

Chapter 7

Summary of Protocol-Independent Routing Properties Configuration Statements

This chapter provides a reference for each of the protocol-independent routing configuration statements. The statements are organized alphabetically.

active

Syntax	(active passive);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-options (aggregate generate static) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)]
Description	Configure whether static, aggregate, or generated routes are removed from the routing and forwarding tables when they become inactive. Routes that have been configured to remain continually installed in the routing and forwarding tables are marked with reject next hops when they are inactive. active—Remove a route from the routing and forwarding tables when it becomes inactive. passive—Have a route remain continually installed in the routing and forwarding tables even when it becomes inactive.
Default	active

Usage Guidelines See “Configuring Static Routes” on page 45, “Configuring Aggregate Routes” on page 66, and “Configuring Generated Routes” on page 74.

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

aggregate

Syntax

```
aggregate {
  defaults {
    aggregate-options;
  }
  route destination-prefix {
    policy policy-name;
    aggregate-options;
  }
}
```

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options],
[edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options rib *routing-table-name*],
[edit logical-routers *logical-router-name* routing-options],
[edit logical-routers *logical-router-name* routing-options rib *routing-table-name*],
[edit routing-instances *routing-instance-name* routing-options],
[edit routing-instances *routing-instance-name* routing-options rib *routing-table-name*],
[edit routing-options],
[edit routing-options rib *routing-table-name*]

Description Configure aggregate routes.

Options *aggregate-options*—Additional information about aggregate routes that is included with the route when it is installed in the routing table. Specify zero or more of the following options in *aggregate-options*. Each option is explained separately.

(active | passive);

as-path < *as-path* > < origin (egp | igp | incomplete) > < atomic-aggregate >
< aggregator *as-number in-address* >;

community [*community-ids*];

discard;

(brief | full);

(metric | metric2 | metric3 | metric4) *value* < type *type* > ;

(preference | preference2 | color | color2) *preference* < type *type* > ;

tag *string*;

defaults—Specify global aggregate route options. These options only set default attributes inherited by all newly created aggregate routes. These are treated as global defaults and apply to all the aggregate routes you configure in the aggregate statement. This part of the aggregate statement is optional.

route *destination-prefix*—Configure a non-default aggregate route:

default—For the default route to the destination. This is equivalent to specifying an IP address of 0.0.0.0/0.

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

The policy statement is explained separately.

Usage Guidelines See “Configuring Aggregate Routes” on page 66.

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

as-path

Syntax	as-path <as-path> <origin (egp igp incomplete)> <atomic-aggregate> <aggregator as-number ip-address>;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-options (aggregate generate static) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)]
Description	Associate Border Gateway Protocol (BGP) autonomous system (AS) path information with a static, aggregate, or generated route.
Options	<p>aggregator—(Optional) Attach the BGP aggregator path attribute to the aggregate route. You must specify the last AS number that formed the aggregate route (encoded as two octets) for <i>as-number</i>, followed by the IP address of the BGP system that formed the aggregate route for <i>in-address</i>.</p> <p><i>as-path</i>—(Optional) AS path to include with the route. It can include a combination of individual AS path numbers and AS sets. Enclose sets in brackets ([]). The first AS number in the path represents the AS immediately adjacent to the local AS. Each subsequent number represents an AS that is progressively farther from the local AS, heading toward the origin of the path. You cannot specify a regular expression for <i>as-path</i>; you must use a full, valid AS path.</p> <p>atomic-aggregate—(Optional) Attach the BGP atomic-aggregate path attribute to the aggregate route. This path attribute indicates that the local system selected a less specific route instead of a more specific route.</p> <p>origin <i>egp</i>—BGP origin attribute that indicates that the path information originated in another AS.</p> <p>origin <i>igp</i>—BGP origin attribute that indicates that the path information originated within the local AS.</p> <p>origin <i>incomplete</i>—BGP origin attribute that indicates that the path information was learned by some other means.</p>
Usage Guidelines	See “Configuring Static Routes” on page 45, “Configuring Aggregate Routes” on page 66, and “Configuring Generated Routes” on page 74.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

auto-export

Syntax

```

auto-export {
  (disable | enable);
  family {
    inet {
      multicast {
        (disable | enable);
        rib-group rib-group;
      }
      unicast {
        (disable | enable);
        rib-group rib-group;
      }
    }
  }
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}

```

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options],
 [edit logical-routers *logical-router-name* routing-options],
 [edit routing-instances *routing-instance-name* routing-options],
 [edit routing-options]

Description Export routes between routing instances.

Options (disable | enable)—Disable or enable auto-export.
Default: Enable

family—Address family.

inet—Internet Protocol version 4 (IPv4) address family.

multicast—Multicast routing information.

unicast—Unicast routing information.

The remaining statements are explained separately in this chapter.

Usage Guidelines See “Configuring Policy-Based Export for Routing Instances” on page 198.

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

autonomous-system

Syntax	autonomous-system <i>autonomous-system</i> <loops <i>number</i> > { independent-domain; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options] [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Specify the router's AS number.
Options	<i>autonomous-system</i> —AS number. Use a number assigned to you by the Network Information Center (NIC). Range: 1 through 65,535 <i>loops number</i> —(Optional) How many times this AS number can appear in an AS path. Range: 1 through 65,535 Default: 1 (AS number can appear once)
	The remaining statement is described separately in this chapter.
Usage Guidelines	See “Configuring the AS Number” on page 86.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

bfd-liveness-detection

Syntax	<pre> bfd-liveness-detection { minimum-interval <i>milliseconds</i>; minimum-receive-interval <i>milliseconds</i>; minimum-transmit-interval <i>milliseconds</i>; multiplier <i>number</i>; } </pre>
Hierarchy Level	<pre> [edit logical-routers <i>logical-router-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit routing-options static (defaults route)] </pre>
Description	Configure bidirectional forwarding detection timers for static routes.
Options	<p>minimum-interval <i>milliseconds</i>—Configure the minimum transmit and receive interval. Range: 1 through 255,000</p> <p>minimum-receive-interval <i>milliseconds</i>—Configure the minimum receive interval. Range: 1 through 255,000</p> <p>minimum-transmit-interval <i>milliseconds</i>—Configure the minimum transmit interval. Range: 1 through 255,000</p> <p>multiplier <i>number</i>—Configure the detection time multiplier. Range: 1 through 255 Default: 3</p>
Usage Guidelines	See “Configuring Bidirectional Forwarding Detection” on page 61.
Required Privilege Level	<pre> routing—To view this statement in the configuration. routing-control—To add this statement to the configuration. </pre>

brief

Syntax	(brief full);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit routing-options (aggregate generate) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)]
Description	Configure all AS numbers from all contributing paths to be included in the aggregate or generated route's path. <p>brief—Include only the longest common leading sequences from the contributing AS paths. If this results in AS numbers being omitted from the aggregate route, the BGP <code>atomic_attribute</code> path attribute is included with the aggregate route.</p> <p>full—Include all AS numbers from all contributing paths in the aggregate or generated route's path.</p>
Default	full
Usage Guidelines	See “Configuring Aggregate Routes” on page 66 and “Configuring Generated Routes” on page 74.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	aggregate on page 110, generate on page 125

color

See preference on page 141

community

Syntax	community ([<i>community-ids</i>] no-advertise no-export no-export-subconfed none);
Hierarchy Level	[edit routing-instances <i>routing-instance-name</i> routing-options aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-options (aggregate generate static) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)]
Description	Associate BGP community information with a static, aggregate, or generated route.
Options	<i>community-ids</i> —One or more community identifiers. The <i>community-ids</i> format varies according to the type of attribute that you use.

The BGP community attribute format is *as-number :community-value*:

as-number—AS number of the community member. It can be a value from 0 through 65,535.

community-value—Identifier of the community member. It can be a number from 0 through 65,535.

For more information about BGP community attributes, see the *JUNOS Policy Framework Configuration Guide*.

For specifying the BGP community attribute only, you also can specify *community-ids* as one of the following well-known community names defined in RFC 1997:

no-advertise—Routes containing this community name are not advertised to other BGP peers.

no-export—Routes containing this community name are not advertised outside a BGP confederation boundary.

no-export-subconfed—Routes containing this community name are not advertised to external BGP peers, including peers in other members' ASs inside a BGP confederation.

none—Explicitly exclude BGP community information with a static route. Include this option when configuring an individual route in the route portion to override a community option specified in the defaults portion.

The BGP extended communities attribute format is *type:administrator:assigned-number*.

type is the type of extended community and can be a target, origin, or domain-id community. The target community identifies the route destination. The origin community identifies where the route originated. The domain-id community identifies the OSPF domain where the route originated.

administrator is the administrator. It is either an AS number or an IPv4 address prefix, depending on the type of extended community.

assigned-number identifies the local provider.

For more information about the BGP extended communities attribute, see the *JUNOS Policy Framework Configuration Guide*.

Usage Guidelines	See “Configuring Static Routes” on page 45, “Configuring Aggregate Routes” on page 66, and “Configuring Generated Routes” on page 74.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	aggregate on page 110, generate on page 125, static on page 154

confederation

Syntax	confederation <i>confederation-autonomous-system</i> members [<i>autonomous-systems</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Specify the router’s confederation AS number.
Options	<i>autonomous-system</i> —AS numbers of the confederation members. Range: 1 through 65,535 <i>confederation-autonomous-system</i> —Confederation AS number. Use one of the numbers assigned to you by the NIC. Range: 1 through 65,535
Usage Guidelines	See “Configuring AS Confederation Members” on page 86.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

destination-networks

Syntax	<code>destination-networks prefix;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit routing-options dynamic-tunnels <i>tunnel-name</i>]
Description	Create a tunnel for routes in these destination networks.
Options	<i>prefix</i> —Destination prefix of network.
Usage Guidelines	See “Configuring a Dynamic Tunnel” on page 97.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

discard

Syntax	<code>discard;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit routing-options (aggregate generate) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)]
Description	Do not forward packets addressed to this destination. Instead, drop the packets, do not send ICMP unreachable messages to the packets’ originators, and install a reject route for this destination into the routing table.
Default	When an aggregate route becomes active, it is installed in the routing table with a reject next hop, which means that ICMP unreachable messages are sent.
Usage Guidelines	See “Configuring Aggregate Routes” on page 66 and “Configuring Generated Routes” on page 74.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	aggregate on page 110, generate on page 125

dynamic-tunnels

Syntax	dynamic-tunnels <i>tunnel-name</i> { destination-networks <i>prefix</i> ; source-address <i>address</i> ; tunnel-type <i>type-of-tunnel</i> ; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Configure a dynamic tunnel between two PE routers.
Options	<i>tunnel-name</i> —Name of the dynamic tunnel. The statements are explained separately in this chapter.
Usage Guidelines	See “Configuring a Dynamic Tunnel” on page 97.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

export

Syntax	export [<i>policy-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options forwarding-table], [edit logical-routers <i>logical-router-name</i> routing-options forwarding-table], [edit routing-instances <i>routing-instance-name</i> routing-options forwarding-table], [edit routing-options forwarding-table]
Description	Apply one or more policies to routes being exported from the routing table into the forwarding table.
Options	<i>policy-name</i> —Name of one or more policies.
Usage Guidelines	See “Configuring Per-Packet Load Balancing” on page 93 and the <i>JUNOS Policy Framework Configuration Guide</i> .
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

export-rib

Syntax	export-rib <i>routing-table-name</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>], , [edit logical-routers <i>logical-router-name</i> routing-options rib-groups <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>], [edit routing-options rib-groups <i>group-name</i>]
Description	Name of the routing table from which the JUNOS software should export routing information.
Options	<i>routing-table-name</i> —Routing table group name.
Usage Guidelines	See “Creating Routing Table Groups” on page 88.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	import-rib on page 127, rib-groups on page 150

fate-sharing

Syntax	<pre>fate-sharing { group <i>group-name</i>; cost <i>value</i>; from <i>address</i> <to <i>address</i>>; }</pre>
Hierarchy Level	<pre>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]</pre>
Description	<p>Specify a backup path in case the primary path becomes unusable.</p> <p>You specify one or more objects within a group. The objects can be a LAN interface, a router ID, or a point-to-point link. Sequence is insignificant.</p> <p>Changing the fate-sharing database does not affect existing established LSP until the next CSPF reoptimization. The fate-sharing database does affect fast-reroute detour path computations.</p>
Options	<p>group <i>group-name</i>—Each fate-sharing group must have a name, which can be up to 32 characters long and can contain letters, digits, periods (.) and hyphens (-). You can define up to 512 groups.</p> <p>cost <i>value</i>—Cost assigned to the group. Range: 1 through 65,535 Default: 1</p> <p>from <i>address</i>—Address of ingress router.</p> <p>to <i>address</i>—Address of egress router. For point-to-point link objects, you must specify both a from and to address.</p>
Usage Guidelines	See the <i>JUNOS MPLS Applications Configuration Guide</i> .
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

filter

Syntax	filter { input <i>filter-name</i> ; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i>], [edit routing-options rib <i>routing-table-name</i>]
Description	Name of the routing table from which the JUNOS software should export routing information.
Options	input <i>filter-name</i> —Forwarding table filter name.
Usage Guidelines	See “Applying a Filter to a Forwarding Table” on page 84.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

forwarding-cache

Syntax	forwarding-cache { threshold suppress <i>value</i> <reuse <i>value</i> >; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options multicast] [edit routing-options multicast]
Description	Configure multicast forwarding cache limits.
Options	The threshold statement is explained separately.
Usage Guidelines	See “Configuring Multicast Forwarding Cache Limits” on page 92.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

forwarding-table

Syntax	forwarding-table { export [<i>policy-names</i>]; unicast-reverse-path (active-paths feasible-paths); }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Configure information about the router's forwarding table.
Options	The statement is explained separately.
Usage Guidelines	See "Configuring Per-Packet Load Balancing" on page 93.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

full

See brief on page 116

generate

Syntax	<pre>generate { defaults { generate-options; } route destination-prefix { policy policy-name; generate-options; } }</pre>
Hierarchy Level	<pre>[edit logical-routers logical-router-name routing-instances routing-instance-name routing-options rib routing-table-name], [edit logical-routers logical-router-name routing-instances routing-instance-name routing-options], [edit routing-options rib routing-table-name], [edit routing-options]</pre>
Description	Configure generated routes, which are used as routes of last resort.
Options	<p><i>generate-options</i>—Additional information about generated routes, which is included with the route when it is installed in the routing table. Specify zero or more of the following options in <i>generate-options</i>. Each option is explained separately.</p> <p>(active passive);</p> <p>as-path < <i>as-path</i>> < origin (egp igp incomplete)> < atomic-aggregate> < aggregator <i>as-number in-address</i>>;</p> <p>community [<i>community-ids</i>];</p> <p>discard;</p> <p>(brief full);</p> <p>(metric metric2 metric3 metric4) <i>value</i> < type <i>type</i>> ;</p> <p>(preference preference2 color color2) <i>preference</i> < type <i>type</i>> ;</p> <p>tag <i>string</i>;</p> <p>defaults—Specify global generated route options. These options only set default attributes inherited by all newly created generated routes. These are treated as global defaults and apply to all the generated routes you configure in the generate statement. This part of the generate statement is optional.</p> <p>route <i>destination-prefix</i>—Configure a non-default generated route:</p> <p>default—For the default route to the destination. This is equivalent to specifying an IP address of 0.0.0.0/0.</p> <p><i>destination-prefix/prefix-length</i>—<i>destination-prefix</i> is the network portion of the IP address, and <i>prefix-length</i> is the destination prefix length.</p> <p>The policy statement is explained separately.</p>

Usage Guidelines See “Configuring Generated Routes” on page 74.

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

graceful-restart

Syntax graceful-restart {
 disable;
 path-selection-defer-time-limit *time-limit*;
}

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options],
[edit logical-routers *logical-router-name* routing-options],
[edit routing-instances *routing-instance-name* routing-options],
[edit routing-options]

Description Configure graceful restart.

Options disable—Disable graceful restart.

time-limit—Grace period for graceful restart, in seconds.
Range: 1 through 600 seconds

Usage Guidelines See “Configuring Graceful Restart” on page 96.

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

import

Syntax import [*policy-names*];

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

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

Options The statements are explained separately.

Usage Guidelines See “Configuring Route Resolution” on page 99.

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

import-policy

Syntax	import-policy [<i>policy-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options rib-groups <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>], [edit routing-options rib-groups <i>group-name</i>]
Description	Apply one or more policies to routes imported into the routing table group. The import-policy statement complements the import-rib statement and cannot be used unless you first specify the routing tables to which routes are being imported.
Options	<i>policy-name</i> —Name of one or more policies.
Usage Guidelines	See “Creating Routing Table Groups” on page 88.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	export-rib on page 121, rib-groups on page 150

import-rib

Syntax	import-rib [<i>routing-table-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options rib-group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>], [edit routing-options rib-group <i>group-name</i>]
Description	Name of the routing table into which the JUNOS software should import routing information. The first routing table name you enter is the primary routing table. Any additional names you enter identify secondary routing tables. When a protocol imports routes, it imports them into the primary and any secondary routing tables. If the primary route is deleted, the secondary route also is deleted. For IPv4 import routing tables, the primary routing table must be inet.0 or routing-instance-name.inet.0. For IPv6 import routing tables, the primary routing table must be inet6.0.
Options	<i>routing-table-names</i> —Name of one or more routing tables.
Usage Guidelines	See “Creating Routing Table Groups” on page 88.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	export-rib on page 121, rib-groups on page 150

independent-domain

Statement	independent-domain;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options autonomous-system <i>autonomous-system</i> <loops <i>number</i> >], [edit logical-routers <i>logical-router-name</i> routing-options autonomous-system <i>autonomous-system</i> <loops <i>number</i> >], [edit routing-options autonomous-system <i>autonomous-system</i> <loops <i>number</i> >], [edit routing-instances <i>routing-instance-name</i> routing-options autonomous-system <i>autonomous-system</i> <loops <i>number</i> >]
Description	Configure an independent AS domain.
Usage Guidelines	See “Configuring an Independent Domain” on page 209.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

input

Syntax	input;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> filter], [edit routing-options rib <i>routing-table-name</i> filter]
Description	Name of the input filter.
Options	<i>filter-name</i> —Name of the input filter.
Usage Guidelines	See “Applying a Filter to a Forwarding Table” on page 84.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

install

Syntax	(install no-install);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-options static (defaults route)], [edit routing-options rib <i>routing-table-name</i> static (defaults route)]
Description	Configure whether the JUNOS software installs all static routes into the forwarding table. Even if you configure a route so it is not installed in the forwarding table, the route is still eligible to be exported from the routing table to other protocols.
Default	install
Options	install—Explicitly install all static routes into the forwarding table. no-install—Do not install the route into the forwarding table, even if it is the route with the lowest preference.
Usage Guidelines	See “Configuring Static Routes” on page 45.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	static on page 154

instance-export

Syntax	instance-export [<i>policy-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Apply one or more policies to routes being exported from a routing instance.
Options	<i>policy-names</i> —Name of one or more export policies.
Usage Guidelines	See “Configuring Policy-Based Export for Routing Instances” on page 198 and the <i>JUNOS Policy Framework Configuration Guide</i> .
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

instance-import

Syntax	instance-import [<i>policy-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Apply one or more policies to routes being imported into a routing instance.
Options	<i>policy-names</i> —Name of one or more import policies.
Usage Guidelines	See “Configuring Policy-Based Export for Routing Instances” on page 198 and the <i>JUNOS Policy Framework Configuration Guide</i> .
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

interface

Syntax	interface [<i>interface-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast scope <i>scope-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options multicast scope <i>scope-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options multicast scope <i>scope-name</i>], [edit routing-options multicast scope <i>scope-name</i>]
Description	Configure the interfaces on which to enable multicast scoping.
Options	<i>interface-names</i> —Name of the interface. To configure all interfaces, you can specify all. For details about specifying interfaces, see the <i>JUNOS Network Interfaces and Class of Service Configuration Guide</i> .
Usage Guidelines	See “Configuring Multicast Scoping” on page 91.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	multicast on page 137

interface-routes

Syntax	<pre>interface-routes { family (inet inet6) { export { lan point-to-point; } } rib-group <i>group-name</i>; }</pre>
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]</p>
Description	Associate a routing table group with the router's interfaces and specify routing table groups into which interface routes are imported.
Options	<p>inet—Specify the IPv4 address family.</p> <p>inet6—Specify the IPv6 address family.</p> <p>lan—Export LAN routes.</p> <p>point-to-point—Export point-to-point routes.</p> <p>The remaining statement is explained separately.</p>
Usage Guidelines	See “Configuring How Interface Routes Are Imported into Routing Tables” on page 89.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>
See Also	rib-groups on page 150

Isp-next-hop

Syntax	<pre> Isp-next-hop Isp-name { metric metric; preference preference; } </pre>
Hierarchy Level	<pre> [edit logical-routers logical-router-name routing-instances routing-instance-name routing-options static route destination-prefix], [edit logical-routers logical-router-name routing-options static route destination-prefix], [edit routing-instances routing-instance-name routing-options static route destination-prefix] [edit routing-options static route destination-prefix] </pre>
Description	Specify an LSP as the next hop for a static route, and configure an independent metric or preference on that next-hop LSP.
Options	<p><i>Isp-name</i>—Name of the next-hop LSP.</p> <p><i>metric</i>—Metric value. Range: 1 through 65,535</p> <p><i>preference</i>—Preference value. A lower number indicates a more preferred route. Range: 1 through 255 Default: 5</p>
Usage Guidelines	See “Specifying an LSP as the Next Hop for a Static Route” on page 51.
Required Privilege Level	<pre> routing—To view this statement in the configuration. routing-control—To add this statement to the configuration. </pre>

martians

Syntax	<pre>martians { destination-prefix match-type <allow>; }</pre>
Hierarchy Level	<pre>[edit logical-routers logical-router-name routing-instances routing-instance-name routing-options], [edit logical-routers logical-router-name routing-instances routing-instance-name routing-options rib routing-table-name], [edit logical-routers logical-router-name routing-options], [edit logical-routers logical-router-name routing-options rib routing-table-name], [edit routing-instances routing-instance-name routing-options], [edit routing-instances routing-instance-name routing-options rib routing-table-name], [edit routing-options], [edit routing-options rib routing-table-name]</pre>
Description	Configure martian addresses.
Options	<p>allow—(Optional) Explicitly allow a subset of a range of addresses that has been disallowed.</p> <p><i>destination-prefix</i>—Destination route you are configuring:</p> <p><i>destination-prefix/prefix-length</i>—<i>destination-prefix</i> is the network portion of the IP address, and <i>prefix-length</i> is the destination prefix length.</p> <p>default—Default route to use when routing packets that do not match a network or host in the routing table. This is equivalent to specifying the IP address 0.0.0.0/0.</p> <p><i>match-type</i>—Criteria that the destination must match:</p> <p>exact—Exactly match the route's mask length.</p> <p>longer—The route's mask length is greater than the specified mask length.</p> <p>orlonger—The route's mask length is equal to or greater than the specified mask length.</p> <p>through <i>destination-prefix</i>—The route matches the first prefix, the route matches the second prefix for the number of bits in the route, and the number of bits in the route is less than or equal to the number of bits in the second prefix.</p> <p>upto <i>prefix-length</i>—The route's mask length falls between the two destination prefix lengths, inclusive.</p> <p>Default: exact</p>
Usage Guidelines	See "Configuring Martian Addresses" on page 82.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

maximum-routes

Syntax	maximum-routes <i>route-limit</i> <log-only threshold <i>value</i> >;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Configure an upper limit for the number of routes installed in a routing table.
Options	<p><i>route-limit</i>—Route limit. If this limit is reached, a warning is triggered and any additional routes are rejected. Range: 1 through 4,294,967,295 Default: Not set</p> <p><i>log-only</i>—(Optional) Sets the route limit as an advisory limit. An advisory limit triggers only a warning, and additional routes are not rejected.</p> <p><i>threshold value</i>—(Optional) Threshold value for the mandatory limit that triggers a warning. Range: 1 through 100</p>
Usage Guidelines	See “Configuring a Route Limit for Routing Tables” on page 208.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

metric

See the following sections:

metric (Aggregate, Generated, or Static Route) on page 136

metric (Qualified Next Hop on Static Route) on page 136

metric (Aggregate, Generated, or Static Route)

Syntax	<code>(metric metric2 metric3 metric4) metric <type type>;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate static) (defaults route)], [edit routing-options (aggregate generate static) (defaults route)]
Description	Metric value for an aggregate, generated, or static route. You can specify up to four metric values, starting with <code>metric</code> (for the first metric value) and continuing with <code>metric2</code> , <code>metric3</code> , and <code>metric4</code> .
Options	<i>metric</i> —Metric value. Range: 1 through 65,535 <i>type type</i> —(Optional) Type of route. Range: 1 through 16
Usage Guidelines	See “Specifying the Route Metric” on page 55, “Specifying the Route Metric” on page 69, and “Specifying the Route Metric” on page 77.
Required Privilege Level	<code>routing</code> —To view this statement in the configuration. <code>routing-control</code> —To add this statement to the configuration.
See Also	<code>aggregate</code> on page 110, <code>generate</code> on page 125, <code>static</code> on page 154

metric (Qualified Next Hop on Static Route)

Syntax	<code>metric metric;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options static route <i>destination-prefix</i> qualified-next-hop], [edit routing-options static route <i>destination-prefix</i> qualified-next-hop]
Description	Metric value for a static route.
Options	<i>metric</i> —Metric value. Range: 1 through 65,535
Usage Guidelines	See “Specifying an Independent Preference for a Static Route” on page 49.
Required Privilege Level	<code>routing</code> —To view this statement in the configuration. <code>routing-control</code> —To add this statement to the configuration.
See Also	<code>qualified-next-hop</code> on page 142, <code>static</code> on page 154

multicast

Syntax	<pre> multicast { scope <i>scope-name</i> { interface [<i>interface-names</i>]; prefix <i>destination-prefix</i>; } ssm-groups { <i>address</i> } } </pre>
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-routers <i>logical-router-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-options]</p>
Description	Configure generic multicast properties.
Options	The statements are explained separately in this chapter.
Usage Guidelines	See “Configuring Multicast Scoping” on page 91 and “Configuring Additional Source-Specific Multicast Groups” on page 92.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

no-install

See install on page 129

no-readvertise

See readvertise on page 143

no-retain

See retain on page 146

options

Syntax	options { syslog (level <i>level</i> upto level); }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options],
Description	Configure the types of system logging messages sent about the routing protocols process to the system message logging file. These messages are also displayed on the system console. You can log messages at a particular level, or up to and including a particular level.
Options	<p>level <i>level</i>—Severity of the message. It can be one or more of the following levels, in order of decreasing urgency:</p> <p> emergency—Panic or other conditions that cause the system to become unusable.</p> <p> alert—Conditions that should be corrected immediately, such as a corrupted system database.</p> <p> critical—Critical conditions, such as hard drive errors.</p> <p> error—Standard error conditions.</p> <p> warning—System warning messages.</p> <p> notice—Conditions that are not error conditions, but might warrant special handling.</p> <p> info—Informational messages.</p> <p> debug—Software debugging messages.</p> <p>Default: info</p> <p>upto <i>level</i>—Log all messages up to a particular level.</p>
Usage Guidelines	See “Configuring Logging for the Routing Protocol Process” on page 98.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	syslog in the <i>JUNOS System Basics Configuration Guide</i> .

p2mp-lsp-next-hop

Syntax	p2mp-lsp-next-hop { metric <i>metric</i> ; preference <i>preference</i> ; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static route <i>destination-prefix</i>], [edit logical-routers <i>logical-router-name</i> routing-options static route <i>destination-prefix</i>], [edit routing-instances <i>routing-instance-name</i> routing-options static route <i>destination-prefix</i>] [edit routing-options static route <i>destination-prefix</i>]
Description	Specify a point-to-multipoint LSP as the next hop for a static route, and configure an independent metric or preference on that next-hop LSP.
Options	<i>metric</i> —Metric value. Range: 1 through 65,535 <i>preference</i> —Preference value. A lower number indicates a more preferred route. Range: 1 through 255 Default: 5
Usage Guidelines	See “Specifying an LSP as the Next Hop for a Static Route” on page 51.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

passive

See active on page 109

policy

Syntax	<code>policy <i>policy-name</i>;</code>
Hierarchy Level	<pre>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)], [edit routing-options (aggregate generate) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate) (defaults route)]</pre>
Description	<p>Associate a routing policy when configuring an aggregate or generated route's destination prefix in the routes part of the aggregate or generate statement. This provides the equivalent of an import routing policy filter for the destination prefix. That is, each potential contributor to an aggregate route, along with any aggregate options, is passed through the policy filter. The policy then can accept or reject the route as a contributor to the aggregate route and, if the contributor is accepted, the policy can modify the default preferences. The contributor with the numerically smallest prefix becomes the most preferred, or <i>primary</i>, contributor. A rejected contributor still can contribute to a less specific aggregate route. If you do not specify a policy filter, all candidate routes contribute to an aggregate route.</p>
Options	<code><i>policy-name</i></code> —Name of a routing policy.
Usage Guidelines	See “Configuring Aggregate Routes” on page 66 and “Configuring Generated Routes” on page 74.
Required Privilege Level	<pre>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</pre>
See Also	aggregate on page 110, generate on page 125

preference

Syntax	(preference preference2 color color2) <i>preference</i> <type type>;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-options (aggregate generate static) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)]
Description	Preference value for a static, aggregated, or generated route. You also can specify a secondary preference value (preference2), as well as colors, which are even finer-grained preference values (color and color2).
Options	<i>preference</i> —Preference value. A lower number indicates a more preferred route. Range: 1 through 255 Default: 5 (for static routes), 130 (for aggregate and generated routes) <i>type</i> —(Optional) Type of route. Range: 1 through 16
Usage Guidelines	See “Configuring Static Routes” on page 45, “Configuring Aggregate Routes” on page 66, and “Configuring Generated Routes” on page 74.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	aggregate on page 110, generate on page 125, static on page 154

prefix

Syntax	<code>prefix destination-prefix;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options scope <i>scope-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options multicast scope <i>scope-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options multicast scope <i>scope-name</i>], [edit routing-options multicast scope <i>scope-name</i>]
Description	Configure the prefix for multicast scopes.
Options	<i>destination-prefix</i> —Prefix within the multicast scope.
Usage Guidelines	See “Configuring Multicast Scoping” on page 91.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	multicast on page 137

qualified-next-hop

Syntax	<code>qualified-next-hop address { metric <i>metric</i>; preference <i>preference</i>; }</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static route <i>destination-prefix</i>], [edit logical-routers <i>logical-router-name</i> routing-options static route <i>destination-prefix</i>], [edit logical-routers <i>logical-router-name</i> routing-options rib inet6.0 static route <i>destination-prefix</i>], [edit routing-instances <i>routing-instance-name</i> routing-options static route <i>destination-prefix</i>], [edit routing-options static route <i>destination-prefix</i>], [edit routing-options rib inet6.0 static route <i>destination-prefix</i>]
Description	Configure an independent metric or preference on a static route.
Options	<i>address</i> —IPv4 or IPv6 address of the next hop. <i>metric</i> —Metric value. Range: 1 through 65,535 <i>preference</i> —Preference value. A lower number indicates a more preferred route. Range: 1 through 255 Default: 5
Usage Guidelines	See “Specifying an Independent Preference for a Static Route” on page 49.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

readvertise

Syntax	(readvertise no-readvertise);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-options static (defaults route)], [edit routing-options rib <i>routing-table-name</i> static (defaults route)]
Description	Configure whether static routes are eligible to be readvertised by routing protocols: readvertise—Readvertise static routes. no-readvertise—Mark a static route as being ineligible for readvertisement; include the no-readvertise option when configuring the route.
Default	readvertise
Usage Guidelines	See “Configuring Static Routes” on page 45.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	static on page 154

resolution

Syntax	<pre>resolution { rib <i>routing-table-name</i> { import [<i>policy-names</i>]; resolution-ribs [<i>routing-table-names</i>]; } }</pre>
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit logical-routers <i>logical-router-name</i> routing-options],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options],</p> <p>[edit routing-options]</p>
Description	Configure route resolution.
Options	The statements are explained separately.
Usage Guidelines	See “Configuring Route Resolution” on page 99.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

resolution-ribs

Syntax	<pre>resolution-ribs [<i>routing-table-names</i>];</pre>
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options resolution rib],</p> <p>[edit logical-routers <i>logical-router-name</i> routing-options resolution rib],</p> <p>[edit routing-instances <i>routing-instance-name</i> routing-options resolution rib],</p> <p>[edit routing-options resolution rib]</p>
Description	Specify one or more routing tables to use for route resolution.
Options	The statements are explained separately.
Usage Guidelines	See “Configuring Route Resolution” on page 99.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

resolve

Syntax	resolve;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)],, [edit logical-routers <i>logical-router-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-options static (defaults route)], [edit routing-options rib <i>routing-table-name</i> static (defaults route)]
Description	Configure statically configured routes to be resolved to a next hop that is not directly connected: resolve—Have a static route resolved to an IP prefix that is not a directly connected next hop. In this case, the route is resolved through the inet.0 and inet.3 routing tables.
Usage Guidelines	See “Configuring Static Routes” on page 45.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	static on page 154

retain

Syntax	(retain no-retain);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options static (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options static (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> static (defaults route)], [edit routing-options static (defaults route)], [edit routing-options rib <i>routing-table-name</i> static (defaults route)]
Description	Configure statically configured routes to be deleted from or retained in the forwarding table when the routing protocol process shuts down normally: <p style="margin-left: 40px;">retain—Have a static route remain in the forwarding table when the routing protocol process shuts down normally. Doing this greatly reduces the time required to restart a system that has a large number of routes in its routing table.</p> <p style="margin-left: 40px;">no-retain—Delete statically configured routes from the forwarding table when the routing protocol process shuts down normally.</p>
Default	no-retain
Usage Guidelines	See “Configuring Static Routes” on page 45.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	static on page 154

rib

See the following sections:

rib (General) on page 147

rib (Route Resolution) on page 148

rib (General)

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

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options],
[edit logical-routers *logical-router-name* routing-options],
[edit routing-instances *routing-instance-name* routing-options],
[edit routing-options]

Description Create a routing table.

Explicitly creating a routing table with the *routing-table-name* statement is optional if you are not adding any static, martian, aggregate, or generated routes to the routing table and if you also are creating a routing table group. Simply including the rib-groups statement to declare that a routing table is part of a routing table group is sufficient to create it.

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

Options *routing-table-name*—Name of the routing table, in the following format:

protocol[.*identifier*]

protocol is the protocol family. It can be inet6 for the IPv6 family, inet for the IPv4 family, or iso for the ISO protocol family.

identifier is a positive integer that specifies the instance of the routing table.

Default: inet.0

The remaining statements are explained separately.

Usage Guidelines See “Creating Routing Tables” on page 43.

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

rib (Route Resolution)

Syntax

```
rib routing-table-name {
    import [ policy-names ];
    resolution-ribs [ routing-table-names ];
}
```

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options resolution],
[edit logical-routers *logical-router-name* routing-options resolution],
[edit routing-instances *routing-instance-name* routing-options resolution],
[edit routing-options resolution]

Description Specify routing table name for route resolution.

Options The statements are explained separately.

Usage Guidelines See “Configuring Route Resolution” on page 99.

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

rib-group

Syntax	<code>rib-group <i>group-name</i>;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options static], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options interface-routes], [edit logical-routers <i>logical-router-name</i> routing-options interface-routes], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> static], [edit routing-options static], [edit routing-instances <i>routing-instance-name</i> routing-options interface-routes], [edit routing-options interface-routes], [edit routing-options rib <i>routing-table-name</i> static]
Description	Configure which routing table groups interface routes are imported into.
Options	<i>group-name</i> —Name of the routing table group. The name must start with a letter and can include letters, numbers, and hyphens. It generally does not make sense to specify more than a single routing table group.
Usage Guidelines	See “Configuring How Interface Routes Are Imported into Routing Tables” on page 89 and “Creating Routing Table Groups” on page 88.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	interface-routes on page 132, rib-groups on page 150

rib-groups

Syntax	<pre> rib-groups { group-name { import-policy [<i>policy-names</i>]; import-rib [<i>group-names</i>]; export-rib <i>group-name</i>; } } </pre>
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]</p>
Description	<p>Group one or more routing tables to form a routing table group. A routing protocol can import routes into all the routing tables in the group and can export routes from a single routing table.</p> <p>Each routing table group must contain one or more routing tables that the JUNOS software uses when importing routes (specified in the import-rib statement) and optionally can contain one routing table group that the JUNOS software uses when exporting routes to the routing protocols (specified in the export-rib statement).</p>
Options	<p><i>group-name</i>—Name of the routing table group. The name must start with a letter and can include letters, numbers, and hyphens.</p> <p>The remaining statements are explained separately.</p>
Usage Guidelines	See “Creating Routing Table Groups” on page 88.
Required Privilege Level	<p>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</p>
See Also	rib-group on page 149

route-distinguisher-id

Syntax	route-distinguisher-id <i>address</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Configure a route distinguisher identifier for a routing instance, specifying an IP address. If a route distinguisher is configured for a particular routing instance, that value supersedes the route distinguisher configured by this statement.
Options	<i>address</i> —IP address.
Usage Guidelines	See “Configuring a Route Distinguisher” on page 97.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

route-record

Syntax	route-record;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-options]
Description	Export the AS path and routing information to the traffic sampling process.
Usage Guidelines	See “Configuring Route Recording for Flow Aggregation” on page 87.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	<i>JUNOS Network Interfaces and Class of Service Configuration Guide</i> .

router-id

Syntax	router-id <i>address</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options], [edit logical-routers <i>logical-router-name</i> routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options], [edit routing-options]
Description	Specify the router’s IP address.
Options	<i>address</i> —IP address of the router. Default: Address of the first interface encountered by the JUNOS software.
Usage Guidelines	See “Configuring the Router Identifier” on page 86.

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

routing-options

Syntax routing-options { ... }

Hierarchy Level [edit logical-routers *logical-router-name*],
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*],
 [edit],
 [edit routing-instances *routing-instance-name*]

Description Configure protocol-independent routing properties.

Usage Guidelines See “Protocol-Independent Routing Properties Overview” on page 37.

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

scope

Syntax scope *scope-name* {
 interface [*interface-names*];
 prefix *destination-prefix*;
 }

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*
 routing-options multicast],
 [edit logical-routers *logical-router-name* routing-options multicast],
 [edit routing-instances *routing-instance-name* routing-options multicast],
 [edit routing-options multicast]

Description Configure multicast scoping.

Options *scope-names*—Name of the multicast scope.
 The remaining statements are explained separately.

Usage Guidelines See “Configuring Multicast Scoping” on page 91.

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

See Also multicast on page 137

source-address

Syntax	source-address <i>address</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit routing-options dynamic-tunnels <i>tunnel-name</i>]
Description	Configure the tunnel source address.
Options	<i>address</i> —Name of the source address.
Usage Guidelines	See “Configuring a Dynamic Tunnel” on page 97.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

ssm-groups

Syntax	ssm-groups { <i>address</i> ; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options multicast], [edit logical-routers <i>logical-router-name</i> routing-options multicast], [edit routing-instances <i>routing-instance-name</i> routing-options multicast], [edit routing-options multicast]
Description	Configure additional SSM groups.
Options	<i>address</i> —Address range of the additional SSM group.
Usage Guidelines	See “Configuring Additional Source-Specific Multicast Groups” on page 92.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	multicast on page 137

static

```

Syntax static {
    defaults {
        static-options;
    }
    rib-group group-name;
    route destination-prefix {
        next-hop;
        qualified-next-hop address {
            metric metric;
            preference preference;
        }
        static-options;
    }
}

```

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options],
 [edit logical-routers *logical-router-name* routing-options],
 [edit logical-routers *logical-router-name* routing-options rib *routing-table-name*],
 [edit routing-instances *routing-instance-name* routing-options],
 [edit routing-options],
 [edit routing-options rib *routing-table-name*]

Description Configure static routes to be installed in the routing table. You can specify any number of routes within a single static statement, and you can specify any number of static options in the configuration.

Options defaults—Specify global static route options. These options only set default attributes inherited by all newly created static routes. These are treated as global defaults and apply to all the static routes you configure in the static statement. This part of the static statement is optional.

route *destination-prefix*—Destination of the generated route.

defaults—For the default route to the destination. This is equivalent to specifying an IP address of 0.0.0.0/0.

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

next-hop—How to reach the destination.

discard—Do not forward packets addressed to this destination. Instead, drop the packets, do not send ICMP unreachable messages to the packets' originators, and install a reject route for this destination into the routing table.

next-hop *address*—Reach the next-hop router by specifying an IP address or an interface name.

next-table *routing-table-name*—Name of the next routing table to the destination.

receive—Install a receive route for this destination into the routing table.

reject—Do not forward packets addressed to this destination. Instead, drop the packets, send ICMP unreachable messages to the packets' originators, and install a reject route for this destination into the routing table.

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

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

(active | passive);

as-path < *as-path*> < origin (egp | igp | incomplete)> < atomic-aggregate>
< aggregator *as-number in-address*>;

community [*community-ids*];

(install | no-install);

(metric | metric2 | metric3 | metric4) *value* < type *type*> ;

(preference | preference2 | color | color2) *preference* < type *type*> ;

(readvertise | no-readvertise);

(resolve | no-resolve);

(no-retain | retain);

tag *string*;

The remaining statements are explained separately.

Usage Guidelines See “Configuring Static Routes” on page 45.

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

tag

Syntax	<code>tag string;</code>
Hierarchy Level	<pre>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options (aggregate generate static) (defaults route)], [edit logical-routers <i>logical-router-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options (aggregate generate static) (defaults route)], [edit routing-instances <i>routing-instance-name</i> routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)], [edit routing-options (aggregate generate static) (defaults route)], [edit routing-options rib <i>routing-table-name</i> (aggregate generate static) (defaults route)]</pre>
Description	Associate an OSPF tag with a static, aggregate, or generated route.
Options	<i>string</i> —OSPF tag string.
Usage Guidelines	See “Configuring Static Routes” on page 45, “Configuring Aggregate Routes” on page 66, and “Configuring Generated Routes” on page 74.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	aggregate on page 110, generate on page 125, static on page 154

threshold

Syntax	threshold suppress <i>value</i> <reuse <i>value</i> >;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options multicast forwarding-cache], [edit routing-options multicast forwarding-cache]
Description	Configure the suppression and reuse thresholds for multicast forwarding cache limits.
Options	suppress <i>value</i> —Value at which to begin suppressing new multicast forwarding cache entries. This value is mandatory. This number should be greater than the reuse value. Range: 1 through 200,000 reuse <i>value</i> —Value at which to begin creating new multicast forwarding cache entries. This value is optional. If configured, this number should be less than the suppress value. Range: 1 through 200,000
Usage Guidelines	See “Configuring Multicast Forwarding Cache Limits” on page 92.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

traceoptions

Syntax traceoptions {
 file *name* <replace> <size *size*> <files *number*> <no-stamp>
 <(world-readable | no-world-readable)>;
 flag *flag* <flag-modifier> <disable>;
 }

Hierarchy Level [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* routing-options],
 [edit logical-routers *logical-router-name* routing-options],
 [edit routing-instances *routing-instance-name* routing-options],
 [edit routing-options]

Description Define tracing operations that track all routing protocol functionality in the router.

To specify more than one tracing operation, include multiple flag statements.

Default If you do not include this statement, no global tracing operations are performed.

Options disable—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as all.

file *name*—Name of the file to receive the output of the tracing operation. Enclose the name within quotation marks. All files are placed in the directory /var/log. We recommend that you place global routing protocol tracing output in the file routing-log.

files *number*—(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 also must specify a maximum file size with the size option.

Range: 2 through 1000 files

Default: 2 files

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

all—All tracing operations

config-internal—Configuration internals

event—Event processing

flash—Flash processing

general—All normal operations and routing table changes (a combination of the normal and route trace operations)

indirect—Indirect next-hop add/change/delete

kernel—Kernel communication

normal—All normal operations

parse—Configuration parsing

policy—Routing policy operations and actions

regex-parse—Regular-expression parsing

route—Routing table changes

state—State transitions

task—Interface transactions and processing

timer—Timer usage

flag-modifier—(Optional) Modifier for the tracing flag. You can specify one or more of these modifiers:

detail—Detailed trace information

receive—Packets being received

send—Packets being transmitted

no-stamp—(Optional) Do not place timestamp information at the beginning of each line in the trace file.

Default: If you omit this option, timestamp information is placed at the beginning of each line of the tracing output.

replace—(Optional) Replace an existing trace file if there is one.

Default: If you do not include this option, tracing output is appended to an existing trace 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 also must specify a maximum number of trace files with the *files* option.

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

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

Default: 1 MB

Usage Guidelines See “Tracing Global Routing Protocol Operations” on page 99.

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

tunnel-type

Syntax	tunnel-type <i>type</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit logical-routers <i>logical-router-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options dynamic-tunnels <i>tunnel-name</i>], [edit routing-options dynamic-tunnels <i>tunnel-name</i>]
Description	Select the dynamic tunnel type.
Options	<i>type</i> —Tunnel Type. GRE is supported as tunnel type.
Usage Guidelines	See “Configuring a Dynamic Tunnel” on page 97.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

unicast-reverse-path

Syntax	unicast-reverse-path (active-paths feasible-paths);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> routing-options forwarding-table], [edit routing-options forwarding-table]
Description	Enable unicast reverse-path-forwarding check.
Options	active-paths—Consider only active paths during the unicast reverse-path check. feasible-paths—Consider all feasible paths during the unicast reverse-path check.
Usage Guidelines	See “Enabling Unicast Reverse-Path Forwarding Check” on page 96 and the <i>JUNOS Network Interfaces and Class of Service Configuration Guide</i> .
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.