service | gracefully | iccp-service | idp-policy | immediately
| interface-control | ipsec-key-management | kernel-health-monitoring | kernel-replication
| l2-learning | l2cpd-service | l2tp-service | l2tp-universal-edge | lacp | license-service |
link-management | local-policy-decision-function | mac-validation | mib-process |
mounstd-service | mpls-traceroute | mspd | multicast-snooping | named-service | nfsd-service
| packet-triggered-subscribers | peer-selection-service | pgm | pic-services-logging |
pki-service | ppp | ppp-service | pppoe | protected-system-domain-service |
redundancy-interface-process | remote-operations | root-system-domain-service | routing
| routing <logical-system logical-system-name> | sampling | sbc-configuration-process |
sdk-service | service-deployment | services | snmp | soft | static-subscribers
| statistics-service | subscriber-management | subscriber-management-helper | tunnel-oamd
| usb-control | vrrp | web-management>
<all-members>
<gracefully | immediately | soft>
<local>
<member member-id>
```

Syntax (QFX Series)

```
restart
<adaptive-services | audit-process | chassis-control | class-of-service | dialer-services |
diameter-service | dlsw | ethernet-connectivity | event-processing | fibre-channel | firewall
| general-authentication-service | igmp-host-services | interface-control |
ipsec-key-management | isdn-signaling | l2ald | l2-learning | l2tp-service | mib-process |
named-service | network-access-service | nstrace-process | pgm | ppp | pppoe |
redundancy-interface-process | remote-operations | logical-system-name> | routing |
sampling | secure-neighbor-discovery | service-deployment | snmp | usb-control |
web-management>
<gracefully | immediately | soft>
```

Syntax (Routing Matrix)

```
restart
<adaptive-services | audit-process | chassis-control | class-of-service | disk-monitoring |
dynamic-flow-capture | ecc-error-logging | event-processing | firewall | interface-control
| ipsec-key-management | kernel-replication | l2-learning | l2tp-service | lacp |
link-management | mib-process | pgm | pic-services-logging | ppp | pppoe |
redundancy-interface-process | remote-operations | routing <logical-system
logical-system-name> | sampling | service-deployment | snmp>
<all | all-lcc | lcc number>
<gracefully | immediately | soft>
```

Syntax (TX Matrix Routers)	<pre>restart <adaptive-services audit-process chassis-control class-of-service dhcp-service diameter-service disk-monitoring dynamic-flow-capture ecc-error-logging event-processing firewall interface-control ipsec-key-management kernel-replication l2-learning l2tp-service lacp link-management mib-process pgm pic-services-logging ppp pppoe redundancy-interface-process remote-operations routing <logical-system logical-system-name> sampling service-deployment snmp statistics-service> <all-chassis all-lcc lcc number scc> <gracefully immediately soft></pre>
Syntax (TX Matrix Plus Routers)	<pre>restart <adaptive-services audit-process chassis-control class-of-service dhcp-service diameter-service disk-monitoring dynamic-flow-capture ecc-error-logging event-processing firewall interface-control ipsec-key-management kernel-replication l2-learning l2tp-service lacp link-management mib-process pgm pic-services-logging ppp pppoe redundancy-interface-process remote-operations routing <logical-system logical-system-name> sampling service-deployment snmp statistics-service> <all-chassis all-lcc all-sfc lcc number sfc number> <gracefully immediately soft></pre>
Syntax (QFX Series)	<pre>restart <adaptive-services audit-process chassis-control class-of-service dialer-services diameter-service dlsw ethernet-connectivity event-processing fibre-channel firewall general-authentication-service igmp-host-services interface-control ipsec-key-management isdn-signaling l2ald l2-learning l2tp-service mib-process named-service network-access-service nstrace-process pgm ppp pppoe redundancy-interface-process remote-operations logical-system-name> routing sampling secure-neighbor-discovery service-deployment snmp usb-control web-management> <gracefully immediately soft></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> <p>Command introduced in Junos OS Release 11.1 for the QFX Series.</p> <p>Command introduced in Junos OS Release 12.2 for ACX Series routers.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p> <p>Options added:</p> <ul style="list-style-type: none"> • dynamic-flow-capture in Junos OS Release 7.4. • dlsw in Junos OS Release 7.5. • event-processing in Junos OS Release 7.5. • ppp in Junos OS Release 7.5. • l2ald in Junos OS Release 8.0. • link-management in Junos Release 8.0. • pgcp-service in Junos OS Release 8.4.

- **sbcd-configuration-process** in Junos OS Release 9.5.
- **services pgcp gateway** in Junos OS Release 9.6.
- **sfc** and **all-sfc** for the TX Matrix Router in Junos OS Release 9.6.
- **bbe-stats-service** in Junos OS Release 18.4R1 on MX Series routers.
- **kernel-health-monitoring** in Junos OS Release 19.1R1.

Description Restart a Junos OS process.



CAUTION: Never restart a software process unless instructed to do so by a customer support engineer. A restart might cause the router or switch to drop calls and interrupt transmission, resulting in possible loss of data.

Options **none**—Same as **gracefully**.

adaptive-services—(Optional) Restart the configuration management process that manages the configuration for stateful firewall, Network Address Translation (NAT), intrusion detection services (IDS), and IP Security (IPsec) services on the Adaptive Services PIC.

all-chassis—(TX Matrix and TX Matrix Plus routers only) (Optional) Restart the software process on all chassis.

all-lcc—(TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process on all T640 routers connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process on all T1600 routers connected to the TX Matrix Plus router.

all-members—(MX Series routers only) (Optional) Restart the software process for all members of the Virtual Chassis configuration.

all-sfc—(TX Matrix Plus routers only) (Optional) For a TX Matrix Plus router, restart the software processes for the TX Matrix Plus router (or switch-fabric chassis).

ancpd-service—(Optional) Restart the Access Node Control Protocol (ANCP) process, which works with a special Internet Group Management Protocol (IGMP) session to collect outgoing interface mapping events in a scalable manner.

application-identification—(Optional) Restart the process that identifies an application using intrusion detection and prevention (IDP) to allow or deny traffic based on applications running on standard or nonstandard ports.

audit-process—(Optional) Restart the RADIUS accounting process that gathers statistical data that can be used for general network monitoring, analyzing, and tracking usage patterns, for billing a user based on the amount of time or type of services accessed.

auto-configuration—(Optional) Restart the Interface Auto-Configuration process.

autoinstallation—(EX Series switches only) (Optional) Restart the autoinstallation process.

bbe-stats-service—(MX Series routers only) (Optional) Restart bbe-statsd, the BBE statistics collection and management process.

captive-portal-content-delivery—(Optional) Restart the HTTP redirect service by specifying the location to which a subscriber's initial Web browser session is redirected, enabling initial provisioning and service selection for the subscriber.

ce-l2tp-service—(M10, M10i, M7i, and MX Series routers only) (Optional) Restart the Universal Edge Layer 2 Tunneling Protocol (L2TP) process, which establishes L2TP tunnels and Point-to-Point Protocol (PPP) sessions through L2TP tunnels.

chassis-control—(Optional) Restart the chassis management process.

class-of-service—(Optional) Restart the class-of-service (CoS) process, which controls the router's or switch's CoS configuration.

clksyncd-service—(Optional) Restart the external clock synchronization process, which uses synchronous Ethernet (SyncE).

database-replication—(EX Series switches and MX Series routers only) (Optional) Restart the database replication process.

datapath-trace-service—(Optional) Restart the packet path tracing process.

dhcp—(EX Series switches only) (Optional) Restart the software process for a Dynamic Host Configuration Protocol (DHCP) server. A DHCP server allocates network IP addresses and delivers configuration settings to client hosts without user intervention.

dhcp-service—(Optional) Restart the Dynamic Host Configuration Protocol process.

dialer-services—(EX Series switches only) (Optional) Restart the ISDN dial-out process.

diameter-service—(Optional) Restart the diameter process.

disk-monitoring—(Optional) Restart disk monitoring, which checks the health of the hard disk drive on the Routing Engine.

dls—(QFX Series only) (Optional) Restart the data link switching (DLSw) service.

dot1x-protocol—(EX Series switches only) (Optional) Restart the port-based network access control process.

dynamic-flow-capture—(Optional) Restart the dynamic flow capture (DFC) process, which controls DFC configurations on Monitoring Services III PICs.

ecc-error-logging—(Optional) Restart the error checking and correction (ECC) process, which logs ECC parity errors in memory on the Routing Engine.

ethernet-connectivity-fault-management—(Optional) Restart the process that provides IEEE 802.1ag Operation, Administration, and Management (OAM) connectivity fault

management (CFM) database information for CFM maintenance association end points (MEPs) in a CFM session.

ethernet-link-fault-management—(EX Series switches and MX Series routers only) (Optional) Restart the process that provides the OAM link fault management (LFM) information for Ethernet interfaces.

ethernet-switching—(EX Series switches only) (Optional) Restart the Ethernet switching process.

event-processing—(Optional) Restart the event process (eventd).

fibre-channel—(QFX Series only) (Optional) Restart the Fibre Channel process.

firewall—(Optional) Restart the firewall management process, which manages the firewall configuration and enables accepting or rejecting packets that are transiting an interface on a router or switch.

general-authentication-service—(EX Series switches and MX Series routers only) (Optional) Restart the general authentication process.

gracefully—(Optional) Restart the software process.

iccp-service—(Optional) Restart the Inter-Chassis Communication Protocol (ICCP) process.

idp-policy—(Optional) Restart the intrusion detection and prevention (IDP) protocol process.

immediately—(Optional) Immediately restart the software process.

interface-control—(Optional) Restart the interface process, which controls the router's or switch's physical interface devices and logical interfaces.

ipsec-key-management—(Optional) Restart the IPsec key management process.

isdn-signaling—(QFX Series only) (Optional) Restart the ISDN signaling process, which initiates ISDN connections.

kernel-health-monitoring—(Optional) Restart the Routing Engine kernel health monitoring process, which enables health parameter data to be sent from kernel components to data collection applications. When you change the polling interval through `sysctl kern.jkhmd_polling_time_secs`, you must restart the kernel health monitoring process for the new polling interval to take effect.

kernel-replication—(Optional) Restart the kernel replication process, which replicates the state of the backup Routing Engine when graceful Routing Engine switchover (GRES) is configured.

l2-learning—(Optional) Restart the Layer 2 address flooding and learning process.

l2cpd-service—(Optional) Restart the Layer 2 Control Protocol process, which enables features such as Layer 2 protocol tunneling and nonstop bridging.

l2tp-service— (M10, M10i, M7i, and MX Series routers only) (Optional) Restart the Layer 2 Tunneling Protocol (L2TP) process, which sets up client services for establishing Point-to-Point Protocol (PPP) tunnels across a network and negotiating Multilink PPP if it is implemented.

l2tp-universal-edge— (MX Series routers only) (Optional) Restart the L2TP process, which establishes L2TP tunnels and PPP sessions through L2TP tunnels.

lACP— (Optional) Restart the Link Aggregation Control Protocol (LACP) process. LACP provides a standardized means for exchanging information between partner systems on a link to allow their link aggregation control instances to reach agreement on the identity of the LAG to which the link belongs, and then to move the link to that LAG, and to enable the transmission and reception processes for the link to function in an orderly manner.

lcc *number*— (TX Matrix and TX Matrix Plus routers only) (Optional) For a TX Matrix router, restart the software process for a specific T640 router that is connected to the TX Matrix router. For a TX Matrix Plus router, restart the software process for a specific router that is 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.

license-service— (EX Series switches only) (Optional) Restart the feature license management process.

link-management— (TX Matrix and TX Matrix Plus routers and EX Series switches only) (Optional) Restart the Link Management Protocol (LMP) process, which establishes and maintains LMP control channels.

lldpd-service— (EX Series switches only) (Optional) Restart the Link Layer Discovery Protocol (LLDP) process.

local— (MX Series routers only) (Optional) Restart the software process for the local Virtual Chassis member.

local-policy-decision-function— (Optional) Restart the process for the Local Policy Decision Function, which regulates collection of statistics related to applications and application groups and tracking of information about dynamic subscribers and static interfaces.

mac-validation— (Optional) Restart the Media Access Control (MAC) validation process, which configures MAC address validation for subscriber interfaces created on demux interfaces in dynamic profiles on MX Series routers.

member *member-id*—(MX Series routers only) (Optional) Restart the software process for a specific member of the Virtual Chassis configuration. Replace ***member-id*** with a value of 0 or 1.

mib-process—(Optional) Restart the Management Information Base (MIB) version II process, which provides the router's MIB II agent.

mobile-ip—(Optional) Restart the Mobile IP process, which configures Junos OS Mobile IP features.

mountd-service—(EX Series switches and MX Series routers only) (Optional) Restart the service for NFS mount requests.

mpls-traceroute—(Optional) Restart the MPLS Periodic Traceroute process.

mspd—(Optional) Restart the Multiservice process.

multicast-snooping—(EX Series switches and MX Series routers only) (Optional) Restart the multicast snooping process, which makes Layer 2 devices, such as VLAN switches, aware of Layer 3 information, such as the media access control (MAC) addresses of members of a multicast group.

named-service—(Optional) Restart the DNS Server process, which is used by a router or a switch to resolve hostnames into addresses.

network-access-service—(QFX Series only) (Optional) Restart the network access process, which provides the router's Challenge Handshake Authentication Protocol (CHAP) authentication service.

nfsd-service—(Optional) Restart the Remote NFS Server process, which provides remote file access for applications that need NFS-based transport.

packet-triggered-subscribers—(Optional) Restart the packet-triggered subscribers and policy control (PTSP) process, which allows the application of policies to dynamic subscribers that are controlled by a subscriber termination device.

peer-selection-service—(Optional) Restart the Peer Selection Service process.

pgcp-service—(Optional) Restart the pgcpd service process running on the Routing Engine. This option does not restart pgcpd processes running on mobile station PICs. To restart pgcpd processes running on mobile station PICs, use the **services pgcp gateway** option.

pgm—(Optional) Restart the process that implements the Pragmatic General Multicast (PGM) protocol for assisting in the reliable delivery of multicast packets.

pic-services-logging—(Optional) Restart the logging process for some PICs. With this process, also known as fsad (the file system access daemon), PICs send special logging information to the Routing Engine for archiving on the hard disk.

pki-service—(Optional) Restart the PKI Service process.

ppp—(Optional) Restart the Point-to-Point Protocol (PPP) process, which is the encapsulation protocol process for transporting IP traffic across point-to-point links.

ppp-service—(Optional) Restart the Universal edge PPP process, which is the encapsulation protocol process for transporting IP traffic across universal edge routers.

pppoe—(Optional) Restart the Point-to-Point Protocol over Ethernet (PPPoE) process, which combines PPP that typically runs over broadband connections with the Ethernet link-layer protocol that allows users to connect to a network of hosts over a bridge or access concentrator.

protected-system-domain-service—(Optional) Restart the Protected System Domain (PSD) process.

redundancy-interface-process—(Optional) Restart the ASP redundancy process.

remote-operations—(Optional) Restart the remote operations process, which provides the ping and traceroute MIBs.

root-system-domain-service—(Optional) Restart the Root System Domain (RSD) service.

routing—(ACX Series routers, QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the routing protocol process.

routing <logical-system *logical-system-name*>—(Optional) Restart the routing protocol process, which controls the routing protocols that run on the router or switch and maintains the routing tables. Optionally, restart the routing protocol process for the specified logical system only.

sampling—(Optional) Restart the sampling process, which performs packet sampling based on particular input interfaces and various fields in the packet header.

sbc-configuration-process—(Optional) Restart the session border controller (SBC) process of the border signaling gateway (BSG).

scc—(TX Matrix routers only) (Optional) Restart the software process on the TX Matrix router (or switch-card chassis).

sdk-service—(Optional) Restart the SDK Service process, which runs on the Routing Engine and is responsible for communications between the SDK application and Junos OS. Although the SDK Service process is present on the router, it is turned off by default.

secure-neighbor-discovery—(QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the secure Neighbor Discovery Protocol (NDP) process, which provides support for protecting NDP messages.

sfc *number*—(TX Matrix Plus routers only) (Optional) Restart the software process on the TX Matrix Plus router (or switch-fabric chassis). Replace *number* with 0.

service-deployment—(Optional) Restart the service deployment process, which enables Junos OS to work with the Session and Resource Control (SRC) software.

services—(Optional) Restart a service.

services pgcp gateway *gateway-name*—(Optional) Restart the pgcpd process for a specific border gateway function (BGF) running on an MS-PIC. This option does not restart the pgcpd process running on the Routing Engine. To restart the pgcpd process on the Routing Engine, use the **pgcp-service** option.

sflow-service—(EX Series switches only) (Optional) Restart the flow sampling (sFlow technology) process.

snmp—(Optional) Restart the SNMP process, which enables the monitoring of network devices from a central location and provides the router's or switch's SNMP master agent.

soft—(Optional) Reread and reactivate the configuration without completely restarting the software processes. For example, BGP peers stay up and the routing table stays constant. Omitting this option results in a graceful restart of the software process.

static-subscribers—(Optional) Restart the static subscribers process, which associates subscribers with statically configured interfaces and provides dynamic service activation and activation for these subscribers.

statistics-service—(Optional) Restart the process that manages the Packet Forwarding Engine statistics.

subscriber-management—(Optional) Restart the Subscriber Management process.

subscriber-management-helper—(Optional) Restart the Subscriber Management Helper process.

tunnel-oamd—(Optional) Restart the Tunnel OAM process, which enables the Operations, Administration, and Maintenance of Layer 2 tunneled networks. Layer 2 protocol tunneling (L2PT) allows service providers to send Layer 2 protocol data units (PDUs) across the provider's cloud and deliver them to Juniper Networks EX Series Ethernet Switches that are not part of the local broadcast domain.

usb-control—(MX Series routers) (Optional) Restart the USB control process.

vrrp—(ACX Series routers, EX Series switches, and MX Series routers only) (Optional) Restart the Virtual Router Redundancy Protocol (VRRP) process, which enables hosts on a LAN to make use of redundant routing platforms on that LAN without requiring more than the static configuration of a single default route on the hosts.

web-management—(QFX Series, EX Series switches, and MX Series routers only) (Optional) Restart the Web management process.

Required Privilege Level reset

Related Documentation • *Overview of Junos OS CLI Operational Mode Commands*

List of Sample Output [restart interface-control gracefully on page 459](#)

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

[restart interface-control gracefully](#)

```
user@host> restart interface-control gracefully
Interface control process started, pid 41129
```

show policy

List of Syntax	Syntax on page 460 Syntax (EX Series Switches) on page 460
Syntax	<pre>show policy <logical-system (all <i>logical-system-name</i>)> <<i>policy-name</i>> <<i>statistics</i>></pre>
Syntax (EX Series Switches)	<pre>show policy <<i>policy-name</i>></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. statistics option introduced in Junos OS Release 16.1 for MX Series routers.
Description	Display information about configured routing policies.
Options	<p>none—List the names of all configured routing policies.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>policy-name</i>—(Optional) Show the contents of the specified policy.</p> <p>statistics—(Optional) Use in conjunction with the test policy command to show the length of time (in microseconds) required to evaluate a given policy and the number of times it has been executed. This information can be used, for example, to help structure a policy so it is evaluated efficiently. Timers shown are per route; times are not cumulative. Statistics are incremented even when the router is learning (and thus evaluating) routes from peering routers.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show policy damping• test policy on page 442
List of Sample Output	show policy on page 461 show policy policy-name on page 461 show policy statistics policy-name on page 461 show policy (Multicast Scoping) on page 462 show policy (Route Filter and source Address Filter Lists) on page 462

Output Fields Table 7 on page 230 lists the output fields for the **show policy** command. Output fields are listed in the approximate order in which they appear.

Table 28: show policy Output Fields

Field Name	Field Description
<i>policy-name</i>	Name of the policy listed.
<i>term</i>	Name of the user-defined policy term. The term name unnamed is used for policy elements that occur outside of user defined terms
<i>from</i>	Match condition for the policy.
<i>then</i>	Action for the policy.

Sample Output

show policy

```
user@host> show policy
Configured policies:
__vrf-export-red-internal__
__vrf-import-red-internal__
red-export
rf-test-policy
multicast-scoping
```

show policy policy-name

```
user@host> show policy vrf-import-red-internal
Policy vrf-import-red-internal:
  from
    203.0.113.0/28 accept
    203.0.113.32/28 accept
  then reject
```

show policy statistics policy-name

```
user@host> show policy statistics iBGP-v4-RR-Import
Policy iBGP-v4-RR-Import:
  [1243328] Term Lab-Infra:
    from [1243328 0] proto BGP
      [28 0] route filter:
        10.11.0.0/8 orlonger
        10.13.0.0/8 orlonger
    then [28 0] accept
  [1243300] Term External:
    from [1243300 1] proto BGP
      [1243296 0] community Ext-Com1 [64496:1515 ]
      [1243296 0] prefix-list-filter Customer-Routes
      [1243296 0] aspath AS6221
      [1243296 1] route filter:
```

```
172.16.49.0/12 orlonger
172.16.50.0/12 orlonger
172.16.51.0/12 orlonger
172.16.52.0/12 orlonger
172.16.56.0/12 orlonger
172.16.60.0/12 orlonger
then [1243296 2] community + Ext-Com2 [64496:2000 ] [1243296 0] accept
[4] Term Final:
then [4 0] reject
```

show policy (Multicast Scoping)

```
user@host> show policy multicast-scoping
```

```
Policy multicast-scoping:
  from
    multicast-scope == 8
  then
    accept
```

show policy (Route Filter and source Address Filter Lists)

```
user@host> show policy rf-test-policy
```

```
Policy rf-test-policy:
  Term term1:
    from source-address-filter-list saf-list-1
    source-address filter:
      192.0.2.0/29 longer
      192.0.2.64/28 exact
      192.0.2.128/28 exact
      192.0.2.160/28 orlonger
  Term term2:
    from route-filter-list rf-list-1
    route filter:
      198.51.100.0/29 upto 198.51.100.0/30
      198.51.100.8/29 upto 198.51.100.8/30 accept
  Term unnamed:
    then reject
```

show policy conditions

Syntax	<pre>show policy conditions <condition-name> <detail> <dynamic> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switches)	<pre>show policy conditions <condition-name> <detail> <dynamic></pre>
Release Information	<p>Command introduced in Junos OS Release 9.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	<p>Display all the configured conditions as well as the routing tables with which the configuration manager is interacting. If the detail keyword is included, the output also displays dependent routes for each condition.</p>
Options	<p>none—Display all configured conditions and associated routing tables.</p> <p>condition-name—(Optional) Display information about the specified condition only.</p> <p>detail—(Optional) Display the specified level of output.</p> <p>dynamic—(Optional) Display information about the conditions in the dynamic database.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show policy conditions detail on page 464
Output Fields	<p>Table 8 on page 232 lists the output fields for the show policy conditions command. Output fields are listed in the approximate order in which they appear.</p>

Table 29: show policy conditions Output Fields

Field Name	Field Description	Level of Output
Condition	Name of configured condition.	All levels
event	Condition type. If the if-route-exists option is configured, the event type is: Existence of a route in a specific routing table.	All levels

Table 29: show policy conditions Output Fields (continued)

Field Name	Field Description	Level of Output
Dependent routes	List of routes dependent on the condition, along with the latest generation number.	detail
Condition tables	List of routing tables associated with the condition, along with the latest generation number and number of dependencies.	All levels
If-route-exists conditions	List of conditions configured to look for a route in the specified table.	All levels

Sample Output

show policy conditions detail

```

user@host> show policy conditions detail

Configured conditions:
Condition cond1, event: Existence of a route in a specific routing table
Dependent routes:
  172.16.4.4/32, generation 3
  6.6.6.6/32, generation 3
  10.10.10.10/32, generation 3

Condition cond2, event: Existence of a route in a specific routing table
Dependent routes:
None

Condition tables:
Table inet.0, generation 4, dependencies 3, If-route-exists conditions: cond1
(static) cond2 (static)

```


show ripng general-statistics

List of Syntax	Syntax on page 465 Syntax (EX Series Switch) on page 465
Syntax	<pre>show ripng general-statistics <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switch)	<pre>show ripng general-statistics</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 general RIP next-generation (RIPng) statistics.
Options	<p>none—Display general RIPng statistics.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • clear ripng general-statistics on page 447
List of Sample Output	show ripng general-statistics on page 466
Output Fields	<p>Table 30 on page 465 lists the output fields for the show ripng general-statistics command. Output fields are listed in the approximate order in which they appear.</p>

Table 30: show ripng general-statistics Output Fields

Field Name	Field Description
bad msgs	Number of invalid messages received.
no rcv intf	Number of packets received with no matching interface.
curr memory	Amount of memory currently used by RIPng.
max memory	Most memory used by RIPng.

Sample Output

show ripng general-statistics

```
user@host> show ripng general-statistics
```

```
RIPng I/O info:
```

bad msgs	:	0
no recv intf	:	0
curr memory	:	0
max memory	:	0

show ripng neighbor

List of Syntax [Syntax on page 467](#)
[Syntax \(EX Series Switch\) on page 467](#)

Syntax `show ripng neighbor`
`<logical-system (all | logical-system-name)>`
`<name>`

Syntax (EX Series Switch) `show ripng neighbor`
`<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 information about RIP next-generation (RIPng) neighbors.

Options **none**—Display information about all RIPng neighbors.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

name—(Optional) Display detailed information about a specific RIPng neighbor.

Required Privilege Level view

List of Sample Output [show ripng neighbor on page 468](#)

Output Fields [Table 31 on page 467](#) lists the output fields for the **show ripng neighbor** command. Output fields are listed in the approximate order in which they appear.

Table 31: show ripng neighbor Output Fields

Field Name	Field Description
Neighbor	Name of RIPng neighbor.
State	State of the connection: Up or Dn (Down).
Source Address	Source address.
Destination Address	Destination address.
Send	Send options: broadcast , multicast , none , version 1 , or yes .
Recv	Type of packets to accept: both , none , version 1 , or yes .

Table 31: show ripng neighbor Output Fields (continued)

Field Name	Field Description
In Met	Metric added to incoming routes when advertising into RIPng routes that were learned from other protocols.

Sample Output

show ripng neighbor

```
user@host> show ripng neighbor
```

Neighbor	State	Source Address	Dest Address	Send	Recv	In Met
-----	-----	-----	-----	-----	-----	-----
fe-0/0/2.0	Up	fe80::290:69ff:fe68:b002	ff02::9	yes	yes	1

show ripng statistics

List of Syntax	Syntax on page 469 Syntax (EX Series Switch) on page 469
Syntax	<pre>show ripng statistics <logical-system (all <i>logical-system-name</i>)> <<i>name</i>></pre>
Syntax (EX Series Switch)	<pre>show ripng statistics <<i>name</i>></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 RIP next generation (RIPng) statistics about messages sent and received on an interface, as well as information received from advertisements from other routing devices.
Options	<p>none—Display RIPng statistics for all neighbors.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>name</i>—(Optional) Display detailed information about a specific RIPng neighbor.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear ripng statistics on page 448
List of Sample Output	show ripng statistics on page 470
Output Fields	Table 32 on page 470 lists the output fields for the show ripng statistics command. Output fields are listed in the approximate order in which they appear.

Table 32: show ripng statistics Output Fields

Field Name	Field Description
RIPng info	Information about RIPng on the specified interface: <ul style="list-style-type: none"> port—UDP port number used for RIPng. holddown—Hold-down interval, in seconds. rts learned—Number of routes learned through RIPng. rts held down—Number of routes held down by RIPng. rqsts dropped—Number of received request packets that were dropped. resps dropped—Number of received response packets that were dropped. restart—Graceful restart status. Displayed when RIPng is or has been in the process of graceful restart.
logical-interface	Name of the logical interface and its statistics: <ul style="list-style-type: none"> routes learned—Number of routes learned on the logical interface. routes advertised—Number of routes advertised by the logical interface. timeout—Timeout interval, in seconds. update interval—Interval between routing table updates, in seconds.
Counter	List of counter types: <ul style="list-style-type: none"> Updates Sent—Number of update messages sent. Triggered Updates Sent—Number of triggered update messages sent. Responses Sent—Number of response messages sent. Bad Messages—Number of invalid messages received. Updates Received—Number of RIPng update messages received. Bad Route Entries—Number of RIPng invalid route entry messages received. Updates Ignored—Number of RIPng update messages ignored. RIPng Requests Received—Number of RIPng request messages received. RIPng Requests Ignored—Number of RIPng request messages ignored.
Total	Total number of packets for the selected counter.
Last 5 min	Number of packets for the selected counter in the most recent 5-minute period.
Last minute	Number of packets for the selected counter in the most recent 1-minute period.

Sample Output

show ripng statistics

```

user@host> show ripng statistics
RIPng info: port 521; holddown 120s;
    rts learned  rts held down  rqsts dropped  resps dropped
              0              0              0              0

so-0/1/3.0: 0 routes learned; 1 routes advertised; timeout 180s; update interval
20s
Counter                               Total   Last 5 min  Last minute

```

-----	-----	-----	-----
Updates Sent	934	16	4
Triggered Updates Sent	1	0	0
Responses Sent	0	0	0
Bad Messages	0	0	0
Updates Received	0	0	0
Bad Route Entries	0	0	0
Updates Ignored	0	0	0
RIPng Requests Received	0	0	0
RIPng Requests Ignored	0	0	0

show route

List of Syntax [Syntax on page 472](#)
 [Syntax \(EX Series Switches\) on page 472](#)

Syntax

```
show route
<all>
<destination-prefix>
<logical-system (all | logical-system-name)>
<private>
<te-ipv4-prefix-ip te-ipv4-prefix-ip>
<te-ipv4-prefix-node-ip te-ipv4-prefix-node-ip>
<te-ipv4-prefix-node-iso te-ipv4-prefix-node-iso>
```

Syntax (EX Series Switches)

```
show route
<all>
<destination-prefix>
<private>
```

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.
 Option **private** introduced in Junos OS Release 9.5.
 Option **private** introduced in Junos OS Release 9.5 for EX Series switches.
 Command introduced in Junos OS Release 15.1R3 on MX Series routers for enhanced subscriber management.
 Option **display-client-data** introduced in Junos OS Release 16.2R1 on MX80, MX104, MX240, MX480, MX960, MX2010, MX2020, vMX Series routers.
 Options **te-ipv4-prefix-ip**, **te-ipv4-prefix-node-ip**, and **te-ipv4-prefix-node-iso** introduced in Junos OS Release 17.2R1 on MX Series and PTX Series.

Description Display the active entries in the routing tables.

Options **none**—Display brief information about all active entries in the routing tables.

all—(Optional) Display information about all routing tables, including private, or internal, routing tables.

destination-prefix—(Optional) Display active entries for the specified address or range of addresses.

logical-system (all | logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.

private—(Optional) Display information only about all private, or internal, routing tables.

display-client-data —(Optional) Display client id and cookie information for routes installed by the routing protocol process client applications.

te-ipv4-prefix-ip *te-ipv4-prefix-ip*—(Optional) Display IPv4 address of the traffic-engineering prefix, without the mask length if present in the routing table.

te-ipv4-prefix-node-ip *te-ipv4-prefix-node-ip*—(Optional) Display all prefixes that have originated from the traffic-engineering node. You can filter IPv4 node addresses from the traffic-engineered routes in the **lsdist.0** table.

te-ipv4-prefix-node-iso *te-ipv4-prefix-node-iso*—(Optional) Display all prefixes that have originated from the traffic-engineering node. You can filter IPv4 routes with the specified ISO circuit ID from the **lsdist.0** table.

Required Privilege Level

view

Related Documentation

- *Understanding IS-IS Configuration*
- *Example: Configuring IS-IS*
- *Examples: Configuring Internal BGP Peering*
- *Examples: Configuring External BGP Peering*
- *Examples: Configuring OSPF Routing Policy*
- *Verifying and Managing Junos OS Enhanced Subscriber Management*

List of Sample Output

[show route on page 476](#)
[show route \(VPN\) on page 477](#)
[show route \(with Destination Prefix\) on page 477](#)
[show route destination-prefix detail on page 477](#)
[show route extensive on page 477](#)
[show route extensive \(ECMP\) on page 478](#)
[show route extensive \(Multipath Resolution\) on page 478](#)
[show route \(Enhanced Subscriber Management\) on page 483](#)
[show route \(IPv6 Flow Specification\) on page 483](#)
[show route display-client-data detail on page 483](#)
[show route te-ipv4-prefix-ip on page 484](#)
[show route te-ipv4-prefix-ip extensive on page 485](#)
[show route te-ipv4-prefix-node-iso on page 487](#)
[show route te-ipv4-prefix-node-iso extensive on page 488](#)
[show route te-ipv4-prefix-node-iso detail on page 490](#)

Output Fields

[Table 12 on page 243](#) describes the output fields for the **show route** command. Output fields are listed in the approximate order in which they appear.

Table 33: show route Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).

Table 33: show route Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active). • holddown (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. <p>However, if you have configured advertisement of multiple routes (with the add-path or advertise-inactive 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"> • hidden (routes that are not used because of a routing policy).
<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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only. For example, 10.1.1.195:NoCtrlWord:1:1:Local/96): <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote.
[<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"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • -—A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.</p>
<i>weeks:days</i> <i>hours:minutes:seconds</i>	How long the route been known (for example, 2w4d 13:11:14 , or 2 weeks, 4 days, 13 hours, 11 minutes, and 14 seconds).

Table 33: show route Output Fields (continued)

Field Name	Field Description
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"> • I—IGP. • E—EGP. • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—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. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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>
encapsulated	Extended next-hop encoding capability enabled for the specified BGP community for routing IPv4 traffic over IPv6 tunnels. When BGP receives routes without the tunnel community, IPv4-Over IPv6 tunnels are not created and BGP routes are resolved without encapsulation.
Route Labels	Stack of labels carried in the BGP route update.
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—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. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
to	<p>Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.</p> <p>If the destination is Discard, traffic is dropped.</p>

Table 33: show route Output Fields (continued)

Field Name	Field Description
via	<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 Selected. This field can also contain the following information:</p> <ul style="list-style-type: none"> • 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. • Balance—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. • lsp-path-name—Name of the LSP used to reach the next hop. • label-action—MPLS label and operation occurring at the next hop. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label). For VPNs, expect to see multiple push 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).
Private unicast	(Enhanced subscriber management for MX Series routers) Indicates that an access-internal route is managed by enhanced subscriber management. By contrast, access-internal routes <i>not</i> managed by enhanced subscriber management are displayed with associated next-hop and media access control (MAC) address information.
balance	Distribution of the load based on the underlying operational interface bandwidth for equal-cost multipaths (ECMP) across the nexthop gateways in percentages.

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 (VPN)

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 192.0.2.0
```

```
13979:665001.inet.0: 871 destinations, 3556 routes (871 active, 0 holddown, 0 hidden)
```

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

```
192.0.2.0/24      [BGP/170] 00:28:32, localpref 100, from 10.9.9.160
                  AS path: 13980 ?, validation-state: unverified
                  > 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 ?, validation-state: unverified
                  > 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 (with Destination Prefix)

```
user@host> show route 192.168.0.0/12
```

```
inet.0: 10 destinations, 10 routes (9 active, 0 holddown, 1 hidden)
```

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

```
192.168.0.0/12    *[Static/5] 2w4d 12:54:27
                  > to 192.168.167.254 via fxp0.0
```

show route destination-prefix detail

```
user@host> show route 198.51.100.0 detail
```

```
inet.0: 15 destinations, 20 routes (15 active, 0 holddown, 0 hidden)
```

```
198.51.100.0/24 (2 entries, 2 announced)
```

```
*BGP Preference: 170/-101
```

```
...
```

```
BGP-Static Preference: 4294967292
```

```
Next hop type: Discard
```

```
Address: 0x9041ae4
```

```
Next-hop reference count: 2
```

```
State: <NoReadvrt Int Ext AlwaysFlash>
```

```
Inactive reason: Route Preference
```

```
Local AS: 200
```

```
Age: 4d 1:40:40
```

```
Validation State: unverified
```

```
Task: RT
```

```
Announcement bits (1): 2-BGP_RT_Background
```

```
AS path: 4 5 6 I
```

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
203.0.113.1
  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: 64510 Peer AS: 64511
  Age: 3 Metric2: 1
  Validation State: unverified
  Task: BGP_64510.10.0.0.30+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:64502:100 encapsulation:0L:14 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 extensive (ECMP)

```

user@host> show route extensive
*IS-IS Preference: 15
  Level: 1
  Next hop type: Router, Next hop index: 1048577
  Address: 0xFFFFFFFF
  Next-hop reference count: YY
  Next hop: 198.51.100.2 via ae1.0 balance 43%, selected
  Session Id: 0x141
  Next hop: 192.0.2.2 via ae0.0 balance 57%

```

show route extensive (Multipath Resolution)

```

user@host> show route extensive
inet.0: 37 destinations, 37 routes (36 active, 0 holddown, 1 hidden)
10.1.1.2/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 10.1.1.2/32 -> {indirect(1048574)}
  *Static Preference: 5
  Next hop type: Indirect, Next hop index: 0
  Address: 0xb39d1b0

```

```

Next-hop reference count: 2
Next hop type: Router, Next hop index: 581
Next hop: 10.1.1.2 via ge-2/0/1.0, selected
Session Id: 0x144
Next hop: 10.2.1.2 via ge-2/0/2.0, selected
Session Id: 0x145
Protocol next hop: 10.1.1.1
Indirect next hop: 0xb2b20f0 1048574 INH Session ID: 0x143
State: <Active Int Ext>
Age: 2:53 Metric2: 0
Validation State: unverified
Task: RT
Announcement bits (2): 0-KRT 2-Resolve tree 1
AS path: I
Indirect next hops: 1
  Protocol next hop: 10.1.1.1
  Indirect next hop: 0xb2b20f0 1048574 INH Session ID: 0x143

  Indirect path forwarding next hops: 2
    Next hop type: Router
    Next hop: 10.1.1.2 via ge-2/0/1.0
    Session Id: 0x144
    Next hop: 10.2.1.2 via ge-2/0/2.0
    Session Id: 0x145
10.1.1.1/32 Originating RIB: inet.0
  Node path count: 1
  Node flags: 1
  Forwarding nexthops: 2 (Merged)
  Nexthop: 10.1.1.2 via ge-2/0/1.0
  Nexthop: 10.2.1.2 via ge-2/0/2.0

```

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

```
user@host> show route 198.51.100.1 active-path extensive
```

```

inet.0: 1000061 destinations, 1000082 routes (1000061 active, 0 holddown, 0 hidden)
198.51.100.1/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 198.51.100.1/32 -> {indirect(1051215)}
unicast reverse-path: 0
[ae0.0 ae1.0]
Page 0 idx 0, (group Internet-IPv4 type External) Type 1 val 0xbb2e53d8 (adv_entry)
Advertised metrics:
Nexthop: Self
AS path: [500] 410 I
Communities:
Path 198.51.100.1 from 10.0.0.11 Vector len 4. Val: 0
*BGP Preference: 170/-101
Next hop type: Indirect, Next hop index: 0
Address: 0x2e9aacdc
Next-hop reference count: 500000
Source: 10.0.0.11
Next hop type: Router, Next hop index: 0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 25, Push 20(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 20: None;
Label element ptr: 0xb5dc1780
Label parent element ptr: 0x18d48080
Label element references: 2
Label element child references: 0

```

```
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 25, Push 22(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 22: None;
Label element ptr: 0xb5dc1700
Label parent element ptr: 0x18d41000
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 24, Push 48(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 48: None;
Label element ptr: 0x18d40800
Label parent element ptr: 0x18d49780
Label element references: 3
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Label operation: Push 3851, Push 24, Push 49(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 49: None;
Label element ptr: 0xb5dc1680
Label parent element ptr: 0x18d48f00
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Label operation: Push 3851, Push 25, Push 21(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 21: None;
Label element ptr: 0xb5dc1600
Label parent element ptr: 0x18d44d80
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Label operation: Push 3851, Push 25, Push 25(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 25: None; Label 25: None;
Label element ptr: 0xb5dc1580
Label parent element ptr: 0x18d3da80
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1, selected
Label operation: Push 3851, Push 24, Push 68(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 68: None;
Label element ptr: 0x18d41500
Label parent element ptr: 0x18d49000
Label element references: 3
Label element child references: 0
```



```

Label element lsp id: 0
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Label operation: Push 3851, Push 24, Push 69(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 3851: None; Label 24: None; Label 69: None;
Label element ptr: 0xb5dc1500
Label parent element ptr: 0x18d48300
Label element references: 2
Label element child references: 0
Label element lsp id: 0
Session Id: 0x0
Protocol next hop: 10.0.0.11
Label operation: Push 3851
Label TTL action: prop-ttl
Load balance label: Label 3851: None;
Indirect next hop: 0x1883e200 1051215 INH Session ID: 0xb0d
State:
Local AS: 500 Peer AS: 500
Age: 1:40:03 Metric2: 2
Validation State: unverified
Task: BGP_500.10.0.0.11
Announcement bits (5): 0-KRT 8-KRT 9-BGP_RT_Background 10-Resolve tree 5 11-Resolve
tree 8
AS path: 410 I
Accepted
Route Label: 3851
Localpref: 100
Router ID: 10.0.0.11
Indirect next hops: 1
Protocol next hop: 10.0.0.11 Metric: 2
Label operation: Push 3851
Label TTL action: prop-ttl
Load balance label: Label 3851: None;
Indirect next hop: 0x1883e200 1051215 INH Session ID: 0xb0d
Indirect path forwarding next hops (Merged): 8
Next hop type: Router
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.12.2 via ae0.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
Next hop: 10.0.13.3 via ae1.0 weight 0x1
Session Id: 0x0
10.0.0.11/32 Originating RIB: inet.3
Metric: 1 Node path count: 4
Node flags: 1
Indirect nexthops: 4
Protocol Nexthop: 10.0.0.4 Metric: 1 Push 24
Indirect nexthop: 0x1880f200 1048597 INH Session ID: 0xb0c
Path forwarding nexthops link: 0x36120400

```

```
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.4/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
Protocol Nexthop: 10.0.0.5 Metric: 1 Push 24
Indirect nexthop: 0x18810000 1048596 INH Session ID: 0xb0b
Path forwarding nexthops link: 0x1545be00
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.5/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
Protocol Nexthop: 10.0.0.6 Metric: 1 Push 25
Indirect nexthop: 0x1880e600 1048588 INH Session ID: 0xb0a
Path forwarding nexthops link: 0x3611f440
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.6/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
Protocol Nexthop: 10.0.0.7 Metric: 1 Push 25
Indirect nexthop: 0x1880dc00 1048586 INH Session ID: 0xb09
Path forwarding nexthops link: 0x15466d80
Path inh link: 0x0
Indirect path forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
Nexthop: 10.0.13.3 via ae1.0
Session Id: 0
10.0.0.7/32 Originating RIB: inet.3
Metric: 1 Node path count: 1
Forwarding nexthops: 2
Nexthop: 10.0.12.2 via ae0.0
Session Id: 0
```

```

Nexthop: 10.0.13.3 via ae1.0
Session Id: 0

```

show route (Enhanced Subscriber Management)

```

user@host> show route

inet.0: 41 destinations, 41 routes (40 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

198.51.100.11/24    *[Access-internal/12] 00:00:08
                   > to #0 10.0.0.1.93.65 via demux0.1073741824
198.51.100.12/24    *[Access-internal/12] 00:00:08
                   Private unicast

```

show route (IPv6 Flow Specification)

```

user@host> show route

inet6.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::10:255:185:19/128
                   *[Direct/0] 05:11:27
                   > via lo0.0
2001:db8::11:11:11:0/120
                   *[BGP/170] 00:28:58, localpref 100
                   AS path: 2000 I, validation-state: unverified
                   > to 2001:db8::13:14:2:2 via ge-1/1/4.0
2001:db8::13:14:2:0/120*[Direct/0] 00:45:07
                   > via ge-1/1/4.0
2001:db8::13:14:2:1/128*[Local/0] 00:45:18
                   Local via ge-1/1/4.0
fe80::2a0:a50f:fc71:71d5/128
                   *[Direct/0] 05:11:27
                   > via lo0.0
fe80::5e5e:abff:feb0:933e/128
                   *[Local/0] 00:45:18
                   Local via ge-1/1/4.0

inet6flow.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2001:db8::11:11:11:10/128,*,proto=6,dstport=80,srcport=65535/term:1
                   *[BGP/170] 00:28:58, localpref 100, from 2001:db8::13:14:2:2
                   AS path: 2000 I, validation-state: unverified
                   Fictitious
2001:db8::11:11:11:30/128,*,icmp6-type=128,len=100,dscp=10/term:2
                   *[BGP/170] 00:20:54, localpref 100, from 2001:db8::13:14:2:2
                   AS path: 2000 I, validation-state: unverified
                   Fictitious

```

show route display-client-data detail

```

user@host> show route 198.51.100.0/24 display-client-data detail

inet.0: 59 destinations, 70 routes (59 active, 0 holddown, 0 hidden)
198.51.100.0/24 (1 entry, 1 announced)

```

```

State: <FlashAll>
*BGP-Static Preference: 5/-101
  Next hop type: Indirect, Next hop index: 0
  Address: 0xa5c2af8
  Next-hop reference count: 2
  Next hop type: Router, Next hop index: 1641
  Next hop: 192.0.2.1 via ge-2/1/1.0, selected
  Session Id: 0x160
  Protocol next hop: 192.0.2.1
  Indirect next hop: 0xa732cb0 1048621 INH Session ID: 0x17e
  State: <Active Int Ext AlwaysFlash NSR-incapable Programmed>
  Age: 3:13      Metric2: 0
  Validation State: unverified
  Announcement bits (3): 0-KRT 5-LDP 6-Resolve tree 3
  AS path: I
  Client id: 1, Cookie: 1

```

show route te-ipv4-prefix-ip

```
user@host> show route te-ipv4-prefix-ip 10.10.10.10
```

```

lsdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

```

```

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
  }/1152
      *[IS-IS/15] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0101.0101.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0202.0202.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0303.0303.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0404.0404.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0505.0505.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0606.0606.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0707.0707.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152
      *[IS-IS/18] 00:01:01
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
  }/1152

```

```
*[IS-IS/18] 00:01:01
Fictitious
```

show route te-ipv4-prefix-ip extensive

```
user@host>show route te-ipv4-prefix-ip 10.10.10.10 extensive
Isdist.0: 298 destinations, 298 routes (298 active, 0 holddown, 0 hidden)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 298
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0101.0101.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 298
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0xe0, Algo: 0>

PREFIX { Node { AS:64496 ISO:0100.0202.0202.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 298
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0303.0303.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
```

```

        Next-hop reference count: 298
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 7:58
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0404.0404.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 298
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 7:58
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0505.0505.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 298
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 7:58
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0606.0606.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 298
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 7:58
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0707.0707.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)

```

```

*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 298
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0x40, Algo: 0

```

show route te-ipv4-prefix-node-iso

```

user@host> show route te-ipv4-prefix-node-iso 0100.0a0a.0a0a.00

Isdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
}/1152
          *[IS-IS/15] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.1.1.1/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.2.2.2/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.3.3.3/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.4.4.4/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.5.5.5/32 } ISIS-L2:0
}/1152
          *[IS-IS/18] 00:05:20
          Fictitious

```

```

Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.6.6.6/32 } ISIS-L2:0
}/1152
      *[IS-IS/18] 00:05:20
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.7.7.7/32 } ISIS-L2:0
}/1152
      *[IS-IS/18] 00:05:20
      Fictitious
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152
      *[IS-IS/18] 00:05:20
      Fictitious

```

show route te-ipv4-prefix-node-iso extensive

```

user@host> show route te-ipv4-prefix-node-iso 0100.0a0a.0a0a.00 extensive

Isdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.1.1.1/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1001, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.2.2.2/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:

```



```

        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1002, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.3.3.3/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1003, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.4.4.4/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1004, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.5.5.5/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2
        Next hop type: Fictitious, Next hop index: 0
        Address: 0xa1a2ac4
        Next-hop reference count: 283
        Next hop:
        State: <Active NotInstall>
        Local AS: 64496
        Age: 6:47
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1005, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.6.6.6/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
    *IS-IS Preference: 18
        Level: 2

```

```

Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 283
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 6:47
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1006, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.7.7.7/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1007, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

```

show route te-ipv4-prefix-node-iso detail

```

user@host> show route te-ipv4-prefix-node-iso 0100.0a0a.0a0a.00 detail

Isdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L1:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496

```

```

    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.1.1.1/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1001, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.2.2.2/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1002, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.3.3.3/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1003, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.4.4.4/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4

```

```

Next-hop reference count: 283
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1004, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.5.5.5/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1005, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.6.6.6/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1006, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.7.7.7/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)
  *IS-IS Preference: 18
    Level: 2
    Next hop type: Fictitious, Next hop index: 0
    Address: 0xa1a2ac4
    Next-hop reference count: 283
    Next hop:
    State: <Active NotInstall>
    Local AS: 64496
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1007, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:64496 ISO:0100.0a0a.0a0a.00 } { IPv4:10.10.10.10/32 } ISIS-L2:0
}/1152 (1 entry, 0 announced)

```

```
*IS-IS Preference: 18
Level: 2
Next hop type: Fictitious, Next hop index: 0
Address: 0xa1a2ac4
Next-hop reference count: 283
Next hop:
State: <Active NotInstall>
Local AS: 64496
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0x40, Algo: 0
```

show route active-path

List of Syntax	Syntax on page 494 Syntax (EX Series Switches) on page 494
Syntax	<pre>show route active-path <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route active-path <brief detail extensive terse></pre>
Release Information	<p>Command introduced in Junos OS Release 8.0.</p> <p>Command introduced in Junos OS Release 9.0 for EX Series switches.</p>
Description	Display all active routes for destinations. An active route is a route that is selected as the best path. Inactive routes are not displayed.
Options	<p>none—Display all active routes.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route active-path on page 494 show route active-path brief on page 495 show route active-path detail on page 495 show route active-path extensive on page 496 show route active-path terse on page 498
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 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 172.16.100.1 via so-2/1/3.0
172.16.100.1/24    *[Direct/0] 00:18:36
                  > via so-2/1/3.0
172.16.100.1/32    *[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 264](#).

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: 172.16.100.1 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

172.16.100.0/24 (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

172.16.100.1/32 (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 -> {172.16.100.1}
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: 172.16.100.1 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

172.16.100.1/24 (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

172.16.100.1/32 (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			>100.0	
*	10.255.71.50/32	I	15	10		>172.16.100.1.	
*	172.16.100.0/24	D	0			>so-2/1/3.0	
*	172.16.100.2/32	L	0			Local	
*	192.168.64.0/21	D	0			>fxp0.0	
*	192.168.70.19/32	L	0			Local	

show route advertising-protocol

Syntax	<pre>show route advertising-protocol <i>protocol neighbor-address</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Release Information	Command introduced before Junos OS Release 7.4.
Description	Display the routing information as it has been prepared for advertisement to a particular neighbor of a particular dynamic routing protocol.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>neighbor-address</i>—Address of the neighboring router to which the route entry is being transmitted.</p> <p><i>protocol</i>—Protocol transmitting the route:</p> <ul style="list-style-type: none"> • bgp—Border Gateway Protocol • dvmrp—Distance Vector Multicast Routing Protocol • msdp—Multicast Source Discovery Protocol • pim—Protocol Independent Multicast • rip—Routing Information Protocol • ripng—Routing Information Protocol next generation
Additional Information	<p>Routes displayed are routes that the routing table has exported into the routing protocol and that have been filtered by the associated protocol's export routing policy statements. Starting with Junos OS Release 13.3, you can display the routing instance table foo for any address family, on a VPN route reflector, or a VPN AS boundary router that is advertising local VPN routes. However, If you do not specify the table in the command, the output displays each VRF prefix twice.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • <i>Example: Configuring the MED Attribute That Determines the Exit Point in an AS</i>
List of Sample Output	<p>show route advertising-protocol bgp (Layer 3 VPN) on page 502</p> <p>show route advertising-protocol bgp detail on page 502</p>

[show route advertising-protocol bgp detail \(Aggregate Extended Community Bandwidth\) on page 502](#)
[show route advertising-protocol bgp detail \(Labeled Unicast\) on page 503](#)
[show route advertising-protocol bgp detail \(Layer 2 VPN\) on page 503](#)
[show route advertising-protocol bgp detail \(Layer 3 VPN\) on page 503](#)
[show route advertising-protocol bgp extensive all \(Next Hop Self with RIB-out IP Address\) on page 504](#)

Output Fields [Table 13 on page 270](#) lists the output fields for the **show route advertising-protocol** command. Output fields are listed in the approximate order in which they appear.

Table 34: show route advertising-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
<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"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy) 	All levels
Prefix	Destination prefix.	brief none
<i>destination-prefix (entry, announced)</i>	Destination prefix. The entry value is the number of routes for this destination, and the announced value is the number of routes being announced for this destination.	detail extensive
BGP group and type	BGP group name and type (Internal or External).	detail extensive
Route Distinguisher	Unique 64-bit prefix augmenting each IP subnet.	detail extensive
Advertised Label	Incoming label advertised by the Label Distribution Protocol (LDP). When an IP packet enters a label-switched path (LSP), the ingress router examines the packet and assigns it a label based on its destination, placing the label in the packet's header. The label transforms the packet from one that is forwarded based on its IP routing information to one that is forwarded based on information associated with the label.	detail extensive
Label-Base, range	First label in a block of labels and label block size. A remote PE router uses this first label when sending traffic toward the advertising PE router.	detail extensive
VPN Label	Virtual private network (VPN) label. Packets are sent between CE and PE routers by advertising VPN labels. VPN labels transit over either a Resource Reservation Protocol (RSVP) or a Label Distribution Protocol (LDP) label-switched path (LSP) tunnel.	detail extensive

Table 34: show route advertising-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
Nexthop	<p>Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.</p> <p>If the next-hop advertisement to the peer is Self, and the RIB-out next hop is a specific IP address, the RIB-out IP address is included in the extensive output. See show route advertising-protocol bgp extensive all (Next Hop Self with RIB-out IP Address) on page 274.</p>	All levels
MED	Multiple exit discriminator value included in the route.	brief
Lclpref or Localpref	Local preference value included in the route.	All levels
Queued	When BGP route prioritization is enabled and a route is present in a priority queue, this shows which priority queue the route is in.	All levels except brief
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"> • I—IGP. • E—EGP. • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—Brackets enclose the local AS number associated with the AS path if configured on the router, or if AS path prepending is configured. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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
Route Labels	Stack of labels carried in the BGP route update.	detail extensive
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 for the show route detail command for all possible values for this field.	detail extensive
AIGP	Accumulated interior gateway protocol (AIGP) BGP attribute.	detail extensive

Table 34: show route advertising-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
Attrset AS	Number, local preference, and path of the autonomous system (AS) that originated the route. These values are stored in the Attrset attribute at the originating router.	detail extensive
Layer2-info:encaps	Layer 2 encapsulation (for example, VPLS).	detail extensive
control flags	Control flags: none or Site Down .	detail extensive
mtu	Maximum transmission unit (MTU) of the Layer 2 circuit.	detail extensive

Sample Output

show route advertising-protocol bgp (Layer 3 VPN)

```
user@host> show route advertising-protocol bgp 10.255.14.171

VPN-A.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.172/32 Self              1      100 I
VPN-B.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.181/32 Self              2      100 I
```

show route advertising-protocol bgp detail

```
user@host> show route advertising-protocol bgp 111.222.1.3 detail

bgp20.inet.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
111.222.1.11/32 (1 entry, 1 announced)
  BGP group pe-pe type Internal
  Route Distinguisher: 111.255.14.11:69
  Advertised Label: 100000
  next hop: Self
  Localpref: 100
  AS path: 2 I
  Communities: target:69:20
  AIGP 210
111.8.0.0/16 (1 entry, 1 announced)
  BGP group pe-pe type Internal
  Route Distinguisher: 111.255.14.11:69
  Advertised Label: 100000
  Next hop: Self
  Localpref: 100
  AS path: 2 I
  Communities: target:69:20
  AIGP 210
```

show route advertising-protocol bgp detail (Aggregate Extended Community Bandwidth)

```
user@host> show route advertising-protocol bgp 10.0.4.2 10.0.2.0/30 detail

inet.0: 20 destinations, 26 routes (20 active, 0 holddown, 0 hidden)
* 10.0.2.0/30 (2 entries, 1 announced)
```

```
BGP group external2 type External
  Nexthop: Self
  AS path: [65000] 65001 I
  Communities: bandwidth:65000:80000000
```

show route advertising-protocol bgp detail (Labeled Unicast)

```
user@host>show route advertising bgp 1.1.1.3 detail

inet.0: 69 destinations, 70 routes (69 active, 0 holddown, 0 hidden)
* 1.1.1.8/32 (2 entries, 2 announced)
BGP group ibgp type Internal
Route Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: 1.1.1.4
MED: 7
Localpref: 100
AS path: [5] I
Cluster ID: 3.3.3.3
Originator ID: 1.1.1.1
Entropy label capable
inet6.0: 26 destinations, 28 routes (26 active, 0 holddown, 0 hidden)
* 100::1/128 (2 entries, 1 announced)
BGP group ibgp type Internal
Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: ::ffff:1.1.1.4
Localpref: 100
AS path: [5] I
Cluster ID: 3.3.3.3
Originator ID: 1.1.1.1
```

show route advertising-protocol bgp detail (Layer 2 VPN)

```
user@host> show route advertising-protocol bgp 192.168.24.1 detail

vpn-a.12vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
192.168.16.1:1:1:1/96 (1 entry, 1 announced)
  BGP group int type Internal
    Route Distinguisher: 192.168.16.1:1
    Label-base : 32768, range : 3
    Nexthop: Self
    Localpref: 100
    AS path: I
    Communities: target:65412:100
    AIGP 210
    Layer2-info: encaps:VLAN, control flags:, mtu:
```

show route advertising-protocol bgp detail (Layer 3 VPN)

```
user@host> show route advertising-protocol bgp 10.255.14.176 detail

vpna.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
* 10.49.0.0/30 (1 entry, 1 announced)
  BGP group ibgp type Internal
    Route Distinguisher: 10.255.14.174:2
    VPN Label: 101264
    Nexthop: Self
    Localpref: 100
    AS path: I
    Communities: target:200:100
```

```
AIGP 210
AttrSet AS: 100
    Localpref: 100
    AS path: I
...
```

show route advertising-protocol bgp extensive all (Next Hop Self with RIB-out IP Address)

```
user@host> show route advertising-protocol bgp 200.0.0.2 170.0.1.0/24 extensive all
inet.0: 13 destinations, 19 routes (13 active, 0 holddown, 6 hidden)
  170.0.1.0/24 (2 entries, 1 announced)
    BGP group eBGP-INTEROP type External
      Nexthop: Self (rib-out 10.100.3.2)
      AS path: [4713] 200 I
...
```


show route all

List of Syntax	Syntax on page 505 Syntax (EX Series Switches) on page 505
Syntax	<pre>show route all <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route all</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 information about all routes in all routing tables, including private, or internal, tables.
Options	<p>none—Display information about all routes in all routing tables, including private, or internal, tables.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • show route brief on page 280 • show route detail on page 282
List of Sample Output	show route all on page 505
Output Fields	In Junos OS Release 9.5 and later, only the output fields for the show route all command display all routing tables, including private, or hidden, routing tables. The output field table of the show route 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 best

List of Syntax	Syntax on page 507 Syntax (EX Series Switches) on page 507
Syntax	<pre>show route best <i>destination-prefix</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route best <i>destination-prefix</i> <brief detail extensive terse></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	<p>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.</p>
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p><i>destination-prefix</i>—Address or range of addresses.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • show route brief on page 280 • show route detail on page 282
List of Sample Output	<p>show route best on page 508</p> <p>show route best detail on page 508</p> <p>show route best extensive on page 509</p> <p>show route best terse on page 509</p>
Output Fields	<p>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.</p>

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 278](#).

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

List of Syntax	Syntax on page 510 Syntax (EX Series Switches) on page 510
Syntax	<pre>show route brief <destination-prefix> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switches)	<pre>show route brief <destination-prefix></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display brief information about the active entries in the routing tables.
Options	none —Display all active entries in the routing table. destination-prefix —(Optional) Display active entries for the specified address or range of addresses. logical-system (all logical-system-name) —(Optional) Perform this operation on all logical systems or on a particular logical system.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• show route all on page 275• show route best on page 277
List of Sample Output	show route brief on page 510
Output Fields	For information about output fields, see the Output Field table of the show route 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
172.16.233.5/32 *[OSPF/10] 1w5d 20:30:29, metric 1
MultiRecv

```

show route detail

List of Syntax	Syntax on page 512 Syntax (EX Series Switches) on page 512
Syntax	<pre>show route detail <destination-prefix> [logical-system (all logical-system-name)]</pre>
Syntax (EX Series Switches)	<pre>show route detail <destination-prefix></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> <p>Command introduced in Junos OS Release 13.2X51-D15 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Display detailed information about the active entries in the routing tables.
Options	<p>none—Display all active entries in the routing table on all systems.</p> <p>destination-prefix—(Optional) Display active entries for the specified address or range of addresses.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route detail on page 523 show route detail (with BGP Multipath) on page 529 show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 530 show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 530 show route detail (Flexible VXLAN Tunnel Profile) on page 531
Output Fields	<p>Table 14 on page 282 describes the output fields for the show route detail command. Output fields are listed in the approximate order in which they appear.</p>

Table 35: 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.

Table 35: show route detail Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy)
<i>route-destination</i> (entry, announced)	<p>Route destination (for example:10.0.0.1/24). The entry value is the number of routes for this destination, and the announced 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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote. • source—Source of the advertisement: Local or Remote.
<i>label stacking</i>	<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"> • S=0 route 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). • If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).

Table 35: show route detail Output Fields (continued)

Field Name	Field Description
[protocol, preference]	<p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • - —A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value.</p> <p>Preference2 values are signed integers, that is, Preference2 values can be either positive or negative values. However, Junos OS evaluates Preference2 values as unsigned integers that are represented by positive values. Based on the Preference2 values, Junos OS evaluates a preferred route differently in the following scenarios:</p> <ul style="list-style-type: none"> • Both Signed Preference2 values <ul style="list-style-type: none"> • Route A = -101 • Route B = -156 <p>Where both the Preference2 values are signed, Junos OS evaluates only the unsigned value of Preference2 and Route A, which has a lower Preference2 value is preferred.</p> • Unsigned Preference2 values <p>Now consider both unsigned Preference2 values:</p> <ul style="list-style-type: none"> • Route A = 4294967096 • Route B = 200 <p>Here, Junos OS considers the lesser Preference2 value and Route B with a Preference2 value of 200 is preferred because it is less than 4294967096.</p> • Combination of signed and unsigned Preference2 values <p>When Preference2 values of two routes are compared, and for one route the Preference2 is a signed value, and for the other route it is an unsigned value, Junos OS prefers the route with the positive Preference2 value over the negative Preference2 value. For example, consider the following signed and unsigned Preference2 values:</p> <ul style="list-style-type: none"> • Route A = -200 • Route B = 200 <p>In this case, Route B with a Preference2 value of 200 is preferred although this value is greater than -200, because Junos OS evaluates only the unsigned value of the Preference2 value.</p>
Level	(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.
Route Distinguisher	IP subnet augmented with a 64-bit prefix.
PMSI	Provider multicast service interface (MVPN routing table).

Table 35: show route detail Output Fields (continued)

Field Name	Field Description
Next-hop type	Type of next hop. For a description of possible values for this field, see Table 15 on page 288 .
Next-hop reference count	Number of references made to the next hop.
Flood nexthop branches exceed maximum message	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.
Source	IP address of the route source.
Next hop	Network layer address of the directly reachable neighboring system.
via	<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 Selected. This field can also contain the following information:</p> <ul style="list-style-type: none"> • 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. • Balance—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.
Label-switched-path lsp-path-name	Name of the LSP used to reach the next hop.
Label operation	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Interface	(Local only) Local interface name.
Protocol next hop	Network layer address of the remote routing device that advertised the prefix. This address is used to derive a forwarding next hop.
Indirect next hop	Index designation used to specify the mapping between protocol next hops, tags, kernel export policy, and the forwarding next hops.
State	State of the route (a route can be in more than one state). See Table 16 on page 290 .
Local AS	AS number of the local routing device.
Age	How long the route has been known.
AIGP	Accumulated interior gateway protocol (AIGP) BGP attribute.

Table 35: show route detail Output Fields (continued)

Field Name	Field Description
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	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. For sample output, see show route table .
Task	Name of the protocol that has added the route.
Announcement bits	The number of BGP peers or protocols to which Junos OS has announced this route, followed by the list of the recipients of the announcement. Junos OS can also announce the route to the KRT for installing the route into the Packet Forwarding Engine, to a resolve tree, a L2 VC, or even a VPN. For example, n-Resolve inet indicates that the specified route is used for route resolution for next hops found in the routing table. <ul style="list-style-type: none"> n—An index used by Juniper Networks customer support only.
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"> I—IGP. E—EGP. Recorded—The AS path is recorded by the sample process (sampled). ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> []—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. []—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. { }—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. ()—Parentheses enclose a confederation. ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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 35: show route detail Output Fields (continued)

Field Name	Field Description
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—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. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
ORR Generation-ID	Displays the optimal route reflection (ORR) generation identifier. ISIS and OSPF interior gateway protocol (IGP) updates filed whenever any of the corresponding ORR route has its metric valued changed, or if the ORR route is added or deleted.
FECs bound to route	Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.
Primary Upstream	When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.
RPF Nexthops	When multipoint LDP with MoFRR is configured, the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.
Label	Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.
weight	Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.
VC Label	MPLS label assigned to the Layer 2 circuit virtual connection.
MTU	Maximum transmission unit (MTU) of the Layer 2 circuit.
VLAN ID	VLAN identifier of the Layer 2 circuit.
Prefixes bound to route	Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.
Communities	Community path attribute for the route. See Table 17 on page 292 for all possible values for this field.
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).
control flags	Control flags: none or Site Down .
mtu	Maximum transmission unit (MTU) information.

Table 35: show route detail Output Fields (continued)

Field Name	Field Description
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.
status vector	Layer 2 VPN and VPLS network layer reachability information (NLRI).
Accepted Multipath	Current active path when BGP multipath is configured.
Accepted LongLivedStale	The LongLivedStale flag indicates that the route was marked LLGR-stale by this router, as part of the operation of LLGR receiver mode. Either this flag or the LongLivedStaleImport flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag.
Accepted LongLivedStaleImport	<p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy. Either this flag or the LongLivedStale flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag.</p> <p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and import into the inet.0 routing table</p>
ImportAccepted LongLivedStaleImport	<p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and imported into the inet.0 routing table</p> <p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy.</p>
Accepted MultipathContrib	Path currently contributing to BGP multipath.
Localpref	Local preference value included in the route.
Router ID	BGP router ID as advertised by the neighbor in the open message.
Primary Routing Table	In a routing table group, the name of the primary routing table in which the route resides.
Secondary Tables	In a routing table group, the name of one or more secondary tables in which the route resides.

[Table 15 on page 288](#) describes all possible values for the Next-hop Types output field.

Table 36: Next-hop Types Output Field Values

Next-Hop Type	Description
Broadcast (bcast)	Broadcast next hop.
Deny	Deny next hop.
Discard	Discard next hop.
Dynamic List	Dynamic list next hop

Table 36: Next-hop Types Output Field Values (continued)

Next-Hop Type	Description
Flood	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.
Hold	Next hop is waiting to be resolved into a unicast or multicast type.
Indexed (idxd)	Indexed next hop.
Indirect (indr)	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.
Interface	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.
Local (locl)	Local address on an interface. This next-hop type causes packets with this destination address to be received locally.
Multicast (mcst)	Wire multicast next hop (limited to the LAN).
Multicast discard (mdsc)	Multicast discard.
Multicast group (mgrp)	Multicast group member.
Receive (recv)	Receive.
Reject (rjct)	Discard. An ICMP unreachable message was sent.
Resolve (rslv)	Resolving next hop.
Routed multicast (mcrt)	Regular multicast next hop.
Router	<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"> • Must not be a direct or local subnet for the routing device. • Must have a next hop that is directly connected to the routing device.

Table 36: Next-hop Types Output Field Values (continued)

Next-Hop Type	Description
Software	Next hop added to the Routing Engine forwarding table for remote IP addresses with prefix /32 for Junos OS Evolved only.
Table	Routing table next hop.
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 16 on page 290 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 37: 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.

Table 37: State Output Field Values (continued)

Value	Description
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.
Int	Interior route.
Int Ext	BGP route received from an internal BGP peer or a BGP confederation peer.
Interior > Exterior > Exterior via Interior	Direct, static, IGP, or EBGp path is available.
Local Preference	Path with a higher local preference value is available.
Martian	Route is a martian (ignored because it is obviously invalid).
MartianOK	Route exempt from martian filtering.
Next hop address	Path with lower metric next hop is available.
No difference	Path from neighbor with lower IP address is available.
NoReadvrt	Route not to be advertised.
NotBest	Route not chosen because it does not have the lowest MED.
Not Best in its group	Incoming BGP AS is not the best of a group (only one AS can be the best).
NotInstall	Route not to be installed in the forwarding table.
Number of gateways	Path with a greater number of next hops is available.
Origin	Path with a lower origin code is available.
Pending	Route pending because of a hold-down configured on another route.
Programmed	Route installed programatically by on-box or off-box applications using API.
Release	Route scheduled for release.
RIB preference	Route from a higher-numbered routing table is available.

Table 37: State Output Field Values (continued)

Value	Description
Route Distinguisher	64-bit prefix added to IP subnets to make them unique.
Route Metric or MED comparison	Route with a lower metric or MED is available.
Route Preference	Route with lower preference value is available
Router ID	Path through a neighbor with lower ID is available.
Secondary	Route not a primary route.
Unusable path	Path is not usable because of one of the following conditions: <ul style="list-style-type: none"> The route is damped. The route is rejected by an import policy. The route is unresolved.
Update source	Last tiebreaker is the lowest IP address value.
ProtectionCand	Indicates paths requesting protection.
ProtectionPath	Indicates the route entry that can be used as a protection path.

Table 17 on page 292 describes the possible values for the Communities output field.

Table 38: 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 0. 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.
bandwidth: local AS number:link-bandwidth-number	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.
domain-id	Unique configurable number that identifies the OSPF domain.
domain-id-vendor	Unique configurable number that further identifies the OSPF domain.
<i>link-bandwidth-number</i>	Link-bandwidth number: from 0 through 4,294,967,295 (bytes per second).
<i>local AS number</i>	Local AS number: from 1 through 65,535.
<i>options</i>	1 byte. Currently this is only used if the route type is 5 or 7. Setting the least significant bit in the field indicates that the route carries a type 2 metric.

Table 38: Communities Output Field Values (continued)

Value	Description
origin	(Used with VPNs) Identifies where the route came from.
ospf-route-type	1 byte, encoded as 1 or 2 for intra-area routes (depending on whether the route came from a type 1 or a type 2 LSA); 3 for summary routes; 5 for external routes (area number must be 0); 7 for NSSA routes; or 129 for sham link endpoint addresses.
route-type-vendor	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x8000 . The format is area-number:ospf-route-type:options .
rte-type	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x0306 . The format is area-number:ospf-route-type:options .
target	Defines which VPN the route participates in; target has the format 32-bit IP address:16-bit number . For example, 10.19.0.0:100.
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
           ORR Generation-ID: 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
           ORR Generation-ID: 1
    Task: OSPF
           Announcement bits (2): 0-KRT 3-Resolve tree 2
           AS path: I

...

172.16.233.2/32 (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

...

172.16.233.22/32 (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: 172.16.0.2 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: 172.16.0.2 via lt-1/2/0.7 weight 0x1
             Label-switched-path R2-to-R200-p2mp
             Label operation: Pop
             Next hop: 172.16.0.2 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.0.0.0.0+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.0.0.0.0+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: 12 circuit
      Announcement bits (1): 0-LDP
      AS path: I
      VC Label 100000, MTU 1500, VLAN ID 512

inet.0: 45 destinations, 47 routes (44 active, 0 holddown, 1 hidden)
1.1.1.3/32 (1 entry, 1 announced)
    *IS-IS Preference: 18
      Level: 2
      Next hop type: Router, Next hop index: 580
      Address: 0x9db6ed0
      Next-hop reference count: 8
      Next hop: 10.1.1.6 via lt-1/0/10.5, selected
      Session Id: 0x18a
      State: <Active Int>
      Local AS: 2
      Age: 1:32 Metric: 10
      Validation State: unverified
      ORR Generation-ID: 1
      Task: IS-IS
      Announcement bits (3): 0-KRT 5-Resolve tree 4 6-Resolve_IGP_FRR
task
      AS path: I

inet.0: 61 destinations, 77 routes (61 active, 1 holddown, 0 hidden)
1.1.1.1/32 (2 entries, 1 announced)
    *OSPF Preference: 10
      Next hop type: Router, Next hop index: 673
      Address: 0xc008830
      Next-hop reference count: 3
      Next hop: 10.1.1.1 via ge-0/0/2.0, selected
      Session Id: 0x1b7
      State: <Active Int>
      Local AS: 1
      Age: 3:06:59 Metric: 100
      Validation State: unverified
      ORR Generation-ID: 1
      Area: 0.0.0.0
      Task: OSPF
      Announcement bits (2): 1-KRT 9-Resolve tree 2
      AS path: I

```

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: 172.16.1.2
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: 172.16.1.3

```

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 label detail (Multipoint LDP with Multicast-Only Fast Reroute)

```

user@host> show route label 301568 detail

```

```

mpls.0: 18 destinations, 18 routes (18 active, 0 holddown, 0 hidden)
301568 (1 entry, 1 announced)
  *LDP Preference: 9
    Next hop type: Flood
    Address: 0x2735208
    Next-hop reference count: 3
    Next hop type: Router, Next hop index: 1397
    Address: 0x2735d2c
    Next-hop reference count: 3
    Next hop: 1.3.8.2 via ge-1/2/22.0
    Label operation: Pop
    Load balance label: None;
    Next hop type: Router, Next hop index: 1395
    Address: 0x2736290
    Next-hop reference count: 3
    Next hop: 1.3.4.2 via ge-1/2/18.0
    Label operation: Pop
    Load balance label: None;
    State: <Active Int AckRequest MulticastRPF>
    Local AS: 10
    Age: 54:05 Metric: 1
    Validation State: unverified
    Task: LDP
    Announcement bits (1): 0-KRT
    AS path: I
    FECs bound to route: P2MP root-addr 172.16.1.1, grp: 232.1.1.1,
src: 192.168.219.11
    Primary Upstream : 172.16.1.3:0--172.16.1.2:0
      RPF Nexthops :
        ge-1/2/15.0, 1.2.94.1, Label: 301568, weight: 0x1
        ge-1/2/14.0, 1.2.3.1, Label: 301568, weight: 0x1
    Backup Upstream : 172.16.1.3:0--172.16.1.6:0
      RPF Nexthops :
        ge-1/2/20.0, 1.2.96.1, Label: 301584, weight: 0xffff
        ge-1/2/19.0, 1.3.6.1, Label: 301584, weight: 0xffff

```

show route detail (Flexible VXLAN Tunnel Profile)

```

user@host> show route 192.168.0.2 detail
...
CUSTOMER_0001.inet.0: 5618 destinations, 6018 routes (5618 active, 0 holddown, 0
hidden)
192.168.0.2/32 (1 entry, 1 announced)
  *Static Preference: 5/100
    Next hop type: Router, Next hop index: 74781
    Address: 0x5d9b03cc
    Next-hop reference count: 363
    Next hop: via fti0.6, selected
    Session Id: 0x24c8
    State: <Active Int NSR-incapable OpaqueData Programmed>
    Age: 1:25:53
    Validation State: unverified
      Tag: 10000001 Tag2: 1
    Announcement bits (2): 1-KRT 3-Resolve tree 30
    AS path: I
    Flexible IPv6 VXLAN tunnel profile
      Action: Encapsulate

```

```
Interface: fti0.6 (Index: 10921)
VNI: 10000001
Source Prefix: 2001:db8:255::2/128
Source UDP Port Range: 54614 - 60074
Destination Address: 2001:db8:80:1:1:1:0:1
Destination UDP Port: 4790
VXLAN Flags: 0x08
```

```
...
```

show route exact

List of Syntax	Syntax on page 533 Syntax (EX Series Switches) on page 533
Syntax	<pre>show route exact <i>destination-prefix</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route exact <i>destination-prefix</i> <brief detail extensive terse></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 only the routes that exactly match the specified address or range of addresses.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p><i>destination-prefix</i>—Address or range of addresses.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route exact on page 533 show route exact detail on page 534 show route exact extensive on page 534 show route exact terse on page 534
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 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

List of Syntax	Syntax on page 535 Syntax (EX Series Switches) on page 535
Syntax	<pre>show route export <brief detail> <instance <instance-name> routing-table-name> <logical-system (all logical-system-name)></pre>
Syntax (EX Series Switches)	<pre>show route export <brief detail> <instance <instance-name> routing-table-name></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 policy-based route export information. Policy-based export simplifies the process of exchanging route information between routing instances.
Options	<p>none—(Same as brief.) Display standard information about policy-based export for all instances and routing tables on all systems.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>instance <instance-name>—(Optional) Display a particular routing instance for which policy-based export is currently enabled.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p>routing-table-name—(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 show route export inet command).</p>
Required Privilege Level	view
List of Sample Output	show route export on page 536 show route export detail on page 536 show route export instance detail on page 537
Output Fields	<p>Table 18 on page 306 lists the output fields for the show route export command. Output fields are listed in the approximate order in which they appear.</p>

Table 39: 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.	brief none
Export	Whether the table is currently exporting routes to other tables: Y or N (Yes or No).	brief none
Import	Tables currently importing routes from the originator table. (Not displayed for tables that are not exporting any routes.)	detail
Flags	(instance keyword only) Flags for this feature on this instance: <ul style="list-style-type: none"> config auto-policy—The policy was deduced from the configured IGP export policies. cleanup—Configuration information for this instance is no longer valid. config—The instance was explicitly configured. 	detail
Options	(instance keyword only) Configured option displays the type of routing tables the feature handles: <ul style="list-style-type: none"> unicast—Indicates <i>instance.inet.0</i>. multicast—Indicates <i>instance.inet.2</i>. unicast multicast—Indicates <i>instance.inet.0</i> and <i>instance.inet.2</i>. 	detail
Import policy	(instance keyword only) Policy that route export uses to construct the import-export matrix. Not displayed if the instance type is vrf .	detail
Instance	(instance keyword only) Name of the routing instance.	detail
Type	(instance keyword only) Type of routing instance: forwarding , non-forwarding , or vrf .	detail

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	Type: non-forwarding
Instance: red	Type: non-forwarding

show route extensive

List of Syntax	Syntax on page 538 Syntax (EX Series Switches) on page 538
Syntax	<pre>show route extensive <destination-prefix> [logical-system (all logical-system-name)]</pre>
Syntax (EX Series Switches)	<pre>show route extensive <destination-prefix></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 extensive information about the active entries in the routing tables.
Options	<p>none—Display all active entries in the routing table.</p> <p>destination-prefix—(Optional) Display active entries for the specified address or range of addresses.</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route extensive on page 545 show route extensive (Access Route) on page 552 show route extensive (BGP PIC Edge) on page 553 show route extensive (FRR and LFA) on page 553 show route extensive (IS-IS) on page 554 show route extensive (Route Reflector) on page 554 show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 555 show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 555 show route extensive (Flexible VXLAN Tunnel Profile) on page 556
Output Fields	<p>Table 19 on page 308 describes the output fields for the show route extensive command. Output fields are listed in the approximate order in which they appear.</p>

Table 40: show route extensive Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).

Table 40: show route extensive Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active). • holddown (routes that are in the pending state before being declared inactive). • hidden (routes that are not used because of a routing policy).
<i>route-destination</i> (entry, announced)	<p>Route destination (for example: 10.0.0.1/24). The entry value is the number of route for this destination, and the announced 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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote.
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"> • S=0 route 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). • If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).
[protocol, preference]	<p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • - —A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.</p>

Table 40: show route extensive Output Fields (continued)

Field Name	Field Description
Level	(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.
Route Distinguisher	IP subnet augmented with a 64-bit prefix.
PMSI	Provider multicast service interface (MVPN routing table).
Next-hop type	Type of next hop. For a description of possible values for this field, see the Output Field table in the show route detail command.
Next-hop reference count	Number of references made to the next hop.
Flood nexthop branches exceed maximum message	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.
Source	IP address of the route source.
Next hop	Network layer address of the directly reachable neighboring system.
via	<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 Selected. This field can also contain the following information:</p> <ul style="list-style-type: none"> • 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. • Balance—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.
Label-switched-path lsp-path-name	Name of the LSP used to reach the next hop.
Label operation	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Offset	Whether the metric has been increased or decreased by an offset value.
Interface	(Local only) Local interface name.
Protocol next hop	Network layer address of the remote routing device that advertised the prefix. This address is used to recursively derive a forwarding next hop.

Table 40: *show route extensive* Output Fields (continued)

Field Name	Field Description
<i>label-operation</i>	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Indirect next hops	<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 Indirect next hop: weight 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"> • 0x1 indicates active next hops. • 0x4000 indicates passive next hops.
State	State of the route (a route can be in more than one state). See the Output Field table in the show route detail command.
Session ID	The BFD session ID number that represents the protection using MPLS fast reroute (FRR) and loop-free alternate (LFA).
Weight	<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 show route table.</p>

Table 40: 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"> • Active preferred—Currently active route was selected over this route. • 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. • Cluster list length—Path with a shorter cluster list length is available. • Forwarding use only—Path is only available for forwarding purposes. • IGP metric—Path through the next hop with a lower IGP metric is available. • IGP metric type—Path with a lower OSPF link-state advertisement type is available. • Interior > Exterior > Exterior via Interior—Direct, static, IGP, or EBGp path is available. • Local preference—Path with a higher local preference value is available. • Next hop address—Path with a lower metric next hop is available. • No difference—Path from a neighbor with a lower IP address is available. • Not Best in its group—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). • Number of gateways—Path with a higher number of next hops is available. • Origin—Path with a lower origin code is available. • OSPF version—Path does not support the indicated OSPF version. • RIB preference—Route from a higher-numbered routing table is available. • Route distinguisher—64-bit prefix added to IP subnets to make them unique. • Route metric or MED comparison—Route with a lower metric or MED is available. • Route preference—Route with a lower preference value is available. • Router ID—Path through a neighbor with a lower ID is available. • Unusable path—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. • Update source—Last tiebreaker is the lowest IP address value.
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 show route table.</p>

Table 40: show route extensive Output Fields (continued)

Field Name	Field Description
Task	Name of the protocol that has added the route.
Announcement bits	<p>List of protocols that are consumers of the route. Using the following output as an example, Announcement bits (3): 0-KRT 5-Resolve tree 2 8-BGP RT Background there are (3) announcement bits to reflect the three clients (protocols) that have state for this route: Kernel (0-KRT), 5 (resolution tree process 2), and 8 (BGP).</p> <p>The notation n-Resolve inet 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.</p>
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"> • I—IGP. • E—EGP. • Recorded—The AS path is recorded by the sample process (sampled). • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—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. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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>
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—Indicates that origin validation is not enabled for the BGP peers. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
FECs bound to route	Point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.
AS path: I <Originator>	(For route reflected output only) Originator ID attribute set by the route reflector.

Table 40: show route extensive Output Fields (continued)

Field Name	Field Description
route status	<p>Indicates the status of a BGP route:</p> <ul style="list-style-type: none"> • Accepted—The specified BGP route is imported by the default BGP policy. • Import—The route is imported into a Layer 3 VPN routing instance. • Import-Protect—A remote instance egress that is protected. • Multipath—A BGP multipath active route. • MultipathContrib—The route is not active but contributes to the BGP multipath. • Protect—An egress route that is protected. • Stale—A route that is marked stale due to graceful restart.
Primary Upstream	When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.
RPF Nexthops	When multipoint LDP with MoFRR is configured, the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.
Label	Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.
weight	Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.
VC Label	MPLS label assigned to the Layer 2 circuit virtual connection.
MTU	Maximum transmission unit (MTU) of the Layer 2 circuit.
VLAN ID	VLAN identifier of the Layer 2 circuit.
Cluster list	(For route reflected output only) Cluster ID sent by the route reflector.
Originator ID	(For route reflected output only) Address of router that originally sent the route to the route reflector.
Prefixes bound to route	Forwarding Equivalent Class (FEC) bound to this route. Applicable only to routes installed by LDP.
Communities	Community path attribute for the route. See the Output Field table in the show route detail command for all possible values for this field.
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).
control flags	Control flags: none or Site Down.
mtu	Maximum transmission unit (MTU) information.
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.

Table 40: show route extensive Output Fields (continued)

Field Name	Field Description
status vector	Layer 2 VPN and VPLS network layer reachability information (NLRI).
Localpref	Local preference value included in the route.
Router ID	BGP router ID as advertised by the neighbor in the open message.
Primary Routing Table	In a routing table group, the name of the primary routing table in which the route resides.
Secondary Tables	In a routing table group, the name of one or more secondary tables in which the route resides.
Originating RIB	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.
Node path count	Number of nodes in the path.
Forwarding nexthops	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)
203.0.113.10/16 (1 entry, 1 announced)
TSI:
KRT in-kernel 203.0.113.10/16 -> {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: 64496
    Age: 1:34:06
    Task: RT
    Announcement bits (2): 0-KRT 3-Resolve tree 2
    AS path: I

203.0.113.30/30 (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: 64496
    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: 64496
        Age: 1:32:40    Metric: 1
        Area: 0.0.0.0
        Task: OSPF
        AS path: I

203.0.113.103/32 (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: 644969
        Age: 1:32:43
        Task: IF
        Announcement bits (1): 3-Resolve tree 2
        AS path: I

...

203.0.113.203/30 (1 entry, 1 announced)
TSI:
KRT in-kerne 203.0.113.203/30 -> {203.0.113.216}
    *OSPF Preference: 10
        Next-hop reference count: 9
        Next hop: via so-0/3/0.0
        Next hop: 203.0.113.216 via ge-3/1/0.0, selected
        State: <Active Int>
        Local AS: 64496
        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

...

198.51.100.2/32 (1 entry, 1 announced)
TSI:
KRT in-kerne 198.51.100.2/32 -> {}
    *PIM Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS: 64496
        Age: 1:34:08
        Task: PIM Recv
        Announcement bits (2): 0-KRT 3-Resolve tree 2
        AS path: I

...

198.51.100.22/32 (1 entry, 1 announced)
TSI:
KRT in-kerne 198.51.100.22/32 -> {}
    *IGMP Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>

```

```

        Local AS:    64496
        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)

203.0.113.103/32 (1 entry, 1 announced)
  State: <FlashAll>
  *RSVP   Preference: 7
          Next-hop reference count: 6
          Next hop: 203.0.113.216 via ge-3/1/0.0 weight 0x1, selected
          Label-switched-path green-r1-r3
          Label operation: Push 100096
          State: <Active Int>
          Local AS:    64496
          Age: 1:28:12   Metric: 2
          Task: RSVP
          Announcement bits (2): 1-Resolve tree 1 2-Resolve tree 2
          AS path: I

203.0.113.238/32 (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:    64496
          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:    64496
          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: 64496
        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)
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: 198.51.100.2 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: 198.51.100.2 via lt-1/2/0.7 weight 0x1
                Label-switched-path R2-to-R200-p2mp
                Label operation: Pop
                Next hop: 198.51.100.2 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)
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: 203.0.113.216 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: 203.0.113.103

```

```

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: 203.0.113.103 Metric: 2
    Push 800012
    Indirect next hop: 87272e4 1048574
    Indirect path forwarding next hops: 1
        Next hop: 203.0.113.216 via ge-3/1/0.0 weight 0x1

    203.0.113.103/32 Originating RIB: inet.3
        Metric: 2                                Node path count: 1
        Forwarding nexthops: 1
            Nexthop: 203.0.113.216 via ge-3/1/0.0

inet6.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)

2001:db8::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:    64496
    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:    64496
    Age: 1:34:07
    Task: IF
    AS path: I

ff02::2/128 (1 entry, 1 announced)
TSI:
KRT in-kernel ff02::2/128 -> {}
    *PIM    Preference: 0
        Next-hop reference count: 18
        State: <Active NoReadvrt Int>
        Local AS:    64496
        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-kernel ff02::d/128 -> {}

```

```

    *PIM      Preference: 0
             Next-hop reference count: 18
             State: <Active NoReadvrt Int>
             Local AS: 64496
             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-kernel ff02::16/128 -> {}
    *MLD      Preference: 0
             Next-hop reference count: 18
             State: <Active NoReadvrt Int>
             Local AS: 64496
             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)

203.0.113.103:1:3:1/96 (1 entry, 1 announced)
    *BGP      Preference: 170/-101
             Route Distinguisher: 203.0.113.103:1
             Next-hop reference count: 7
             Source: 203.0.113.103
             Protocol next hop: 203.0.113.103
             Indirect next hop: 2 no-forward
             State: <Secondary Active Int Ext>
             Local AS: 64496 Peer AS: 64496
             Age: 1:28:12 Metric2: 1
             Task: BGP_69.203.0.113.103+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: 203.0.113.103
             Primary Routing Table bgp.l2vpn.0

203.0.113.152:1:1:1/96 (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: 203.0.113.152
    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

203.0.113.152:1:5:1/96 (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: 203.0.113.152
    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:, mtu: 0
    Label-base: 800008, range: 8, status-vector: 0x9F

...

l2circuit.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
TSI:

203.0.113.163: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: 203.0.113.163 Indirect next hop: 86af000 296
    State: <Active Int>
    Local AS: 64499
    Age: 10:21
    Task: l2 circuit
    Announcement bits (1): 0-LDP
    AS path: I
    VC Label 100000, MTU 1500, VLAN ID 512

203.0.113.55/24 (1 entry, 1 announced)
TSI:
KRT queued (pending) add
    198.51.100.0/24 -> {Push 300112}
    *BGP Preference: 170/-101
    Next hop type: Router
    Address: 0x925c208
    Next-hop reference count: 2
    Source: 203.0.113.9
    Next hop: 203.0.113.9 via ge-1/2/0.15, selected
    Label operation: Push 300112
    Label TTL action: prop-ttl
    State: <Active Ext>

```

```

Local AS: 64509 Peer AS: 65539
Age: 1w0d 23:06:56
AIGP: 25
Task: BGP_65539.203.0.113.9+56732
Announcement bits (1): 0-KRT
AS path: 65539 64508 I
Accepted
Route Label: 300112
Localpref: 100
Router ID: 213.0.113.99

```

show route extensive (Access Route)

```
user@host> show route 203.0.113.102 extensive
```

```

inet.0: 39256 destinations, 39258 routes (39255 active, 0 holddown, 1 hidden)
203.0.113.102/32 (1 entry, 1 announced)
TSI:
KRT in-kerne1 203.0.113.102/32 -> {192.0.2.2}
OSPF area : 0.0.0.0, LSA ID : 203.0.113.102, LSA type : Extern
  *Access Preference: 13
    Next-hop reference count: 78472
    Next hop: 192.0.2.2 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

```

```
user@host> show route 2001:db8:4641:1::/48 extensive
```

```

inet6.0: 75 destinations, 81 routes (75 active, 0 holddown, 0 hidden)
2001:db8:4641:1::/48 (1 entry, 1 announced)
TSI:
KRT in-kerne1 2001:db8:4641:1::/48 -> {#0 0.13.1.0.0.1}
  *Access Preference: 13
    Next hop type: Router, Next hop index: 74548
    Address: 0x1638c1d8
    Next-hop reference count: 6
    Next hop: #0 0.13.1.0.0.1 via demux0.1073753267, selected
    Session Id: 0x0
    State: <Active Int>
    Age: 4:17
    Validation State: unverified
    Task: RPD Unix Domain Server./var/run/rpd_serv.local
    Announcement bits (2): 0-KRT 4-Resolve tree 2
    AS path: I
2001:db8:4641:1::/128 (1 entry, 1 announced)
TSI:
KRT in-kerne1 2001:db8:4641:1::/128 -> {#0 0.13.1.0.0.1}
  *Access-internal Preference: 12
    Next hop type: Router, Next hop index: 74548
    Address: 0x1638c1d8
    Next-hop reference count: 6
    Next hop: #0 0.13.1.0.0.1 via demux0.1073753267, selected
    Session Id: 0x0
    State: <Active Int>
    Age: 4:17

```



```

Validation State: unverified
Task: RPD Unix Domain Server./var/run/rpd_serv.local
Announcement bits (2): 0-KRT 4-Resolve tree 2
AS path: I

```

show route extensive (BGP PIC Edge)

```

user@host> show route 198.51.100.6 extensive

ed.inet.0: 6 destinations, 9 routes (6 active, 0 holddown, 0 hidden)
 198.51.100.6/32 (3 entries, 2 announced)
    State: <CalcForwarding>
    TSI:
    KRT in-kerne1 198.51.100.6/32 -> {indirect(1048574), indirect(1048577)}
    Page 0 idx 0 Type 1 val 9219e30
    Nexthop: Self
    AS path: [2] 3 I
    Communities: target:2:1
    Path 198.51.100.6 from 198.51.100.4 Vector len 4. Val: 0
..
    #Multipath Preference: 255
    Next hop type: Indirect
    Address: 0x93f4010
    Next-hop reference count: 2
..
    Protocol next hop: 198.51.1001.4
    Push 299824
    Indirect next hop: 944c000 1048574 INH Session ID: 0x3
    Indirect next hop: weight 0x1
    Protocol next hop: 198.51.100.5
    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 203.0.113.20 extensive

inet.0: 46 destinations, 49 routes (45 active, 0 holddown, 1 hidden)
 203.0.113.20/24 (2 entries, 1 announced)
    State: FlashAll
    TSI:
    KRT in-kerne1 203.0.113.20/24 -> {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: 203.0.113.112 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: 203.0.113.122 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: 64500
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: 203.0.113.112 via ge-2/1/8.0, selected
Session Id: 0x201
State: Int
Inactive reason: Route Preference
Local AS: 64500
Age: 5:35 Metric: 3
Area: 0.0.0.0
Task: OSPF
AS path: I

```

show route extensive (IS-IS)

```
user@host> show route extensive
```

```

IS-IS Preference: 15
Level: 1
Next hop type: Router, Next hop index: 1048577
Address: 0xFFFFFFFF
Next-hop reference count: YY
Next hop: 203.0.113.22 via ae1.0 balance 43%, selected
Session Id: 0x141
Next hop: 203.0.113.22 via ae0.0 balance 57%

```

show route extensive (Route Reflector)

```
user@host> show route extensive
```

```

203.0.113.0/8 (1 entry, 1 announced)

TSI:
KRT in-kernel 203.0.113.0/8 -> {indirect(40)}
  *BGP Preference: 170/-101
    Source: 192.168.4.214
    Protocol next hop: 198.51.100.192 Indirect next hop: 84ac908 40
    State: <Active Int Ext>
    Local AS: 65548 Peer AS: 65548
    Age: 3:09 Metric: 0 Metric2: 0
    Task: BGP_65548.192.168.4.214+1033
    Announcement bits (2): 0-KRT 4-Resolve inet.0
    AS path: 65544 64507 I <Originator>
    Cluster list: 198.51.100.1
    Originator ID: 203.0.113.88
    Communities: 7777:7777

```

```

Localpref: 100
Router ID: 203.0.113.4
Indirect next hops: 1
    Protocol next hop: 203.0.113.192 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: 64511
              Age: 8:20      Metric: 1
              Task: LDP
              Announcement bits (1): 0-KRT
              AS path: I
              FECs bound to route: P2MP root-addr 203.0.113.166, grp 203.0.113.1,
src 192.168.142.2

```

show route label detail (Multipoint LDP with Multicast-Only Fast Reroute)

```

user@host> show route label 301568 detail

mpls.0: 18 destinations, 18 routes (18 active, 0 holddown, 0 hidden)
301568 (1 entry, 1 announced)
    *LDP      Preference: 9
              Next hop type: Flood
              Address: 0x2735208
              Next-hop reference count: 3
              Next hop type: Router, Next hop index: 1397
              Address: 0x2735d2c
              Next-hop reference count: 3
              Next hop: 203.0.113.82 via ge-1/2/22.0
              Label operation: Pop
              Load balance label: None;
              Next hop type: Router, Next hop index: 1395
              Address: 0x2736290
              Next-hop reference count: 3
              Next hop: 203.0.113.2 via ge-1/2/18.0
              Label operation: Pop
              Load balance label: None;
              State: <Active Int AckRequest MulticastRPF>
              Local AS: 64500

```

```

Age: 54:05      Metric: 1
Validation State: unverified
Task: LDP
Announcement bits (1): 0-KRT
AS path: I
FECs bound to route: P2MP root-addr 198.51.100.1, grp: 203.0.113.1,
src: 192.168.219.11
Primary Upstream : 198.51.100.3:0--198.51.100.2:0
RPF Nexthops :
    ge-1/2/15.0, 10.2.94.1, Label: 301568, weight: 0x1
    ge-1/2/14.0, 10.2.3.1, Label: 301568, weight: 0x1
Backup Upstream : 198.51.100.3:0--198.51.100.6:0
RPF Nexthops :
    ge-1/2/20.0, 198.51.100.96, Label: 301584, weight: 0xffff
    ge-1/2/19.0, 198.51.100.36, Label: 301584, weight: 0xffff

```

show route extensive (Flexible VXLAN Tunnel Profile)

```

user@host> show route 192.168.0.2 extensive
...
CUSTOMER_0001.inet.0: 5618 destinations, 6018 routes (5618 active, 0 holddown, 0
hidden)

192.168.0.2/32 (1 entry, 1 announced)
TSI:
KRT in-kernel 192.168.0.2/32 -> {fti0.6 Flags NSR-incapable}
Opaque data client: FLEX-TNL
Address: 0xd00eee8
Opaque-data reference count: 2
Opaque data: Flexible IPv6 VXLAN tunnel profile
    *Static Preference: 5/100
        Next hop type: Router, Next hop index: 74781
        Address: 0x5d9b03cc
        Next-hop reference count: 363
        Next hop: via fti0.6, selected
        Session Id: 0x24c8
        State: <Active Int NSR-incapable OpaqueData Programmed>
        Age: 1:34:00
        Validation State: unverified
            Tag: 10000001   Tag2: 1
        Announcement bits (2): 1-KRT 3-Resolve tree 30
        AS path: I
        Flexible IPv6 VXLAN tunnel profile
            Action: Encapsulate
            Interface: fti0.6 (Index: 10921)
            VNI: 10000001
            Source Prefix: 2001:db8:255::2/128
            Source UDP Port Range: 54614 - 60074
            Destination Address: 2001:db8:80:1:1:1:0:1
            Destination UDP Port: 4790
            VXLAN Flags: 0x08
    ...

```

show route forwarding-table

List of Syntax [Syntax on page 557](#)
 [Syntax \(MX Series Routers\) on page 557](#)
 [Syntax \(TX Matrix and TX Matrix Plus Routers\) on page 557](#)

Syntax show route forwarding-table
 <detail | extensive | summary>
 <all>
 <ccc *interface-name*>
 <destination *destination-prefix*>
 <family *family* | matching *matching*>
 <interface-name *interface-name*>
 <label *name*>
 <matching *matching*>
 <multicast>
 <table (default | *logical-system-name/routing-instance-name* | *routing-instance-name*)>
 <vlan (all | *vlan-name*)>
 <vpn *vpn*>

Syntax (MX Series Routers) show route forwarding-table
 <detail | extensive | summary>
 <all>
 <bridge-domain (all | *domain-name*)>
 <ccc *interface-name*>
 <destination *destination-prefix*>
 <family *family* | matching *matching*>
 <interface-name *interface-name*>
 <label *name*>
 <learning-vlan-id *learning-vlan-id*>
 <matching *matching*>
 <multicast>
 <table (default | *logical-system-name/routing-instance-name* | *routing-instance-name*)>
 <vlan (all | *vlan-name*)>
 <vpn *vpn*>

Syntax (TX Matrix and TX Matrix Plus Routers) show route forwarding-table
 <detail | extensive | summary>
 <all>
 <ccc *interface-name*>
 <destination *destination-prefix*>
 <family *family* | matching *matching*>
 <interface-name *interface-name*>
 <matching *matching*>
 <label *name*>
 <lcc *number*>
 <multicast>
 <table *routing-instance-name*>
 <vpn *vpn*>

- Release Information** Command introduced before Junos OS Release 7.4.
Option **bridge-domain** introduced in Junos OS Release 7.5
Option **learning-vlan-id** introduced in Junos OS Release 8.4
Options **all** and **vlan** introduced in Junos OS Release 9.6.
Command introduced in Junos OS Release 11.3 for the QFX Series.
Command introduced in Junos OS Release 14.1X53-D20 for the OCX 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: **bridge (ccc | destination | detail | extensive | interface-name | label | learning-vlan-id | matching | multicast | summary | table | vlan | vpn)**, **ethernet-switching**, **evpn**, **fibre-channel**, **fmembers**, **inet**, **inet6**, **iso**, **mcsnoop-inet**, **mcsnoop-inet6**, **mpls**, **satellite-inet**, **satellite-inet6**, **satellite-vpls**, **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 —(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 564](#)
[show route forwarding-table detail on page 565](#)
[show route forwarding-table destination extensive \(Weights and Balances\) on page 565](#)
[show route forwarding-table extensive on page 566](#)
[show route forwarding-table extensive \(RPF\) on page 567](#)
[show route forwarding-table \(dynamic list next hop\) on page 568](#)
[show route forwarding-table family mpls on page 569](#)
[show route forwarding-table family mpls ccc ge-0/0/1.1004 on page 569](#)
[show route forwarding-table family vpls on page 569](#)
[show route forwarding-table vpls \(Broadcast, unknown unicast, and multicast \(BUM\) hashing is enabled\) on page 570](#)

[show route forwarding-table vpls \(Broadcast, unknown unicast, and multicast \(BUM\) hashing is enabled with MAC Statistics\) on page 570](#)
[show route forwarding-table family vpls extensive on page 570](#)
[show route forwarding-table table default on page 572](#)
[show route forwarding-table table](#)
[logical-system-name/routing-instance-name on page 573](#)
[show route forwarding-table vpn on page 573](#)

Output Fields [Table 20 on page 330](#) 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 41: 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 table logical-system-name/routing-instance-name 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

Table 41: *show route forwarding-table Output Fields (continued)*

Field Name	Field Description	Level of Output
Enabled protocols	<p>The features and protocols that have been enabled for a given routing table. This field can contain the following values:</p> <ul style="list-style-type: none"> • BUM hashing—BUM hashing is enabled. • MAC Stats—Mac Statistics is enabled. • Bridging—Routing instance is a normal layer 2 bridge. • No VLAN—No VLANs are associated with the bridge domain. • All VLANs—The vlan-id all statement has been enabled for this bridge domain. • Single VLAN—Single VLAN ID is associated with the bridge domain. • MAC action drop—New MACs will be dropped when the MAC address limit is reached. • Dual VLAN—Dual VLAN tags are associated with the bridge domain • No local switching—No local switching is enabled for this routing instance.. • Learning disabled—Layer 2 learning is disabled for this routing instance. • MAC limit reached—The maximum number of MAC addresses that was configured for this routing instance has been reached. • VPLS—The VPLS protocol is enabled. • No IRB I2-copy—The no-irb-layer-2-copy feature is enabled for this routing instance. • ACKed by all peers—All peers have acknowledged this routing instance. • BUM Pruning—BUM pruning is enabled on the VPLS instance. • Def BD VXLAN—VXLAN is enabled for the default bridge domain. • EVPN—EVPN protocol is enabled for this routing instance. • Def BD OVSDb—Open vSwitch Database (OVSDb) is enabled on the default bridge domain. • Def BD Ingress replication—VXLAN ingress node replication is enabled on the default bridge domain. • L2 backhaul—Layer 2 backhaul is enabled. • FRR optimize—Fast reroute optimization • MAC pinning—MAC pinning is enabled for this bridge domain. • MAC Aging Timer—The MAC table aging time is set per routing instance. • EVPN VXLAN—This routing instance supports EVPN with VXLAN encapsulation. • PBBN—This routing instance is configured as a provider backbone bridged network. • PBN—This routing instance is configured as a provider bridge network. • ETREE—The ETREE protocol is enabled on this EVPN routing instance. • ARP/NDP suppression—EVPN ARP NDP suppression is enabled in this routing instance. • Def BD EVPN VXLAN—EVPN VXLAN is enabled for the default bridge domain. • MPLS control word—Control word is enabled for this MPLS routing instance. 	All levels
Address family	Address family (for example, IP, IPv6, ISO, MPLS, and VPLS).	All levels
Destination	Destination of the route.	detail extensive

Table 41: show route forwarding-table Output Fields (continued)

Field Name	Field Description	Level of Output
Route Type (Type)	<p>How the route was placed into the forwarding table. When the detail keyword is used, the route type might be abbreviated (as shown in parentheses):</p> <ul style="list-style-type: none"> • cloned (clon)—(TCP or multicast only) Cloned route. • destination (dest)—Remote addresses directly reachable through an interface. • destination down (iddn)—Destination route for which the interface is unreachable. • interface cloned (ifcl)—Cloned route for which the interface is unreachable. • route down (ifdn)—Interface route for which the interface is unreachable. • ignore (ignr)—Ignore this route. • interface (intf)—Installed as a result of configuring an interface. • permanent (perm)—Routes installed by the kernel when the routing table is initialized. • user—Routes installed by the routing protocol process or as a result of the configuration. 	All levels
Route Reference (RtRef)	Number of routes to reference.	detail extensive
Flags	<p>Route type flags:</p> <ul style="list-style-type: none"> • none—No flags are enabled. • accounting—Route has accounting enabled. • cached—Cache route. • incoming-iface interface-number—Check against incoming interface. • prefix load balance—Load balancing is enabled for this prefix. • rt nh decoupled—Route has been decoupled from the next hop to the destination. • sent to PFE—Route has been sent to the Packet Forwarding Engine. • static—Static route. 	extensive
Next hop	<p>IP address of the next hop to the destination.</p> <p>NOTE: For static routes that use point-to-point (P2P) outgoing interfaces, the next-hop address is not displayed in the output.</p>	detail extensive

Table 41: show route forwarding-table Output Fields (continued)

Field Name	Field Description	Level of Output
Next hop Type (Type)	<p>Next-hop type. When the detail keyword is used, the next-hop type might be abbreviated (as indicated in parentheses):</p> <ul style="list-style-type: none"> • broadcast (bcst)—Broadcast. • deny—Deny. • discard (dscd) —Discard. • hold—Next hop is waiting to be resolved into a unicast or multicast type. • indexed (idxd)—Indexed next hop. • indirect (indr)—Indirect next hop. • local (locl)—Local address on an interface. • routed multicast (mcrst)—Regular multicast next hop. • multicast (mcst)—Wire multicast next hop (limited to the LAN). • multicast discard (mdsc)—Multicast discard. • multicast group (mgrp)—Multicast group member. • receive (rcv)—Receive. • reject (rjct)—Discard. An ICMP unreachable message was sent. • resolve (rslv)—Resolving the next hop. • 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. 	detail extensive
Index	Software index of the next hop that is used to route the traffic for a given prefix.	detail extensive none
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.	extensive
Reference (NhRef)	Number of routes that refer to this next hop.	detail extensive none
Next-hop interface (Netif)	Interface used to reach the next hop.	detail extensive none
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 Balance field description).	extensive
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.	extensive
RPF interface	List of interfaces from which the prefix can be accepted. Reverse path forwarding (RPF) information is displayed only when rpf-check is configured on the interface.	extensive

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	
172.16.1.0/24	ifdn	0		rslv	608	1	ge-2/0/1.0
172.16.1.0/32	iddn	0	172.16.1.0	recv	606	1	ge-2/0/1.0
172.16.1.1/32	user	0		rjct	46	4	
172.16.1.1/32	intf	0	172.16.1.1	loc1	607	2	
172.16.1.1/32	iddn	0	172.16.1.1	loc1	607	2	
172.16.1.255/32	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	loc1	615	2	
10.0.0.1/32	dest	0	10.0.0.1	loc1	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	loc1	611	2	
10.1.1.1/32	iddn	0	10.1.1.1	loc1	611	2	
10.1.1.255/32	iddn	0	ff:ff:ff:ff:ff:ff	bcst	609	1	ge-2/0/1.0
10.206.0.0/16	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	loc1	417	2	
10.209.2.131/32	dest	0	10.209.2.131	loc1	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			loc1 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	loc1	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	loc1	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	loc1	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		rs1v	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	loc1	135	2	
10.0.0.4/32	dest	0	10.0.0.4	loc1	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
  Flags: sent to PFE
  Next-hop type: unicast
  Nexthop: 172.16.4.4
  Next-hop type: unicast
  Next-hop interface: so-1/1/0.0
  Nexthop: 145.12.1.2
  Next-hop type: unicast
  Next-hop interface: so-0/1/2.0
  Route interface-index: 0
  Index: 262143  Reference: 1
  Index: 335      Reference: 2
  Weight: 22      Balance: 3
  Index: 337      Reference: 2
  Weight: 33      Balance: 3

```

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
  Flags: sent to PFE
  Nexthop: 00:00:5E:00:53:1b
  Next-hop type: unicast
  Next-hop interface: fxp0.0
  Route interface-index: 0
  Index: 132      Reference: 4

Destination: default
  Route type: permanent
  Route reference: 0
  Flags: none
  Next-hop type: reject
  Route interface-index: 0
  Index: 14       Reference: 1

Destination: 127.0.0.1/32
  Route type: interface
  Route reference: 0
  Flags: sent to PFE
  Nexthop: 127.0.0.1
  Next-hop type: local
  Route interface-index: 0
  Index: 320      Reference: 1
...

Routing table: private1__inet [Index 1]
Internet:

Destination: default
  Route type: permanent
  Route reference: 0
  Flags: sent to PFE
  Next-hop type: reject
  Route interface-index: 0
  Index: 46       Reference: 1

Destination: 10.0.0.0/8
  Route type: interface
  Route reference: 0
  Flags: sent to PFE
  Next-hop type: resolve
  Next-hop interface: fxp1.0
  Route interface-index: 3
  Index: 136      Reference: 1

```

```

...

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
  Nexthop: 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 192.0.2.2/30;
    }
  }
}

```

```
}
}
```

```
user@host> show route forwarding-table extensive
```

```
Routing table: inet [Index 0]
Internet:
...
...
Destination: 192.0.2.3/32
Route type: destination
Route reference: 0                      Route interface-index: 67
Flags: sent to PFE
Nexthop: 192.0.2.3
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 (dynamic list next hop)

The **show route forwarding table** output shows the two next hop elements for a multihomed EVPN destination.

```
user@host> show route forwarding-table label 299952 extensive
```

```
MPLS:

Destination: 299952
Route type: user
Route reference: 0                      Route interface-index: 0
Multicast RPF nh index: 0
P2mpidx: 0
Flags: sent to PFE, rt nh decoupled
Next-hop type: indirect                 Index: 1048575 Reference: 2
Nexthop:
Next-hop type: composite                Index: 601      Reference: 2
Next-hop type: indirect                 Index: 1048574 Reference: 3
Nexthop: 1.0.0.4
Next-hop type: Push 301632, Push 299776(top) Index: 600 Reference: 2
Load Balance Label: None
Next-hop interface: ge-0/0/1.0
Next-hop type: indirect                 Index: 1048577 Reference: 3
Nexthop: 1.0.0.4
Next-hop type: Push 301344, Push 299792(top) Index: 619 Reference: 2
Load Balance Label: None
Next-hop interface: ge-0/0/1.0
```

After one of the PE router has been disabled in the EVPN multihomed network, the same **show route forwarding table** output command shows one next hop element and one empty next hop element.

```
user@host> show route forwarding-table label 299952 extensive
```

```
Routing table: default.mpls [Index 0]
MPLS:

Destination: 299952
Route type: user
```



```

Route reference: 0                      Route interface-index: 0
Multicast RPF nh index: 0
P2mpidx: 0
Flags: sent to PFE, rt nh decoupled
Next-hop type: indirect                 Index: 1048575 Reference: 2
Nexthop:
Next-hop type: composite                 Index: 601      Reference: 2
Next-hop type: indirect                 Index: 1048577 Reference: 3
Nexthop: 1.0.0.4
Next-hop type: Push 301344, Push 299792(top) Index: 619 Reference: 2
Load Balance Label: None
Next-hop interface: ge-0/0/1.0

```

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 mpls ccc ge-0/0/1.1004

```
user@host> show route forwarding-table mpls ccc ge-0/0/1.1004
```

```

Routing table: default.mpls
MPLS:
Destination      Type RtRef Next hop      Type Index NhRef Netif
ge-0/0/1.1004    (CCC) user   0                ulst  1048577  2
                comp      754      3
                comp      755      3
                comp      756      3

Routing table: __mpls-oam__.mpls
MPLS:
Destination      Type RtRef Next hop      Type Index NhRef Netif
default          perm   0                dscd   556    1

```

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                flood  353     1
default          perm   0                rjct   298     1

```

```

fe-0/1/0.0      dnm  0      flood  355    1
00:00:5E:00:53:1f/48      <<<<<Remote CE

                        dnm  0      indr   351    4
                        Push 800000, Push 100002(top)

so-0/0/0.0
00:00:5E:00:53:1f/48      <<<<<<Local CE

                        dnm  0      ucst   354    2 fe-0/1/0.0

```

show route forwarding-table vpls (Broadcast, unknown unicast, and multicast (BUM) hashing is enabled)

```

user@host> show route forwarding-table vpls

Routing table: green.vpls
VPLS:
Enabled protocols: BUM hashing
Destination      Type RtRef Next hop      Type Index  NhRef Netif
default          perm  0          172.16.3.2    dscd   519      1
lsi.1048832      intf  0          172.16.3.2    indr  1048574  4
                        Push 262145    621    2

ge-3/0/0.0
00:00:5E:00:53:01/48 user  0          ucst   590      5 ge-2/3/9.0
0x30003/51      user  0          comp   627      2
ge-2/3/9.0      intf  0          ucst   590      5 ge-2/3/9.0
ge-3/1/3.0      intf  0          ucst   619      4 ge-3/1/3.0
0x30002/51      user  0          comp   600      2
0x30001/51      user  0          comp   597      2

```

show route forwarding-table vpls (Broadcast, unknown unicast, and multicast (BUM) hashing is enabled with MAC Statistics)

```

user@host> show route forwarding-table vpls

Routing table: green.vpls
VPLS:
Enabled protocols: BUM hashing, MAC Stats
Destination      Type RtRef Next hop      Type Index  NhRef Netif
default          perm  0          172.16.3.2    dscd   519      1
lsi.1048834      intf  0          172.16.3.2    indr  1048574  4
                        Push 262145    592    2

ge-3/0/0.0
00:19:e2:25:d0:01/48 user  0          ucst   590      5 ge-2/3/9.0
0x30003/51      user  0          comp   630      2
ge-2/3/9.0      intf  0          ucst   590      5 ge-2/3/9.0
ge-3/1/3.0      intf  0          ucst   591      4 ge-3/1/3.0
0x30002/51      user  0          comp   627      2
0x30001/51      user  0          comp   624      2

```

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          Route interface-index: 72

```

```

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             Route interface-index: 0
Flags: none
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: 00:00:5E:00:53:01/48
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: 00:00:5E:00:53:04/48
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: 00:00:5E:00:53:05/48
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
172.16.0.1/32    user    0          dscd    561    2
172.16.2.0/24    intf    0          rslv    771    1 ge-1/2/0.3
172.16.2.0/32    dest    0 172.16.2.0       recv    769    1 ge-1/2/0.3
172.16.2.1/32    intf    0 172.16.2.1       locl    770    2
172.16.2.1/32    dest    0 172.16.2.1       locl    770    2
172.16.2.2/32    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
172.16.2.255/32 dest    0 172.16.2.255     bcst    768    1 ge-1/2/0.3
172.16.233.0/4   perm    1          mdsc    562    1
172.16.233.1/32 perm    0 172.16.233.1     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	loc1	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						
172.16.233.0/4	perm	2		mdsc	5	3
172.16.233.1/32	perm	0	172.16.233.1	mcst	1	8
172.16.233.5/32	user	1	172.16.233.5	mcst	1	8
255.255.255.255/32	perm	0		bcst	2	3

On QFX5200, the results for this command look like this:

```
show route forwarding-table family mpls
```

```
Routing table: default.mpls
```

```
MPLS:
```

```
Destination Type RtRef Next hop Type Index NhRef Netif
```

```
default perm 0 dscd 65 1
```

```
0 user 0 recv 64 4
```

```
1 user 0 recv 64 4
```

```
2 user 0 recv 64 4
```

```
13 user 0 recv 64 4
```

```
300384 user 0 9.1.1.1 Pop 1711 2 xe-0/0/34.0
```

```
300384(S=0) user 0 9.1.1.1 Pop 1712 2 xe-0/0/34.0
```

```
300400 user 0 ulst 131071 2
```

```
10.1.1.2 Pop 1713 1 xe-0/0/38.0
```

```
172.16.11.2 Pop 1714 1 xe-0/0/40.0
```

```
300400(S=0) user 0 ulst 131072 2
```

```
10.1.1.2 Pop 1715 1 xe-0/0/38.0
```

```
172.16.11.2 Pop 1716 1 xe-0/0/40.0
```

```
Routing table: __mpls-oam__.mpls
```

```
MPLS:
```

```
Destination Type RtRef Next hop Type Index NhRef Netif
```

```
default perm 0 dscd 1681 1
```

show route hidden

Syntax	<pre>show route hidden <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Release Information	Command introduced before Junos OS Release 7.4.
Description	Display only hidden route information. A hidden route is unusable, even if it is the best path.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>logical-system (all <i>logical-system-name</i>)—(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"> • Understanding Hidden Routes
List of Sample Output	show route hidden on page 575 show route hidden detail on page 576 show route hidden extensive on page 576 show route hidden terse on page 577
Output Fields	For information about output fields, see the output field table 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 hidden

```
user@host> show route hidden

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
127.0.0.1/32      [Direct/0] 04:26:38
                  > via lo0.0

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both
```

```

10.5.5.5/32      [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: 100 I
                  Unusable
10.12.1.0/24     [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: 100 I
                  Unusable
10.12.80.4/30    [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: I
                  Unusable
...

```

show route hidden detail

```

user@host> show route hidden detail

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
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>
        Local AS:      1
        Age: 4:27:37
        Task: IF
        AS path: I

private1__inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)

red.inet.0: 6 destinations, 8 routes (4 active, 0 holddown, 3 hidden)
Restart Complete

10.5.5.5/32 (1 entry, 0 announced)
    BGP      Preference: 170/-101
        Route Distinguisher: 10.4.4.4:4
        Next hop type: Unusable
        Next-hop reference count: 6
        State: <Secondary Hidden Int Ext>
        Local AS:      1 Peer AS:      1
        Age: 3:45:09
        Task: BGP_1.10.4.4.4+2493
        AS path: 100 I
        Communities: target:1:999
        VPN Label: 100064
        Localpref: 100
        Router ID: 10.4.4.4
        Primary Routing Table bgp.13vpn.0
...

```

show route hidden extensive

The output for the **show route hidden extensive** command is identical to that of the **show route hidden detail** command. For sample output, see [show route hidden detail on page 346](#).

show route hidden terse

```
user@host> show route hidden 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
127.0.0.1/32	D 0			>1o0.0	

```
private1___.inet.0: 2 destinations, 3 routes (2 active, 0 holddown, 0 hidden)
```

```
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
10.5.5.5/32	B 170	100		Unusable	100 I
10.12.1.0/24	B 170	100		Unusable	100 I
10.12.80.4/30	B 170	100		Unusable	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
```

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

A Destination	P Prf	Metric 1	Metric 2	Next hop	AS path
10.4.4.4:4:10.5.5.5/32	B 170	100		Unusable	100 I
10.4.4.4:4:10.12.1.0/24	B 170	100		Unusable	100 I
10.4.4.4:4:10.12.80.4/30	B 170	100		Unusable	I

```
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

List of Syntax	Syntax on page 578 Syntax (EX Series Switches) on page 578
Syntax	<pre>show route inactive-path <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route inactive-path <brief detail extensive terse></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display routes for destinations that have no active route. An inactive route is a route that was not selected as the best path.
Options	<p>none—Display all inactive routes.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>logical-system (all <i>logical-system-name</i>)—(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">• show route active-path on page 264
List of Sample Output	show route inactive-path on page 578 show route inactive-path detail on page 579 show route inactive-path extensive on page 580 show route inactive-path terse on page 580
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 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 349](#).

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           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 instance

List of Syntax	Syntax on page 582 Syntax (EX Series Switches and QFX Series) on page 582
Syntax	<pre>show route instance <brief detail summary> <instance-name> <logical-system (all logical-system-name)> <operational></pre>
Syntax (EX Series Switches and QFX Series)	<pre>show route instance <brief detail summary> <instance-name> <operational></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> <p>Command introduced in Junos OS Release 11.3 for the QFX Series.</p> <p>Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.</p>
Description	Display routing instance information.
Options	<p>none—(Same as brief) Display standard information about all routing instances.</p> <p>brief detail summary—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief. (These options are not available with the operational keyword.)</p> <p>instance-name—(Optional) Display information for all routing instances whose name begins with this string (for example, cust1, cust11, and cust111 are all displayed when you run the show route instance cust1 command).</p> <p>logical-system (all logical-system-name)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p>operational—(Optional) Display operational routing instances.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • <i>Example: Transporting IPv6 Traffic Across IPv4 Using Filter-Based Tunneling</i> • <i>Example: Configuring the Helper Capability Mode for OSPFv3 Graceful Restart</i>
List of Sample Output	show route instance on page 584 show route instance detail (Graceful Restart Complete) on page 584

[show route instance detail \(Graceful Restart Incomplete\) on page 586](#)

[show route instance detail \(VPLS Routing Instance\) on page 588](#)

[show route instance operational on page 588](#)

[show route instance summary on page 588](#)

Output Fields [Table 21 on page 353](#) lists the output fields for the **show route instance** command. Output fields are listed in the approximate order in which they appear.

Table 42: 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	(operational keyword only) Names of all operational routing instances.	—
Type	Type of routing instance: forwarding , l2vpn , no-forwarding , vpls , virtual-router , or vrf .	All levels
State	State of the routing instance: active or inactive .	brief detail none
Interfaces	Name of interfaces belonging to this routing instance.	brief detail none
Restart State	Status of graceful restart for this instance: Pending or Complete .	detail
Path selection timeout	Maximum amount of time, in seconds, remaining until graceful restart is declared complete. The default is 300 .	detail
Tables	Tables (and number of routes) associated with this routing instance.	brief detail none
Route-distinguisher	Unique route distinguisher associated with this routing instance.	detail
Vrf-import	VPN routing and forwarding instance import policy name.	detail
Vrf-export	VPN routing and forwarding instance export policy name.	detail
Vrf-import-target	VPN routing and forwarding instance import target community name.	detail
Vrf-export-target	VPN routing and forwarding instance export target community name.	detail
Vrf-edge-protection-id	Context identifier configured for edge-protection.	detail
Fast-reroute-priority	Fast reroute priority setting for a VPLS routing instance: high , medium , or low . The default is low .	detail
Restart State	Restart state: <ul style="list-style-type: none"> Pending:protocol-name—List of protocols that have not yet completed graceful restart for this routing table. Complete—All protocols have restarted for this routing table. 	detail

Table 42: show route instance Output Fields (continued)

Field Name	Field Description	Level of Output
Primary rib	Primary table for this routing instance.	brief none summary
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 ]
  Vrf-edge-protection-id: 166.1.3.1 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

L2VPN	l2vpn	BGP-L.inet6.0	0/0/0
		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 next-hop

List of Syntax	Syntax on page 590 Syntax (EX Series Switches) on page 590
Syntax	<pre>show route next-hop <i>next-hop</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route next-hop <i>next-hop</i> <brief detail extensive terse></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 entries in the routing table that are being sent to the specified next-hop address.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>next-hop</i>—Next-hop address.</p>
Required Privilege Level	view
List of Sample Output	show route next-hop on page 590 show route next-hop detail on page 591 show route next-hop extensive on page 593 show route next-hop terse on page 595
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 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.12vpn.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			>192.168.71.254	
*	10.209.0.0/16	S	5			>192.168.71.254	
*	172.16.0.0/12	S	5			>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 output

List of Syntax	Syntax on page 596 Syntax (EX Series Switches) on page 596
Syntax	<pre>show route output (address <i>ip-address</i> interface <i>interface-name</i>) <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches)	<pre>show route output (address <i>ip-address</i> interface <i>interface-name</i>) <brief detail extensive terse></pre>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	<p>Display the entries in the routing table learned through static routes and interior gateway protocols that are to be sent out the interface with either the specified IP address or specified name.</p> <p>To view routes advertised to a neighbor or received from a neighbor for the BGP protocol, use the show route advertising-protocol bgp and show route receive-protocol bgp commands instead.</p>
Options	<p>address <i>ip-address</i>—Display entries in the routing table that are to be sent out the interface with the specified IP address.</p> <p>brief detail extensive terse—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to brief.</p> <p>interface <i>interface-name</i>—Display entries in the routing table that are to be sent out the interface with the specified name.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p>
Required Privilege Level	view
List of Sample Output	show route output address on page 597 show route output address detail on page 597 show route output address extensive on page 598 show route output address terse on page 598 show route output interface on page 598 show route output interface detail on page 599 show route output interface extensive on page 599 show route output interface terse on page 599

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 output address

```
user@host> show route output address 172.16.36.1/24

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

172.16.36.0/24          *[Direct/0] 00:19:56
                        > via so-0/1/2.0
                        [OSPF/10] 00:19:55, metric 1
                        > via so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output address detail

```
user@host> show route output address 172.16.36.1 detail

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
172.16.36.0/24 (2 entries, 0 announced)
  *Direct Preference: 0
    Next hop type: Interface
    Next-hop reference count: 1
    Next hop: via so-0/1/2.0, selected
    State: <Active Int>
    Age: 23:00
    Task: IF
    AS path: I
  OSPF Preference: 10
    Next-hop reference count: 1
    Next hop: via so-0/1/2.0, selected
    State: <Int>
    Inactive reason: Route Preference
    Age: 22:59      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)

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output address extensive

The output for the **show route output address extensive** command is identical to that of the **show route output address detail** command. For sample output, see [show route output address detail on page 367](#).

show route output address terse

```
user@host> show route output address 172.16.36.1 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
* 172.16.36.0/24    D  0                >so-0/1/2.0
                   0 10                >so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output interface

```
user@host> show route output interface so-0/1/2.0

inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

10.255.71.240/32    *[OSPF/10] 00:13:00, metric 2
                   via so-0/1/2.0
                   > via so-0/3/2.0
10.255.71.241/32    *[OSPF/10] 00:13:10, metric 1
                   > via so-0/1/2.0
172.16.14.0/24      *[OSPF/10] 00:05:11, 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
172.16.16.0/24      *[OSPF/10] 00:13:10, metric 2
                   > via so-0/1/2.0
172.16.36.0/24      *[Direct/0] 00:13:21
                   > via so-0/1/2.0
                   [OSPF/10] 00:13:20, metric 1
                   > via so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
private1__inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```

show route output interface detail

```
user@host> show route output interface so-0/1/2.0 detail
```

```
inet.0: 28 destinations, 30 routes (27 active, 0 holddown, 1 hidden)
10.255.71.240/32 (1 entry, 1 announced)
    *OSPF   Preference: 10
            Next-hop reference count: 2
            Next hop: via so-0/1/2.0
            Next hop: via so-0/3/2.0, selected
            State: <Active Int>
            Age: 14:52      Metric: 2
            Area: 0.0.0.0
            Task: OSPF
            Announcement bits (1): 0-KRT
            AS path: I
10.255.71.241/32 (1 entry, 1 announced)
    *OSPF   Preference: 10
            Next-hop reference count: 4
            Next hop: via so-0/1/2.0, selected
            State: <Active Int>
            Age: 15:02      Metric: 1
            Area: 0.0.0.0
            Task: OSPF
            Announcement bits (1): 0-KRT
            AS path: I
...
```

show route output interface extensive

The output for the **show route output interface extensive** command is identical to that of the **show route output interface detail** command. For sample output, see [show route output interface detail on page 369](#).

show route output interface terse

```
user@host> show route output interface so-0/1/2.0 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
*	10.255.71.240/32	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	
*	172.16.14.0/24	0	10	3		35.1.1.2	

```

                                     >so-0/1/2.0
                                     so-0/3/2.0
* 172.16.16.0/24      0 10      2
* 172.16.36.0/24      D  0
                      0 10      1
                      >so-0/1/2.0
                      >so-0/1/2.0

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: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

private1___.inet6.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
```


show route protocol

List of Syntax [Syntax on page 601](#)
 [Syntax \(EX Series Switches\) on page 601](#)

Syntax `show route protocol protocol`
 `<brief | detail | extensive | terse>`
 `<logical-system (all | logical-system-name)>`

Syntax (EX Series Switches) `show route protocol protocol`
 `<brief | detail | extensive | terse>`

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.
 ospf2 and **ospf3** options introduced in Junos OS Release 9.2.
 ospf2 and **ospf3** options introduced in Junos OS Release 9.2 for EX Series switches.
 flow option introduced in Junos OS Release 10.0.
 flow option introduced in Junos OS Release 10.0 for EX Series switches.

Description Display the route entries in the routing table that were learned from a particular protocol.

Options **brief | detail | extensive | terse**—(Optional) Display the specified level of output. If you do not specify a level of output, the system defaults to **brief**.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

protocol—Protocol from which the route was learned:

- **access**—Access route for use by DHCP application
- **access-internal**—Access-internal route for use by DHCP application
- **aggregate**—Locally generated aggregate route
- **arp**—Route learned through the Address Resolution Protocol
- **atmvpn**—Asynchronous Transfer Mode virtual private network
- **bgp**—Border Gateway Protocol
- **ccc**—Circuit cross-connect
- **direct**—Directly connected route
- **dvmrp**—Distance Vector Multicast Routing Protocol
- **esis**—End System-to-Intermediate System
- **flow**—Locally defined flow-specification route
- **frr**—Precomputed protection route or backup route used when a link goes down

- **isis**—Intermediate System-to-Intermediate System
- **ldp**—Label Distribution Protocol
- **l2circuit**—Layer 2 circuit
- **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.

Required Privilege Level	view
List of Sample Output	show route protocol access on page 603 show route protocol access-internal extensive on page 603 show route protocol arp on page 603 show route protocol bgp on page 604 show route protocol bgp detail on page 604 show route protocol bgp detail (Labeled Unicast) on page 605 show route protocol bgp detail (Aggregate Extended Community Bandwidth) on page 605 show route protocol bgp extensive on page 606 show route protocol bgp terse on page 607 show route protocol direct on page 607

[show route protocol frr on page 608](#)
[show route protocol l2circuit detail on page 608](#)
[show route protocol l2vpn extensive on page 609](#)
[show route protocol ldp on page 610](#)
[show route protocol ldp extensive on page 610](#)
[show route protocol ospf \(Layer 3 VPN\) on page 611](#)
[show route protocol ospf detail on page 612](#)
[show route protocol rip on page 612](#)
[show route protocol rip detail on page 612](#)
[show route protocol ripng table inet6 on page 613](#)
[show route protocol static detail on page 613](#)

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 detail (Labeled Unicast)

```

user@host> show route protocol bgp 1.1.1.8/32 detail

inet.0: 45 destinations, 46 routes (45 active, 0 holddown, 0 hidden)
1.1.1.8/32 (2 entries, 2 announced)
State:
*BGP Preference: 1/-101
Next hop type: Indirect, Next hop index: 0
Address: 0xc007f30
Next-hop reference count: 2
Source: 1.1.1.1
Next hop type: Router, Next hop index: 614
Next hop: 20.1.1.2 via ge-0/0/1.0, selected
Label-switched-path lsp1
Label operation: Push 1000126, Push 1000125, Push 1000124, Push 1000123, Push
299872(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl, prop-ttl, prop-ttl(top)
Load balance label: Label 1000126: None; Label 1000125: None; Label 1000124: None;
Label 1000123: None; Label 299872: None;
Label element ptr: 0xc007860
Label parent element ptr: 0xc0089a0
Label element references: 1
Label element child references: 0
Label element lsp id: 0
Session Id: 0x140
Protocol next hop: 1.1.1.4
Label operation: Push 1000126, Push 1000125, Push 1000124, Push 1000123(top)
Label TTL action: prop-ttl, prop-ttl, prop-ttl, prop-ttl
Load balance label: Label 1000126: None; Label 1000125: None; Label 1000124: None;
Label 1000123: None;
Indirect next hop: 0xae8d300 1048576 INH Session ID: 0x142
State:
Local AS: 5 Peer AS: 5
Age: 22:43 Metric2: 2
Validation State: unverified
Task: BGP_5.1.1.1.1
Announcement bits (2): 0-KRT 7-Resolve tree 2
AS path: I
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Localpref: 100
Router ID: 1.1.1.1

```

show route protocol bgp detail (Aggregate Extended Community Bandwidth)

```

user@host> show route 10.0.2.0 protocol bgp detail

inet.0: 20 destinations, 26 routes (20 active, 0 holddown, 0 hidden)
10.0.2.0/30 (2 entries, 1 announced)
*BGP Preference: 170/-101
Next hop type: Router, Next hop index: 0
Address: 0xb618990

```

```

Next-hop reference count: 3
Source: 10.0.1.1
Next hop: 10.0.0.2 via ge-0/0/0.0 balance 40%
Session Id: 0x0
Next hop: 10.0.1.1 via ge-0/0/1.0 balance 60%, selected
Session Id: 0x0
State: <Active Ext>
Local AS: 65000 Peer AS: 65001
Age: 20:33
Validation State: unverified
Task: BGP_65001.10.0.1.1
Announcement bits (3): 0-KRT 2-BGP_Listen.0.0.0.0+179
3-BGP_RT_Background
AS path: 65001 I
Communities: bandwidth:65000:60000000
Accepted Multipath
Localpref: 100
Router ID: 128.49.121.137
BGP Preference: 170/-101
Next hop type: Router, Next hop index: 595
Address: 0xb7a1330
Next-hop reference count: 9
Source: 10.0.0.2
Next hop: 10.0.0.2 via ge-0/0/0.0, selected
Session Id: 0x141
State: <NotBest Ext>
Inactive reason: Not Best in its group - Active preferred
Local AS: 65000 Peer AS: 65001
Age: 20:33
Validation State: unverified
Task: BGP_65001.10.0.0.2
AS path: 65001 I
Communities: bandwidth:65000:40000000
Accepted MultipathContrib
Localpref: 100
Router ID: 128.49.121.132

```

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          >172.16.100.1 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

172.16.8.0/24      *[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
172.16.30.0/24    *[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

```

```

2001:db8::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: 64500
            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: 64500
              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: 64500
              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: 64500
              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: 64500
              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
172.16.233.5/32   *[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
172.16.233.5/32   *[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
172.16.233.9/32   *[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 receive-protocol

List of Syntax	Syntax on page 615 Syntax (EX Series Switches) on page 615
Syntax	<pre>show route receive-protocol <i>protocol neighbor-address</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)</pre>
Syntax (EX Series Switches)	<pre>show route receive-protocol <i>protocol neighbor-address</i> <brief detail extensive terse></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 routing information as it was received through a particular neighbor using a particular dynamic routing protocol.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>protocol neighbor-address</i>—Protocol transmitting the route (bgp, dvmrp, msdp, pim, rip, or ripng) and address of the neighboring router from which the route entry was received.</p>
Additional Information	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.
Required Privilege Level	view
List of Sample Output	show route receive-protocol bgp on page 618 show route receive-protocol bgp extensive on page 618 show route receive-protocol bgp table extensive on page 619 show route receive-protocol bgp logical-system extensive on page 619 show route receive-protocol bgp detail (Layer 2 VPN) on page 620 show route receive-protocol bgp extensive (Layer 2 VPN) on page 620 show route receive-protocol bgp (Layer 3 VPN) on page 621 show route receive-protocol bgp detail (Layer 3 VPN) on page 621 show route receive-protocol bgp detail (Long-Lived Graceful Restart) on page 622 show route receive-protocol bgp detail (Labeled Unicast) on page 623 show route receive-protocol bgp extensive (Layer 3 VPN) on page 623 Show route receive protocol (Segment Routing Traffic Engineering) on page 624

Output Fields Table 22 on page 386 describes the output fields for the **show route receive-protocol** command. Output fields are listed in the approximate order in which they appear.

Table 43: 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
<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"> • active • holddown (routes that are in pending state before being declared inactive) • hidden (routes that are not used because of a routing policy) 	All levels
Prefix	Destination prefix.	none brief
MED	Multiple exit discriminator value included in the route.	none brief
<i>destination-prefix</i> (entry, announced)	Destination prefix. The entry value is the number of routes for this destination, and the announced value is the number of routes being announced for this destination.	detail extensive
Accepted LongLivedStale	The LongLivedStale flag indicates that the route was marked LLGR-stale by this router, as part of the operation of LLGR receiver mode. Either this flag or the LongLivedStaleImport flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag.	detail extensive
Accepted LongLivedStaleImport	The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy. Either this flag or the LongLivedStale flag may be displayed for a route. Neither of these flags are displayed at the same time as the Stale (ordinary GR stale) flag. Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and import into the inet.0 routing table	detail extensive
ImportAccepted LongLivedStaleImport	Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and imported into the inet.0 routing table The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy.	detail extensive
Route Distinguisher	64-bit prefix added to IP subnets to make them unique.	detail extensive
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.	detail extensive

Table 43: show route receive-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
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.	detail extensive
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
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"> • I—IGP. • E—EGP. • ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> • []—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. • []—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. • { }—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. • ()—Parentheses enclose a confederation. • ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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
Route Labels	Stack of labels carried in the BGP route update.	detail extensive
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 show route detail 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 Attrset attribute at the originating routing device.	detail extensive

Table 43: show route receive-protocol Output Fields (continued)

Field Name	Field Description	Level of Output
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).	detail extensive
control flags	Control flags: none or Site Down.	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
172.16.1.0/24 (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
172.16.163.0/16 (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
172.16.164.0/16 (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
172.16.195.0/24 (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	Lc1pref	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

* 172.16.44.0/24 (1 entry, 1 announced)
  Accepted
  Route Label: 300096
  Nexthop: 10.0.0.9
  AS path: 13979 I
  AIGP: 203

* 172.16.55.0/24 (1 entry, 1 announced)

```

```

Accepted
Route Label: 300112
Nexthop: 10.0.0.9
AS path: 13979 7018 I
AIGP: 25

* 172.16.66.0/24 (1 entry, 1 announced)
Accepted
Route Label: 300144
Nexthop: 10.0.0.9
AS path: 13979 7018 I

* 172.16.99.0/24 (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    Lc1pref AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
mpls.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
frame-vpn.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref 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    Lc1pref 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    Lc1pref AS path
inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
VPN-A.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref 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    Lc1pref 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    Lc1pref AS path
mpls.0: 9 destinations, 9 routes (9 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref AS path
bgp.l3vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lc1pref 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 detail (Long-Lived Graceful Restart)

```
user@host> show route receive-protocol bgp 10.4.12.11 detail
```

```

bgp.l2vpn.0: 38 destinations, 39 routes (37 active, 0 holddown, 1 hidden)
* 172.16.1.4:100:172.16.1.4/96 AD (1 entry, 1 announced)
  Accepted LongLivedStale LongLivedStaleImport
  Nexthop: 10.4.12.11
  Localpref: 100
  AS path: I

```

show route receive-protocol bgp detail (Labeled Unicast)

```

user@host> show route receive-protocol bgp 1.1.1.1 detail

inet.0: 45 destinations, 46 routes (45 active, 0 holddown, 0 hidden)
* 1.1.1.8/32 (2 entries, 2 announced)
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: 1.1.1.4
Localpref: 100
AS path: I
Entropy label capable, next hop field matches route next hop

inet.3: 15 destinations, 21 routes (6 active, 0 holddown, 14 hidden)

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

mpls.0: 11 destinations, 11 routes (11 active, 0 holddown, 0 hidden)

inet6.0: 26 destinations, 28 routes (26 active, 0 holddown, 0 hidden)
* 100::1/128 (2 entries, 2 announced)
Accepted
Route Labels: 1000123(top) 1000124 1000125 1000126
Nexthop: ::ffff:1.1.1.4
Localpref: 100
AS path: I

inet6.3: 22 destinations, 23 routes (22 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
  172.16.1.0/24 (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
  172.16.163.0/16 (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
  172.16.164.0/16 (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
  172.16.195.0/24 (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 receive protocol (Segment Routing Traffic Engineering)

```

show route receive protocol bgp 10.1.1.4

bgp.inetcolor.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

* 50-4.4.4.4-1234<sr6>/96 (1 entry, 0 announced)
  Import Accepted
  Distinguisher: 50
  Color: 1234
  Nexthop: 10.1.1.4
  Localpref: 100
  AS path: 3 I
  Communities: target:1.1.1.1:1

inetcolor.0: 6 destinations, 7 routes (6 active, 0 holddown, 0 hidden)
* 4.4.4.4-1234<c6>/64 (1 entry, 1 announced)
  Import Accepted
  Color: 1234
  Nexthop: 10.1.1.4
  Localpref: 100
  AS path: 3 I
  Communities: target:1.1.1.1:1

user@host# run show route receive-protocol bgp 5001:1::4

bgp.inet6color.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

* 50-2001:1::4-1234<sr6>/192 (1 entry, 0 announced)
  Import Accepted
  Distinguisher: 50
  Color: 1234
  Nexthop: ::ffff:1.1.1.4
  Localpref: 100
  AS path: 3 I
  Communities: target:1.1.1.1:1

inet6color.0: 6 destinations, 7 routes (6 active, 0 holddown, 0 hidden)
* 2001::5-1234<c6>/160 (1 entry, 1 announced)
  Import Accepted
  Color: 1234
  Nexthop: ::ffff:1.1.1.5
  Localpref: 100
  AS path: 3 I
  Communities: target:2:1

```


show route table

List of Syntax	Syntax on page 625 Syntax (EX Series Switches, QFX Series Switches) on page 625
Syntax	<pre>show route table <i>routing-table-name</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)></pre>
Syntax (EX Series Switches, QFX Series Switches)	<pre>show route table <i>routing-table-name</i> <brief detail extensive terse></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> <p>Statement introduced in Junos OS Release 14.1X53-D15 for QFX Series switches.</p> <p>Show route table evpn statement introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.</p>
Description	Display the route entries in a particular routing table.
Options	<p>brief detail extensive terse—(Optional) Display the specified level of output.</p> <p>logical-system (all <i>logical-system-name</i>)—(Optional) Perform this operation on all logical systems or on a particular logical system.</p> <p><i>routing-table-name</i>—Display route entries for all routing tables whose names begin with this string (for example, inet.0 and inet6.0 are both displayed when you run the show route table inet command).</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show route summary
List of Sample Output	show route table bgp.l2.vpn on page 637 show route table bgp.l3vpn.0 on page 637 show route table bgp.l3vpn.0 detail on page 637 show route table bgp.rtarget.0 (When Proxy BGP Route Target Filtering Is Configured) on page 639 show route table bgp.evpn.0 on page 639 show route table evpna.evpn.0 on page 640 show route table inet.0 on page 640 show route table inet.3 on page 640 show route table inet.3 protocol ospf on page 640

[show route table inet6.0 on page 641](#)
[show route table inet6.3 on page 641](#)
[show route table inetcolor.0 on page 641](#)
[show route table inetflow detail on page 642](#)
[show route table inetflow.0 extensive \(BGP Flowspec Redirect to IP\) on page 643](#)
[show route table lsdist.0 extensive on page 644](#)
[show route table l2circuit.0 on page 646](#)
[show route table lsdist.0 on page 646](#)
[show route table mpls on page 646](#)
[show route table mpls extensive on page 647](#)
[show route table mpls.0 on page 647](#)
[show route table mpls.0 detail \(PTX Series\) on page 648](#)
[show route table mpls.0 ccc ge-0/0/1.1004 detail on page 648](#)
[show route table mpls.0 protocol evpn on page 650](#)
[show route table mpls.0 protocol ospf on page 656](#)
[show route table mpls.0 extensive \(PTX Series\) on page 656](#)
[show route table mpls.0 \(RSVP Route—Transit LSP\) on page 657](#)
[show route table vpls_1 detail on page 657](#)
[show route table vpn-a on page 658](#)
[show route table vpn-a.mdt.0 on page 658](#)
[show route table VPN-A detail on page 658](#)
[show route table VPN-AB.inet.0 on page 659](#)
[show route table VPN_blue.mvpn-inet6.0 on page 659](#)
[show route table vrf1.mvpn.0 extensive on page 660](#)
[show route table inetflow detail on page 660](#)
[show route table bgp.evpn.0 extensive |no-more \(EVPN\) on page 663](#)
[show route table default-switch.evpn.0 extensive on page 666](#)
[show route table evpn1.evpn-mcsn on page 667](#)
[show route table evpn1 \(Multihomed Proxy MAC and IP Address\) on page 667](#)

Output Fields [Table 12 on page 243](#) describes the output fields for the **show route table** command. Output fields are listed in the approximate order in which they appear.

Table 44: show route table Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).

Table 44: *show route table* Output Fields (continued)

Field Name	Field Description
Restart complete	<p>All protocols have restarted for this routing table.</p> <p>Restart state:</p> <ul style="list-style-type: none"> • Pending;protocol-name—List of protocols that have not yet completed graceful restart for this routing table. • Complete—All protocols have restarted for this routing table. <p>For example, if the output shows-</p> <ul style="list-style-type: none"> • <code>LDP.inet.0 : 5 routes (4 active, 1 holddown, 0 hidden)</code> Restart Pending: OSPF LDP VPN <p>This indicates that OSPF, LDP, and VPN protocols did not restart for the LDP.inet.0 routing table.</p> <ul style="list-style-type: none"> • <code>vpls_1.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)</code> Restart Complete <p>This indicates that all protocols have restarted for the vpls_1.l2vpn.0 routing table.</p>
<i>number</i> destinations	Number of destinations for which there are routes in the routing table.
<i>number</i> routes	<p>Number of routes in the routing table and total number of routes in the following states:</p> <ul style="list-style-type: none"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy)

Table 44: show route table Output Fields (continued)

Field Name	Field Description
<i>route-destination</i> (entry, announced)	<p>Route destination (for example:10.0.0.1/24). The entry value is the number of routes for this destination, and the announced 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"> • MPLS-label (for example, 80001). • interface-name (for example, ge-1/0/2). • neighbor-address:control-word-status:encapsulation type:vc-id:source (Layer 2 circuit only; for example, 10.1.1.195:NoCtrlWord:1:1:Local/96). <ul style="list-style-type: none"> • neighbor-address—Address of the neighbor. • control-word-status—Whether the use of the control word has been negotiated for this virtual circuit: NoCtrlWord or CtrlWord. • encapsulation type—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. • vc-id—Virtual circuit identifier. • source—Source of the advertisement: Local or Remote. • inclusive multicast Ethernet tag route—Type of route destination represented by (for example, 3:100.100.100.10:100::0::10::100.100.100.10/384): <ul style="list-style-type: none"> • route distinguisher—(8 octets) Route distinguisher (RD) must be the RD of the EVPN instance (EVI) that is advertising the NLRI. • Ethernet tag ID—(4 octets) Identifier of the Ethernet tag. Can set to 0 or to a valid Ethernet tag value. • IP address length—(1 octet) Length of IP address in bits. • originating router's IP address—(4 or 16 octets) Must set to the provider edge (PE) device's IP address. This address should be common for all EVIs on the PE device, and may be the PE device's loopback address.
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"> • S=0 route 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). • If there is no S= information, the route is a normal MPLS route, which has a stack depth of 1 (the label-popping operation is not performed).
[<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"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • -—A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route. <p>In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.</p>

Table 44: show route table Output Fields (continued)

Field Name	Field Description
Level	(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.
Route Distinguisher	IP subnet augmented with a 64-bit prefix.
PMSI	Provider multicast service interface (MVPN routing table).
Next-hop type	Type of next hop. For a description of possible values for this field, see Table 15 on page 288 .
Next-hop reference count	Number of references made to the next hop.
Flood nexthop branches exceed maximum message	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.
Source	IP address of the route source.
Next hop	Network layer address of the directly reachable neighboring system.
via	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 Selected . This field can also contain the following information: <ul style="list-style-type: none"> • 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. • Balance—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.
Label-switched-path <i>lsp-path-name</i>	Name of the LSP used to reach the next hop.
Label operation	MPLS label and operation occurring at this routing device. The operation can be pop (where a label is removed from the top of the stack), push (where another label is added to the label stack), or swap (where a label is replaced by another label).
Interface	(Local only) Local interface name.
Protocol next hop	Network layer address of the remote routing device that advertised the prefix. This address is used to derive a forwarding next hop.
Indirect next hop	Index designation used to specify the mapping between protocol next hops, tags, kernel export policy, and the forwarding next hops.
State	State of the route (a route can be in more than one state). See Table 16 on page 290 .

Table 44: show route table Output Fields (continued)

Field Name	Field Description
Local AS	AS number of the local routing devices.
Age	How long the route has been known.
AI GP	Accumulated interior gateway protocol (AI GP) BGP attribute.
Metric <i>n</i>	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	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.
Task	Name of the protocol that has added the route.
Announcement bits	<p>The number of BGP peers or protocols to which Junos OS has announced this route, followed by the list of the recipients of the announcement. Junos OS can also announce the route to the kernel routing table (KRT) for installing the route into the Packet Forwarding Engine, to a resolve tree, a Layer 2 VC, or even a VPN. For example, <i>n-Resolve inet</i> indicates that the specified route is used for route resolution for next hops found in the routing table.</p> <ul style="list-style-type: none"> <i>n</i>—An index used by Juniper Networks customer support only.
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"> I—IGP. E—EGP. Recorded—The AS path is recorded by the sample process (sampled). ?—Incomplete; typically, the AS path was aggregated. <p>When AS path numbers are included in the route, the format is as follows:</p> <ul style="list-style-type: none"> []—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. []—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. { }—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. ()—Parentheses enclose a confederation. ([])—Parentheses and brackets enclose a confederation set. <p>NOTE: 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 44: show route table Output Fields (continued)

Field Name	Field Description
validation-state	<p>(BGP-learned routes) Validation status of the route:</p> <ul style="list-style-type: none"> • 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. • Unknown—Indicates that the prefix is not among the prefixes or prefix ranges in the database. • Unverified—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. • Valid—Indicates that the prefix and autonomous system pair are found in the database.
FECs bound to route	Indicates point-to-multipoint root address, multicast source address, and multicast group address when multipoint LDP (M-LDP) inband signaling is configured.
Primary Upstream	When multipoint LDP with multicast-only fast reroute (MoFRR) is configured, indicates the primary upstream path. MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.
RPF Nexthops	When multipoint LDP with MoFRR is configured, indicates the reverse-path forwarding (RPF) next-hop information. Data packets are received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to the RPF checks.
Label	Multiple MPLS labels are used to control MoFRR stream selection. Each label represents a separate route, but each references the same interface list check. Only the primary label is forwarded while all others are dropped. Multiple interfaces can receive packets using the same label.
weight	Value used to distinguish MoFRR primary and backup routes. A lower weight value is preferred. Among routes with the same weight value, load balancing is possible.
VC Label	MPLS label assigned to the Layer 2 circuit virtual connection.
MTU	Maximum transmission unit (MTU) of the Layer 2 circuit.
VLAN ID	VLAN identifier of the Layer 2 circuit.
Prefixes bound to route	Forwarding equivalent class (FEC) bound to this route. Applicable only to routes installed by LDP.
Communities	Community path attribute for the route. See Table 17 on page 292 for all possible values for this field.
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).
control flags	Control flags: none or Site Down .
mtu	Maximum transmission unit (MTU) information.
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.
status vector	Layer 2 VPN and VPLS network layer reachability information (NLRI).

Table 44: show route table Output Fields (continued)

Field Name	Field Description
Accepted Multipath	Current active path when BGP multipath is configured.
Accepted LongLivedStale	The LongLivedStale flag indicates that the route was marked LLGR-stale by this router, as part of the operation of LLGR receiver mode. Either this flag or the LongLivedStaleImport flag might be displayed for a route. Neither of these flags is displayed at the same time as the Stale (ordinary GR stale) flag.
Accepted LongLivedStaleImport	<p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy. Either this flag or the LongLivedStale flag might be displayed for a route. Neither of these flags is displayed at the same time as the Stale (ordinary GR stale) flag.</p> <p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and import into the inet.0 routing table</p>
ImportAccepted LongLivedStaleImport	<p>Accept all received BGP long-lived graceful restart (LLGR) and LLGR stale routes learned from configured neighbors and imported into the inet.0 routing table</p> <p>The LongLivedStaleImport flag indicates that the route was marked LLGR-stale when it was received from a peer, or by import policy.</p>
Accepted MultipathContrib	Path currently contributing to BGP multipath.
Localpref	Local preference value included in the route.
Router ID	BGP router ID as advertised by the neighbor in the open message.
Primary Routing Table	In a routing table group, the name of the primary routing table in which the route resides.
Secondary Tables	In a routing table group, the name of one or more secondary tables in which the route resides.

[Table 15 on page 288](#) describes all possible values for the Next-hop Types output field.

Table 45: Next-hop Types Output Field Values

Next-Hop Type	Description
Broadcast (bcast)	Broadcast next hop.
Deny	Deny next hop.
Discard	Discard next hop.
Flood	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.

Table 45: Next-hop Types Output Field Values (continued)

Next-Hop Type	Description
Hold	Next hop is waiting to be resolved into a unicast or multicast type.
Indexed (idxd)	Indexed next hop.
Indirect (indr)	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.
Interface	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.
Local (locl)	Local address on an interface. This next-hop type causes packets with this destination address to be received locally.
Multicast (mcst)	Wire multicast next hop (limited to the LAN).
Multicast discard (mdsc)	Multicast discard.
Multicast group (mgrp)	Multicast group member.
Receive (recv)	Receive.
Reject (rjct)	Discard. An ICMP unreachable message was sent.
Resolve (rslv)	Resolving next hop.
Routed multicast (mcrtr)	Regular multicast next hop.
Router	<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 a next-hop type router, the route must meet the following criteria:</p> <ul style="list-style-type: none"> • Must not be a direct or local subnet for the routing device. • Must have a next hop that is directly connected to the routing device.
Table	Routing table next hop.
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 16 on page 290 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 46: 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.
Int	Interior route.
Int Ext	BGP route received from an internal BGP peer or a BGP confederation peer.
Interior > Exterior > Exterior via Interior	Direct, static, IGP, or EBGp path is available.

Table 46: State Output Field Values (continued)

Value	Description
Local Preference	Path with a higher local preference value is available.
Martian	Route is a martian (ignored because it is obviously invalid).
MartianOK	Route exempt from martian filtering.
Next hop address	Path with lower metric next hop is available.
No difference	Path from neighbor with lower IP address is available.
NoReadvrt	Route not to be advertised.
NotBest	Route not chosen because it does not have the lowest MED.
Not Best in its group	Incoming BGP AS is not the best of a group (only one AS can be the best).
NotInstall	Route not to be installed in the forwarding table.
Number of gateways	Path with a greater number of next hops is available.
Origin	Path with a lower origin code is available.
Pending	Route pending because of a hold-down configured on another route.
Release	Route scheduled for release.
RIB preference	Route from a higher-numbered routing table is available.
Route Distinguisher	64-bit prefix added to IP subnets to make them unique.
Route Metric or MED comparison	Route with a lower metric or MED is available.
Route Preference	Route with lower preference value is available.
Router ID	Path through a neighbor with lower ID is available.
Secondary	Route not a primary route.
Unusable path	Path is not usable because of one of the following conditions: <ul style="list-style-type: none"> • The route is damped. • The route is rejected by an import policy. • The route is unresolved.
Update source	Last tiebreaker is the lowest IP address value.

Table 17 on page 292 describes the possible values for the Communities output field.

Table 47: 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 0. 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.
bandwidth: local AS number:link-bandwidth-number	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.
domain-id	Unique configurable number that identifies the OSPF domain.
domain-id-vendor	Unique configurable number that further identifies the OSPF domain.
<i>link-bandwidth-number</i>	Link-bandwidth number: from 0 through 4,294,967,295 (bytes per second).
<i>local AS number</i>	Local AS number: from 1 through 65,535.
<i>options</i>	1 byte. Currently this is only used if the route type is 5 or 7. Setting the least significant bit in the field indicates that the route carries a type 2 metric.
origin	(Used with VPNs) Identifies where the route came from.
<i>ospf-route-type</i>	1 byte, encoded as 1 or 2 for intra-area routes (depending on whether the route came from a type 1 or a type 2 LSA); 3 for summary routes; 5 for external routes (area number must be 0); 7 for NSSA routes; or 129 for sham link endpoint addresses.
route-type-vendor	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x8000. The format is area-number:ospf-route-type:options .
rte-type	Displays the area number, OSPF route type, and option of the route. This is configured using the BGP extended community attribute 0x0306. The format is area-number:ospf-route-type:options .
target	Defines which VPN the route participates in; target has the format 32-bit IP address:16-bit number . For example, 10.19.0.0:100.
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.
evpn-mcast-flags	Identifies the value in the multicast flags extended community and whether snooping is enabled. A value of 0x1 indicates that the route supports IGMP proxy.

Table 47: Communities Output Field Values (continued)

Value	Description
evpn-l2-info	Identifies whether Multihomed Proxy MAC and IP Address Route Advertisement is enabled. A value of 0x20 indicates that the proxy bit is set. . Use the show bridge mac-ip-table extensive statement to determine whether the MAC and IP address route was learned locally or from a PE device.

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)

10.255.245.12:1:172.16.4.0/8 (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 bgp.evpn.0

```

user@host> show route table bgp.evpn.0

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

2:100.100.100.2:100::0::00:26:88:5f:67:b0/304
    * [BGP/170] 11:00:05, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1
2:100.100.100.2:100::0::00:51:51:51:51:51/304
    * [BGP/170] 11:00:05, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1
2:100.100.100.3:100::0::00:52:52:52:52:52/304
    * [BGP/170] 10:59:58, localpref 100, from 100.100.100.3
        AS path: I, validation-state: unverified
        > to 100.64.13.3 via ge-2/0/8.0, label-switched-path R0toR2
2:100.100.100.3:100::0::a8:d0:e5:5b:01:c8/304
    * [BGP/170] 10:59:58, localpref 100, from 100.100.100.3
        AS path: I, validation-state: unverified
        > to 100.64.13.3 via ge-2/0/8.0, label-switched-path R0toR2
3:100.100.100.2:100::1000::100.100.100.2/304
    * [BGP/170] 11:00:16, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1
3:100.100.100.2:100::2000::100.100.100.2/304
    * [BGP/170] 11:00:16, localpref 100, from 100.100.100.2
        AS path: I, validation-state: unverified
        > to 100.64.12.2 via xe-2/2/0.0, label-switched-path R0toR1

```

show route table evpn.evpn.0

```

user@host> show route table evpn.evpn.0

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

3:100.100.100.10:100::0::10::100.100.100.10/384
    *[EVPN/170] 01:37:09
    Indirect
3:100.100.100.2:100::2000::100.100.100.2/304
    *[EVPN/170] 01:37:12
    Indirect

```

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 172.16.5.254 via fxp0.0
10.0.0.1/32        *[Direct/0] 00:51:58
                   > via at-5/3/0.0
10.0.0.2/32        *[Local/0] 00:51:58
                   Local
10.12.12.21/32     *[Local/0] 00:51:57
                   Reject
10.13.13.13/32     *[Direct/0] 00:51:58
                   > via t3-5/2/1.0
10.13.13.14/32     *[Local/0] 00:51:58
                   Local
10.13.13.21/32     *[Local/0] 00:51:58
                   Local
10.13.13.22/32     *[Direct/0] 00:33:59
                   > via t3-5/2/0.0
127.0.0.1/32       [Direct/0] 00:51:58
                   > via lo0.0
10.222.5.0/24      *[Direct/0] 00:51:58
                   > via fxp0.0
10.222.5.81/32     *[Local/0] 00:51:58
                   Local

```

show route table inet.3

```

user@host> show route table inet.3

inet.3: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

10.0.0.5/32        *[LDP/9] 00:25:43, metric 10, tag 200
                   to 10.2.94.2 via lt-1/2/0.49
                   > to 10.2.3.2 via lt-1/2/0.23

```

show route table inet.3 protocol ospf

```

user@host> show route table inet.3 protocol ospf

```



```
inet.3: 9 destinations, 18 routes (9 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.1.1.20/32      [L-OSPF/10] 1d 00:00:56, metric 2
> to 10.0.10.70 via lt-1/2/0.14, Push 800020
  to 10.0.6.60 via lt-1/2/0.12, Push 800020, Push 800030(top)
1.1.1.30/32      [L-OSPF/10] 1d 00:01:01, metric 3
> to 10.0.10.70 via lt-1/2/0.14, Push 800030
  to 10.0.6.60 via lt-1/2/0.12, Push 800030
1.1.1.40/32      [L-OSPF/10] 1d 00:01:01, metric 4
> to 10.0.10.70 via lt-1/2/0.14, Push 800040
  to 10.0.6.60 via lt-1/2/0.12, Push 800040
1.1.1.50/32      [L-OSPF/10] 1d 00:01:01, metric 5
> to 10.0.10.70 via lt-1/2/0.14, Push 800050
  to 10.0.6.60 via lt-1/2/0.12, Push 800050
1.1.1.60/32      [L-OSPF/10] 1d 00:01:01, metric 6
> to 10.0.10.70 via lt-1/2/0.14, Push 800060
  to 10.0.6.60 via lt-1/2/0.12, Pop
```

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 inetcolor.0

```
user@host> show route table inetcolor.0

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

7.7.7.7-7000<c>/64
*[SPRING-TE/8] 00:22:49, metric 1, metric2 10
> to 11.1.1.2 via et-0/0/0.1, Push 801007, Push 801003, Push
```

```

801002(top)
Push 801002(top)
Push 801002(top)
Push 801002(top)
801005(top)
Push 801005(top)
Push 801005(top)
Push 801005(top)
100.90.90.90-7000<c>/64
*[SPRING-TE/8] 00:22:49, metric 1, metric2 10
801002(top)
Push 801002(top)
Push 801002(top)
Push 801002(top)
801005(top)
Push 801005(top)
Push 801005(top)
Push 801005(top)
> to 21.204.1.2 via et-0/0/2.4, Push 801007, Push 801006,
Push 801005(top)

```

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: 64502 Peer AS: 64500
             Age: 4
             Task: BGP_64500.10.12.99.5+3792
             Announcement bits (1): 0-Flow
             AS path: 64500 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: 64502

```

```

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 inetflow.0 extensive (BGP Flowspec Redirect to IP)

```
user@host> show route table inetflow.0 extensive
```

```

inetflow.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
2.2.2.2,*/term:1 (1 entry, 1 announced)
TSI:
KRT in dfwd;
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xb209500 (adv_entry)
Advertised metrics:
Nexthop: 21.1.4.5
Localpref: 100
AS path: [100] I
Communities: redirect-to-ip:21.1.4.5:0
Action(s): accept,count
*Flow Preference: 5
Next hop type: Indirect, Next hop index: 0
Address: 0xa2b931c
Next-hop reference count: 1Next hop:
State: <Active> L
ocal AS: 69
Age: 2
Validation State: unverified
Task: RT Flow
Announcement bits (1): 0-Flow
AS path: I
Communities: redirect-to-ip:21.1.4.5:0

```

```
user@host> show route table inetflow.) extensive
```

```

inetflow.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
2.2.2.2,*/term:1 (1 entry, 1 announced)
TSI:
KRT in dfwd;
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xb209500 (adv_entry)
Advertised metrics:
Nexthop: 21.1.4.5
Localpref: 100
AS path: [100] I
Communities: redirect-to-nexthop
Action(s): accept,count
*Flow Preference: 5
Next hop type: Indirect, Next hop index: 0
Address: 0xa2b931c
Next-hop reference count: 1
Next hop:
State: <Active>
Local AS: 69
Age: 2
Validation State: unverified
Task: RT Flow
Announcement bits (1): 0-Flow
AS path: I
Communities: redirect-to-nexthop

```

```

regress@10.102.178.210> show route table inetflow.0 extensive
inetflow.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
4.4.4.4,*/term:1 (1 entry, 1 announced)
TSI:
KRT in dfwd;
Action(s): accept,count
*BGP Preference: 170/-101
Next hop type: Fictitious, Next hop index: 0
Address: 0xc5e3c30
Next-hop reference count: 3
Next hop: 21.1.4.5
State: <Active Int Ext>
Local AS: 100 Peer AS: 100
Age: 10
Validation State: unverified
Task: BGP_100.1.1.1+179
Announcement bits (1): 0-Flow
AS path: I
Communities: redirect-to-nexthop
Accepted
Localpref: 100
Router ID: 1.1.1.1

```

show route table lsdist.0 extensive

```

user@host> show route table lsdist.0 extensive

lsdist.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
NODE { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 ISIS-L1:0 }/1152
(1 entry, 1 announced)
TSI:
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xa62f378 (adv_entry)
  Advertised metrics:
    Nexthop: Self
    Localpref: 100
    AS path: [4170512532] I
    Communities:
Path NODE { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 ISIS-L1:0 }
Vector len 4. Val: 0
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0x95dfc64
    Next-hop reference count: 9
    State: <Active NotInstall>
    Local AS: 4170512532
    Age: 6:05
    Validation State: unverified
    Task: IS-IS
    Announcement bits (1): 0-BGP_RT_Background
    AS path: I
    IPv4 Router-ids:
      128.220.11.197
    Area membership:
      47 00 05 80 ff f8 00 00 00 01 08 00 01
    SPRING-Capabilities:
      - SRGB block [Start: 800000,
Range: 256, Flags: 0xc0]
    SPRING-Algorithms:
      - Algo: 0
LINK { Local { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 }.{

```

```

IPv4:8.65.1.105 } Remote { AS:4170512532 BGP-LS ID:4170512532 ISO:4284.3300.5067)
TSI:
Page 0 idx 0, (group ibgp type Internal) Type 1 val 0xa62f3cc (adv_entry)
  Advertised metrics:
    Nexthop: Self
    Localpref: 100
    AS path: [4170512532] I
    Communities:
Path LINK { Local { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 }.{
  IPv4:8.65.1.105 } Remote { AS:4170512532 BGP-LS ID:4170512532 ISO:4284.33000
    *IS-IS Preference: 15
      Level: 1
      Next hop type: Fictitious, Next hop index: 0
      Address: 0x95dfc64
      Next-hop reference count: 9
      State: <Active NotInstall>
      Local AS: 4170512532
      Age: 6:05
      Validation State: unverified
      Task: IS-IS
      Announcement bits (1): 0-BGP_RT_Background
      AS path: I
      Color: 32768
      Maximum bandwidth: 1000Mbps
      Reservable bandwidth: 1000Mbps
      Unreserved bandwidth by priority:
        0 1000Mbps
        1 1000Mbps
        2 1000Mbps
        3 1000Mbps
        4 1000Mbps
        5 1000Mbps
        6 1000Mbps
        7 1000Mbps
      Metric: 10
      TE Metric: 10
      LAN IPV4 Adj-SID - Label: 299776, Flags: 0x30,
Weight: 0, Nbr: 10.220.1.83

PREFIX { Node { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 } {
  IPv4:128.220.11.197/32 } ISIS-L1:0 }/1152 (1 entry, 1 announced) TSI: Page 0 idx
  0, (group ibgp type Internal) Type 1 val 0xa62f43c (adv_entry)
    Advertised metrics:
      Nexthop: Self
      Localpref: 100
      AS path: [4170512532] I
      Communities:
Path PREFIX { Node { AS:4170512532 BGP-LS ID:4170512532 ISO:3245.3412.3456.00 }
{ IPv4:128.220.11.197/32 } ISIS-L1:0 } Vector len 4. Val: 0
  *IS-IS Preference: 15
    Level: 1
    Next hop type: Fictitious, Next hop index: 0
    Address: 0x95dfc64
    Next-hop reference count: 9
    State:<Active NotInstall>
    Local AS: 4170512532
    Age: 6:05
    Validation State: unverified
    Task: IS-IS
    Announcement bits (1): 0-BGP_RT_Background

```

AS path: I

Prefix SID: 67, Flags: 0x40, Algo: 0

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 lsdist.0

```

user@host> show route table lsdist.0

lsdist.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

LINK { Local { AS:4 BGP-LS ID:100 IPv4:4.4.4.4 }.{ IPv4:4.4.4.4 } Remote { AS:4
BGP-LS ID:100 IPv4:7.7.7.7 }.{ IPv4:7.7.7.7 } Undefined:0 }/1152
    *[BGP-LS-EPE/170] 00:20:56
    Fictitious
LINK { Local { AS:4 BGP-LS ID:100 IPv4:4.4.4.4 }.{ IPv4:4.4.4.4 IfIndex:339 }
Remote { AS:4 BGP-LS ID:100 IPv4:7.7.7.7 }.{ IPv4:7.7.7.7 } Undefined:0 }/1152
    *[BGP-LS-EPE/170] 00:20:56
    Fictitious
LINK { Local { AS:4 BGP-LS ID:100 IPv4:4.4.4.4 }.{ IPv4:50.1.1.1 } Remote { AS:4
BGP-LS ID:100 IPv4:5.5.5.5 }.{ IPv4:50.1.1.2 } Undefined:0 }/1152
    *[BGP-LS-EPE/170] 00:20:56
    Fictitious

```

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

```

```

1024          Receive
              *[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: 18 destinations, 19 routes (18 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

0          *[MPLS/0] 11:39:56, metric 1
           to table inet.0
0(S=0)     *[MPLS/0] 11:39:56, metric 1
           to table mpls.0
1          *[MPLS/0] 11:39:56, metric 1
           Receive
2          *[MPLS/0] 11:39:56, metric 1
           to table inet6.0
2(S=0)     *[MPLS/0] 11:39:56, metric 1
           to table mpls.0
13         *[MPLS/0] 11:39:56, metric 1
           Receive
303168     *[EVPN/7] 11:00:49, routing-instance pbbn10, route-type
Ingress-MAC, ISID 0
           to table pbbn10.evpn-mac.0
303184     *[EVPN/7] 11:00:53, routing-instance pbbn10, route-type
Ingress-IM, ISID 1000
           to table pbbn10.evpn-mac.0
           [EVPN/7] 11:00:53, routing-instance pbbn10, route-type
Ingress-IM, ISID 2000
           to table pbbn10.evpn-mac.0
303264     *[EVPN/7] 11:00:53, remote-pe 100.100.100.2, routing-instance
pbbn10, route-type Egress-IM, ISID 1000
           > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303280     *[EVPN/7] 11:00:53, remote-pe 100.100.100.2, routing-instance
pbbn10, route-type Egress-IM, ISID 2000
           > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303328     *[EVPN/7] 11:00:49, remote-pe 100.100.100.2, routing-instance
pbbn10, route-type Egress-MAC, ISID 0
           > to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303344     *[EVPN/7] 11:00:49, remote-pe 100.100.100.2, routing-instance

```

```

pbbn10, route-type Egress-MAC, ISID 0
> to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303360      *[EVPN/7] 11:00:47, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC 00:26:88:5f:67:b0
> to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303376      *[EVPN/7] 11:00:47, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC 00:51:51:51:51:51
> to 100.1.12.2 via xe-2/2/0.0, label-switched-path R0toR1
303392      *[EVPN/7] 11:00:35, remote-pe 100.100.100.3, routing-instance
pbbn10, route-type Egress-MAC, ISID 0
> to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2
303408      *[EVPN/7] 11:00:35, remote-pe 100.100.100.3, routing-instance
pbbn10, route-type Egress-MAC, ISID 0
> to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2
303424      *[EVPN/7] 11:00:33, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC a8:d0:e5:5b:01:c8
> to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2
303440      *[EVPN/7] 11:00:33, routing-instance pbbn10, route-type
Egress-MAC, ISID 0, BMAC 00:52:52:52:52:52
> to 100.1.13.3 via ge-2/0/8.0, label-switched-path R0toR2

```

show route table mpls.0 detail (PTX Series)

```

user@host> show route table mpls.0 detail
ge-0/0/2.600 (1 entry, 1 announced)
  *L2VPN Preference: 7
    Next hop type: Indirect
    Address: 0x9438f34
    Next-hop reference count: 2
    Next hop type: Router, Next hop index: 567
    Next hop: 10.0.0.1 via ge-0/0/1.0, selected
    Label operation: Push 299808
    Label TTL action: prop-ttl
    Load balance label: Label 299808:None;
    Session Id: 0x1
    Protocol next hop: 10.255.255.1
    Label operation: Push 299872 Offset: 252
    Label TTL action: no-prop-ttl
    Load balance label: Label 299872:Flow label PUSH;
    Composite next hop: 0x9438ed8 570 INH Session ID: 0x2
    Indirect next hop: 0x9448208 262142 INH Session ID: 0x2
    State: <Active Int>
    Age: 21 Metric2: 1
    Validation State: unverified
    Task: Common L2 VC
    Announcement bits (2): 0-KRT 2-Common L2 VC
    AS path: I

```

show route table mpls.0 ccc ge-0/0/1.1004 detail

```

user@host> show route table mpls.0 ccc ge-0/0/1.1004 detail
mpls.0: 121 destinations, 121 routes (121 active, 0 holddown, 0 hidden)
ge-0/0/1.1004 (1 entry, 1 announced)
  *EVPN Preference: 7
    Next hop type: List, Next hop index: 1048577
    Address: 0xdc14770
    Next-hop reference count: 3

```



```

Next hop: ELNH Address 0xd011e30
  Next hop type: Indirect, Next hop index: 0
  Address: 0xd011e30
  Next-hop reference count: 3
  Protocol next hop: 100.100.100.1
  Label operation: Push 301952
  Composite next hop: 0xd011dc0 754 INH Session ID: 0x146
  Indirect next hop: 0xb69a890 1048615 INH Session ID: 0x146
    Next hop type: Router, Next hop index: 735
    Address: 0xd00e530
    Next-hop reference count: 23
    Next hop: 100.46.1.2 via ge-0/0/5.0
    Label-switched-path pe4_to_pe1
    Label operation: Push 300320
    Label TTL action: prop-ttl
    Load balance label: Label 300320: None;
    Label element ptr: 0xd00e580
    Label parent element ptr: 0x0
    Label element references: 18
    Label element child references: 16
    Label element lsp id: 5
Next hop: ELNH Address 0xd012070
  Next hop type: Indirect, Next hop index: 0
  Address: 0xd012070
  Next-hop reference count: 3
  Protocol next hop: 100.100.100.2
  Label operation: Push 301888
  Composite next hop: 0xd012000 755 INH Session ID: 0x143
  Indirect next hop: 0xb69a9a0 1048641 INH Session ID: 0x143
    Next hop type: Router, Next hop index: 716
    Address: 0xd00e710
    Next-hop reference count: 23
    Next hop: 100.46.1.2 via ge-0/0/5.0
    Label-switched-path pe4_to_pe2
    Label operation: Push 300304
    Label TTL action: prop-ttl
    Load balance label: Label 300304: None;
    Label element ptr: 0xd00e760
    Label parent element ptr: 0x0
    Label element references: 15
    Label element child references: 13
    Label element lsp id: 6
Next hop: ELNH Address 0xd0121f0, selected
  Next hop type: Indirect, Next hop index: 0
  Address: 0xd0121f0
  Next-hop reference count: 3
  Protocol next hop: 100.100.100.3
  Label operation: Push 301984
  Composite next hop: 0xd012180 756 INH Session ID: 0x145
  Indirect next hop: 0xb69aab0 1048642 INH Session ID: 0x145
    Next hop type: Router, Next hop index: 801
    Address: 0xd010ed0
    Next-hop reference count: 32
    Next hop: 100.46.1.2 via ge-0/0/5.0
    Label-switched-path pe4_to_pe3
    Label operation: Push 300336
    Label TTL action: prop-ttl
    Load balance label: Label 300336: None;
    Label element ptr: 0xd0108c0
    Label parent element ptr: 0x0

```

```

Label element references: 22
Label element child references: 20
Label element lsp id: 7
State: < Active Int >
Age: 2:06:50
Validation State: unverified
Task: evpn global task
Announcement bits (1): 1-KRT
AS path: I

```

show route table mpls.0 protocol evpn

```
user@host>show route table mpls.0 protocol evpn
```

```

mpls.0: 121 destinations, 121 routes (121 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

299872          *[EVPN/7] 02:30:58, routing-instance mhevpn, route-type
Ingress-IM, vlan-id 10
                to table mhevpn.evpn-mac.0
300016          *[EVPN/7] 02:30:38, routing-instance VS-1, route-type
Ingress-IM, vlan-id 110
                to table VS-1.evpn-mac.0
300032          *[EVPN/7] 02:30:38, routing-instance VS-1, route-type
Ingress-IM, vlan-id 120
                to table VS-1.evpn-mac.0
300048          *[EVPN/7] 02:30:38, routing-instance VS-1, route-type
Ingress-IM, vlan-id 130
                to table VS-1.evpn-mac.0
300064          *[EVPN/7] 02:30:38, routing-instance VS-2, route-type
Ingress-IM, vlan-id 210
                to table VS-2.evpn-mac.0
300080          *[EVPN/7] 02:30:38, routing-instance VS-2, route-type
Ingress-IM, vlan-id 220
                to table VS-2.evpn-mac.0
300096          *[EVPN/7] 02:30:38, routing-instance VS-2, route-type
Ingress-IM, vlan-id 230
                to table VS-2.evpn-mac.0
300112          *[EVPN/7] 02:27:06, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:44:44:44:44:44:44:44
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300128          *[EVPN/7] 02:29:22, routing-instance mhevpn, route-type
Ingress-Aliasing
                to table mhevpn.evpn-mac.0
300144          *[EVPN/7] 02:27:06, routing-instance VS-1, route-type
Egress-MAC, ESI 00:44:44:44:44:44:44:44
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300160          *[EVPN/7] 02:29:22, routing-instance VS-1, route-type
Ingress-Aliasing
                to table VS-1.evpn-mac.0
300176          *[EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:44:44:44:44:44:44:44
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300192          *[EVPN/7] 02:29:22, routing-instance VS-2, route-type
Ingress-Aliasing
                to table VS-2.evpn-mac.0
300208          *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-IM, vlan-id 120
                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300224          *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance

```

```

mhevpn, route-type Egress-IM, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300240      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-IM, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300256      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-IM, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300272      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-IM, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300288      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-IM, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300304      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-IM, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300320      *[EVPN/7] 02:27:06, routing-instance VS-1, route-type
Egress-MAC, ESI 00:11:11:11:11:11:11:11:11
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300336      *[EVPN/7] 02:27:06, routing-instance VS-1, route-type
Egress-MAC, ESI 00:33:33:33:33:33:33:33:33
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300368      *[EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:33:33:33:33:33:33:33:33
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300384      *[EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:11:11:11:11:11:11:11:11
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300416      *[EVPN/7] 02:27:06, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:33:33:33:33:33:33:33:33
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300432      *[EVPN/7] 02:27:06, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:11:11:11:11:11:11:11:11
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
300480      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300496      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300560      *[EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance

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VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300592 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
300608 * [EVPN/7] 02:29:23
> via ge-0/0/1.1001, Pop
300624 * [EVPN/7] 02:29:23
> via ge-0/0/1.2001, Pop
301232 * [EVPN/7] 02:29:17
> via ge-0/0/1.1002, Pop
301296 * [EVPN/7] 02:29:10
> via ge-0/0/1.1003, Pop
301312 * [EVPN/7] 02:27:06
> via ae10.2003, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301360 * [EVPN/7] 02:29:01
> via ge-0/0/1.1004, Pop
301408 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
vpws1004, route-type Egress, vlan-id 2004
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301456 * [EVPN/7] 02:27:06
> via ae10.1010, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301552 * [EVPN/7] 02:27:07, routing-instance VS-1, route-type
Egress-MAC, ESI 00:22:22:22:22:22:22:22:22
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301568 * [EVPN/7] 02:27:07, routing-instance VS-2, route-type
Egress-MAC, ESI 00:22:22:22:22:22:22:22:22
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301648 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
vpws1010, route-type Egress, vlan-id 2010
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301664 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301680 * [EVPN/7] 02:27:07, remote-pe 100.100.100.2, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
301696 * [EVPN/7] 02:27:07, routing-instance mhevpn, route-type
Egress-MAC, ESI 00:22:22:22:22:22:22:22:22
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301712 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301728 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301744 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-IM, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301760 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
vpws1010, route-type Egress, vlan-id 2010
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301776 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301792 * [EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-IM, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

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301808          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
vpws1004, route-type Egress, vlan-id 2004
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301824          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-IM, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301840          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1002, route-type Egress, vlan-id 2002
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301856          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1003, route-type Egress, vlan-id 2003
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301872          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1003, route-type Egress Protection, vlan-id 2003
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301888          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
vpws1010, route-type Egress Protection, vlan-id 1010
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301904          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-IM, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301920          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-IM, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
301936          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-IM, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301952          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-SH, vlan-id 230
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301968          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-IM, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
301984          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-SH, vlan-id 220
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302000          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-IM, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302016          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-SH, vlan-id 210
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302032          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302048          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302064          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302080          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-2, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302096          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302112          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

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302128          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302144          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302160          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-IM, vlan-id 120
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302176          *[EVPN/7] 02:27:07, remote-pe 100.100.100.1, routing-instance
VS-1, route-type Egress-IM, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302192          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-IM, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302208          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-SH, vlan-id 130
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302224          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-IM, vlan-id 120
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302240          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-SH, vlan-id 120
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302256          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-IM, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302272          *[EVPN/7] 02:27:07, remote-pe 100.100.100.3, routing-instance
VS-1, route-type Egress-SH, vlan-id 110
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302288          *[EVPN/7] 02:27:06, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302304          *[EVPN/7] 02:27:06, remote-pe 100.100.100.1, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302320          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302336          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-MAC
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302352          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
vpws1004, route-type Egress, vlan-id 2004
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302368          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-IM, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302384          *[EVPN/7] 02:27:06, remote-pe 100.100.100.3, routing-instance
mhevpn, route-type Egress-SH, vlan-id 10
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302400          *[EVPN/7] 02:26:21
> via ge-0/0/1.3001, Pop
302432          *[EVPN/7] 02:26:21, remote-pe 100.100.100.3, routing-instance
vpws3001, route-type Egress, vlan-id 40000
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302448          *[EVPN/7] 02:26:21, remote-pe 100.100.100.1, routing-instance
vpws3001, route-type Egress, vlan-id 40000
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302464          *[EVPN/7] 02:26:20, remote-pe 100.100.100.2, routing-instance

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vpws3001, route-type Egress, vlan-id 40000
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302480      *[EVPN/7] 02:26:14
> via ge-0/0/1.3016, Pop
302512      *[EVPN/7] 02:26:14, remote-pe 100.100.100.1, routing-instance
vpws3016, route-type Egress, vlan-id 40016
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302528      *[EVPN/7] 02:26:14, remote-pe 100.100.100.2, routing-instance
vpws3016, route-type Egress, vlan-id 40016
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302560      *[EVPN/7] 02:26:06
> via ae10.3011, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302592      *[EVPN/7] 02:26:07, remote-pe 100.100.100.1, routing-instance
vpws3011, route-type Egress, vlan-id 401100
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302608      *[EVPN/7] 02:26:07, remote-pe 100.100.100.2, routing-instance
vpws3011, route-type Egress, vlan-id 401100
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302624      *[EVPN/7] 02:26:07, remote-pe 100.100.100.3, routing-instance
vpws3011, route-type Egress Protection, vlan-id 301100
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302656      *[EVPN/7] 02:25:59
> via ae10.3006, Pop
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302688      *[EVPN/7] 02:26:00, remote-pe 100.100.100.2, routing-instance
vpws3006, route-type Egress, vlan-id 400600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
302704      *[EVPN/7] 02:26:00, remote-pe 100.100.100.1, routing-instance
vpws3006, route-type Egress, vlan-id 400600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
302720      *[EVPN/7] 02:25:59, remote-pe 100.100.100.3, routing-instance
vpws3006, route-type Egress, vlan-id 400600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
302736      *[EVPN/7] 02:25:59, remote-pe 100.100.100.3, routing-instance
vpws3006, route-type Egress Protection, vlan-id 300600
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ge-0/0/1.1001      *[EVPN/7] 02:29:23
> via ge-0/0/1.2001
ge-0/0/1.2001      *[EVPN/7] 02:29:23
> via ge-0/0/1.1001
ge-0/0/1.1002      *[EVPN/7] 02:27:06
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ae10.2003          *[EVPN/7] 02:29:10
> via ge-0/0/1.1003
ge-0/0/1.1003      *[EVPN/7] 02:27:06
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
> via ae10.2003
ge-0/0/1.1004      *[EVPN/7] 02:27:06
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ae10.1010          *[EVPN/7] 02:27:06
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
ge-0/0/1.3001      *[EVPN/7] 02:26:20
> to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

```

```

                                to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2
ge-0/0/1.3016                    to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
                                *[EVPN/7] 02:26:13
                                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
ae10.3011                       *[EVPN/7] 02:26:06
                                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1
ae10.3006                       *[EVPN/7] 02:25:59
                                > to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe1

                                to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe2

                                to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3

```

show route table mpls.0 protocol ospf

```

user@host> show route table mpls.0 protocol ospf

mpls.0: 29 destinations, 29 routes (29 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

299952          *[L-OSPF/10] 23:59:42, metric 0
                > to 10.0.10.70 via lt-1/2/0.14, Pop
                  to 10.0.6.60 via lt-1/2/0.12, Swap 800070, Push 800030(top)
299952(S=0)     *[L-OSPF/10] 23:59:42, metric 0
                > to 10.0.10.70 via lt-1/2/0.14, Pop
                  to 10.0.6.60 via lt-1/2/0.12, Swap 800070, Push 800030(top)
299968          *[L-OSPF/10] 23:59:48, metric 0
                > to 10.0.6.60 via lt-1/2/0.12, Pop

```

show route table mpls.0 extensive (PTX Series)

```

user@host> show route table mpls.0 extensive

ge-0/0/2.600 (1 entry, 1 announced)
TSI:
KRT in-kernel ge-0/0/2.600.0      /32 -> {composite(570)}
    *L2VPN Preference: 7
      Next hop type: Indirect
      Address: 0x9438f34
      Next-hop reference count: 2
      Next hop type: Router, Next hop index: 567
      Next hop: 10.0.0.1 via ge-0/0/1.0, selected
      Label operation: Push 299808
      Label TTL action: prop-ttl
      Load balance label: Label 299808:None;
      Session Id: 0x1
      Protocol next hop: 10.255.255.1
      Label operation: Push 299872 Offset: 252
      Label TTL action: no-prop-ttl
      Load balance label: Label 299872:Flow label PUSH;
      Composite next hop: 0x9438ed8 570 INH Session ID: 0x2
      Indirect next hop: 0x9448208 262142 INH Session ID: 0x2
      State: <Active Int>
      Age: 47          Metric2: 1
      Validation State: unverified
      Task: Common L2 VC
      Announcement bits (2): 0-KRT 2-Common L2 VC
      AS path: I

```



```

Composite next hops: 1
  Protocol next hop: 10.255.255.1 Metric: 1
  Label operation: Push 299872 Offset: 252
  Label TTL action: no-prop-ttl
  Load balance label: Label 299872:Flow label PUSH;
  Composite next hop: 0x9438ed8 570 INH Session ID: 0x2
  Indirect next hop: 0x9448208 262142 INH Session ID: 0x2
  Indirect path forwarding next hops: 1
    Next hop type: Router
    Next hop: 10.0.0.1 via ge-0/0/1.0
    Session Id: 0x1
  10.255.255.1/32 Originating RIB: inet.3
  Metric: 1 Node path count: 1
  Forwarding nexthops: 1
    Nexthop: 10.0.0.1 via ge-0/0/1.0

```

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 10.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
300352(S=0) *[RSVP/7/1] 00:08:00, metric 1
            > to 10.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
300384     *[RSVP/7/2] 00:05:20, metric 1
            > to 10.64.1.106 via ge-1/0/0.0, Pop
300384(S=0) *[RSVP/7/2] 00:05:20, metric 1
            > to 10.64.1.106 via ge-1/0/0.0, Pop

```

show route table vpls_1 detail

```
user@host> show route table vpls_1 detail
```

```

vpls_1.12vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Restart Complete

172.16.1.11:1000:1:1/96 (1 entry, 1 announced)
*L2VPN Preference: 170/-1
Receive table: vpls_1.12vpn.0
Next-hop reference count: 2
State: <Active Int Ext>
Age: 4:29:47 Metric2: 1
Task: vpls_1-12vpn
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
192.168.16.1:1:1:1/96
    *[VPN/7] 05:48:27
    Discard
192.168.24.1:1:2:1/96
    *[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
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

```

```

1:10.255.2.202:65536:10.255.2.202/432
                  *[BGP/170] 00:02:37, localpref 100, from 10.255.2.202
                  AS path: I
                  > via so-0/1/3.0
1:10.255.2.203:65536:10.255.2.203/432
                  *[BGP/170] 00:02:37, localpref 100, from 10.255.2.203
                  AS path: I
                  > via so-0/1/0.0
1:10.255.2.204:65536:10.255.2.204/432
                  *[MVPN/70] 00:57:23, metric2 1
                  Indirect
5:10.255.2.202:65536:128:::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

```

```

6:10.255.2.203:65536:64500:128:::10.12.53.12:128:ffff::1/432
    *[PIM/105] 00:02:37
        Multicast (IPv6)
7:10.255.2.202:65536:64500:128:::192.168.90.2:128:ffff::1/432
    *[MVPN/70] 00:02:37, metric2 1
        Indirect

```

show route table vrf1.mvpn.0 extensive

```

user@host> show route table vrf1.mvpn.0 extensive

1:10.255.50.77:1:10.255.50.77/240 (1 entry, 1 announced)
    *MVPN    Preference: 70
        PMSI: Flags 0x0: Label 0: RSVP-TE:
Session_13[10.255.50.77:0:25624:10.255.50.77]
    Next hop type: Indirect
    Address: 0xbb2c944
    Next-hop reference count: 360
    Protocol next hop: 10.255.50.77
    Indirect next hop: 0x0 - INH Session ID: 0x0
    State: <Active Int Ext>
    Age: 53:03      Metric2: 1
    Validation State: unverified
    Task: mvpn global task
    Announcement bits (3): 0-PIM.vrf1 1-mvpn global task 2-rt-export

    AS path: I

```

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: 64502 Peer AS: 64500
        Age: 4
        Task: BGP_64500.10.12.99.5+3792
        Announcement bits (1): 0-Flow
        AS path: 64500 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: 64502
        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@host> 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
```

```
10.1.1.2:100:10.1.1.2/96 AD
    *[VPLS/170] 1d 03:11:03, metric2 1
    Indirect
10.1.1.4:100:10.1.1.4/96 AD
    *[BGP/170] 1d 03:11:02, localpref 100, from 10.1.1.4
    AS path: I, validation-state: unverified
    > via ge-1/2/1.5
10.1.1.2:100:1:0/96 MH
    *[VPLS/170] 1d 03:11:03, metric2 1
    Indirect
10.1.1.4:100:1:0/96 MH
    *[BGP/170] 1d 03:11:02, localpref 100, from 10.1.1.4
    AS path: I, validation-state: unverified
    > via ge-1/2/1.5
10.1.1.4:NoCtrlWord:5:100:100:10.1.1.2:10.1.1.4/176
    *[VPLS/7] 1d 03:11:02, metric2 1
    > via ge-1/2/1.5
10.1.1.4:NoCtrlWord:5:100:100:10.1.1.4:10.1.1.2/176
    *[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)
```

```
10.0.0.0/32 (3 entries, 1 announced)
    State: <OnList CalcForwarding>
```

```
TSI:
```

```
KRT in-kernel 10.0.0.0/32 -> {composite(1048575)} Page 0 idx 1 Type 1 val 0x934342c
```

```
    Nexthop: Self
    AS path: [2] I
    Communities: target:2:1
Path 10.0.0.0 from 10.3.0.0 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: 10.2.0.0
    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_172.16.2.0.0+34549
    AS path: I
```

```

Communities: target:2:1
Import Accepted
VPN Label: 16
Localpref: 0
Router ID: 10.2.0.0
Primary Routing Table bgp.13vpn.0
Composite next hops: 1
    Protocol next hop: 10.2.0.0 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
BGP Preference: 170/-1
Route Distinguisher: 2:1
Next hop type: Indirect
Address: 0x9347028
Next-hop reference count: 3
Source: 10.3.0.0
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: 10.3.0.0
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_172.16.3.0.0+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: 10.3.0.0
Primary Routing Table bgp.13vpn.0
Composite next hops: 1
    Protocol next hop: 10.3.0.0 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

```

```

10.3.0.0/32 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: 10.2.0.0
Push 16
Composite next hop: 0x25805988 - INH Session ID: 0x193c
Indirect next hop: 0x23eea900 - INH Session ID: 0x193c Weight 0x1

Protocol next hop: 10.3.0.0
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 table bgp.evpn.0 extensive |no-more (EVPN)

```

show route table bgp.evpn.0 extensive | no-more

bgp.evpn.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
2:1000:10::100::00:aa:aa:aa:aa:aa/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS: 17 Peer AS:17 Age:21:12 Metric2:1 Validation State:
unverified
    Task: BGP_17.1.2.3.4+50756
    AS path: I
    Communities: target:1111:8388708 encapsulation0:0:0:0:3
    Import Accepted
    Route Label: 100
    ESI: 00:00:00:00:00:00:00:00
    Localpref: 100
    Router ID: 10.2.3.4

```

```

Secondary Tables: default-switch.evpn.0
Indirect next hops: 1
  Protocol next hop: 10.2.3.4 Metric: 1
  Indirect next hop: 0x2 no-forward INH Session ID: 0x0
  Indirect path forwarding next hops: 1
    Next hop type: Router
    Next hop: 10.10.10.1 via xe-0/0/1.0
    Session Id: 0x2
  1.2.3.4/32 Originating RIB: inet.0
    Metric: 1                      Node path count: 1
    Forwarding nexthops: 2
      Nexthop: 10.92.78.102 via em0.0

2:1000:10::200::00:bb:bb:bb:bb:bb/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS:17 Peer AS:17 Age:19:43 Metric2:1 Validation
State:unverified
    Task: BGP_17.1.2.3.4+50756
    AS path: I
    Communities: target:2222:22 encapsulation0:0:0:0:3
    Import Accepted
    Route Label: 200
    ESI: 00:00:00:00:00:00:00:00:00:00
    Localpref: 100
    Router ID: 10.2.3.4
    Secondary Tables: default-switch.evpn.0
    Indirect next hops: 1
      Protocol next hop: 10.2.3.4 Metric: 1
      Indirect next hop: 0x2 no-forward INH Session ID: 0x0
      Indirect path forwarding next hops: 1
        Next hop type: Router
        Next hop: 10.10.10.1 via xe-0/0/1.0
        Session Id: 0x2
      10.2.3.4/32 Originating RIB: inet.0
        Metric: 1                      Node path count: 1
        Forwarding nexthops: 2
          Nexthop: 10.92.78.102 via em0.0

2:1000:10::300::00:cc:cc:cc:cc:cc/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS:17 Peer AS:17 Age:17:21 Metric2:1 Validation State:
unverified Task: BGP 17,1,2,3,4+50756
    AS path: I
    Communities: target:3333:33 encapsulation0:0:0:0:3
    Import Accepted
    Route Label: 300

```



```

ESI: 00:00:00:00:00:00:00:00:00
Localpref: 100
Router ID: 10.2.3.4
Secondary Tables: default-switch.evpn.0
Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
        Next hop type: Router
        Next hop: 10.10.10.1 via xe-0/0/1.0
        Session Id: 0x2
    10.2.3.4/32 Originating RIB: inet.0
        Metric: 1 Node path count: 1
        Forwarding nexthops: 2
        Nexthop: 10.92.78.102 via em0.0

3:1000:10::100::1.2.3.4/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    PMSI: Flags 0x0: Label 100: Type INGRESS-REPLICATION 1.2.3.4
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS:17 Peer AS:17 Age:37:01 Metric2:1 Validation State:
unverified Task: BGP 17.1.2.3.4+50756
    AS path: I
    Communities: target:1111:8388708 encapsulation0:0:0:0:3
    Import Accepted
    Localpref: 100
    Router ID: 10.2.3.4
    Secondary Tables: default-switch.evpn.0
    Indirect next hops: 1
        Protocol next hop: 10.2.3.4 Metric: 1
        Indirect next hop: 0x2 no-forward INH Session ID: 0x0
        Indirect path forwarding next hops: 1
            Next hop type: Router
            Next hop: 10.10.10.1 via xe-0/0/1.0
            Session Id: 0x2
        10.2.3.4/32 Originating RIB: inet.0
            Metric: 1 Node path count: 1
            Forwarding nexthops: 2
            Nexthop: 10.92.78.102 via em0.0

3:1000:10::200::1.2.3.4/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
    Route Distinguisher: 1000:10
    PMSI: Flags 0x0: Label 200: Type INGRESS-REPLICATION 1.2.3.4
    Next hop type: Indirect
    Address: 0x9420fd0
    Next-hop reference count: 12
    Source: 10.2.3.4
    Protocol next hop: 10.2.3.4
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    State: Local AS: 17 Peer AS: 17 Age:35:22 Metric2:1 Validation
State:unverified Task: BGP 17.1.2.3.4+50756
    AS path:I Communities: target:2222:22 encapsulation):0:0:0:0:3

```

```

Import Accepted
  Localpref: 100
  Router ID: 10.2.3.4
  Secondary Tables: default-switch.evpn.0
  Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
      Next hop type: Router
      Next hop: 10.10.10.1 via xe-0/0/1.0
      Session Id: 0x2
    10.2.3.4/32 Originating RIB: inet.0
      Metric: 1 Node path count: 1
      Forwarding nexthops: 2
        Nexthop: 10.92.78.102 via em0.0

3:1000:10::300::1.2.3.4/304 (1 entry, 0 announced)
  *BGP Preference: 170/-101
  Route Distinguisher: 1000:10
  PMSI: Flags 0x0: Label 300: Type INGRESS-REPLICATION 1.2.3.4
  Next hop type: Indirect
  Address: 0x9420fd0
  Next-hop reference count: 12
  Source: 10.2.3.4
  Protocol next hop: 10.2.3.4
  Indirect next hop: 0x2 no-forward INH Session ID: 0x0
  State: Local AS: 17 Peer AS: 17 Age 35:22 Metric2:1 Validation State:
unverified Task: BGP 17.1.2.3.4+5075
  6 AS path: I Communities: target:3333:33 encapsulation0:0:0:0:3
Import Accepted Localpref:100
  Router ID: 10.2.3.4
  Secondary Tables: default-switch.evpn.0
  Indirect next hops: 1
    Protocol next hop: 10.2.3.4 Metric: 1
    Indirect next hop: 0x2 no-forward INH Session ID: 0x0
    Indirect path forwarding next hops: 1
      Next hop type: Router
      Next hop: 10.10.10.1 via xe-0/0/1.0
      Session Id: 0x2
    10.2.3.4/32 Originating RIB: inet.0
      Metric: 1 Node path count: 1
      Forwarding nexthops: 2
        Nexthop: 10.92.78.102 via em0.0

```

show route table default-switch.evpn.0 extensive

The following shows the partial output listing for the EVPN VNI table.

```
user@host> show route table default-switch.evpn.0 extensive
```

```

3:1000:10::100::00:aa:aa:aa:aa:aa/304 (1 entry, 1 announced)
  *BGP Preference: 170/-101
  Route Distinguisher: 10.255.0.1:00
  PMSI: Flags 0x0: Label 100: Type INGRESS-REPLICATION 1.2.3.4
  Next hop type: Indirect, Next hop index: 0
  Address: 0xcebfad0
  Next-hop reference count: 26
  Source: 10.255.0.1
  Protocol next hop: 10.255.0.1
  Indirect next hop: 0x2 no-forward INH Session ID: 0x0

```

```

        State: <Secondary Active Int Ext>
Local AS: 100 Peer AS: 100
Age: 1:35:30 Metric2: 2
Validation State: unverified
Task: BGP_100.10.255.0.1
Announcement bits (1): 0-default-switch-evpn
AS path: I
Communities: target:100:100 encapsulation:vxlan (0x8)
evpn-mcast-flags:0x1:snooping-enabled
. . .

```

show route table evpn1.evpn-mcsn

The following shows the output listing for the multicast information used by the rpd and mcsnoopd.

```

user@host> show route table default-switch.evpn-mcsn.1
default-switch.evpn-mcsn.1: 9 destinations, 9 routes (9 active, 0 holddown, 0
hidden)
+ = Active Route, - = Last Active, * = Both

0.14,0.0,0.0/48      *[Multicast/180] 00:01:02
                    to 1.1.1.1 via vtep.32770
                    to 1.2.2.2 via vtep.32771
                    to 1.6.6.6 via vtep.32769
                    to 1.3.3.3 via vtep.32772
0.14,0.0,0.0,224.0.0.0/52*[Multicast/180] 00:01:02
                    to 1.1.1.1 via vtep.32770
                    to 1.2.2.2 via vtep.32771
                    to 1.6.6.6 via vtep.32769
0.14,0.0,0.0,225.1.1.1/80*[Multicast/180] 00:00:06
                    to 1.1.1.1 via vtep.32770
                    to 1.2.2.2 via vtep.32771
                    to 1.6.6.6 via vtep.32769
                    to 1.3.3.3 via vtep.32772

```

show route table evpn1 (Multihomed Proxy MAC and IP Address)

The following shows a partial output listing for an EVPN instance. This indicates when Multihomed Proxy MAC and IP Address Route Advertisement is enabled.

```

user@host> show route table evpn-1
2:666:11010003::1002::00:00:00:00:00:02::102.1.1.2/304 MAC/IP (1 entry, 1
announced)
TSI:
Page 0 idx 0, (group vteps type Internal) Type 1 val 0xb20eb10 (adv_entry)
  Advertised metrics:
    Nexthop: 103.1.1.1
    Localpref: 100
    AS path: [666] I
Communities: target:666:1002 evpn-12-info:0x20:proxy (mtu 0)
Path 2:666:11010003::1002::00:00:00:00:00:02::102.1.1.2 Vector len 4. Val: 0
  *EVPN Preference: 170
    Next hop type: Indirect, Next hop index: 0
    Address: 0xc3a9cf0
    Next-hop reference count: 36
    Protocol next hop: 103.1.1.1

```

Indirect next hop: 0x0 - INH Session ID: 0x0
State: <Active Int Ext>

show route terse

List of Syntax [Syntax on page 669](#)
[Syntax \(EX Series Switches\) on page 669](#)

Syntax `show route terse`
`<logical-system (all | logical-system-name)>`

Syntax (EX Series Switches) `show route terse`

Release Information Command introduced before Junos OS Release 7.4.
 Command introduced in Junos OS Release 9.0 for EX Series switches.

Description Display a high-level summary of the routes in the routing table.



NOTE: For BGP routes, the `show route terse` command displays the local preference attribute and MED instead of the metric1 and metric2 values. This is mostly due to historical reasons.

To display the metric1 and metric2 value of a BGP route, use the [show route extensive](#) command.

Options **none**—Display a high-level summary of the routes in the routing table.

logical-system (all | *logical-system-name*)—(Optional) Perform this operation on all logical systems or on a particular logical system.

Required Privilege Level view

List of Sample Output [show route terse on page 671](#)

Output Fields [Table 27 on page 439](#) describes the output fields for the `show route terse` command. Output fields are listed in the approximate order in which they appear.

Table 48: 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.

Table 48: show route terse Output Fields (continued)

Field Name	Field Description
<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"> • active (routes that are active) • holddown (routes that are in the pending state before being declared inactive) • hidden (routes that are not used because of a routing policy)
<i>route key</i>	Key for the state of the route: <ul style="list-style-type: none"> • +—A plus sign indicates the active route, which is the route installed from the routing table into the forwarding table. • -—A hyphen indicates the last active route. • *—An asterisk indicates that the route is both the active and the last active route. An asterisk before a to line indicates the best subpath to the route.
A	Active route. An asterisk (*) indicates this is the active route.
V	Validation status of the route: <ul style="list-style-type: none"> • ?—Not evaluated. Indicates that the route was not learned through BGP. • I—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. • N—Unknown. Indicates that the prefix is not among the prefixes or prefix ranges in the database. • V—Valid. Indicates that the prefix and autonomous system pair are found in the database.
<i>Destination</i>	Destination of the route.
P	Protocol through which the route was learned: <ul style="list-style-type: none"> • A—Aggregate • B—BGP • C—CCC • D—Direct • G—GMPLS • I—IS-IS • L—L2CKT, L2VPN, LDP, Local • K—Kernel • M—MPLS, MSDP • O—OSPF • P—PIM • R—RIP, RIPng • S—Static • T—Tunnel
Prf	Preference value of the route. In every routing metric except for the BGP LocalPref attribute, a lesser value is preferred. In order to use common comparison routines, Junos OS stores the 1's complement of the LocalPref value in the Preference2 field. For example, if the LocalPref value for Route 1 is 100, the Preference2 value is -101. If the LocalPref value for Route 2 is 155, the Preference2 value is -156. Route 2 is preferred because it has a higher LocalPref value and a lower Preference2 value.

Table 48: show route terse Output Fields (continued)

Field Name	Field Description
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.
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"> I—IGP. E—EGP. ?—Incomplete; typically, the AS path was aggregated.

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
* ? 172.16.1.1/32    0 10      1          >10.0.0.2
?                               B 170      100          I
  unverified                               >10.0.0.2
* ? 172.16.1.1/32    D 0      0          >10.0.2
* V 2.2.0.2/32       B 170      110          200 I
  valid                               >10.0.0.2
* ? 10.0.0.0/30      D 0      0          >10.0.0.1
?                               B 170      100          I
  unverified                               >10.0.0.2
* ? 10.0.0.1/32      L 0      0          Local
* ? 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
* ? 172.16.233.5/32  0 10      1          MultiRecv
```

test policy

Syntax	<code>test policy <i>policy-name</i> <i>prefix</i></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Test a policy configuration to determine which prefixes match routes in the routing table.
	<div>  <p>NOTE: If you are using the <code>test policy</code> command on a logical system, you must first set the CLI to the logical system context. For example, if you want to test a routing policy that is configured on logical system R2, first run the <code>set cli logical-system R2</code> command.</p> </div>
Options	<p><i>policy-name</i>—Name of a policy.</p> <p><i>prefix</i>—Destination prefix to match.</p>
Additional Information	<p>All prefixes in the default unicast routing table (inet.0) that match prefixes that are the same as or longer than the specific prefix are processed by the from clause in the specified policy. All prefixes accepted by the policy are displayed. The test policy command evaluates a policy differently from the BGP import process. When testing a policy that contains an interface match condition in the from clause, the test policy command uses the match condition. In contrast, BGP does not use the interface match condition when evaluating the policy against routes learned from internal BGP (IBGP) or external BGP (EGBP) multihop peers.</p> <p>When testing a policy, you can see the length of time (in microseconds) required to evaluate the policy and the number of times it has been executed by running the <code>show policy <i>policy-name</i> statistics</code> command.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • Understanding Routing Policy Tests • Example: Testing a Routing Policy with Complex Regular Expressions on page 119 • show policy on page 229
List of Sample Output	test policy on page 673

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

test policy

```
user@host> test policy test-statics 172.16.0.1/8

inet.0: 44 destinations, 44 routes (44 active, 0 holddown, 0 hidden)
Prefixes passing policy:

172.16.3.0/8      *[BGP/170] 16:22:46, localpref 100, from 10.255.255.41
                  AS Path: 50888 I
                  > to 10.11.4.32 via en0.2, label-switched-path l2
172.16.3.1/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
172.16.3.2/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
172.16.3.3/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
172.16.3.4/32    *[IS-IS/18] 2d 00:21:46, metric 0, tag 2
                  > to 10.0.4.7 via fxp0.0
Policy test-statics: 5 prefixes accepted, 0 prefixes rejected
```

