

Chapter 9

Protocol-Independent Routing Monitoring and Troubleshooting

Table 30 summarizes the command-line interface (CLI) commands you can use to monitor and troubleshoot protocol-independent routing properties. In the table, the commands are grouped by functionality. In the remainder of this chapter, they are explained alphabetically.



Note

In Table 30, the variants of the show route commands listed in the category "Routing Table Information" are all filters that select the specific information that is displayed from the routing tables. The other show route commands (specifically, show route forwarding-table and show route martians) are independent commands and cannot be used in conjunction with any of the filter options.

Table 30: Commands for Monitoring Protocol-Independent Routing Properties

Task Category	Task or Information to Monitor	Command
Routing Table Information	Information about the entries in the routing tables.	show route on page 350
	Routes transmitted by a particular routing protocol.	show route advertising-protocol on page 357
	Routes containing a specified AS path.	show route aspath-regex on page 358
	Best route to the specified address or range of addresses.	show route best on page 360
	Routes containing members of a specified BGP community.	show route community on page 361
	Routes that have been damped.	show route damping on page 363
	Routes that exactly match the specified address or range of addresses.	show route exact on page 366
	Routes that are currently inactive.	show route inactive on page 372
	Routes that form a label-switched path.	show route label-switched-path on page 373
	Routes that contain the specified next hop.	show route next-hop on page 376
	Routes exiting the router through the specified interface.	show route output on page 377
	Routes learned by the specified protocol.	show route protocol on page 378
	Routes in a range of destination prefixes.	show route range on page 380
	Routes received by a particular routing protocol.	show route receive-protocol on page 383
	Routes learned from the specified source.	show route source-gateway on page 385
	Statistics about the routes in all routing tables.	show route summary on page 386
Routes in a particular routing table.	show route table on page 387	
High-level summary of routing table information.	show route terse on page 389	
Forwarding Table Information	Information about the entries in the kernel's forwarding table.	show route forwarding-table on page 367
	Clear a router from the kernel's forwarding table.	clear route forwarding-table on page 347
Martian Information	Information about martian addresses.	show route martians on page 374
AS Paths	Known AS paths.	show as-path on page 348

clear route forwarding-table

Syntax clear route forwarding-table *destination-prefix*

Description Delete a route entry from the kernel's forwarding table. This is the version of the forwarding table in the Routing Engine. The Routing Engine copies this table to the Packet Forwarding Engine.

Options *destination-prefix*—IP address of the destination to delete.

Required Privilege Level maintenance

Sample Output

```

user@host> show route forwarding-table
Internet:
Destination                Type RtRef Nexthop                Type Index NhRef Netif
...
123.456.0.0/18              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.457.0.0/18              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.123.0.0/17              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.123.24.0/21             user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.125.0.0/16              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.129.0.0/18              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.130.0.0/17              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.130.24.0/22             user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.130.128.0/18            user   0 111.222.5.254          ucst   19 55371 fxp0.0
...
user@host> clear route forwarding-table 123.456.0.0
user@host> show route forwarding-table
Internet:
Destination                Type RtRef Nexthop                Type Index NhRef Netif
...
123.457.0.0/18              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.123.0.0/17              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.123.24.0/21             user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.125.0.0/16              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.129.0.0/18              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.130.0.0/17              user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.130.24.0/22             user   0 111.222.5.254          ucst   19 55371 fxp0.0
123.130.128.0/18            user   0 111.222.5.254          ucst   19 55371 fxp0.0
...

```

• show as-path

•
• **Syntax** show as-path

• **Description** Display the distribution of AS paths that the local routing is using (usually through the routing table). Use this command when debugging refcount problems for AS paths and for seeing how AS paths have been manipulated through policy (through the as-path-prepend action) or aggregation.

• **Required Privilege Level** view

• **Output Fields** Total AS paths—Number of AS paths.

• Path—AS path.

• <flags>—Information about the AS path:

• ASLoop—Path contains an AS loop.

• Atomic—Path includes the ATOMIC_AGGREGATE path attribute.

• Local—Path was created by local aggregation.

• Refs—Path reference count.

• ASes—Number of ASes in the path.

• Segments—Length of the AS segment descriptor.

• Overhead—Efficiency of AS storage.

Sample Output

```

user@host> show as-path
Total AS paths: 24744
Path: 234 234 3561 6503 278 3596 I
      Refs: 2 ASes: 6 Segments: 1 Overhead: 64
Path: 267 234 3561 4926 4926 4926 10834 5648 I <ASLoop>
      Refs: 2 ASes: 8 Segments: 1 Overhead: 64
Path: 234 234 3561 4926 4926 4926 10834 5648 I <ASLoop>
      Refs: 2 ASes: 8 Segments: 1 Overhead: 64
Path: 2914 4000 8068 8072 I
      Refs: 3 ASes: 4 Segments: 1 Overhead: 64
Path: 2914 701 6388 3464 I
      Refs: 22 ASes: 4 Segments: 1 Overhead: 64
Path: 267 234 1239 6347 11404 11404 I <ASLoop>
      Refs: 2 ASes: 6 Segments: 1 Overhead: 64
Path: 234 234 1239 6347 11404 11404 I <ASLoop>
      Refs: 2 ASes: 6 Segments: 1 Overhead: 64
Path: 267 234 1239 2516 4675 I <Atomic>
      Aggregator: 4675 202.233.0.5
      Refs: 2 ASes: 5 Segments: 1 Overhead: 64
Path: 267 234 1239 2516 4675 I <Atomic>
      Aggregator: 4675 202.249.2.37
      Refs: 2 ASes: 5 Segments: 1 Overhead: 64
Path: 234 234 1239 2516 4675 I <Atomic>
      Aggregator: 4675 202.249.2.37
      Refs: 2 ASes: 5 Segments: 1 Overhead: 64
Path: 234 234 1239 2516 4675 I <Atomic>
      Aggregator: 4675 202.233.0.5
      Refs: 2 ASes: 5 Segments: 1 Overhead: 64
Path: 267 234 1239 701 10275 ?
      Aggregator: 10275 157.130.192.246
      Refs: 4 ASes: 5 Segments: 1 Overhead: 64
...

```

show route

Syntax show route <destination-prefix> <all | hidden> <brief | detail | extensive> <filters>

Description Display the active entries in the routing tables.

Options none—Display all active entries in the routing tables.

all—(Optional) Display information about all routes, including hidden entries.

brief—(Optional) Display brief route information.

destination-prefix—(Optional) Display active entries for the specified address or range of addresses.

detail—(Optional) Display detailed route information.

extensive—(Optional) Display very detailed route information.

filters—(Optional) One or more filters that select specific information to display from the routing tables. To simplify the readability and explanation of the filters, each filter is treated as an individual command even though you can combine one or more filters in a single show route command. The following is the syntax of the show route command including all filters:

```
show route <destination-prefix> <summary | detail | extensive> <best | exact | range>
<advertising-protocol protocol neighbor-address> <aspath-regex regular-expression>
<community as-number:community-value> <damped> <detail> <forwarding-table>
<inactive> <next-hop address> <output interface-name> <protocol protocol> <range>
<receive-protocol protocol neighbor-address> <source-gateway address>
<table inet.number>
```

hidden—(Optional) Display hidden route information

Default: brief

Required Privilege Level view

Sample Output Sample Output: show route brief on page 354
Sample Output: show route detail on page 355
Sample Output: show route extensive on page 356

Options at a Glance Table 31 summarizes which information is included in each of the show route command options. In this table, output fields are listed in alphabetical order. In the Output Fields section, the output fields are listed in the order in which they are displayed.

Table 31: Show Route Output Field Summary

Options	Field Description
Detail Extensive	Age—How long the route has been known.
Detail Extensive	Announcement bits—List of protocols that will announce this route.
Detail Extensive	AS path—AS path through which the route was learned.
Detail Extensive	AS path: I <Originator>—(For route reflected output only) Originator ID sent by the route reflector.
Detail	BGP next hop—Next hop path attribute of the route.
Detail Extensive	Cluster list—(For router reflected output only) Cluster id sent by the route reflector.
Detail	Communities—Community path attribute of the route.
All	destinations—Number of destinations for which there are routes in the routing table.
Detail Extensive	<i>destination-prefix</i> (entry, announced)—Route address. entry is the number of routes for this destination, and announced is the number of routes being announced for this destination.
Detail	Local AS—AS number of the local router.
Detail	Localpref—Local preference path attribute of the route.
Detail	Metric—For routes learned from BGP, this is the MED metric.
Detail	Metric2—For routes learned from BGP, this is the IGP metric.
Detail Extensive	Nexthop—Address of the next hop and the interface used to reach the next hop.
Detail Extensive	Next hop type—Type of next hop.
Detail Extensive	Originator ID—(For router reflected output only) Address of router that originally sent route to the route reflector
Detail	Peer AS—AS number of the peer router.
Detail Extensive	Preference—Preference value of the route.
Brief	[<i>protocol/preference</i>] —Protocol from which the route was learned and the route's preference value.
Detail	Router ID—BGP router ID as advertised by the neighbor in the open message.
All	routes—Number of routes in the routing table.
All	<i>routing-table-name</i> —Name of the routing table; for example, inet.0.
Detail Extensive	Source—Source address of the route.
Detail Extensive	State—Flags for this route.
Detail Extensive	Static Direct Local <i>protocol-name</i> —How the route was learned.
Detail Extensive	Task—Name of the task that owns the route.
Brief	<i>time</i> —How long the route has been known.
Extensive	TSl—Header for protocol-specific information.

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

+—A plus sign before [*protocol/preference*] indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before [*protocol/preference*] indicates the last active route.

*—An asterisk before [*protocol/preference*] 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.

[*protocol/preference*](Brief output only) Protocol from which the route was learned and the route's preference value.

time(Brief output only) How long the route has been known.

destination-prefix (entry, announced)(Detail and Extensive output only) Route address. entry is the number of routes for this destination, and announced is the number of routes being announced for this destination.

Static | Direct | Local | *protocol-name*(Detail and Extensive output only) How the route was learned.

Preference(Detail and Extensive output only) Preference value of the route.

Next hop(Detail and Extensive output only) Address of the next hop and the interface used to reach the next hop.

Next hop type(Detail and Extensive output only) Type of the next hop. It can be Discard, Local, Interface, or Reject

Source(Detail and Extensive output only) Source address of the route.

State(Detail and Extensive output only) Flags for this route. It can be one or more of the following:

Accounting—Route needs accounting.

Active—Route is active.

Clone—Route is a clone.

Delete—Route has been deleted.

Ex—Exterior route.

Hidden—Route is not used because of routing policy.

IfCheck—Route needs forwarding RPF check.

Initial—Route is being added.

Int—Interior route.

Martian—Route is a martian.

MartianOK—Route is exempt from martian filtering.

NoReadvrt—Route is not to be advertised.

NotBest—Route was not chosen because it does not have the lowest MED metric.

NotInstall—Route is not to be installed in the forwarding table.

Pending—Route is pending because of holddown on another route.

Release—Route is scheduled for release.

Secondary—Route is not a primary route.

Local AS—(Detail output only) AS number of the local router.

Peer AS—(Detail output only) AS number of the peer router.

Age—(Detail and Extensive output only) How long the route has been known.

Metric—(Detail output only) For routes learned from BGP, this is the MED metric.

Metric2—(Detail output only) For routes learned from BGP, this is the IGP metric.

Task—Name of the task that owns the route.

Announcement bits—(Detail and Extensive output only) List of protocols that will announce this route.

AS path—(Detail and Extensive output only) 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 was originated:

I—IGP.

E— EGP.

?—Incomplete; typically, the AS path was aggregated.

Communities—(Detail output only) Community path attribute of the route.

BGP next hop—(Detail output only) Next hop path attribute of the route.

Localpref—(Detail output only) Local preference path attribute of the route.

Router ID—(Detail output only) BGP router ID as advertised by the neighbor in the open message.

AS path: I <Originator>—(For route reflected output only: Detail and Extensive output only)
Originator ID sent by the route reflector.

Cluster list—(For router reflected output only: Detail and Extensive output only) Cluster id
sent by the route reflector.

Originator ID—(For router reflected output only; Detail and Extensive output only) Address of
router that originally sent route to the route reflector.

TSI—(Extensive output only) Header for protocol-specific information.

**Sample Output: show route
brief**

```

user@host> show route brief
inet.0: 14 destinations, 14 routes (13 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0          *[Static/5] 00:00:08
                  > to 111.222.5.254 via fxp0.0
1.0.0.1/32        *[Direct/0] 00:00:09
                  > via at-5/3/0.0
1.0.0.2/32        *[Local/0] 00:00:09
                  Local
12.12.12.21/32    *[Local/0] 00:00:08
                  Reject
13.13.13.13/32    *[Direct/0] 00:00:09
                  > via t3-5/2/1.0
13.13.13.14/32    *[Local/0] 00:00:09
                  Local
13.13.13.21/32    *[Local/0] 00:00:09
                  Local
13.13.13.22/32    *[Direct/0] 00:00:09
                  > via t3-5/2/0.0
127.0.0.1/32     [Direct/0] 00:00:09
                  > via lo0.0
111.222.5.0/24    *[Direct/0] 00:00:09
                  > via fxp0.0
111.222.5.59/32   *[Kernel/-2] 00:00:09
                  > to 111.222.5.62 via fxp0.0
111.222.5.62/32   *[Kernel/-2] 00:00:09
                  > to 111.222.5.62 via fxp0.0
111.222.5.81/32   *[Local/0] 00:00:09
                  Local
224.0.0.5/32     *[OSPF/10] 00:00:09, metric 1

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

47.0005.80ff.f800.0000.0108.0001.1921.6800.5081.00/160
                  *[Direct/0] 00:00:09
                  > via lo0.0

```

```

Sample Output: show route detail
user@host> show route detail
inet.0: 72095 destinations, 72095 routes (72094 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0 (1 entry, 1 announced)
  *Static Preference: 5
    Next hop type: Reject
    State: <Active NoReadvrt Int Ext>
    Age: 5:10:46
    Task: RT
    Announcement bits (2): 0-KRT 5-BGP_Sync_Any
    AS path: I

4.0.0.0/8 (1 entry, 1 announced)
  *BGP Preference: 170/-101
    Next hop type: Reject
    State: <Active Int Ext>
    Local AS: 10458 Peer AS: 10458
    Age: 1:57:53 Metric: 3 Metric2: 0
    Task: BGP_10458.208.197.169.14+179
    Announcement bits (2): 0-KRT 5-BGP_Sync_Any
    AS path: 2914 I I
    Communities: 2914:420

...
4.17.106.0/24 (1 entry, 1 announced)
  *BGP Preference: 170/-101
    Next hop type: Reject
    State: <Active Int Ext>
    Local AS: 10458 Peer AS: 10458
    Age: 5:07:09 Metric2: 0
    Task: BGP_10458.208.197.169.14+179
    Announcement bits (2): 0-KRT 5-BGP_Sync_Any
    AS path: 267 1225 701 13832 I
    Communities: 1225:80 1225:701 267:1225
    BGP next hop: 204.42.253.253
    Localpref: 100
    Router ID: 208.197.169.14

```

The following example shows output when route reflection is active:

```

user@host> show route 16/8 detail
inet.0: 871 destinations, 871 routes (870 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

16.0.0.0/8 (1 entry, 1 announced)
  *BGP Preference: 170/-101
    Source: 10.255.245.45
    Nexthop: 111.222.5.1 via fxp0.0, selected
    State: <Active Int Ext>
    Local AS: 69 Peer AS: 69
    Age: 10:56 Metric2: 0
    Task: BGP_69.10.255.245.45+179
    Announcement bits (2): 2-KRT 5-BGP_Sync_Any
    AS path: I <Originator>
    Cluster list: 1.2.3.4
    Originator ID: 10.255.245.66
    BGP next hop: 111.222.5.1
    Localpref: 100
    Router ID: 10.255.245.45

```

Sample Output: show route extensive

```
user@host> show route extensive
inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0 (1 entry, 1 announced)
TSI:

    *Static Preference:    5
      Nexthop: 111.222.5.254 via fxp0.0, selected
      State: <Active NoReadvrt Int Ext>
      Age: 3:26
      Task: RT
      Announcement bits (1): 1-KRT
      AS path: I

1.0.0.1/32 (1 entry, 1 announced)
TSI:
  IS-IS level 1, LSP fragment 0, metric 10
  IS-IS level 2, LSP fragment 0, metric 10

    *Direct Preference:    0
      Next hop type: Interface
      Nexthop: via at-5/3/0.0, selected
      State: <Active>
      Age: 3:27
      Task: IF
      Announcement bits (1): 2-IS-IS
      AS path: I

...
```

show route advertising-protocol

Syntax show route advertising-protocol *protocol neighbor-address* <detail>

Description Display the routing information as it has been prepared for advertisement to a particular neighbor of a particular dynamic routing protocol. The information displayed reflects the routes that the routing table has exported into the routing protocol and that were filtered by that protocol's export routing policy statements. (In the figure "Importing and Exporting Routing Policies" in the section "How to Construct Routing Policy" in the *JUNOS Internet Software Configuration Guide: Routing and Routing Protocols*, these are the routes shown in the right "Protocol" box.)

Options detail—(Optional) Display additional information that was advertised to the neighbor. For example, for BGP, this option displays information about any other BGP path attributes that were advertised, including communities, route reflection, and aggregator.

neighbor-address—Address of the neighboring router to which the route entry is being transmitted.

protocol—Protocol transmitting the route. It can be bgp, dvmrp, msdp, pim-dense, pim-sparse, or rip.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

Prefix—Route address.

Next hop—Address of the next hop to the address.

MED—MED value included in the route.

Lclpref—Local preference value included in the route.

AS path—AS path included in the route.

Sample Output

```
user@host> show route advertising-protocol bgp 111.222.1.3
inet.0: 46498 destinations, 46498 routes (46496 active, 0 holddown, 2 hidden)
Prefix          Next hop          MED          Lclpref    AS path
15.0.0.1/32     111.222.1.1      69          IGP
```

show route aspath-regex

Syntax show route aspath-regex *regular-expression*
 show route aspath-regex "*regular-expression ...*"

Description Display the entries in the routing table that match the specified BGP AS path regular expression.

Options *regular-expression*—Regular expression that matches an entire AS path.

You can specify an AS path term in one of the following ways:

An individual AS number

A period wildcard used in place of an AS number

An AS path regular expression that is enclosed in parentheses

You also can include the operators described in the table "AS Path Regular Expression Operators" in the *JUNOS Internet Software Configuration Guide: Routing and Routing Protocols*. The following list summarizes these operators:

$\{m,n\}$ —At least m and at most n repetitions of the AS path term.

$\{m\}$ —Exactly m repetitions of the AS path term.

$\{m,\}$ — m or more repetitions of the AS path term.

$*$ —Zero or more repetitions of an AS path term.

$+$ —One or more repetitions of an AS path term.

$?$ —Zero or one repetition of an AS path term.

aspath_term | *aspath_term*—Match one of the two AS path terms.

When you specify more than one AS number or path term, or when you include an operator in the regular expression, enclose the entire regular expression in quotation marks. For example, to match any path that contains AS number 234, specify the following command:

```
show route aspath-regex ". * 234 . *"
```

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

- routes—Number of routes in the routing table:

 - active—Number of routes that are active.
 - holddown—Number of routes that are in the hold-down state prior to being declared inactive.
 - hidden—Number of routes not used because of routing policy.

- prefix*—Route address.
- [*protocol/preference*]*]*—Protocol from which the route was learned and the route's preference value.
- time*—How long the route has been known.
- localpref—Local preference value included in the route.
- from—Address and interface from which route was learned.
- +—A plus sign before [*protocol/preference*] indicates the active route, which is the route installed from the routing table into the forwarding table.
- A hyphen before [*protocol/preference*] indicates the last active route.
- *—An asterisk before [*protocol/preference*] 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.
- AS Path—AS path included in the route.

 - []—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the router.
 - { }—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.
 - ([])—Enclose a confederation set.

```

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

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

```

```

user@host> show route aspath-regex "\.* 234 3561 .*"

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

9.20.0.0/17      *[BGP/170] 01:35:00, localpref 100, from 131.103.20.49
                 AS Path: [666] 234 3561 2685 2686 Incomplete
                 to 192.156.169.1 via 192.156.169.14(so-0/0/0)
12.10.231.0/24  *[BGP/170] 01:35:00, localpref 100, from 131.103.20.49
                 AS Path: [666] 234 3561 5696 7369 IGP
                 to 192.156.169.1 via 192.156.169.14(so-0/0/0)
24.64.32.0/19   *[BGP/170] 01:34:59, localpref 100, from 131.103.20.49
                 AS Path: [666] 234 3561 6327 IGP
                 to 192.156.169.1 via 192.156.169.14(so-0/0/0)
24.88.0.0/18    *[BGP/170] 01:34:59, localpref 100, from 131.103.20.49
                 AS Path: [666] 234 3561 7725 IGP
                 to 192.156.169.1 via 192.156.169.14(so-0/0/0)
24.92.0.0/19   *[BGP/170] 01:35:00, localpref 100, from 131.103.20.49
                 AS Path: [666] 234 3561 IGP
...

```

show route best

Syntax `show route destination-prefix best`

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 *destination-prefix*—Address or range of addresses.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

time—How long the route has been known.

Sample Output user@host> `show route best 111.222/24`

```

inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0      *[Static/5] 00:09:41
                 > to 111.222.5.254 via so-2/0/1

```

show route community

Syntax	show route community as-number:community-value show route community "as-number:community-value"
Description	Display the route entries in each routing table that are members of a BGP community. The Communities: field in the show route detail command output lists the communities that the route is a member of, if any.
Options	<i>as-number:community-value</i> —One or more community identifier. <i>as-number</i> is the AS number, and <i>community-value</i> is the community identifier. When you specify more than one community identifier, enclose the identifiers in double quotation marks.
Required Privilege Level	view
Output Fields	<p><i>routing-table-name</i>—Name of the routing table; for example, inet.0.</p> <p>destinations—Number of destinations for which there are routes in the routing table.</p> <p>routes—Number of routes in the routing table:</p> <ul style="list-style-type: none"> active—Number of routes that are active. holddown—Number of routes that are in the hold-down state prior to being declared inactive. hidden—Number of routes not used because of routing policy. <p><i>prefix</i>—Route address.</p> <p><i>[protocol/preference]</i>—Protocol from which the route was learned and the route's preference value.</p> <p><i>time</i>—How long the route has been known.</p> <p>localpref—Local preference value included in the route.</p> <p>from—Address and interface from which route was learned.</p> <p>+—A plus sign before <i>[protocol/preference]</i> indicates the active route, which is the route installed from the routing table into the forwarding table.</p> <p>—A hyphen before <i>[protocol/preference]</i> indicates the last active route.</p> <p>*—An asterisk before <i>[protocol/preference]</i> 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>

AS Path—AS path included in the route.

[]—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the router.

{ }—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.

([])—Enclose a confederation set.

Sample Output

```

user@host> show route community 234:80
inet.0: 46511 destinations, 46511 routes (46509 active, 0 holddown, 2 hidden)
+ = Active Route, - = Last Active, * = Both

4.0.0.0/8          *[BGP/170] 03:33:07, localpref 100, from 131.103.20.49
                   AS Path: {666} 234 2548 1 IGP
                   to 192.156.169.1 via 192.156.169.14(so-0/0/0)
6.0.0.0/8          *[BGP/170] 03:33:07, localpref 100, from 131.103.20.49
                   AS Path: {666} 234 2548 568 721 Incomplete
                   to 192.156.169.1 via 192.156.169.14(so-0/0/0)
9.2.0.0/16         *[BGP/170] 03:33:06, localpref 100, from 131.103.20.49
                   AS Path: {666} 234 2548 1673 1675 1747 IGP
                   to 192.156.169.1 via 192.156.169.14(so-0/0/0)
...
inet.1: 728 destinations, 728 routes (545 active, 0 holddown, 183 hidden)
+ = Active Route, - = Last Active, * = Both
...
inet.2: 7367 destinations, 7360 routes (7307 active, 53 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both
...

```

show route damping

Syntax	show route damping <detail>
Description	Display the routes in the routing table that have been damped.
Options	<p>none—Display all routes in the routing table that have been damped.</p> <p>detail—(Optional) Display detailed information about routes in the routing table that have been damped.</p>
Required Privilege Level	view
Output Fields	<p><i>routing-table-name</i>—Name of the routing table; for example, inet.0.</p> <p>destinations—Number of destinations for which there are routes in the routing table.</p> <p>routes—Number of routes in the routing table:</p> <ul style="list-style-type: none"> active—Number of routes that are active. holddown—Number of routes that are in the hold-down state prior to being declared inactive. hidden—Number of routes not used because of routing policy. <p><i>prefix</i>—Route address.</p> <p><i>[protocol/preference]</i>—Protocol from which the route was learned and the route's preference value.</p> <p>Nexthop—Address of the next hop and the interface used to reach the next hop.</p> <p>State—Flags for this route. It can be one or more of the following:</p> <ul style="list-style-type: none"> Accounting—Route needs accounting. Active—Route is active. Clone—Route is a clone. Delete—Route has been deleted. Ex—Exterior route. Hidden—Route is not used because of routing policy. IfCheck—Route needs forwarding RPF check. Initial—Route is being added. Int—Interior route. Martian—Route is a martian. MartianOK—Route is exempt from martian filtering.

NoReadvrt—Route is not to be advertised.

NotBest—Route was not chosen because it does not have the lowest MED metric.

NotInstall—Route is not to be installed in the forwarding table.

Pending—Route is pending because of holddown on another route.

Release—Route is scheduled for release.

Local AS—AS number of the local router.

Peer AS—AS number of the peer router.

Age—How long the route has been known.

Task—Name of the task that owns the route.

AS path—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 was originated:

I—IGP.

E—EGP.

?—Incomplete; typically, the AS path was aggregated.

Localpref—Local preference value included in the route.

Router ID—BGP router ID as advertised by the neighbor in the open message.

Merit (last update/now)—Last updated and current figure-of-merit value.

Damping parameters—Name that identifies the damping parameters used, which is defined in the damping statement at the [edit policy-options] hierarchy level.

Last update—Time of most recent change in path attributes.

First update—Time of first change in path attribute, which started the route damping process.

Flaps—Number of times route has gone up or down or its path attributes changed.

Suppressed—Indicates that this route is currently suppressed. A suppressed route does not appear in the forwarding table and routing protocols do not export it.

Reusable in—Time when a suppressed route will again be available.

Preference will be—Preference value that will be applied to the route when it is again active.

Sample Output user@host> show route damped detail

```
inet.0: 21 destinations, 21 routes (15 active, 0 holddown, 6 hidden)
  + = Active Route, - = Last Active, * = Both

1.1.1.0/24 (1 entry, 0 announced)
  BGP Preference: /-101
    Nexthop: 10.12.1.2 via en0.0, selected
    State: <Hidden Ext>
    Local AS: 911 Peer AS: 922
    Age: 11:50
    Task: BGP_922.10.12.1.2+179
    AS path: 922 I
    Localpref: 100
    Router ID: 111.222.1.46
    Merit (last update/now): 4833/2796
    Default damping parameters used
    Last update: 00:11:50
    First update: 01:01:43
    Flaps: 10
    Suppressed. Reusable in: 00:28:40
    Preference will be: 170
...

```

show route exact

Syntax show route *destination-prefix* exact

Description Display only the routes that exactly match the specified address or range of addresses.

Options *destination-prefix*—Address or range of addresses.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

+—A plus sign before *[protocol/preference]* indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before *[protocol/preference]* indicates the last active route.

*—An asterisk before *[protocol/preference]* 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.

time—How long the route has been known.

localpref—Local preference value included in the route.

from—Address and interface from which route was learned.

AS Path—AS path included in the route.

[]—Brackets enclose the local AS number associated with the AS path if more than one AS number is configured on the router.

{ }—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.

([])—Enclose a confederation set.

Sample Output user@host> **show route exact show route exact 24.226.160.0/19**

```

inet.0: 53294 destinations, 53294 routes (53293 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

24.226.160.0/19    *[BGP/170] 00:31:04, MED 0, localpref 100, from
208.197.169.14
                  AS path: 2914 701 3493 11290 I
                  > to 111.222.5.254 via fxp0.0

```

show route forwarding-table

Syntax show route forwarding-table <destination-prefix> <detail>

Description Display the route entries in the kernel's forwarding table. This is the version of the forwarding table in the Routing Engine. The Routing Engine copies this table to the Packet Forwarding Engine.

The `show route forwarding-table` command displays only the network-layer prefixes and their next hops. Commonly, you need information in the `show route` commands. However, when you run into problems, such as connectivity problems, it can be necessary to use the `show route forwarding-table` command to verify that the routing protocol process has relayed the correct information into the forwarding table.



Note

The `show route forwarding-table` command is an independent command, not a filter that selects specific information that is displayed from the routing tables. You cannot use this command in conjunction with any of the `show route filter` options (see Table 30 on page 346).

Options none—Display the routes in the forwarding table. This option is equivalent to the UNIX `netstat -rn` command.

destination-prefix—(Optional) IP address of a destination.

detail—(Optional) Display detailed information, including clone routes. This option is equivalent to the UNIX `netstat -rna` command.

Required Privilege Level view

mdsc—Multicast discard.

mgrp—Multicast group member.

recv—Receive.

rjct—Discard; ICMP unreachable message sent.

rslv—Resolving next hop.

ucst—Unicast.

ulst—List of unicast next hops. A packet sent to this next hop will go to any next hop in the list.

Index—Number associated with the next hop.

NhRef—Number of routes that reference this next hop.

Netif—Interface used to reach the next hop.

Sample Output

```

user@host> show route forwarding-table
Internet:
Destination          Type RtRef  Nexthop          Type Index NhRef Netif
default              user   1 111.222.1.254   ucst   20   3 de0.0
default              perm   0                    rjct   9    1
10.168.1.8           intf   0 10.168.1.8      locl   16   1
111.222/23           intf   0                    rslv   14   1 de0.0
111.222.0.0          dest   0 111.222.0.0     recv   12   1 de0.0
111.222.1.8          intf   0 111.222.1.8     locl   13   2
111.222.1.8          dest   0 111.222.1.8     locl   13   2
111.222.1.254        dest   0 0:a0:c9:69:ea:f3 ucst   20   3 de0.0
111.222.1.255        dest   0 111.222.1.255   bcst   11   1 de0.0
111.222.7.4/30       intf   0 ff.3.0.21       ucst   22   1 mps0.0
111.222.7.5          intf   0 111.222.7.5     locl   21   1
224/4                perm   0                    mdsc   8    1
224.0.0.1            perm   0 224.0.0.1       mcst   4    1
255.255.255.255      perm   0                    bcst   5    1

ISO:
Destination          Type RtRef  Nexthop          Type Index NhRef Netif
default              perm   0                    dscd   15   1
47.0005.80ff.f800.0000.0108.0001.1921.6800.1008.00
                    intf   0                    locl   17   1

MPLS:
Interface.Label      Type RtRef  Nexthop          Type Index NhRef Netif
default              perm   0                    dscd   1    1

user@host> show route forwarding-table detail
Internet:
Destination          Type RtRef  InIf  Flags  Nexthop          Type Index NhRef Net
if
default              user   0    0  0x10                    rjct   9    9
default              perm   0    0  0x00                    rjct   9    9
1.1.1.8/32           user   0    0  0x10 111.222.8.208   ucst   35   5 so-
2/1/1.0
1.1.1.9/32           user   0    0  0x10 111.222.8.208   ucst   35   5 so-
2/1/1.0
10.0.222.0/30       ifdn   0    0  0x00 ff.3.0.21       ucst   51   1 t3-
5/2/2.0

```


111.222.8.207/32	intf	0	0	0x10	ff.3.0.21	ucst	37	1	so-	.
2/1/2.0										.
111.222.8.208/32	intf	0	0	0x10	f.0.8.0	ucst	35	5	so-	.
2/1/1.0										.
111.222.8.209/32	intf	0	0	0x10	111.222.8.209	loc1	34	1		.
111.222.10.69/32	user	0	0	0x10		rjct	9	9		.
111.222.10.69/32	intf	0	0	0x00	111.222.10.69	loc1	26	1		.
111.222.10.70/32	ifdn	0	0	0x00	dlci: 15	ucst	27	1	so-	.
2/1/0.0										.
207.79.80.0/24	user	1	0	0x10	111.222.4.254	ucst	19	6	fxp	.
0.0										.
207.79.80.170/32	clon	1	0	0x00	111.222.4.254	ucst	19	6	fxp	.
0.0										.
208.197.169.0/24	user	1	0	0x10	111.222.4.254	ucst	19	6	fxp	.
0.0										.
208.197.169.253/32	clon	1	0	0x00	111.222.4.254	ucst	19	6	fxp	.
0.0										.
224.0.0.0/4	perm	0	0	0x10		mdsc	8	1		.
224.0.0.1/32	perm	0	0	0x10	224.0.0.1	mcst	4	1		.
255.255.255.255/32	perm	0	0	0x10		bcst	5	1		.

ISO:

Destination	Type	RtRef	InIf	Flags	Nexthop	Type	Index	NhRef	Net	.
if										.
default	perm	0	0	0x00		dscd	17	1		.
47.0005.80ff.f800.0000.0108.0001.1921.6800.4021.00	intf	0	0	0x00		loc1	18	1		.

MPLS:

Interface.Label	Type	RtRef	InIf	Flags	Nexthop	Type	Index	NhRef	Net	.
if										.
default	perm	0	0	0x00		dscd	1	1		.
0000000	user	0	0	0x18		recv	3	2		.
0000001	user	0	0	0x18		recv	3	2		.

show route inactive

Syntax show route inactive

Description Display the inactive entries in each routing table.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

+—A plus sign before *[protocol/preference]* indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before *[protocol/preference]* indicates the last active route.

*—An asterisk before *[protocol/preference]* 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.

time—How long the route has been known.

via—Interface to reach the next hop.

Sample Output

```
user@host> show route inactive
inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

127.0.0.1/32          [Direct/0] 19:40:17
> via lo0.0
```

show route label-switched-path

Syntax show route label-switched-path *path-name*

Description Display the routes used in a label-switched path.

Options *path-name*—Name of a label-switched path.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

+—A plus sign before *[protocol/preference]* indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before *[protocol/preference]* indicates the last active route.

*—An asterisk before *[protocol/preference]* 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.

time—How long the route has been known.

metric—Metric associated with the route.

to—Destination of the LSP; that is, the address of the egress router.

via—Interface to reach the LSP.

lsp-name—Name of the LSP.

```

Sample Output user@host> show route label-switched-path sf-to-ny
inet.0: 29 destinations, 29 routes (29 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

1.1.1.1/32          [MPLS/7] 00:00:06, metric 0
                   > to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny
3.3.3.3/32          *[MPLS/7] 00:00:06, metric 0
                   > to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny

inet.3: 3 destinations, 3 routes (3 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

2.2.2.2/32          *[MPLS/7] 00:00:06, metric 0
                   > to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny
4.4.4.4/32          *[MPLS/7] 00:00:06, metric 0
                   to 111.222.1.9 via s0-0/0/0, label-switched-path abc
                   > to 111.222.1.9 via s0-0/0/0, label-switched-path xyz
                   to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny
111.222.1.9/32      [MPLS/7] 00:00:06, metric 0
                   > to 111.222.1.9 via s0-0/0/0, label-switched-path sf-to-ny

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

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

```

show route martians

Syntax show route martians <table *routing-table*>

Description Display the martian entries associated with each routing table.



Note

The show route martians command is an independent command, not a filter that selects specific information that is displayed from the routing tables. You cannot use this command in conjunction with any of the show route filter options (see Table 30 on page 346).

Options table *routing-table*—Display the martian entries associated with a particular routing table.

Required Privilege Level view

```

Sample Output user@host> show route martians
inet.0:
0.0.0.0/0      Match: Exact, Advertise: <none>
0.0.0.0/8      Match: <none>, Advertise: <none>
127.0.0.0/8    Match: <none>, Advertise: Restrict
128.0.0.0/16   Match: <none>, Advertise: Restrict
191.255.0.0/16 Match: <none>, Advertise: Restrict
192.0.0.0/24   Match: <none>, Advertise: Restrict
223.255.255.0/24 Match: <none>, Advertise: Restrict
240.0.0.0/4    Match: <none>, Advertise: Restrict

inet.1:
0.0.0.0/0      Match: Exact, Advertise: <none>
0.0.0.0/8      Match: <none>, Advertise: <none>
127.0.0.0/8    Match: <none>, Advertise: Restrict
128.0.0.0/16   Match: <none>, Advertise: Restrict
191.255.0.0/16 Match: <none>, Advertise: Restrict
192.0.0.0/24   Match: <none>, Advertise: Restrict
223.255.255.0/24 Match: <none>, Advertise: Restrict
240.0.0.0/4    Match: <none>, Advertise: Restrict

inet.2:
0.0.0.0/0      Match: Exact, Advertise: <none>
0.0.0.0/8      Match: <none>, Advertise: <none>
127.0.0.0/8    Match: <none>, Advertise: Restrict
128.0.0.0/16   Match: <none>, Advertise: Restrict
191.255.0.0/16 Match: <none>, Advertise: Restrict
192.0.0.0/24   Match: <none>, Advertise: Restrict
223.255.255.0/24 Match: <none>, Advertise: Restrict
240.0.0.0/4    Match: <none>, Advertise: Restrict

inet.3:
0.0.0.0/0      Match: Exact, Advertise: <none>
0.0.0.0/8      Match: <none>, Advertise: <none>
127.0.0.0/8    Match: <none>, Advertise: Restrict
128.0.0.0/16   Match: <none>, Advertise: Restrict
191.255.0.0/16 Match: <none>, Advertise: Restrict
192.0.0.0/24   Match: <none>, Advertise: Restrict
223.255.255.0/24 Match: <none>, Advertise: Restrict
240.0.0.0/4    Match: <none>, Advertise: Restrict

```

show route next-hop

Syntax show route next-hop *destination-prefix*

Description Display the entries in the routing table that are being sent to the specified next-hop address.

Options *destination-prefix*—IP address or name of a next hop.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

+—A plus sign before *[protocol/preference]* indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before *[protocol/preference]* indicates the last active route.

*—An asterisk before *[protocol/preference]* 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.

time—How long the route has been known.

to—Next hop to the destination.

via—Interface to reach the next hop.

Sample Output user@host> **show route next-hop 111.222.5.254**

```
inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both
```

```
0.0.0.0/0          *[Static/5] 00:43:39
                   > to 111.222.5.254 via fxp0.0
```

show route output

Syntax	show route output (interface <i>interface</i> address <i>address</i>)
Description	Display the entries in the routing table that are to be sent out the specified interface or out the interface with the specified address.
Options	address <i>address</i> —Interface address. interface <i>interface</i> —Interface name.
Required Privilege Level	view
Output Fields	<p><i>routing-table-name</i>—Name of the routing table; for example, inet.0.</p> <p>destinations—Number of destinations for which there are routes in the routing table.</p> <p>routes—Number of routes in the routing table:</p> <ul style="list-style-type: none"> active—Number of routes that are active. holddown—Number of routes that are in the hold-down state prior to being declared inactive. hidden—Number of routes not used because of routing policy. <p>prefix—Route address.</p> <p>[<i>protocol/preference</i>]—Protocol from which the route was learned and the route's preference value.</p> <ul style="list-style-type: none"> +—A plus sign before [<i>protocol/preference</i>] indicates the active route, which is the route installed from the routing table into the forwarding table. —A hyphen before [<i>protocol/preference</i>] indicates the last active route. *—An asterisk before [<i>protocol/preference</i>] 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><i>time</i>—How long the route has been known.</p> <p>via—Interface to reach the next hop.</p>
Sample Output	<pre> user@host> show route output interface t3-5/2/1 inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden) + = Active Route, - = Last Active, * = Both 13.13.13.13/32 *[Direct/0] 00:44:55 > via t3-5/2/1.0 iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden) + = Active Route, - = Last Active, * = Both </pre>

show route protocol

Syntax show route protocol *protocol*

Description Display the route entries in the routing table that were learned from a particular protocol.

Options *protocol*—Protocol from which the route was learned. It can be one of the following: aggregate, bgp, direct, dvmrp, isis, ldp, local, mpls, msdp, ospf, pim, rip, rsvp, or static.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

+—A plus sign before *[protocol/preference]* indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before *[protocol/preference]* indicates the last active route.

*—An asterisk before *[protocol/preference]* 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.

time—How long the route has been known.

via—Interface to reach the next hop.

```

Sample Output user@host> show route protocol direct
inet.0: 35 destinations, 35 routes (34 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

127.0.0.1/32      [Direct/0] 14:36:24
                  > via lo0.0
111.222.5.0/24   *[Direct/0] 14:36:24
                  > via fxp0.0
111.222.8.16/28  *[Direct/0] 14:36:24
                  > via at-5/3/0.0
111.222.8.100/30 *[Direct/0] 14:36:24
                  > via at-5/3/0.129
111.222.8.104/30 *[Direct/0] 14:36:24
                  > via at-5/3/0.128
111.222.8.161/32 *[Direct/0] 14:36:24
                  > via t3-5/2/0.0
111.222.8.163/32 *[Direct/0] 14:36:24
                  > via t3-5/2/1.0
...

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

47.0005.80ff.f800.0000.0108.0001.1921.6800.5081.00/160
                  *[Direct/0] 14:36:24
                  > via lo0.0

```

show route range

Syntax show route range <destination-prefix>

Description Display all the routing table entries in a prefix range.

Options destination-prefix—Destination prefix and mask for the range.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

prefix—Route address.

[protocol/preference]—Protocol from which the route was learned and the route's preference value.

+—A plus sign before *[protocol/preference]* indicates the active route, which is the route installed from the routing table into the forwarding table.

—A hyphen before *[protocol/preference]* indicates the last active route.

*—An asterisk before *[protocol/preference]* 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.

time—How long the route has been known.

metric—Metric associated with the route.

tag—Tag associated with the route.

to—Next hop to the destination.

via—Interface to reach the next hop.

Sample Output This example shows all routes:

```

user@host> show route range
inet.0: 27 destinations, 27 routes (26 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0          *[Static/5] 06:03:18
                   Discard
10.255.245.87/32  *[Direct/0] 06:03:19
                   > via lo0.0
123.16.1.0/24     *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.16.14.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.16.100.0/24   *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.16.128.0/19   *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.16.160.0/24   *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.17.2.0/24     *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.17.12.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.17.16.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.17.17.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
123.17.20.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
111.222.1.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
111.222.4.0/24    *[Direct/0] 06:03:19
                   > via fxp0.0
111.222.4.18/32   *[Local/0] 06:03:19
                   Local
111.222.5.0/24    *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
111.222.8.196/32  *[Local/0] 06:02:12
                   Local
111.222.8.197/32  *[Direct/0] 06:01:54
                   > via so-2/1/3.0
111.222.8.206/32  *[Direct/0] 06:01:55
                   > via so-2/1/0.0
111.222.8.207/32  *[Local/0] 06:02:12
                   Local
111.222.8.210/32  *[Direct/0] 05:57:06
                   > via so-2/1/2.0
111.222.8.211/32  *[Local/0] 06:02:12
                   Local
111.222.8.217/32  *[Local/0] 06:02:12
                   Reject
124.79.80.0/24   *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
125.197.169.0/24  *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0
125.223.208.0/24  *[Static/5] 06:03:18
                   > to 111.222.4.254 via fxp0.0

```

This example shows just a range:

```
user@host> show route range 123.16/16
inet.0: 27 destinations, 27 routes (26 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

123.16.1.0/24      *[Static/5] 06:03:27
                  > to 111.222.4.254 via fxp0.0
123.16.14.0/24   *[Static/5] 06:03:27
                  > to 111.222.4.254 via fxp0.0
123.16.100.0/24  *[Static/5] 06:03:27
                  > to 111.222.4.254 via fxp0.0
123.16.128.0/19 *[Static/5] 06:03:27
                  > to 111.222.4.254 via fxp0.0
123.16.160.0/24 *[Static/5] 06:03:27
                  > to 111.222.4.254 via fxp0.0
```

show route receive-protocol

Syntax	show route receive-protocol <i>protocol neighbor-address</i> <detail extensive>
Description	Display the routing information as it was received through a particular neighbor of a particular dynamic routing protocol. This information includes the routes that the local router advertised to the neighbor. The information displayed reflects the routes before they are filtered by that protocol's import routing policy statements and is placed into the routing table.
Options	<p>detail—Display additional information that was received from the neighbor. For example, for BGP, this option displays information about any other BGP path attributes that were received, including communities, route reflection, and aggregator.</p> <p><i>neighbor-address</i>—Address of the neighboring router from which the route entry was received.</p> <p><i>protocol</i>—Protocol transmitting the route. It can be one of the following: bgp, dvmrp, pim-dense, or pim-sparse.</p>
Required Privilege Level	view
Output Fields	<p><i>routing-table-name</i>—Name of the routing table; for example, inet.0.</p> <p>destinations—Number of destinations for which there are routes in the routing table.</p> <p>routes—Number of routes in the routing table:</p> <ul style="list-style-type: none"> active—Number of routes that are active. holddown—Number of routes that are in the hold-down state prior to being declared inactive. hidden—Number of routes not used because of routing policy. <p>Prefix—Route address.</p> <p>Next hop—Address of the next hop to the address.</p> <p>MED—MED value included in the route.</p> <p>Lclpref—Local preference value included in the route.</p> <p>AS path—AS path included in the route.</p> <p>AS path: I <Originator>—(For route reflected output only) Route reflector set the originator id attribute.</p> <p>Cluster list—(For router reflected output only) Cluster id sent by the route reflector.</p> <p>Originator ID—(For router reflected output only) Address of router that originally sent route to the route reflector.</p>

Sample Output user@host> show route receive-protocol bgp 10.255.245.63 extensive

```

inet.0: 244 destinations, 244 routes (243 active, 0 holddown, 1 hidden)
Prefix          Nexthop          MED    Lclpref AS path
1.1.1.0/24 (1 entry, 1 announced)
  Nexthop: 10.0.50.3
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.45
165.3.0.0/16 (1 entry, 1 announced)
  Nexthop: 111.222.5.254
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.68
165.4.0.0/16 (1 entry, 1 announced)
  Nexthop: 111.222.5.254
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.45
195.1.2.0/24 (1 entry, 1 announced)
  Nexthop: 111.222.5.254
  Localpref: 100
  AS path: I <Originator>
  Cluster list: 10.2.3.1
  Originator ID: 10.255.245.68

inet.2: 63 destinations, 63 routes (63 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path

inet.3: 10 destinations, 10 routes (10 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
Prefix          Nexthop          MED    Lclpref AS path

mpls.0: 48 destinations, 48 routes (48 active, 0 holddown, 0 hidden)

```

show route source-gateway

Syntax	show route source-gateway <i>address</i>
Description	Display the entries in the routing table that were learned from a particular address. The Source: field in the show route detail command output lists the source for each route, if known.
Options	<i>address</i> —IP address of the system.
Required Privilege Level	view
Output Fields	<p><i>routing-table-name</i>—Name of the routing table; for example, inet.0.</p> <p>destinations—Number of destinations for which there are routes in the routing table.</p> <p>routes—Number of routes in the routing table:</p> <ul style="list-style-type: none"> active—Number of routes that are active. holddown—Number of routes that are in the hold-down state prior to being declared inactive. hidden—Number of routes not used because of routing policy. <p><i>prefix</i>—Route address.</p> <p>[<i>protocol/preference</i>] —Protocol from which the route was learned and the route's preference value.</p> <ul style="list-style-type: none"> +—A plus sign before [<i>protocol/preference</i>] indicates the active route, which is the route installed from the routing table into the forwarding table. —A hyphen before [<i>protocol/preference</i>] indicates the last active route. *—An asterisk before [<i>protocol/preference</i>] 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><i>time</i>—How long the route has been known.</p> <p>from—Address and interface from which route was learned.</p> <p>AS Path—AS path included in the route.</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 router. { }—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. ([])—Enclose a confederation set.

```

Sample Output user@host> show route source-gateway 131.103.20.49
inet.0: 46035 destinations, 46035 routes (46033 active, 0 holddown, 2 hidden)
+ = Active Route, - = Last Active, * = Both

4.0.0.0/8          *[BGP/170] 04:43:40, from 131.103.20.49
                   AS Path: {666} 234 2548 1 IGP
                   to 192.156.169.1 via 192.156.169.14(de0.0)
6.0.0.0/8          *[BGP/170] 04:43:40, from 131.103.20.49
                   AS Path: {666} 234 2548 568 721 Incomplete
                   to 192.156.169.1 via 192.156.169.14(de0.0)
...

```

show route summary

Syntax show route summary

Description Display summary statistics about the entries in the routing table.

Required Privilege Level view

Output Fields *routing-table-name*—Name of the routing table; for example, inet.0.

destinations—Number of destinations for which there are routes in the routing table.

routes—Number of routes in the routing table:

active—Number of routes that are active.

holddown—Number of routes that are in the hold-down state prior to being declared inactive.

hidden—Number of routes not used because of routing policy.

Direct—Routes on the directly connected network.

Local—Local routes.

protocol-name—How the route was learned.

```

Sample Output user@host> show route summary
inet.0: 66452 destinations, 66452 routes (66452 active, 0 holddown, 0 hidden)
      Direct:      3 routes,      3 active
      Local:       2 routes,      2 active
      BGP: 84654 routes, 64536 active
      IS-IS: 1904 routes, 1903 active

inet.3: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
      Static:      1 routes,      1 active

iso.0: 1 destinations, 1 routes (1 active, 0 holddown, 0 hidden)
      Direct:      1 routes,      1 active

```

show route table

Syntax	show route table <i>routing-table</i>
Description	Display the route entries in a particular routing table.
Options	<i>routing-table</i> —Name of a routing table, in the format <i>inet.number</i> .
Required Privilege Level	view
Output Fields	<p><i>routing-table-name</i>—Name of the routing table; for example, <i>inet.0</i>.</p> <p>destinations—Number of destinations for which there are routes in the routing table.</p> <p>routes—Number of routes in the routing table:</p> <ul style="list-style-type: none"> active—Number of routes that are active. holddown—Number of routes that are in the hold-down state prior to being declared inactive. hidden—Number of routes not used because of routing policy. <p><i>prefix</i>—Route address.</p> <p>label stacking—On the penultimate-hop router, indicates the depth of the MPLS label stack, where the label popping operation is needed. A pair of routes is displayed because the pop operation is different depending on the stack depth.</p> <ul style="list-style-type: none"> S=0 route indicates the packet with an incoming label stack depth $n \geq 2$ exits this router using MPLS, with $n-1$ stack label. No S= information indicates a normal MPLS route, which has a stack depth of 1. <p>[<i>protocol/preference</i>]—Protocol from which the route was learned and the route's preference value.</p> <ul style="list-style-type: none"> +—A plus sign before [<i>protocol/preference</i>] indicates the active route, which is the route installed from the routing table into the forwarding table. —A hyphen before [<i>protocol/preference</i>] indicates the last active route. *—An asterisk before [<i>protocol/preference</i>] 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><i>time</i>—How long the route has been known.</p> <p>Metric 1—First metric value in the route.</p> <p><i>via</i>—Interface to reach the next hop.</p>

Sample Output

```

user@host> show route table inet.0
inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

0.0.0.0/0          *[Static/5] 00:51:57
                  > to 111.222.5.254 via fxp0.0
1.0.0.1/32        *[Direct/0] 00:51:58
                  > via at-5/3/0.0
1.0.0.2/32        *[Local/0] 00:51:58
                  Local
12.12.12.21/32    *[Local/0] 00:51:57
                  Reject
13.13.13.13/32    *[Direct/0] 00:51:58
                  > via t3-5/2/1.0
13.13.13.14/32    *[Local/0] 00:51:58
                  Local
13.13.13.21/32    *[Local/0] 00:51:58
                  Local
13.13.13.22/32    *[Direct/0] 00:33:59
                  > via t3-5/2/0.0
127.0.0.1/32     [Direct/0] 00:51:58
                  > via lo0.0
111.222.5.0/24   *[Direct/0] 00:51:58
                  > via fxp0.0
111.222.5.81/32  *[Local/0] 00:51:58
                  Local
224.0.0.5/32     *[OSPF/10] 00:51:58, metric 1

user@host> show route table mpls
mpls.0: 8 destinations, 8 routes (8 active, 0 holddown, 0 hidden)
+ = Active Route, - = Last Active, * = Both

0          *[MPLS/0] 6d 05:37:09, metric 1
          Receive
1          *[MPLS/0] 6d 05:37:09, metric 1
          Receive
100061     *[RSVP/7] 00:20:59, metric 1
          > to 192.168.200.26 via fxpl.0, label-switched-path dc.1
100061(S=0) *[RSVP/7] 00:20:59, metric 1
          > to 192.168.200.26 via fxpl.0, label-switched-path dc.1
100063     *[RSVP/7] 00:20:58, metric 1
          > to 192.168.200.26 via fxpl.0, label-switched-path to-sj2-3
100063(S=0) *[RSVP/7] 00:20:58, metric 1
          > to 192.168.200.26 via fxpl.0, label-switched-path to-sj2-3
100073     *[RSVP/7] 00:04:45, metric 1
          > to 192.168.200.26 via fxpl.0, label-switched-path to-sj2-1
100073(S=0) *[RSVP/7] 00:04:45, metric 1
          > to 192.168.200.26 via fxpl.0, label-switched-path to-sj2-1

```

show route terse

Syntax	show route terse
Description	Display a high-level summary of the routes in the routing table.
Required Privilege Level	view
Output Fields	<p>A—Active route. An asterisk (*) indicates that this is the active route.</p> <p>Destination—Destination of the route.</p> <p>P—Protocol through which the route was learned:</p> <p style="padding-left: 40px;">S—Static</p> <p style="padding-left: 40px;">D—Direct</p> <p style="padding-left: 40px;">L—Local</p> <p style="padding-left: 40px;">I—IS-IS</p> <p style="padding-left: 40px;">O—OSPF</p> <p>Prf—Preference value of the route.</p> <p>Metric 1—First metric value in the route.</p> <p>Metric 2—Second metric value in the route.</p> <p>Next hop—Next hop to the destination. An angle bracket (>) indicates that the route is the selected route.</p> <p>AS path—AS path in the route.</p>

Sample Output

```

user@host> show route terse
inet.0: 12 destinations, 12 routes (11 active, 0 holddown, 1 hidden)
+ = Active Route, - = Last Active, * = Both

A Destination          P Prf Metric 1    Metric 2    Next hop      AS path
* 0.0.0.0/0            S   5
* 1.0.0.1/32          D   0            >at-5/3/0.0
* 1.0.0.2/32          L   0            Local
* 12.12.12.21/32      L   0            Reject
* 13.13.13.13/32      D   0            >t3-5/2/1.0
* 13.13.13.14/32      L   0            Local
* 13.13.13.21/32      L   0            Local
* 13.13.13.22/32      D   0            >t3-5/2/0.0
127.0.0.1/32          D   0            >lo0.0
* 111.222.5.0/24      D   0            >fxp0.0
* 111.222.5.81/32     L   0            Local
* 224.0.0.5/32        O  10            1            MultiRecv

```

.....