



Junos[®] OS

RIPng Feature Guide



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Junos® OS RIPng Feature Guide

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Table of Contents

	About the Documentation	xi
	Documentation and Release Notes	xi
	Supported Platforms	xi
	Using the Examples in This Manual	xi
	Merging a Full Example	xii
	Merging a Snippet	xii
	Documentation Conventions	xiii
	Documentation Feedback	xv
	Requesting Technical Support	xv
	Self-Help Online Tools and Resources	xv
	Opening a Case with JTAC	xvi
Part 1	Overview	
Chapter 1	Introduction to RIPng	3
	RIPng Overview	3
	RIPng Protocol Overview	3
	RIPng Standards	4
	RIPng Packets	4
	Supported RIP and RIPng Standards	5
Part 2	Configuring RIPng	
Chapter 2	Configuring a Basic RIPng Network	9
	Understanding Basic RIPng Routing	9
	Example: Configuring a Basic RIPng Network	9
Chapter 3	Applying Policies to RIPng Routes	17
	Understanding RIPng Import Policies to Filter Routes	17
	Example: Applying Policies to RIPng Routes Imported from Neighbors	17
	Example: Testing a Routing Policy with Complex Regular Expressions	23
Chapter 4	Configuring Traffic Control with Metrics in a RIPng Network	31
	Understanding RIPng Traffic Control with Metrics for Optimizing the Path	
	Cost	31
	Example: Configuring the Metric Value Added to Imported RIPng Routes to	
	Control the Route Selection Process	32
Chapter 5	Configuring RIPng Timers	39
	Understanding RIP Timers	39
	Example: Configuring RIPng Update Interval	40

Chapter 6	Tracing RIPng Protocol Traffic	47
	Understanding RIPng Protocol Traffic Trace Operations	47
	Example: Tracing Global Routing Protocol Operations	48
	Example: Tracing RIPng Protocol Traffic	52
Part 3	Troubleshooting	
Chapter 7	Troubleshooting Network Issues	59
	Working with Problems on Your Network	59
	Isolating a Broken Network Connection	60
	Identifying the Symptoms of a Broken Network Connection	61
	Isolating the Causes of a Network Problem	62
	Taking Appropriate Action for Resolving the Network Problem	63
	Evaluating the Solution to Check Whether the Network Problem Is Resolved	64
	Identifying the Symptoms of a Broken Network Connection	65
	Isolating the Causes of a Network Problem	66
	Taking Appropriate Action for Resolving the Network Problem	67
	Evaluating the Solution to Check Whether the Network Problem Is Resolved . . .	67
Part 4	Configuration Statements and Operational Commands	
Chapter 8	Configuration Statements	71
	export (Protocols RIPng)	72
	graceful-restart (Protocols RIPng)	73
	group (Protocols RIPng)	74
	holddown (Protocols RIPng)	75
	import (Protocols RIPng)	76
	metric-in (Protocols RIPng)	77
	metric-out (Protocols RIPng)	78
	neighbor (Protocols RIPng)	79
	preference (Protocols RIPng)	80
	receive (Protocols RIPng)	81
	ripng	82
	route-timeout (Protocols RIPng)	83
	routing-instances (Multiple Routing Entities)	84
	send (Protocols RIPng)	85
	traceoptions (Protocols RIPng)	86
	update-interval (Protocols RIPng)	88
Chapter 9	Operational Commands	89
	clear ripng general-statistics	91
	clear ripng statistics	92
	restart	93
	show policy	103
	show policy conditions	106
	show ripng general-statistics	108
	show ripng neighbor	110
	show ripng statistics	112
	show route	115

show route active-path	133
show route advertising-protocol	138
show route all	143
show route best	145
show route brief	148
show route detail	150
show route exact	170
show route export	172
show route extensive	175
show route forwarding-table	193
show route hidden	210
show route inactive-path	213
show route instance	217
show route next-hop	225
show route output	231
show route protocol	236
show route receive-protocol	249
show route table	258
show route terse	296
test policy	299

List of Figures

Part 2	Configuring RIPng	
Chapter 2	Configuring a Basic RIPng Network	9
	Figure 1: Sample RIPng Network Topology	10
Chapter 3	Applying Policies to RIPng Routes	17
	Figure 2: RIPng Import Policy Network Topology	18
	Figure 3: Routing Policy Test for Complex Regular Expressions	25
Chapter 4	Configuring Traffic Control with Metrics in a RIPng Network	31
	Figure 4: RIPng Incoming Metrics Network Topology	33
Chapter 5	Configuring RIPng Timers	39
	Figure 5: RIPng Timers Network Topology	41
Chapter 6	Tracing RIPng Protocol Traffic	47
	Figure 6: RIPng Trace Operations Network Topology	53
Part 3	Troubleshooting	
Chapter 7	Troubleshooting Network Issues	59
	Figure 7: Process for Diagnosing Problems in Your Network	60
	Figure 8: Network with a Problem	60

List of Tables

	About the Documentation	xi
	Table 1: Notice Icons	xiii
	Table 2: Text and Syntax Conventions	xiv
Part 3	Troubleshooting	
Chapter 7	Troubleshooting Network Issues	59
	Table 3: Checklist for Working with Problems on Your Network	59
Part 4	Configuration Statements and Operational Commands	
Chapter 9	Operational Commands	89
	Table 4: show policy Output Fields	104
	Table 5: show policy conditions Output Fields	106
	Table 6: show ripng general-statistics Output Fields	108
	Table 7: show ripng neighbor Output Fields	110
	Table 8: show ripng statistics Output Fields	113
	Table 9: show route Output Fields	116
	Table 10: show route advertising-protocol Output Fields	139
	Table 11: show route detail Output Fields	150
	Table 12: Next-hop Types Output Field Values	156
	Table 13: State Output Field Values	158
	Table 14: Communities Output Field Values	160
	Table 15: show route export Output Fields	173
	Table 16: show route extensive Output Fields	175
	Table 17: show route forwarding-table Output Fields	196
	Table 18: show route instance Output Fields	218
	Table 19: show route receive-protocol Output Fields	250
	Table 20: show route table Output Fields	259
	Table 21: Next-hop Types Output Field Values	265
	Table 22: State Output Field Values	266
	Table 23: Communities Output Field Values	268
	Table 24: show route terse Output Fields	296

About the Documentation

- [Documentation and Release Notes on page xi](#)
- [Supported Platforms on page xi](#)
- [Using the Examples in This Manual on page xi](#)
- [Documentation Conventions on page xiii](#)
- [Documentation Feedback on page xv](#)
- [Requesting Technical Support on page xv](#)

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 <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

Supported Platforms

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

- [ACX Series](#)
- [SRX Series](#)
- [T Series](#)
- [MX Series](#)
- [M Series](#)

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming

configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

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

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

Merging a Full Example

To merge a full example, follow these steps:

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

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

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

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

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

Merging a Snippet

To merge a snippet, follow these steps:

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

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

```
commit {
  file ex-script-snippet.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 xiii 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 xiv 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 [<i>community-ids</i>]
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.	

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

Convention	Description	Examples
GUI Conventions		
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

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <http://www.juniper.net/techpubs/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <http://www.juniper.net/techpubs/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 J-Care or Partner Support Service 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 <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

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- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes: <http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications: <http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum: <http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

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

Opening a Case with JTAC

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

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

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

PART 1

Overview

- [Introduction to RIPvng on page 3](#)

CHAPTER 1

Introduction to RIPng

- [RIPng Overview on page 3](#)
- [Supported RIP and RIPng Standards on page 5](#)

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 3](#)
- [RIPng Standards on page 4](#)
- [RIPng Packets on page 4](#)

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 IGPs 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).

Related Documentation

- [RIP Overview](#)
- [Example: Configuring a Basic RIPng Network on page 9](#)

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*

Related Documentation

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

PART 2

Configuring RIPng

- [Configuring a Basic RIPng Network on page 9](#)
- [Applying Policies to RIPng Routes on page 17](#)
- [Configuring Traffic Control with Metrics in a RIPng Network on page 31](#)
- [Configuring RIPng Timers on page 39](#)
- [Tracing RIPng Protocol Traffic on page 47](#)

CHAPTER 2

Configuring a Basic RIPng Network

- [Understanding Basic RIPng Routing on page 9](#)
- [Example: Configuring a Basic RIPng Network on page 9](#)

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.

Related Documentation

- [RIPng Overview on page 3](#)
- [Example: Configuring a Basic RIPng Network on page 9](#)

Example: Configuring a Basic RIPng Network

This example shows how to configure a basic RIPng network.

- [Requirements on page 9](#)
- [Overview on page 9](#)
- [Configuration on page 10](#)
- [Verification on page 12](#)

Requirements

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

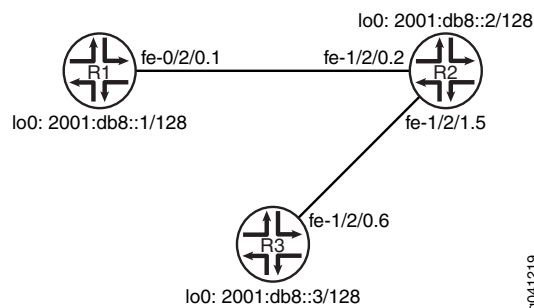
Overview

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 1 on page 10](#) shows the topology used in this example.

Figure 1: Sample RIPng Network Topology



[“CLI Quick Configuration” on page 10](#) shows the configuration for all of the devices in [Figure 1 on page 10](#). The section [“Step-by-Step Procedure” on page 11](#) 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	<pre> 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 </pre>
Device R2	<pre> 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 </pre>

```
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 13](#)
- [Checking the Interface Addresses on page 13](#)
- [Looking at the Routes That Device R1 Is Advertising to Device R2 on page 14](#)
- [Verifying the RIPng-Enabled Interfaces on page 14](#)
- [Looking at the Routes That Device R1 Is Receiving from Device R2 on page 14](#)
- [Verifying the Exchange of RIPng Messages on page 15](#)
- [Verifying Reachability of All Hosts in the RIPng Network on page 16](#)

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

- *Understanding Basic RIP Routing*
- *RIP Configuration Overview*

CHAPTER 3

Applying Policies to RIPvng Routes

- [Understanding RIPvng Import Policies to Filter Routes on page 17](#)
- [Example: Applying Policies to RIPvng Routes Imported from Neighbors on page 17](#)
- [Example: Testing a Routing Policy with Complex Regular Expressions on page 23](#)

Understanding RIPvng Import Policies to Filter Routes

The default RIPvng import policy is to accept all received RIPvng 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.

Related Documentation

- [Example: Applying Policies to RIPvng Routes Imported from Neighbors on page 17](#)

Example: Applying Policies to RIPvng Routes Imported from Neighbors

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

- [Requirements on page 17](#)
- [Overview on page 17](#)
- [Configuration on page 18](#)
- [Verification on page 21](#)

Requirements

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

Overview

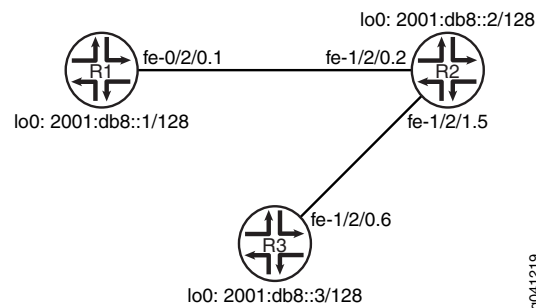
In this example, Device R2 has several extra loopback interface addresses configured to simulate additional networks.

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 2 on page 18](#) shows the topology used in this example.

Figure 2: RIPng Import Policy Network Topology



“[CLI Quick Configuration](#)” on [page 18](#) shows the configuration for all of the devices in [Figure 2 on page 18](#). The section “[Step-by-Step Procedure](#)” on [page 19](#) 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	<pre> 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 </pre>
Device R2	<pre> 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 </pre>

```

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 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
```

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 21](#)
- [Looking at the Routes That Device R2 Is Advertising to Device R1 on page 22](#)
- [Looking at the Routes That Device R1 Is Receiving from Device R2 on page 22](#)
- [Checking the Routing Table on page 22](#)

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
                  > to fe80::2a0:a514:0:24c via fe-1/2/0.1
2001:db8::3/128    *[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.

Related Documentation

- [Understanding RIPng Import Policies to Filter Routes on page 17](#)

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 23](#)
- [Overview on page 23](#)
- [Configuration on page 25](#)
- [Verification on page 29](#)

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].*$";

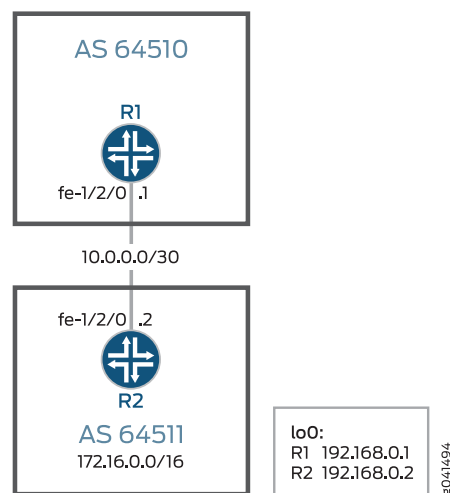
```

This regular expression matches community values beginning with either 1 or 3.

Topology

Figure 3 on page 25 shows the sample network.

Figure 3: Routing Policy Test for Complex Regular Expressions



"CLI Quick Configuration" on page 25 shows the configuration for all of the devices in Figure 3 on page 25.

The section "Step-by-Step Procedure" on page 26 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
```

2. 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

```

3. 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*

CHAPTER 4

Configuring Traffic Control with Metrics in a RIPng Network

- [Understanding RIPng Traffic Control with Metrics for Optimizing the Path Cost on page 31](#)
- [Example: Configuring the Metric Value Added to Imported RIPng Routes to Control the Route Selection Process on page 32](#)

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.

Related Documentation

- [Example: Configuring the Metric Value Added to Imported RIPng Routes to Control the Route Selection Process on page 32](#)

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 32](#)
- [Overview on page 32](#)
- [Configuration on page 33](#)
- [Verification on page 36](#)

Requirements

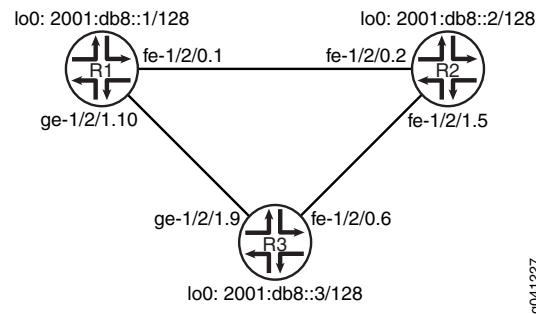
No special configuration beyond device initialization is required before configuring this example.

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 4 on page 33](#) shows the topology used in this example.

Figure 4: 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 33 shows the configuration for all of the devices in [Figure 4](#) on page 33. The section “[Step-by-Step Procedure](#)” on page 34 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 inet 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 36](#)
- [Removing the metric-in Statement on page 36](#)

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	<ol style="list-style-type: none">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# commit2. 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:a0:a514:0:24c/128. The metric for this route is 2.

Related Documentation

- [Understanding RIPng Traffic Control with Metrics for Optimizing the Path Cost on page 31](#)

CHAPTER 5

Configuring RIPng Timers

- [Understanding RIP Timers on page 39](#)
- [Example: Configuring RIPng Update Interval on page 40](#)

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.

Release History Table

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

Related Documentation

- [Example: Configuring RIP Timers](#)
- [Example: Configuring RIP Demand Circuits](#)

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 40](#)
- [Overview on page 40](#)
- [Configuration on page 41](#)
- [Verification on page 44](#)

Requirements

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

Overview

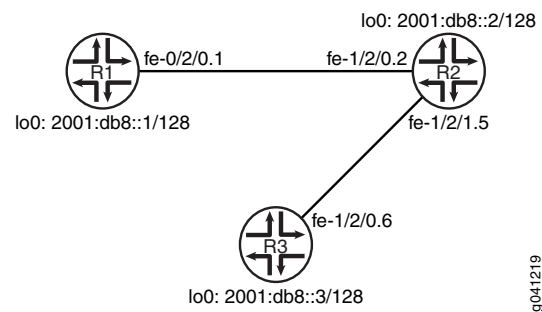
In this example, Device R2 has an update interval of 60 seconds for its neighbor Device R1, and an update interval of 10 seconds for its neighbor Device R3.

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 5 on page 41](#) shows the topology used in this example.

Figure 5: RIPng Timers Network Topology



“CLI Quick Configuration” on page 41 shows the configuration for all of the devices in Figure 5 on page 41. The section “Step-by-Step Procedure” on page 42 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 44](#)
- [Checking the RIPng Updates Received by Device R2 on page 45](#)
- [Checking the RIPng Updates Received by Device R3 on page 45](#)

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.

Related Documentation

- [Understanding RIP Timers on page 39](#)

CHAPTER 6

Tracing RIPng Protocol Traffic

- [Understanding RIPng Protocol Traffic Trace Operations on page 47](#)
- [Example: Tracing Global Routing Protocol Operations on page 48](#)
- [Example: Tracing RIPng Protocol Traffic on page 52](#)

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.

**Related
Documentation**

- [Example: Tracing RIPng Protocol Traffic on page 52](#)
- [Example: Tracing Global Routing Protocol Operations on page 48.](#)

Example: Tracing Global Routing Protocol Operations

This example shows how to list and view files that are created when you enable global routing trace operations.

- [Requirements on page 48](#)
- [Overview on page 49](#)
- [Configuration on page 49](#)
- [Verification on page 52](#)

Requirements

You must have the **view** privilege.

Overview

To configure global routing protocol tracing, include the **traceoptions** statement at the **[edit routing-options]** hierarchy level:

```
traceoptions {
  file filename <files number> <size size> <world-readable | no-world-readable>;
  flag flag <disable>;
}
```

The flags in a **traceoptions flag** statement are identifiers. When you use the **set** command to configure a flag, any flags that might already be set are not modified. In the following example, setting the **timer** tracing flag has no effect on the already configured **task** flag. Use the **delete** command to delete a particular flag.

```
[edit routing-options traceoptions]
user@host# show
flag task;
user@host# set traceoptions flag timer
user@host# show
flag task;
flag timer;
user@host# delete traceoptions flag task
user@host# show
flag timer;
```

This example shows how to configure and view a trace file that tracks changes in the routing table. The steps can be adapted to apply to trace operations for any Junos OS hierarchy level that supports trace operations.



TIP: To view a list of hierarchy levels that support tracing operations, enter the **help apropos traceoptions** command in configuration mode.

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.

```
set routing-options traceoptions file routing-table-changes
set routing-options traceoptions file size 10m
set routing-options traceoptions file files 10
set routing-options traceoptions flag route
set routing-options static route 1.1.1.2/32 next-hop 10.0.45.6
```

Configuring Trace Operations

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 trace operations:

1. Configure trace operations.

```
[edit routing-options traceoptions]
user@host# set file routing-table-changes
user@host# set file size 10m
user@host# set file files 10
user@host# set flag route
```

2. Configure a static route to cause a change in the routing table.

```
[edit routing-options static]
user@host# set route 1.1.1.2/32 next-hop 10.0.45.6
```

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

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

Viewing the Trace File

Step-by-Step Procedure To view the trace file:

1. In operational mode, list the log files on the system.

```
user@host> file list /var/log
/var/log:
...
routing-table-changes
...
```

2. View the contents of the **routing-table-changes** file.

```
user@host> file show /var/log/routing-table-changes
Dec 15 11:09:29 trace_on: Tracing to "/var/log/routing-table-changes" started
Dec 15 11:09:29.496507
Dec 15 11:09:29.496507 Tracing flags enabled: route
Dec 15 11:09:29.496507
Dec 15 11:09:29.533203 inet_routerid_notify: Router ID: 192.168.4.1
Dec 15 11:09:29.533334 inet_routerid_notify: No Router ID assigned
Dec 15 11:09:29.533381 inet_routerid_notify: No Router ID assigned
Dec 15 11:09:29.533420 inet_routerid_notify: No Router ID assigned
Dec 15 11:09:29.534915 inet_routerid_notify: Router ID: 192.168.4.1
Dec 15 11:09:29.542934 inet_routerid_notify: No Router ID assigned
Dec 15 11:09:29.549253 inet_routerid_notify: No Router ID assigned
Dec 15 11:09:29.556878 inet_routerid_notify: No Router ID assigned
```

```
Dec 15 11:09:29.582990 rt_static_reinit: examined 3 static nexthops, 0
unreferenced
Dec 15 11:09:29.589920
Dec 15 11:09:29.589920 task_reconfigure reinitializing done
...
```

3. Filter the output of the log file.

```
user@host> file show /var/log/routing-table-changes | match 1.1.1.2
Dec 15 11:15:30.780314 ADD      1.1.1.2/32          nhid 0 gw 10.0.45.6
      Static   pref 5/0 metric at-0/2/0.0 <ctive Int Ext>
Dec 15 11:15:30.782276 KRT Request: send len 216 v104 seq 0 ADD route/user
af 2 table 0 infot 0 addr 1.1.1.2 nhop-type unicast nhindex 663
```

4. View the tracing operations in real time by running the **monitor start** command with an optional **match** condition.

```
user@host> monitor start routing-table-changes | match 1.1.1.2
Aug 10 19:21:40.773467 BGP RECV      0.0.0.0/0
Aug 10 19:21:40.773685 bgp_rcv_nlri: 0.0.0.0/0
Aug 10 19:21:40.773778 bgp_rcv_nlri: 0.0.0.0/0 belongs to meshgroup
Aug 10 19:21:40.773832 bgp_rcv_nlri: 0.0.0.0/0 qualified bnp->ribact 0x0
12afcb 0x0
```

5. Deactivate the static route.

```
user@host# deactivate routing-options static route 1.1.1.2/32
user@host# commit

*** routing-table-changes ***
Dec 15 11:42:59.355557 CHANGE  1.1.1.2/32          nhid 663 gw 10.0.45.6
      Static   pref 5/0 metric at-0/2/0.0 <Delete Int Ext>
Dec 15 11:42:59.426887 KRT Request: send len 216 v104 seq 0 DELETE route/user
af 2 table 0 infot 0 addr 1.1.1.2 nhop-type discard filtidx 0
Dec 15 11:42:59.427366 RELEASE 1.1.1.2/32          nhid 663 gw 10.0.45.6
      Static   pref 5/0 metric at-0/2/0.0 <Release Delete Int Ext>
```

6. Halt the **monitor** command by pressing Enter and typing **monitor stop**.

```
[Enter]
user@host> monitor stop
```

7. When you are finished troubleshooting, consider deactivating trace logging to avoid any unnecessary impact to system resources.

When configuration is deactivated, it appears in the configuration with the **inactive** tag.

```
[edit routing-options]
user@host# deactivate traceoptions
user@host# commit

[edit routing-options]
user@host# show

inactive: traceoptions {
  file routing-table-changes size 10m files 10;
  flag route;
```

```
}
static {
    inactive: route 1.1.1.2/32 next-hop 10.0.45.6;
}
```

8. To reactivate trace operations, use the **activate** configuration-mode statement.

```
[edit routing-options]
user@host# activate traceoptions
user@host# commit
```

Results

From configuration mode, confirm your configuration by entering the **show routing-options** command. If the output does not display the intended configuration, repeat the instructions in this example to correct the configuration.

```
user@host# show routing-options
traceoptions {
    file routing-table-changes size 10m files 10;
    flag route;
}
static {
    route 1.1.1.2/32 next-hop 10.0.45.6;
}
```

Verification

Confirm that the configuration is working properly.

Verifying That the Trace Log File Is Operating

Purpose Make sure that events are being written to the log file.

Action user@host> **show log routing-table-changes**
Dec 15 11:09:29 trace_on: Tracing to "/var/log/routing-table-changes" started

Related Documentation

- [Understanding Global Routing Protocol Tracing Operations](#)
- [CLI Explorer](#)

Example: Tracing RIPng Protocol Traffic

This example shows how to trace RIPng protocol operations.

- [Requirements on page 53](#)
- [Overview on page 53](#)

- [Configuration on page 53](#)
- [Verification on page 56](#)

Requirements

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

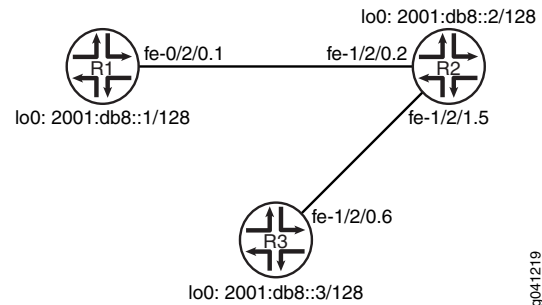
Overview

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 6 on page 53](#) shows the topology used in this example.

Figure 6: RIPng Trace Operations Network Topology



[“CLI Quick Configuration” on page 53](#) shows the configuration for all of the devices in [Figure 6 on page 53](#). The section [“Step-by-Step Procedure” on page 54](#) 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	<pre> 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 </pre>

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.

Related Documentation

- [Understanding RIPng Protocol Traffic Trace Operations on page 47](#)

PART 3

Troubleshooting

- [Troubleshooting Network Issues on page 59](#)

CHAPTER 7

Troubleshooting Network Issues

- [Working with Problems on Your Network on page 59](#)
- [Isolating a Broken Network Connection on page 60](#)
- [Identifying the Symptoms of a Broken Network Connection on page 65](#)
- [Isolating the Causes of a Network Problem on page 66](#)
- [Taking Appropriate Action for Resolving the Network Problem on page 67](#)
- [Evaluating the Solution to Check Whether the Network Problem Is Resolved on page 67](#)

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.

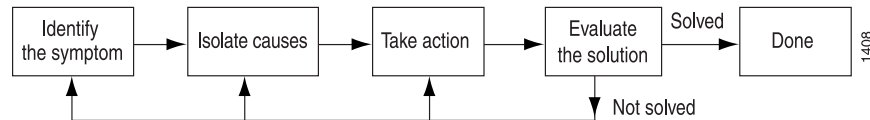
Table 3: Checklist for Working with Problems on Your Network

Tasks	Command or Action
“Isolating a Broken Network Connection” on page 60	
1. Identifying the Symptoms of a Broken Network Connection on page 61	<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 62	<code>show < configuration interfaces protocols route ></code>
3. Taking Appropriate Action for Resolving the Network Problem on page 63	<code>[edit]</code> <code>delete routing options static route destination-prefix</code> <code>commit and-quit</code> <code>show route destination-prefix</code>
4. Evaluating the Solution to Check Whether the Network Problem Is Resolved on page 64	<code>show route (ip-address hostname)</code> <code>ping (ip-address hostname) count 3</code> <code>tracert (ip-address hostname)</code>

Isolating a Broken Network Connection

By applying the standard four-step process illustrated in [Figure 7 on page 60](#), 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.

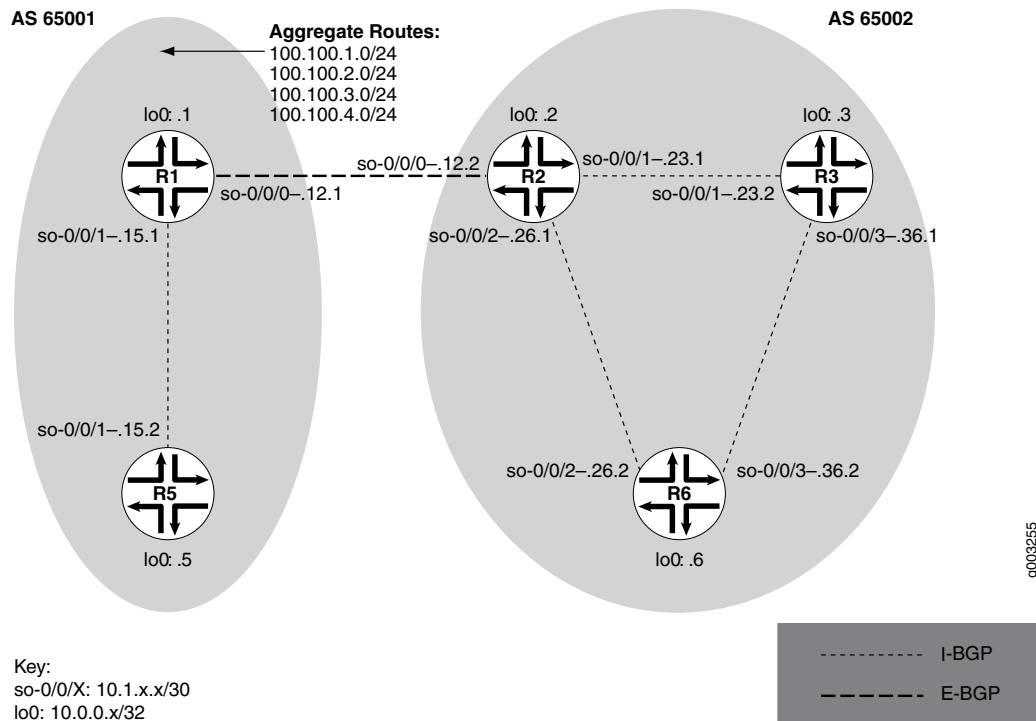
Figure 7: Process for Diagnosing Problems in Your Network



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 8 on page 60](#) shows the network topology used in this topic to illustrate the process of diagnosing problems in a network.

Figure 8: Network with a Problem



The network in [Figure 8 on page 60](#) 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 these steps:

1. [Identifying the Symptoms of a Broken Network Connection on page 61](#)
2. [Isolating the Causes of a Network Problem on page 62](#)
3. [Taking Appropriate Action for Resolving the Network Problem on page 63](#)
4. [Evaluating the Solution to Check Whether the Network Problem Is Resolved on page 64](#)

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   up   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   up   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   up   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 60](#), 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).

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 60](#), 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).

PART 4

Configuration Statements and Operational Commands

- Configuration Statements on page 71
- Operational Commands on page 89

CHAPTER 8

Configuration Statements

- [export \(Protocols RIPng\) on page 72](#)
- [graceful-restart \(Protocols RIPng\) on page 73](#)
- [group \(Protocols RIPng\) on page 74](#)
- [holddown \(Protocols RIPng\) on page 75](#)
- [import \(Protocols RIPng\) on page 76](#)
- [metric-in \(Protocols RIPng\) on page 77](#)
- [metric-out \(Protocols RIPng\) on page 78](#)
- [neighbor \(Protocols RIPng\) on page 79](#)
- [preference \(Protocols RIPng\) on page 80](#)
- [receive \(Protocols RIPng\) on page 81](#)
- [ripng on page 82](#)
- [route-timeout \(Protocols RIPng\) on page 83](#)
- [routing-instances \(Multiple Routing Entities\) on page 84](#)
- [send \(Protocols RIPng\) on page 85](#)
- [traceoptions \(Protocols RIPng\) on page 86](#)
- [update-interval \(Protocols RIPng\) on page 88](#)

export (Protocols RIPng)

Syntax	<code>export [<i>policy-names</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>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	<code>routing</code> —To view this statement in the configuration. <code>routing-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• import on page 76

graceful-restart (Protocols RIPng)

Syntax	<pre>graceful-restart { disable; restart-time <i>seconds</i>; }</pre>
Hierarchy Level	[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]
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	Configure graceful restart for RIPng.
Options	disable —Disables graceful restart for RIPng. 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>Junos OS High Availability Library for Routing Devices</i>

group (Protocols RIPng)

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], [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	<p>Configure a set of RIPng 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. routing-control—To add this statement to the configuration.</p>

holddown (Protocols RIPng)

Syntax	<code>holddown seconds;</code>
Hierarchy Level	[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]
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	Configure how long the expired route is retained in the routing table before being removed.
Options	seconds —Estimated time to wait before removing expired routes from the routing table. Default: 180 seconds Range: 10 through 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 RIPng Update Interval on page 40

import (Protocols RIPng)

Syntax	<code>import [<i>policy-names</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> protocols ripng group <i>group-name</i> neighbor</code> <code> <i>neighbor-name</i>],</code> <code>[edit logical-systems <i>logical-system-name</i> routing-instances <i>routing-instance-name</i> protocols</code> <code> ripng],</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> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols ripng],</code> <code>[edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols ripng],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols ripng group <i>group-name</i> neighbor</code> <code> <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. Support for routing instances introduced in Junos OS Release 9.0.
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	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: Applying Policies to RIPng Routes Imported from Neighbors on page 17• export on page 72

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 32

metric-out (Protocols RIPng)

Syntax	<code>metric-out <i>metric</i>;</code>
Hierarchy Level	<code>[edit logical-systems <i>logical-system-name</i> protocols ripng 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 ripng group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>],</code> <code>[edit routing-instances <i>routing-instance-name</i> protocols ripng 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. Support for routing instances introduced in Junos OS Release 9.0.
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	<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.
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 32• Understanding RIPng Traffic Control with Metrics for Optimizing the Path Cost on page 31

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	<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	Configure neighbor-specific RIPng parameters, thereby overriding the defaults set for the routing device.
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	[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>]
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	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

receive (Protocols RIPng)

Syntax	<code>receive <none>;</code>
Hierarchy Level	<p>[edit logical-systems <i>logical-system-name</i> protocols ripng],</p> <p>[edit logical-systems <i>logical-system-name</i> protocols ripng 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 ripng],</p> <p>[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>],</p> <p>[edit protocols ripng],</p> <p>[edit protocols ripng group <i>group-name</i> neighbor <i>neighbor-name</i>],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols ripng],</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols ripng 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>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 85

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	[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]
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 route timeout interval for RIPng.
Options	<i>seconds</i> —Estimated time to wait before making updates to the routing table. Range: 30 through 360 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 RIPng Update Interval on page 40

routing-instances (Multiple Routing Entities)

Syntax	<code>routing-instances <i>routing-instance-name</i> { ... }</code>
Hierarchy Level	[edit], [edit logical-systems <i>logical-system-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
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 : character cannot be used when multiprotocol routing (MTR) is enabled.</p>
Default	Routing instances are disabled for the router.
Options	<i>routing-instance-name</i> —Name of the routing instance. This must be a non-reserved string of not more than 128 characters.
Required Privilege Level	<code>routing</code> —To view this statement in the configuration. <code>routing-control</code> —To add this statement to the configuration.

- Related Documentation**
- *Example: Configuring Interprovider Layer 3 VPN Option A*
 - *Example: Configuring Interprovider Layer 3 VPN Option B*
 - *Example: Configuring Interprovider Layer 3 VPN Option C*

send (Protocols RIPng)

Syntax	send <none>;
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-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> 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 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	<ul style="list-style-type: none"> • receive on page 81

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	[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]
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	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 RIPvng packets
- **request**—RIPvng information packets such as request, poll, and poll entry packets
- **trigger**—RIPvng triggered updates
- **update**—RIPvng 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 52](#)

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](#)

CHAPTER 9

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 91 Syntax (EX Series Switches) on page 91
Syntax	clear ripng general-statistics <logical-system (all <i>logical-system-name</i>)>
Syntax (EX Series Switches)	clear ripng general-statistics
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) general statistics.
Options	none —Clear RIPng general statistics. logical-system (all <i>logical-system-name</i>) —(Optional) Perform this operation on all logical systems or on a particular logical system.
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • show ripng general-statistics on page 108
List of Sample Output	clear ripng general-statistics on page 91
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 92 Syntax (EX Series Switch) on page 92
Syntax	clear ripng statistics < <i>instance</i> <i>name</i> > <logical-system (all <i>logical-system-name</i>)>
Syntax (EX Series Switch)	clear ripng statistics < <i>instance</i> <i>name</i> >
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 <i>logical-system-name</i>) —(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 112
List of Sample Output	clear ripng statistics on page 92
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 93](#)
 - [Syntax \(ACX Series Routers\) on page 93](#)
 - [Syntax \(EX Series Switches\) on page 93](#)
 - [Syntax \(MX Series Routers\) on page 94](#)
 - [Syntax \(QFX Series\) on page 94](#)
 - [Syntax \(Routing Matrix\) on page 94](#)
 - [Syntax \(TX Matrix Routers\) on page 94](#)
 - [Syntax \(TX Matrix Plus Routers\) on page 95](#)
 - [Syntax \(QFX Series\) on page 95](#)

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-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-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 | 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-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)**

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>
```

Syntax (TX Matrix Plus Routers)

```
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>
```

Syntax (QFX Series)

```
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>
```

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 11.1 for the QFX Series.
 Command introduced in Junos OS Release 12.2 for ACX Series routers.
 Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
 Options added:

- **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 Release 8.0.
- **pgcp-service** in Junos OS Release 8.4.
- **sbc-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.

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.

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-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 102](#)

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 103 Syntax (EX Series Switches) on page 103
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 299
List of Sample Output	show policy on page 104 show policy policy-name on page 104 show policy statistics policy-name on page 104 show policy (Multicast Scoping) on page 105 show policy (Route Filter and source Address Filter Lists) on page 105

Output Fields Table 4 on page 104 lists the output fields for the **show policy** command. Output fields are listed in the approximate order in which they appear.

Table 4: 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 107
Output Fields	<p>Table 5 on page 106 lists the output fields for the show policy conditions command. Output fields are listed in the approximate order in which they appear.</p>

Table 5: 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
Dependent routes	List of routes dependent on the condition, along with the latest generation number.	detail

Table 5: show policy conditions Output Fields (*continued*)

Field Name	Field Description	Level of Output
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 108 Syntax (EX Series Switch) on page 108
Syntax	show ripng general-statistics <logical-system (all <i>logical-system-name</i>)>
Syntax (EX Series Switch)	show ripng general-statistics
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display general RIP next-generation (RIPng) statistics.
Options	none —Display general RIPng statistics. logical-system (all <i>logical-system-name</i>) —(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"> • clear ripng general-statistics on page 91
List of Sample Output	show ripng general-statistics on page 109
Output Fields	Table 6 on page 108 lists the output fields for the show ripng general-statistics command. Output fields are listed in the approximate order in which they appear.

Table 6: 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 110 Syntax (EX Series Switch) on page 110
Syntax	<pre>show ripng neighbor <logical-system (all <i>logical-system-name</i>)> <name></pre>
Syntax (EX Series Switch)	<pre>show ripng neighbor <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 information about RIP next-generation (RIPng) neighbors.
Options	<p>none—Display information about all RIPng 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>name—(Optional) Display detailed information about a specific RIPng neighbor.</p>
Required Privilege Level	view
List of Sample Output	show ripng neighbor on page 111
Output Fields	<p>Table 7 on page 110 lists the output fields for the show ripng neighbor command. Output fields are listed in the approximate order in which they appear.</p>

Table 7: 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 7: 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 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 112 Syntax (EX Series Switch) on page 112
Syntax	show ripng statistics <logical-system (all <i>logical-system-name</i>)> < <i>name</i> >
Syntax (EX Series Switch)	show ripng statistics < <i>name</i> >
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
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	none —Display RIPng statistics for all neighbors. logical-system (all <i>logical-system-name</i>) —(Optional) Perform this operation on all logical systems or on a particular logical system. <i>name</i> —(Optional) Display detailed information about a specific RIPng neighbor.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none">• clear ripng statistics on page 92
List of Sample Output	show ripng statistics on page 113
Output Fields	Table 8 on page 113 lists the output fields for the show ripng statistics command. Output fields are listed in the approximate order in which they appear.

Table 8: 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 115](#)
 [Syntax \(EX Series Switches\) on page 115](#)

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 119](#)
[show route \(VPN\) on page 120](#)
[show route \(with Destination Prefix\) on page 120](#)
[show route destination-prefix detail on page 120](#)
[show route extensive on page 120](#)
[show route extensive \(ECMP\) on page 121](#)
[show route extensive \(Multipath Resolution\) on page 121](#)
[show route \(Enhanced Subscriber Management\) on page 122](#)
[show route \(IPv6 Flow Specification\) on page 122](#)
[show route display-client-data detail on page 123](#)
[show route te-ipv4-prefix-ip on page 123](#)
[show route te-ipv4-prefix-ip extensive on page 124](#)
[show route te-ipv4-prefix-node-iso on page 126](#)
[show route te-ipv4-prefix-node-iso extensive on page 127](#)
[show route te-ipv4-prefix-node-iso detail on page 129](#)

Output Fields [Table 9 on page 116](#) describes the output fields for the **show route** command. Output fields are listed in the approximate order in which they appear.

Table 9: show route Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).
<i>number destinations</i>	Number of destinations for which there are routes in the routing table.

Table 9: show route 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). 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>	<p>How long the route been known (for example, 2w4d 13:11:14, or 2 weeks, 4 days, 13 hours, 11 minutes, and 14 seconds).</p>
<i>metric</i>	<p>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.</p>

Table 9: show route Output Fields (*continued*)

Field Name	Field Description
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, V4OV6 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 9: 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 172.16.0.0/12

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

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

show route 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: 0XXXXXXXXXX
    Next-hop reference count: YY
    Next hop: 172.16.50.2 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: 12.1.1.2 via ge-2/0/1.0, selected
    Session Id: 0x144
    Next hop: 13.1.1.2 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: 12.1.1.2 via ge-2/0/1.0
        Session Id: 0x144
        Next hop: 13.1.1.2 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: 12.1.1.2 via ge-2/0/1.0
Nexthop: 13.1.1.2 via ge-2/0/2.0

```

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:100 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:100 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:100 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:100 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:100 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:100 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:100 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:100 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:100 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
lsdist.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: 100
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:100 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: 100
    Age: 7:58
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0xe0, Algo: 0>

PREFIX { Node { AS:100 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: 100
        Age: 7:58
        Validation State: unverified
        Task: IS-IS
        AS path: I
        Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
      Age: 7:58
      Validation State: unverified
      Task: IS-IS
      AS path: I
      Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
      Age: 7:58
      Validation State: unverified
      Task: IS-IS
      AS path: I
      Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
      Age: 7:58
      Validation State: unverified
      Task: IS-IS
      AS path: I
      Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
Age: 7:58
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
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
lsdist.0: 283 destinations, 283 routes (283 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

PREFIX { Node { AS:100 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:100 ISO:0100.0a0a.0a0a.00 } { IPv4:1.1.1.1/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious
PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:2.2.2.2/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious

```

```

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:3.3.3.3/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious
PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:4.4.4.4/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious
PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:5.5.5.5/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious
PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:6.6.6.6/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious
PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:7.7.7.7/32 } ISIS-L2:0
}/1152
    *[IS-IS/18] 00:05:20
    Fictitious
PREFIX { Node { AS:100 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:100 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:1.1.1.1/32 } 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1001, Flags: 0xe0, Algo: 0

```

```
PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:2.2.2.2/32 } 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1002, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:3.3.3.3/32 } 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1003, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:4.4.4.4/32 } 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1004, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:5.5.5.5/32 } 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: 100
    Age: 6:47
    Validation State: unverified
```



```

Task: IS-IS
AS path: I
Prefix SID: 1005, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:6.6.6.6/32 } 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1006, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:7.7.7.7/32 } 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: 100
    Age: 6:47
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1007, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 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: 100
    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:100 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: 100
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1000, Flags: 0x40, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:1.1.1.1/32 } 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: 100
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1001, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:2.2.2.2/32 } 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: 100
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1002, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:3.3.3.3/32 } 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: 100
Age: 6:54
Validation State: unverified
Task: IS-IS
AS path: I
Prefix SID: 1003, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:4.4.4.4/32 } 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: 100
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1004, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:5.5.5.5/32 } 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: 100
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1005, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:6.6.6.6/32 } 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: 100
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I
    Prefix SID: 1006, Flags: 0xe0, Algo: 0

PREFIX { Node { AS:100 ISO:0100.0a0a.0a0a.00 } { IPv4:7.7.7.7/32 } 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: 100
    Age: 6:54
    Validation State: unverified
    Task: IS-IS
    AS path: I

```

```
Prefix SID: 1007, Flags: 0xe0, Algo: 0
PREFIX { Node { AS:100 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: 100
    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 133 Syntax (EX Series Switches) on page 133
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 133 show route active-path brief on page 134 show route active-path detail on page 134 show route active-path extensive on page 135 show route active-path terse on page 137
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 133](#).

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			>lo0.0	
*	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	show route advertising-protocol <i>protocol neighbor-address</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)>
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	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.
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	show route advertising-protocol bgp (Layer 3 VPN) on page 141 show route advertising-protocol bgp detail on page 141 show route advertising-protocol bgp detail (Labeled Unicast) on page 141

[show route advertising-protocol bgp detail \(Layer 2 VPN\) on page 142](#)
[show route advertising-protocol bgp detail \(Layer 3 VPN\) on page 142](#)
[show route advertising-protocol bgp extensive all \(Next Hop Self with RIB-out IP Address\) on page 142](#)

Output Fields Table 10 on page 139 lists the output fields for the **show route advertising-protocol** command. Output fields are listed in the approximate order in which they appear.

Table 10: 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 10: 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 142.</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 10: 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 (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.l2vpn.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 143 Syntax (EX Series Switches) on page 143
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	<p>Display information about all routes in all routing tables, including private, or internal, tables.</p>
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	<p>view</p>
Related Documentation	<ul style="list-style-type: none"> • show route brief on page 148 • show route detail on page 150
List of Sample Output	show route all on page 143
Output Fields	<p>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.</p>

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
```

```

1          Receive
          *[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 145 Syntax (EX Series Switches) on page 145
Syntax	show route best <i>destination-prefix</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)>
Syntax (EX Series Switches)	show route best <i>destination-prefix</i> <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.
Description	Display the route in the routing table that is the best route to the specified address or range of addresses. The best route is the longest matching route.
Options	<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 148 • show route detail on page 150
List of Sample Output	show route best on page 145 show route best detail on page 146 show route best extensive on page 147 show route best terse on page 147
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 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 146](#).

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           0           >fxp2.0
                   D   0           0           >fxp1.0

```

show route brief

List of Syntax	Syntax on page 148 Syntax (EX Series Switches) on page 148
Syntax	<code>show route brief</code> <code><destination-prefix></code> <code><logical-system (all logical-system-name)></code>
Syntax (EX Series Switches)	<code>show route brief</code> <code><destination-prefix></code>
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 143• show route best on page 145
List of Sample Output	show route brief on page 148
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 100.0
```

```

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 150 Syntax (EX Series Switches) on page 150
Syntax	show route detail <destination-prefix> <logical-system (all logical-system-name)>
Syntax (EX Series Switches)	show route detail <destination-prefix>
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 13.2X51-D15 for the QFX Series. Command introduced in Junos OS Release 14.1X53-D20 for the OCX Series.
Description	Display detailed information about the active entries in the routing tables.
Options	none —Display all active entries in the routing table on all systems. 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
List of Sample Output	show route detail on page 161 show route detail (with BGP Multipath) on page 167 show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 168 show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 168
Output Fields	Table 11 on page 150 describes the output fields for the show route detail command. Output fields are listed in the approximate order in which they appear.

Table 11: 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 11: 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 11: show route detail Output Fields (*continued*)

Field Name	Field Description
<code>[protocol, preference]</code>	<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 11: 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 12 on page 156 .
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 13 on page 158 .
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 11: 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, <i>n-Resolve inet</i> indicates that the specified route is used for route resolution for next hops found in the routing table. <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 11: 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 14 on page 160 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 11: 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 12 on page 156](#) describes all possible values for the Next-hop Types output field.

Table 12: Next-hop Types Output Field Values

Next-Hop Type	Description
Broadcast (bcast)	Broadcast next hop.
Deny	Deny next hop.
Discard	Discard next hop.

Table 12: 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	Routing table next hop.

Table 12: Next-hop Types Output Field Values (*continued*)

Next-Hop Type	Description
Unicast (ucst)	Unicast.
Unilist (ulst)	List of unicast next hops. A packet sent to this next hop goes to any next hop in the list.

Table 13 on page 158 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 13: State Output Field Values

Value	Description
Accounting	Route needs accounting.
Active	Route is active.
Always Compare MED	Path with a lower multiple exit discriminator (MED) is available.
AS path	Shorter AS path is available.
Cisco Non-deterministic MED selection	Cisco nondeterministic MED is enabled, and a path with a lower MED is available.
Clone	Route is a clone.
Cluster list length	Length of cluster list sent by the route reflector.
Delete	Route has been deleted.
Ex	Exterior route.
Ext	BGP route received from an external BGP neighbor.
FlashAll	Forces all protocols to be notified of a change to any route, active or inactive, for a prefix. When not set, protocols are informed of a prefix only when the active route changes.
Hidden	Route not used because of routing policy.
IfCheck	Route needs forwarding RPF check.
IGP metric	Path through next hop with lower IGP metric is available.
Inactive reason	Flags for this route, which was not selected as best for a particular destination.
Initial	Route being added.

Table 13: State Output Field Values (*continued*)

Value	Description
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 programmatically 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.
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.

Table 13: State Output Field Values (*continued*)

Value	Description
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 14 on page 160 describes the possible values for the Communities output field.

Table 14: 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 <i>area-number:ospf-route-type:options</i> .
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 <i>area-number:ospf-route-type:options</i> .

Table 14: Communities Output Field Values (*continued*)

Value	Description
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-kerne 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.12vpn.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-12vpn

```

```

AS path: I
Communities: target:11111:1 Layer2-info: encaps:VPLS,
control flags:, mtu: 0
Label-base: 800008, range: 8
Localpref: 100
Router ID: 10.255.70.103
Primary Routing Table bgp.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: l2 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 exact

List of Syntax	Syntax on page 170 Syntax (EX Series Switches) on page 170
Syntax	<code>show route exact <i>destination-prefix</i></code> <code><brief detail extensive terse></code> <code><logical-system (all <i>logical-system-name</i>)></code>
Syntax (EX Series Switches)	<code>show route exact <i>destination-prefix</i></code> <code><brief detail extensive terse></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
Description	Display only the routes that exactly match the specified address or range of addresses.
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 . <i>destination-prefix</i> —Address or range of addresses. logical-system (all <i>logical-system-name</i>) —(Optional) Perform this operation on all logical systems or on a particular logical system.
Required Privilege Level	view
List of Sample Output	show route exact on page 170 show route exact detail on page 171 show route exact extensive on page 171 show route exact terse on page 171
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 172 Syntax (EX Series Switches) on page 172
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	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches.
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 173 show route export detail on page 173 show route export instance detail on page 174
Output Fields	Table 15 on page 173 lists the output fields for the show route export command. Output fields are listed in the approximate order in which they appear.

Table 15: 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 175 Syntax (EX Series Switches) on page 175
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 182 show route extensive (Access Route) on page 189 show route extensive (BGP PIC Edge) on page 189 show route extensive (FRR and LFA) on page 190 show route extensive (IS-IS) on page 191 show route extensive (Route Reflector) on page 191 show route label detail (Multipoint LDP Inband Signaling for Point-to-Multipoint LSPs) on page 191 show route label detail (Multipoint LDP with Multicast-Only Fast Reroute) on page 192
Output Fields	<p>Table 16 on page 175 describes the output fields for the show route extensive command. Output fields are listed in the approximate order in which they appear.</p>

Table 16: show route extensive Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).
<i>number destinations</i>	Number of destinations for which there are routes in the routing table.

Table 16: show route extensive 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 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 16: 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 16: 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 16: 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.
AI GP	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 16: 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 16: 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 16: 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-kerne1 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-kernel 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-kernel 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-kernel 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 203.0.1.1,
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: 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: 232.1.1.1,
src: 192.168.219.11
          Primary Upstream : 198.51.100.3:0--198.51.100.2:0
            RPF Nexthops :
              ge-1/2/15.0, 1.2.94.1, Label: 301568, weight: 0x1
              ge-1/2/14.0, 1.2.3.1, 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: 0xffffe
              ge-1/2/19.0, 198.51.100.36, Label: 301584, weight: 0xffffe

```


show route forwarding-table

- List of Syntax** [Syntax on page 193](#)
 [Syntax \(MX Series Routers\) on page 193](#)
 [Syntax \(TX Matrix and TX Matrix Plus Routers\) on page 193](#)

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 200](#)
[show route forwarding-table detail on page 201](#)
[show route forwarding-table destination extensive \(Weights and Balances\) on page 201](#)
[show route forwarding-table extensive on page 202](#)
[show route forwarding-table extensive \(RPF\) on page 203](#)
[show route forwarding-table family mpls on page 204](#)
[show route forwarding-table family mpls ccc ge-0/0/1.1004 on page 204](#)
[show route forwarding-table family vpls on page 204](#)
[show route forwarding-table vpls \(Broadcast, unknown unicast, and multicast \(BUM\) hashing is enabled\) on page 205](#)
[show route forwarding-table vpls \(Broadcast, unknown unicast, and multicast \(BUM\) hashing is enabled with MAC Statistics\) on page 205](#)
[show route forwarding-table family vpls extensive on page 205](#)
[show route forwarding-table table default on page 207](#)

[show route forwarding-table table](#)
[logical-system-name/routing-instance-name on page 207](#)
[show route forwarding-table vpn on page 208](#)

Output Fields Table 17 on page 196 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 17: 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 <i>logical-system-name/routing-instance-name</i> option on a device that is configured for and supports logical systems.	All levels
Routing table	Name of the routing table (for example, inet, inet6, mpls).	All levels

Table 17: 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 17: 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	IP address of the next hop to the destination.	detail extensive

Table 17: 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        locl  607   2
172.16.1.1/32    iddn  0 172.16.1.1        locl  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           locl  615   2
10.0.0.1/32      dest  0 10.0.0.1           locl  615   2
10.0.0.255/32    dest  0 10.0.0.255        bcst  613   1 ge-2/0/0.0
10.1.1.0/24      ifdn  0                               rslv  612   1 ge-2/0/1.0
10.1.1.0/32      iddn  0 10.1.1.0           recv  610   1 ge-2/0/1.0
10.1.1.1/32      user  0                               rjct  46   4
10.1.1.1/32      intf  0 10.1.1.1           locl  611   2
10.1.1.1/32      iddn  0 10.1.1.1           locl  611   2
10.1.1.255/32    iddn  0 ff:ff:ff:ff:ff:ff bcst  609   1 ge-2/0/1.0
10.209.0.0/16    user  0 10.209.63.254      ucst  419   20 fxp0.0
10.209.0.0/16    user  1 0:12:1e:ca:98:0    ucst  419   20 fxp0.0
10.209.0.0/18    intf  0                               rslv  418   1 fxp0.0
10.209.0.0/32    dest  0 10.209.0.0         recv  416   1 fxp0.0
10.209.2.131/32  intf  0 10.209.2.131       locl  417   2
10.209.2.131/32  dest  0 10.209.2.131       locl  417   2
10.209.17.55/32  dest  0 0:30:48:5b:78:d2   ucst  435   1 fxp0.0
10.209.63.42/32  dest  0 0:23:7d:58:92:ca   ucst  434   1 fxp0.0
10.209.63.254/32 dest  0 0:12:1e:ca:98:0    ucst  419   20 fxp0.0
10.209.63.255/32 dest  0 10.209.63.255      bcst  415   1 fxp0.0
10.227.0.0/16    user  0 10.209.63.254      ucst  419   20 fxp0.0

...

Routing table: iso
ISO:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  27   1
47.0005.80ff.f800.0000.0108.0003.0102.5524.5220.00
intf  0                               locl  28   1

Routing table: inet6
Internet6:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  6   1
ff00::/8         perm  0                               mdsc  4   1
ff02::1/128      perm  0 ff02::1           mcst  3   1

Routing table: ccc
MPLS:
Interface.Label  Type RtRef Next hop          Type Index NhRef Netif
default          perm  0                               rjct  16   1
100004(top)fe-0/0/1.0

```


show route forwarding-table detail

```

user@host> show route forwarding-table detail
Routing table: inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          user   2 0:90:69:8e:b1:1b ucst  132   4 fxp0.0
default          perm   0                               rjct   14    1
10.1.1.0/24      intf   0 ff.3.0.21         ucst  322   1 so-5/3/0.0
10.1.1.0/32      dest   0 10.1.1.0          recv  324   1 so-5/3/0.0
10.1.1.1/32      intf   0 10.1.1.1          locl  321   1
10.1.1.255/32    dest   0 10.1.1.255        bcst  323   1 so-5/3/0.0
10.21.21.0/24    intf   0 ff.3.0.21         ucst  326   1 so-5/3/0.0
10.21.21.0/32    dest   0 10.21.21.0        recv  328   1 so-5/3/0.0
10.21.21.1/32    intf   0 10.21.21.1        locl  325   1
10.21.21.255/32  dest   0 10.21.21.255      bcst  327   1 so-5/3/0.0
127.0.0.1/32     intf   0 127.0.0.1         locl  320   1
172.17.28.19/32  clon   1 192.168.4.254     ucst  132   4 fxp0.0
172.17.28.44/32  clon   1 192.168.4.254     ucst  132   4 fxp0.0

...

Routing table: private1__inet
Internet:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct   46    1
10.0.0.0/8       intf   0                               rslv  136   1 fxp1.0
10.0.0.0/32      dest   0 10.0.0.0          recv  134   1 fxp1.0
10.0.0.4/32      intf   0 10.0.0.4          locl  135   2
10.0.0.4/32      dest   0 10.0.0.4          locl  135   2

...

Routing table: iso
ISO:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct   38    1

Routing table: inet6
Internet6:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct   22    1
ff00::/8         perm   0                               mdsc   21    1
ff02::1/128      perm   0 ff02::1          mcst   17    1

...

Routing table: mpls
MPLS:
Destination      Type RtRef Next hop          Type Index NhRef Netif
default          perm   0                               rjct  28    1

```

show route forwarding-table destination extensive (Weights and Balances)

```

user@host> show route forwarding-table destination 3.4.2.1 extensive
Routing table: inet [Index 0]
Internet:

Destination: 3.4.2.1/32
Route type: user

```

Route reference: 0	Route interface-index: 0
Flags: sent to PFE	
Next-hop type: unicast	Index: 262143 Reference: 1
Nexthop: 172.16.4.4	
Next-hop type: unicast	Index: 335 Reference: 2
Next-hop interface: so-1/1/0.0	Weight: 22 Balance: 3
Nexthop: 145.12.1.2	
Next-hop type: unicast	Index: 337 Reference: 2
Next-hop interface: so-0/1/2.0	Weight: 33 Balance: 33

show route forwarding-table extensive

```

user@host> show route forwarding-table extensive
Routing table: inet [Index 0]
Internet:

Destination: default
  Route type: user
  Route reference: 2
  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
Next-hop: fe80::2a0:a5ff:fe3d:375
Next-hop type: local
Route interface-index: 0
Index: 75      Reference: 1

...

```

show route forwarding-table extensive (RPF)

The next example is based on the following configuration, which enables an RPF check on all routes that are learned from this interface, including the interface route:

```

so-1/1/0 {
  unit 0 {
    family inet {
      rpf-check;
      address 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
Flags: sent to PFE
Nexthop: 192.0.2.3
Next-hop type: broadcast
Next-hop interface: so-1/1/0.0
RPF interface: so-1/1/0.0

Route interface-index: 67
Index: 328      Reference: 1

```

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       dymn  0              flood  355    1
00:00:5E:00:53:1f/48 <<<<<Remote CE
                  dymn  0              indr   351    4
                  Push 800000, Push 100002(top)

so-0/0/0.0
00:00:5E:00:53:1f/48 <<<<<Local CE
                  dymn  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
Flags: sent to PFE
Next-hop type: flood
Next-hop type: unicast
Next-hop interface: fe-0/1/3.0
Next-hop type: unicast
Next-hop interface: fe-0/1/2.0
Route interface-index: 72
Index: 289 Reference: 1
Index: 291 Reference: 3
Index: 290 Reference: 3

Destination: default
Route type: permanent
Route reference: 0
Flags: none
Next-hop type: discard
Route interface-index: 0
Index: 341 Reference: 1

Destination: fe-0/1/2.0

```

```

Route type: dynamic
Route reference: 0
Flags: sent to PFE
Next-hop type: flood
Next-hop type: indirect
Next-hop type: Push 800016
Next-hop interface: at-1/0/1.0
Next-hop type: indirect
Next hop: 10.31.3.2
Next-hop type: Push 800000
Next-hop interface: fe-0/1/1.0
Next-hop type: unicast
Next-hop interface: fe-0/1/3.0
Route interface-index: 69
Index: 293 Reference: 1
Index: 363 Reference: 4
Index: 301 Reference: 5
Index: 291 Reference: 3

Destination: fe-0/1/3.0
Route type: dynamic
Route reference: 0
Flags: sent to PFE
Next-hop type: flood
Next-hop type: indirect
Next-hop type: Push 800016
Next-hop interface: at-1/0/1.0
Next-hop type: indirect
Next hop: 10.31.3.2
Next-hop type: Push 800000
Next-hop interface: fe-0/1/1.0
Next-hop type: unicast
Next-hop interface: fe-0/1/2.0
Route interface-index: 70
Index: 292 Reference: 1
Index: 363 Reference: 4
Index: 301 Reference: 5
Index: 290 Reference: 3

Destination: 00:00:5E:00:53:01/48
Route type: dynamic
Route reference: 0
Flags: sent to PFE, prefix load balance
Next-hop type: unicast
Next-hop interface: fe-0/1/3.0
Route interface-index: 70
Index: 291 Reference: 3
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
Flags: sent to PFE, prefix load balance
Next-hop type: unicast
Next-hop interface: fe-0/1/2.0
Route interface-index: 69
Index: 290 Reference: 3
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
Flags: sent to PFE, prefix load balance
Next-hop type: indirect
Next hop: 10.31.3.2
Next-hop type: Push 800000
Next-hop interface: fe-0/1/1.0
Route interface-index: 74
Index: 301 Reference: 5

```

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                Type Index NhRef Netif
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        locl  687   2
10.0.60.14/32        dest  0 10.0.60.14        locl  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         locl  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        locl  683   2
10.0.90.14/32        dest  0 10.0.90.14        locl  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		rsrv	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	loc1	770	2	
172.16.2.1/32	dest	0	172.16.2.1	loc1	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	<code>show route hidden</code> <code><brief detail extensive terse></code> <code><logical-system (all <i>logical-system-name</i>)></code>
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	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 <i>logical-system-name</i>) —(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">• <i>Understanding Hidden Routes</i>
List of Sample Output	show route hidden on page 210 show route hidden detail on page 211 show route hidden extensive on page 211 show route hidden terse on page 211
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
```

```

10.12.1.0/24      Unusable
                  [BGP/170] 03:44:10, localpref 100, from 10.4.4.4
                  AS path: 100 I
10.12.80.4/30    Unusable
                  [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 211](#).

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 213 Syntax (EX Series Switches) on page 213
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	<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 routes for destinations that have no active route. An inactive route is a route that was not selected as the best path.</p>
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 133
List of Sample Output	show route inactive-path on page 213 show route inactive-path detail on page 214 show route inactive-path extensive on page 215 show route inactive-path terse on page 215
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 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 214](#).

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.13vpn.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 217 Syntax (EX Series Switches and QFX Series) on page 217
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 219 show route instance detail (Graceful Restart Complete) on page 219 show route instance detail (Graceful Restart Incomplete) on page 221

[show route instance detail \(VPLS Routing Instance\) on page 223](#)

[show route instance operational on page 223](#)

[show route instance summary on page 223](#)

Output Fields Table 18 on page 218 lists the output fields for the **show route instance** command. Output fields are listed in the approximate order in which they appear.

Table 18: 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 18: 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.13vpn.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.12vpn.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
		BGP-L.inet6.0	0/0/0
L2VPN	l2vpn	L2VPN.inet.0	0/0/0
		L2VPN.iso.0	0/0/0
		L2VPN.inet6.0	0/0/0
		L2VPN.l2vpn.0	2/0/0
LDP	vrf	LDP.inet.0	4/0/0
		LDP.iso.0	0/0/0
		LDP.mpls.0	0/0/0

OSPF	vrf	LDP.inet6.0	0/0/0
		LDP.l2circuit.0	0/0/0
		OSPF.inet.0	7/0/0
RIP	vrf	OSPF.iso.0	0/0/0
		OSPF.inet6.0	0/0/0
		RIP.inet.0	6/0/0
STATIC	vrf	RIP.iso.0	0/0/0
		RIP.inet6.0	0/0/0
		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 225 Syntax (EX Series Switches) on page 225
Syntax	show route next-hop <i>next-hop</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)>
Syntax (EX Series Switches)	show route next-hop <i>next-hop</i> <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.
Description	Display the entries in the routing table that are being sent to the specified next-hop address.
Options	brief detail extensive terse —(Optional) Display the specified level of output. logical-system (all <i>logical-system-name</i>) —(Optional) Perform this operation on all logical systems or on a particular logical system. <i>next-hop</i> —Next-hop address.
Required Privilege Level	view
List of Sample Output	show route next-hop on page 225 show route next-hop detail on page 226 show route next-hop extensive on page 228 show route next-hop terse on page 229
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.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

red.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)

```

show route next-hop terse

```

user@host> show route next-hop 192.168.71.254 terse

inet.0: 25 destinations, 26 routes (24 active, 0 holddown, 1 hidden)
Restart Complete
+ = Active Route, - = Last Active, * = Both

```

A	Destination	P	Prf	Metric 1	Metric 2	Next hop	AS path
*	10.10.0.0/16	S	5			>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 231 Syntax (EX Series Switches) on page 231
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	<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 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 232 show route output address detail on page 232 show route output address extensive on page 233 show route output address terse on page 233 show route output interface on page 233 show route output interface detail on page 234 show route output interface extensive on page 234 show route output interface terse on page 234

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 232](#).

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	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 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 234](#).

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      1          >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 236 Syntax (EX Series Switches) on page 236
Syntax	<code>show route protocol <i>protocol</i></code> <code><brief detail extensive terse></code> <code><logical-system (all <i>logical-system-name</i>)></code>
Syntax (EX Series Switches)	<code>show route protocol <i>protocol</i></code> <code><brief detail extensive terse></code>
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 <i>logical-system-name</i>) —(Optional) Perform this operation on all logical systems or on a particular logical system. <i>protocol</i> —Protocol from which the route was learned: <ul style="list-style-type: none">• 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 238 show route protocol access-internal extensive on page 238 show route protocol arp on page 238 show route protocol bgp on page 239 show route protocol bgp detail on page 239 show route protocol bgp detail (Labeled Unicast) on page 239 show route protocol bgp extensive on page 240 show route protocol bgp terse on page 241 show route protocol direct on page 241 show route protocol frr on page 242 show route protocol l2circuit detail on page 242 show route protocol l2vpn extensive on page 243 show route protocol ldp on page 244

[show route protocol ldp extensive on page 244](#)
[show route protocol ospf \(Layer 3 VPN\) on page 245](#)
[show route protocol ospf detail on page 246](#)
[show route protocol rip on page 246](#)
[show route protocol rip detail on page 246](#)
[show route protocol ripng table inet6 on page 247](#)
[show route protocol static detail on page 247](#)

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:
*BCP 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 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
  *BCP      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 249 Syntax (EX Series Switches) on page 249
Syntax	show route receive-protocol <i>protocol neighbor-address</i> <brief detail extensive terse> <logical-system (all <i>logical-system-name</i>)
Syntax (EX Series Switches)	show route receive-protocol <i>protocol neighbor-address</i> <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.
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 252 show route receive-protocol bgp extensive on page 252 show route receive-protocol bgp table extensive on page 252 show route receive-protocol bgp logical-system extensive on page 253 show route receive-protocol bgp detail (Layer 2 VPN) on page 254 show route receive-protocol bgp extensive (Layer 2 VPN) on page 254 show route receive-protocol bgp (Layer 3 VPN) on page 255 show route receive-protocol bgp detail (Layer 3 VPN) on page 255 show route receive-protocol bgp detail (Long-Lived Graceful Restart) on page 256 show route receive-protocol bgp detail (Labeled Unicast) on page 256 show route receive-protocol bgp extensive (Layer 3 VPN) on page 257
Output Fields	Table 19 on page 250 describes the output fields for the show route receive-protocol command. Output fields are listed in the approximate order in which they appear.

Table 19: 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
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

Table 19: show route receive-protocol Output Fields (*continued*)

Field Name	Field Description	Level of Output
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
Layer2-info: encaps	Layer 2 encapsulation (for example, VPLS).	detail extensive
control flags	Control flags: none or Site Down .	detail extensive

Table 19: show route receive-protocol Output Fields (*continued*)

Field Name	Field Description	Level of Output
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      Lclpref  AS path
mpls.0: 48 destinations, 48 routes (48 active, 0 holddown, 0 hidden)
```

show route receive-protocol bgp table extensive

```
user@host> show route receive-protocol bgp 207.17.136.192 table inet.0 66.117.68.0/24 extensive
```

```
inet.0: 227315 destinations, 227316 routes (227302 active, 0 holddown, 13 hidden)
* 66.117.63.0/24 (1 entry, 1 announced)
  Nexthop: 207.17.136.29
  Localpref: 100
  AS path: AS2 PA[6]: 14203 2914 3356 29748 33437 AS_TRANS
  AS path: AS4 PA[2]: 33437 393219
  AS path: Merged[6]: 14203 2914 3356 29748 33437 393219 I
  Communities: 2914:420
```

show route receive-protocol bgp logical-system extensive

```
user@host> show route receive-protocol bgp 10.0.0.9 logical-system PE4 extensive
inet.0: 12 destinations, 13 routes (12 active, 0 holddown, 0 hidden)
* 10.0.0.0/30 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 10.0.0.4/30 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

10.0.0.8/30 (2 entries, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 10.9.9.1/32 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 10.100.1.1/32 (1 entry, 1 announced)
  Accepted
  Route Label: 3
  Nexthop: 10.0.0.9
  AS path: 13979 I

* 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      Lclpref AS path
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED      Lclpref AS path
mpls.0: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED      Lclpref AS path
frame-vpn.l2vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED      Lclpref AS path
10.255.245.35:1:5:1/96 (1 entry, 1 announced)
  Route Distinguisher: 10.255.245.35:1
  Label-base : 800000, range : 4, status-vector : 0x0
  Nexthop: 10.255.245.35
  Localpref: 100
  AS path: I

```

```

Communities: target:65299:100 Layer2-info: encaps:FRAME RELAY,
control flags:0, mtu: 0
bgp.l2vpn.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.245.35:1:5:1/96 (1 entry, 0 announced)
Route Distinguisher: 10.255.245.35:1
Label-base : 800000, range : 4, status-vector : 0x0
Nexthop: 10.255.245.35
Localpref: 100
AS path: I
Communities: target:65299:100 Layer2-info: encaps:FRAME RELAY,
control flags:0, mtu: 0

```

show route receive-protocol bgp (Layer 3 VPN)

```

user@host> show route receive-protocol bgp 10.255.14.171
inet.0: 33 destinations, 33 routes (32 active, 0 holddown, 1 hidden)
Prefix          Nexthop          MED    Lclpref AS path
inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
VPN-A.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.175/32  10.255.14.171          100 2 I
10.255.14.179/32  10.255.14.171          2    100 I
VPN-B.inet.0: 6 destinations, 6 routes (6 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.175/32  10.255.14.171          100 2 I
10.255.14.177/32  10.255.14.171          100 I
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
mpls.0: 9 destinations, 9 routes (9 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
bgp.l3vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path
10.255.14.171:300:10.255.14.177/32
                  10.255.14.171          100 I
10.255.14.171:100:10.255.14.179/32
                  10.255.14.171          2    100 I
10.255.14.171:200:10.255.14.175/32
                  10.255.14.171          100 2 I

```

show route receive-protocol bgp detail (Layer 3 VPN)

```

user@host> show route receive-protocol bgp 10.255.14.174 detail
inet.0: 16 destinations, 17 routes (15 active, 0 holddown, 1 hidden)
inet.3: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
vpna.inet.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
* 10.49.0.0/30 (1 entry, 1 announced)
Route Distinguisher: 10.255.14.176:2
VPN Label: 101264
Nexthop: 10.255.14.174
Localpref: 100
AS path: I
Communities: target:200:100
AttrSet AS: 100
Localpref: 100
AS path: I
* 10.255.14.172/32 (1 entry, 1 announced)
Route Distinguisher: 10.255.14.176:2
VPN Label: 101280

```

```

    Nexthop: 10.255.14.174
    Localpref: 100
    AS path: I
    Communities: target:200:100
    AttrSet AS: 100
        Localpref: 100
        AS path: I
iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
mpls.0: 5 destinations, 5 routes (5 active, 0 holddown, 0 hidden)
bgp.l3vpn.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)
* 10.255.14.174:2:10.49.0.0/30 (1 entry, 0 announced)
    Route Distinguisher: 10.255.14.174:2
    VPN Label: 101264
    Nexthop: 10.255.14.174
    Localpref: 100
    AS path: I
    Communities: target:200:100
    AttrSet AS: 100
        Localpref: 100
        AS path: I
* 10.255.14.174:2:10.255.14.172/32 (1 entry, 0 announced)
    Route Distinguisher: 10.255.14.174:2
    VPN Label: 101280
    Nexthop: 10.255.14.174
    Localpref: 100
    AS path: I
    Communities: target:200:100
    AttrSet AS: 100
        Localpref: 100
        AS path: I
inet6.0: 2 destinations, 2 routes (2 active, 0 holddown, 0 hidden)

```

show route receive-protocol bgp 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 table

List of Syntax	Syntax on page 258 Syntax (EX Series Switches and QFX Series Switches) on page 258
Syntax	<code>show route table <i>routing-table-name</i></code> <code><brief detail extensive terse></code> <code><logical-system (all <i>logical-system-name</i>)></code>
Syntax (EX Series Switches and QFX Series Switches)	<code>show route table <i>routing-table-name</i></code> <code><brief detail extensive terse></code>
Release Information	Command introduced before Junos OS Release 7.4. Command introduced in Junos OS Release 9.0 for EX Series switches. Statement introduced in Junos OS Release 14.1X53-D15 for QFX Series switches. Show route table evpn statement introduced in Junos OS Release 15.1X53-D30 for QFX Series switches.
Description	Display the route entries in a particular routing table.
Options	brief detail extensive terse —(Optional) Display the specified level of output. logical-system (all <i>logical-system-name</i>) —(Optional) Perform this operation on all logical systems or on a particular logical system. <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).
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 269 show route table bgp.l3vpn.0 on page 269 show route table bgp.l3vpn.0 detail on page 270 show route table bgp.rtarget.0 (When Proxy BGP Route Target Filtering Is Configured) on page 271 show route table bgp.evpn.0 on page 271 show route table evpna.evpn.0 on page 272 show route table inet.0 on page 272 show route table inet.3 on page 273 show route table inet.3 protocol ospf on page 273 show route table inet6.0 on page 273 show route table inet6.3 on page 273

[show route table inetflow detail on page 274](#)
[show route table lsdist.0 extensive on page 274](#)
[show route table l2circuit.0 on page 276](#)
[show route table mpls on page 276](#)
[show route table mpls extensive on page 276](#)
[show route table mpls.0 on page 277](#)
[show route table mpls.0 detail \(PTX Series\) on page 278](#)
[show route table mpls.0 ccc ge-0/0/1.1004 detail on page 278](#)
[show route table mpls.0 protocol evpn on page 279](#)
[show route table mpls.0 protocol ospf on page 285](#)
[show route table mpls.0 extensive \(PTX Series\) on page 286](#)
[show route table mpls.0 \(RSVP Route—Transit LSP\) on page 286](#)
[show route table vpls_1 detail on page 287](#)
[show route table vpn-a on page 287](#)
[show route table vpn-a.mdt.0 on page 287](#)
[show route table VPN-A detail on page 288](#)
[show route table VPN-AB.inet.0 on page 288](#)
[show route table VPN_blue.mvpn-inet6.0 on page 289](#)
[show route table vrf1.mvpn.0 extensive on page 289](#)
[show route table inetflow detail on page 289](#)
[show route table bgp.evpn.0 extensive |no-more \(EVPN\) on page 292](#)

Output Fields [Table 9 on page 116](#) describes the output fields for the **show route table** command. Output fields are listed in the approximate order in which they appear.

Table 20: show route table Output Fields

Field Name	Field Description
<i>routing-table-name</i>	Name of the routing table (for example, inet.0).
Restart complete	<p>All protocols have restarted for this routing table.</p> <p>Restart state:</p> <ul style="list-style-type: none"> • Pending:<i>protocol-name</i>—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>
<i>number destinations</i>	Number of destinations for which there are routes in the routing table.

Table 20: show route table 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. • 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).

Table 20: show route table Output Fields (*continued*)

Field Name	Field Description
[<i>protocol, preference</i>]	<p>Protocol from which the route was learned and the preference value for the route.</p> <ul style="list-style-type: none"> • +—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>
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 12 on page 156 .
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.

Table 20: show route table Output Fields (*continued*)

Field Name	Field Description
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 13 on page 158 .
Local AS	AS number of the local routing devices.
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	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.

Table 20: show route table Output Fields (*continued*)

Field Name	Field Description
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>
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.

Table 20: show route table Output Fields (*continued*)

Field Name	Field Description
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 14 on page 160 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).
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.

Table 20: show route table Output Fields (*continued*)

Field Name	Field Description
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 12 on page 156](#) describes all possible values for the Next-hop Types output field.

Table 21: 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.
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.

Table 21: Next-hop Types Output Field Values (*continued*)

Next-Hop Type	Description
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 13 on page 158 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 22: 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.

Table 22: State Output Field Values (*continued*)

Value	Description
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.
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.

Table 22: State Output Field Values (*continued*)

Value	Description
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 14 on page 160 describes the possible values for the Communities output field.

Table 23: 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 <i>number:link-bandwidth-number</i>	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.

Table 23: Communities Output Field Values (*continued*)

Value	Description
<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.
<i>origin</i>	(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.
<i>route-type-vendor</i>	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 <i>area-number:ospf-route-type:options</i> .
<i>rte-type</i>	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 <i>area-number:ospf-route-type:options</i> .
<i>target</i>	Defines which VPN the route participates in; target has the format <i>32-bit IP address:16-bit number</i> . For example, 10.19.0.0:100.
<i>unknown IANA</i>	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.
<i>unknown OSPF vendor community</i>	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 table bgp.l2vpn

```

user@host> show route table bgp.l2vpn
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

```

```

10.255.71.15          *[BGP/170] 00:03:59, MED 1, localpref 100, from
                        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 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 evpna.evpn.0

```

user@host> show route table evpna.evpn.0
evpna.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 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 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 mpls

```

user@host> show route table mpls
mpls.0: 4 destinations, 4 routes (4 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

0          *[MPLS/0] 00:13:55, metric 1
            Receive
1          *[MPLS/0] 00:13:55, metric 1
            Receive
2          *[MPLS/0] 00:13:55, metric 1
            Receive
1024       *[VPN/0] 00:04:18
            to table red.inet.0, Pop

```

show route table mpls extensive

```

user@host> show route table mpls extensive
100000 (1 entry, 1 announced)
TSI:
KRT in-kernel 100000 /36 -> {so-1/0/0.0}
    *LDP Preference: 9
    Next hop: via so-1/0/0.0, selected
    Pop
    State: <Active Int>
    Age: 29:50 Metric: 1
    Task: LDP
    Announcement bits (1): 0-KRT
    AS path: I
    Prefixes bound to route: 10.0.0.194/32

```

show route table mpls.0

```

user@host> show route table mpls.0
mpls.0: 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

```

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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 00:44:44:44:44:44:44:44:44
                > 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 00:44:44:44:44:44:44:44:44
                > 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 00:44:44:44:44:44:44:44:44
                > 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
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
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
> 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
> 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
> 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

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```

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

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> 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
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

to 100.46.1.2 via ge-0/0/5.0, label-switched-path pe4_to_pe3
ge-0/0/1.3016    *[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

```

```

300352(S=0)      > to 10.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
                  *[RSVP/7/1] 00:08:00, metric 1
300384           > to 10.64.0.106 via ge-1/0/1.0, label-switched-path lsp1_p2p
                  *[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.l2vpn.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.l2vpn.0
Next-hop reference count: 2
State: <Active Int Ext>
Age: 4:29:47 Metric2: 1
Task: vpls_1-l2vpn
Announcement bits (1): 1-BGP.0.0.0+179
AS path: I
Communities: Layer2-info: encaps:VPLS, control flags:Site-Down
Label-base: 800000, range: 8, status-vector: 0xFF

```

show route table vpn-a

```

user@host> show route table vpn-a
vpn-a.l2vpn.0: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)

+ = Active Route, - = Last Active, * = Both
192.168.16.1:1:1/96
    *[VPN/7] 05:48:27
        Discard
192.168.24.1:1:2:1/96
    *[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+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-kerne1 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
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: 00:00:00:00:00:00:00:00:00:00:00:00
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 terse

List of Syntax [Syntax on page 296](#)
[Syntax \(EX Series Switches\) on page 296](#)

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 298](#)

Output Fields [Table 24 on page 296](#) describes the output fields for the `show route terse` command. Output fields are listed in the approximate order in which they appear.

Table 24: 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 24: 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.
Destination	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 24: 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      I
?                               B 170          100                               I
  unverified                               >10.0.0.2
* ? 172.16.1.1/32      D  0          0          >10.0.2        200 I
* V 2.2.0.2/32         B 170          110          >10.0.0.2
  valid                               >10.0.0.2
* ? 10.0.0.0/30        D  0          0          >1t-1/2/0.1    I
?                               B 170          100                               I
  unverified                               >10.0.0.2
* ? 10.0.0.1/32        L  0          0          Local          I
* ? 10.0.0.4/30        B 170          100          >10.0.0.2      I
  unverified                               >10.0.0.2
* ? 10.0.0.8/30        B 170          100          >10.0.0.2      I
  unverified                               >10.0.0.2
* I 172.16.1.1/32      B 170          90          >10.0.0.2      200 I
  invalid                               >10.0.0.2
* N 192.168.2.3/32     B 170          100          >10.0.0.2      200 I
  unknown                               >10.0.0.2
* ? 172.16.233.5/32    0 10          1          MultiRecv

```

test policy

Syntax `test policy policy-name prefix`

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.



NOTE: If you are using the `test policy` 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 `set cli logical-system R2` command.

Options *policy-name*—Name of a policy.
prefix—Destination prefix to match.

Additional Information 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.

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 `show policy policy-name statistics` command.

Required Privilege Level view

Related Documentation

- [Understanding Routing Policy Tests](#)
- [Example: Testing a Routing Policy with Complex Regular Expressions on page 23](#)
- [show policy on page 103](#)

List of Sample Output [test policy on page 300](#)

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
```