

Chapter 13

Summary of Protocol-Independent Routing Properties Configuration Statements

This chapter explains each of the protocol-independent routing configuration statements. The statements are organized alphabetically.

active

Syntax	(active passive);
Hierarchy Level	[edit routing-options (aggregate generate static) (defaults route)] [edit routing-options rib <i>routing-table</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</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 “Configure Static Routes” on page 95, “Configure Aggregate Routes” on page 103, and “Configure Generated Routes” on page 111.
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 134, generate on page 141, static on page 154

- aggregate

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

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

-
- **Description** Configure aggregate routes.

-
- **Options** aggregate-options—(Optional under routed). 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;

- (full | brief);

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

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

- (tag | tag2) string;

- destination-prefix—Destination of the aggregate route:

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

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

- The policy statement is explained separately.

- **Usage Guidelines** See “Configure Aggregate Routes” on page 103.

- **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 in-address>;
Hierarchy Level	[edit routing-options (aggregate generate static) (defaults route)], [edit routing-options rib <i>routing-table</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</i> (aggregate generate static) (defaults route)]
Description	Associate BGP AS path information with a static, aggregate, or generated route.
Options	<p>aggregator—Attach the BGP AGGREGATOR path attribute to the aggregate route. When using this option, you must specify the last AS number that formed the aggregate route (encoded as two octets), followed by the IP address of the BGP system that formed the aggregate route.</p> <p><i>as-path</i>—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—Attach the BGP ATOMIC_AGGREGATE path attribute to the aggregate route. This path attribute indicates that the local system selected a less specific route rather than a more specific route.</p> <p>egp—BGP origin attribute that indicates that the path information originated in another AS.</p> <p>igp—BGP origin attribute that indicates that the path information originated within the local AS.</p> <p>incomplete—BGP origin attribute that indicates that the path information was learned by some other means.</p>
Usage Guidelines	See “Configure Static Routes” on page 95, “Configure Aggregate Routes” on page 103, and “Configure Generated Routes” on page 111.
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 134, generate on page 141, static on page 154

autonomous-system

Statement	<code>autonomous-system <i>autonomous-system</i> <loops <i>number</i>>;</code>
Hierarchy Level	[edit routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options]
Description	Specify the router's AS number.
Options	<i>autonomous-system</i> —AS number. Use a number assigned to you by the NIC. Range: 1 through 65,535 <i>loops <i>number</i></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)
Usage Guidelines	See “Configure the AS Number” on page 121
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

brief

Syntax	<code>(brief full);</code>
Hierarchy Level	[edit routing-options (aggregate generate) (defaults route)], [edit routing-options rib <i>routing-table</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</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. brief—Include all AS numbers from all contributing paths in the aggregate or generated route's path. full—Include only the longest common leading sequences from the contributing AS paths. If doing this results in AS numbers being omitted from the aggregate route, the BGP ATOMIC_ATTRIBUTE path attribute is included with the aggregate route.
Default	full
Usage Guidelines	See “Configure Aggregate Routes” on page 103 and “Configure Generated Routes” on page 111.
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 134, generate on page 141

color

See preference on page 148

community

Syntax community ([*community-ids*] | no-advertise | no-export | no-export-subconfed | none);

Hierarchy Level [edit routing-options (aggregate | generate | static) (defaults | route)],
 [edit routing-options rib *routing-table* (aggregate | generate | static) (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options (aggregate | generate | static) (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options rib *routing-table* (aggregate | generate | static) (defaults | route)]

Description Associate BGP community information with a static, aggregate, or generated route.

Options *community-ids*—One or more community identifiers. The *community-ids* 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 65535.

community-value—Identifier of the community member. It can be a number from 0 through 65535.

See “Configure the BGP Community Attribute” on page 68.

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 either a target or origin community. The target community identifies the destination to which the route is going. The origin community identifies where the route originated.

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

assigned-number identifies the local provider.

See “Configure the BGP Extended Communities Attribute” on page 73.

- Usage Guidelines** See “Configure Static Routes” on page 95, “Configure Aggregate Routes” on page 103, and “Configure Generated Routes” on page 111.
- 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 134, generate on page 141, static on page 154

confederation

- Statement** confederation *confederation-autonomous-system* members [*autonomous-system*];
- Hierarchy Level** [edit routing-options],
[edit routing-instances *routing-instance-name* routing-options]
- Description** Specify the router’s confederation AS number.
- Options** *autonomous-system*—AS numbers of the confederation members.
Range: 1 through 65,535

confederation-autonomous-system—Confederation AS number. Use one of the numbers assigned to you by the NIC.
Range: 1 through 65,535
- Usage Guidelines** See “Configure AS Confederation Members” on page 122.
- Required Privilege Level** routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

discard

- Syntax** discard;
- Hierarchy Level** [edit routing-options (aggregate | generate) (defaults | route)],
[edit routing-options rib *routing-table* (aggregate | generate) (defaults | route)]
[edit routing-instances *routing-instance-name* routing-options (aggregate | generate) (defaults | route)],
[edit routing-instances *routing-instance-name* routing-options rib *routing-table* (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 “Configure Aggregate Routes” on page 103 and “Configure Generated Routes” on page 111.
- 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 134, generate on page 141

export

Statement	export [<i>policy-name</i>];
Hierarchy Level	[edit protocols routing-options forwarding-table] [edit routing-instances <i>routing-instance-name</i> protocols 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 “Configure Per-Packet Load Balancing” on page 126 and the chapter “Configure Routing Policy” on page 33.
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>group-name</i> ;
Hierarchy Level	[edit routing-options rib-group <i>group-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options rib-group <i>group-name</i>]
Description	Name of the routing table from which the JUNOS software should export routing information.
Options	<i>group-name</i> —Routing table name.
Usage Guidelines	See “Create Routing Table Groups” on page 123.
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 142, rib-groups on page 152

fate-sharing

Syntax	fate-sharing { group <i>group-name</i> ; cost <i>value</i> ; from <i>address</i> <to <i>address</i> >; }
Hierarchy Level	[edit routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options]
Description	Specify a backup path in case the primary path becomes unusable. 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. Changing the fate-sharing database does not affect existing established LSP until the next re-optimization of CSPF. The fate-sharing database does impact fast-reroute detour path computations.

Options group *group-name*— 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.

cost *value*—Cost assigned to the group.

Range: 1 through 65,535

Default: 1

from *address*—Address of ingress router.

to *address*—Address of egress router. For point-to-point link objects, you must specify both a from and to address.

Usage Guidelines See the *JUNOS Internet Software Configuration Guide: MPLS Applications*.

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

forwarding-table

Statement forwarding-table {
 export [*policy-name*];
}

Hierarchy Level [edit routing-options]
[edit routing-instances *routing-instance-name* routing-options]

Description Configure information about the router's forwarding table.

Option The statement is explained separately.

Usage Guidelines See "Configure Per-Packet Load Balancing" on page 126.

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 136

generate

Syntax	<pre> generate { defaults { generate-options; } route destination-prefix { policy policy-name; generate-options; } } </pre>
Hierarchy Level	<pre> [edit routing-options], [edit routing-options rib routing-table], [edit routing-instances routing-instance-name routing-options], [edit routing-instances routing-instance-name routing-options rib routing-table] </pre>
Description	Configure generated routes, which are used as routes of last resort.
Options	<p><i>generate-options</i>—(Optional under route) 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> <pre> (active passive); as-path < as-path> < origin (egp igp incomplete)> < atomic-aggregate> < aggregator as-number in-address>; community [community-ids] discard; (full brief); (metric metric2 metric3 metric4) value < type type> ; (preference preference2 color color2) preference < type type> ; (tag tag2) string; </pre> <p><i>destination-prefix</i>—Destination of the generated route:</p> <pre> destination-prefix/prefix-length—destination-prefix is the network portion of the IP address, and prefix-length is the destination prefix length. default—For the default route to the destination. This is equivalent to specifying an IP address of 0.0.0.0/0. </pre> <p>The policy statement is explained separately.</p>
Usage Guidelines	See “Configure Generated Routes” on page 111.
Required Privilege Level	<pre> routing—To view this statement in the configuration. routing-control—To add this statement to the configuration. </pre>

import-rib

Syntax import-rib [*group-name*];

Hierarchy Level [edit routing-options rib-group *group-name*],
[edit routing-instances *routing-instance-name* routing-options rib-group *group-name*]

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 import routing tables, the primary routing table must be inet.0. or routing-instance-name.inet.0

Options *group-name*—Name of one or more routing tables.

Usage Guidelines See “Create Routing Table Groups” on page 123.

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 139, rib-groups on page 152

install

Syntax (install | no-install);

Hierarchy Level [edit routing-options static (defaults | route)],
[edit routing-options rib *routing-table* static (defaults | route)],
[edit routing-instances *routing-instance-name* routing-options static (defaults | route)]
[edit routing-instances *routing-instance-name* routing-options rib *routing-table* static
(defaults | route)]

Description Configure whether the JUNOS software installs all static routes into the forwarding table even if they do not have the lowest preference values. Even if you configure a route so it is not installed in the forwarding table, the route still is eligible to be exported from the routing table to other protocols.

install—Have the JUNOS software install all static routes into the forwarding table even if they do not have the lowest preference values. Doing this greatly reduces the time required to restart a system that has a large number of routes in its routing table.

no-install—Do not install the route into the forwarding table even if it is the route with the lowest preference.

Default install

Usage Guidelines See “Configure Static Routes” on page 95.

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

interface

Syntax	interface [<i>interface-name</i>];
Hierarchy Level	[edit routing-options multicast scope <i>scope-name</i>], [edit routing-instances <i>routing-instance-name</i> routing-options multicast scope <i>scope-name</i>]
Description	Configure the interfaces on which to enable multicast scoping.
Options	<i>interface-name</i> —Name of the interface. To configure all interfaces, you can specify all. For details about specifying interfaces, see the <i>JUNOS Internet Software Configuration Guide: Interfaces and Chassis</i> .
Usage Guidelines	See “Configure Multicast Scoping” on page 125.
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 146

interface-routes

Syntax	interface-routes { rib-group <i>group-name</i> ; }
Hierarchy Level	[edit routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options]
Description	Associate a routing table group with the router’s interfaces and specify which routing table groups interface routes are imported into.
Options	The statement is explained separately.
Usage Guidelines	See “Configure How Interface Routes Are Imported into Routing Tables” on page 124.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
See Also	rib-groups on page 152

martians

Syntax martians {
 destination-prefix match-type <allow>;
 }

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

Description Configure martian addresses.

Options allow—(Optional) Explicitly allow a subset of a range of addresses that has been disallowed.

destination-prefix—Destination route you are configuring:

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

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.

match-type—Criteria that the destination must match:

exact—Exactly match the route's mask length.

longer—The route's mask length is greater than the specified mask length.

orlonger—The route's mask length is equal to or greater than the specified mask length.

through *destination-prefix*—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.

upto *prefix-length*—The route's mask length falls between the two destination prefix lengths, inclusive.

Default: exact

Usage Guidelines See "Configure Martian Addresses" on page 118.

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

metric

metric (in static routes)

Syntax	metric <i>metric</i> <type <i>type</i> >;
Hierarchy Level	[edit routing-options static (defaults route)], [edit routing-options rib <i>routing-table</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</i> static (defaults route)]
Description	Metric value for a static route.
Options	<i>metric</i> —Metric value. Range: 1 through 65,535 <i>type</i> —(Optional) Type of route. Range: 1 through 16
Usage Guidelines	See “Configure Static Routes” on page 95.
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

metric (metric value)

Syntax	(metric metric2 metric3 metric4) <i>metric</i> ;
Hierarchy Level	[edit routing-options (aggregate generate) (defaults route)], [edit routing-options rib <i>routing-table</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</i> (aggregate generate) (defaults route)]
Description	Metric value for a static, aggregate, or generated route. You can specify up to four metric values, starting with <i>metric</i> (for the first metric value) and continuing with <i>metric2</i> , <i>metric3</i> , and <i>metric4</i> .
Options	<i>metric</i> —Metric value. Range: 1 through 65,535
Usage Guidelines	See “Configure Aggregate Routes” on page 103, and “Configure Generated Routes” on page 111.
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 134, generate on page 141

• multicast

```

Syntax  multicast {
            scope scope-name {
                interface [interface-name];
                prefix destination-prefix;
            }
            ssm-groups {
                address
            }
        }
    
```

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

Description Configure generic multicast properties.

Options The statements are explained separately.

Usage Guidelines See “Configure Multicast Scoping” on page 125.
See “Configure Additional Source Specific Multicast Groups” on page 125

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

• no-install

See install on page 142

• no-readvertise

See readvertise on page 149

• no-retain

See retain on page 150

options

Syntax	options { syslog (level <i>level</i> upto level); }
Hierarchy Level	[edit routing-options], [edit routing-instances <i>routing-instance-name</i> 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><i>level</i>—Severity of the message. It can be one or more of the following levels, in order of decreasing urgency:</p> <ul style="list-style-type: none"> emergency—Panic or other conditions that cause the system to become unusable. alert—Conditions that should be corrected immediately, such as a corrupted system database. critical—Critical conditions, such as hard drive errors. error—Standard error conditions. warning—System warning messages. notice—Conditions that are not error conditions, but that might warrant special handling. info—Informational messages. debug—Software debugging messages. <p>Default: info</p> <ul style="list-style-type: none"> <i>level</i>—Log messages at a particular level. <i>upto</i>—Log all messages up to a particular level.
Usage Guidelines	See “Configure Logging for the Routing Protocol Process” on page 128.
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 Internet Software Configuration Guide: Installation and System Management</i>

passive

See active on page 133

policy

Syntax `policy policy-name;`

Hierarchy Level [edit routing-options (aggregate | generate) (defaults | route)],
 [edit routing-options rib *routing-table* (aggregate | generate) (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options
 (aggregate | generate) (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options rib *routing-table*
 (aggregate | generate) (defaults | route)]

Description Associate a routing policy when configuring an aggregate or generated route's destination prefix in the routes part of the aggregate or generate statement. Doing so 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 *primary*, contributor. A rejected contributor still can contribute to less specific aggregate route. If you do not specify a policy filter, all candidate routes contribute to an aggregate route.

Options *policy-name*—Name of a routing policy.

Usage Guidelines See “Configure Aggregate Routes” on page 103 and “Configure Generated Routes” on page 111.

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 134, generate on page 141

preference

Syntax `(preference | preference2 | color | color2) preference <type type>;`

Hierarchy Level [edit routing-options (aggregate | generate | static) (defaults | route)],
 [edit routing-options rib *routing-table* (aggregate | generate | static) (defaults | route)]
 [edit routing-instances *routing-instance-name* routing-options (aggregate | generate | static)
 (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options rib *routing-table*
 (aggregate | generate | static) (defaults | route)]

Description Preference value for a static, aggregated, or generated route. You also can specify a secondary preference value (*preference2*); and colors, which are even finer-grained preference values (*color* and *color2*).

Options *preference*—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)

type—(Optional) Type of route.
Range: 1 through 16

Usage Guidelines See “Configure Static Routes” on page 95, “Configure Aggregate Routes” on page 103, and “Configure Generated Routes” on page 111.

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 134, generate on page 141, static on page 154

prefix

Syntax prefix *destination-prefix*;

Hierarchy Level [edit routing-options multicast scope *scope-name*],
[edit routing-instances *routing-instance-name* routing-options multicast scope *scope-name*]

Description Configure the prefix for multicast scopes.

Options *destination-prefix*—Prefix that lies within the multicast scope.

Usage Guidelines See “Configure Multicast Scoping” on page 125.

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 146

readvertise

Syntax (readvertise | no-readvertise);

Hierarchy Level [edit routing-options static (defaults | route)],
[edit routing-options rib *routing-table* static (defaults | route)],
[edit routing-instances *routing-instance-name* routing-options static (defaults | route)],
[edit routing-instances *routing-instance-name* routing-options rib *routing-table* 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 “Configure Static Routes” on page 95.

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 routing-options static (defaults | route)],
 [edit routing-options rib *routing-table* static (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options static (defaults | route)],
 [edit routing-instances *routing-instance-name* routing-options rib *routing-table* 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.

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.

no-retain—Delete statically configured routes from the forwarding table when the routing protocol process shuts down normally.

Default no-retain

Usage Guidelines See “Configure Static Routes” on page 95.

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

Syntax rib *routing-table-name* {
 static {
 defaults {
static-options;
 }
 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 routing-options],
[edit routing-instances *routing-instance-name* 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 inet for the IP 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 “Create Routing Tables” on page 93.

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

rib-group

Syntax *rib-group group-name*;

Hierarchy Level [edit routing-options interface-routes],
[edit routing-instances *routing-instance-name* routing-options interface-routes]

Description Configure which routing table groups interface routes are imported into.

Options *group-name*—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 “Configure How Interface Routes Are Imported into Routing Tables” on page 124, “Create Routing Table Groups” on page 123.

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 143, rib-groups on page 152

rib-groups

Syntax rib-groups {
 group-name {
 import-rib [*routing-table-name*];
 export-rib *routing-table-name*;
 }
 }

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

Description 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.

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).

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

The remaining statements are explained separately.

Usage Guidelines See “Create Routing Table Groups” on page 123.

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

See Also rib-group on page 151

route-record

Statement route-record;

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

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

Usage Guidelines See “Configure Route Recording for Flow Aggregation” on page 123.

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

See Also *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*

router-id

Statement	router-id <i>address</i> ;
Hierarchy Level	[edit routing-options], [edit routing-instances <i>routing-instance-name</i> 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 "Configure the Router Identifier" on page 122.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

routing-options

Statement	routing-options { ... }
Hierarchy Level	[edit], [edit routing-instances <i>routing-instance-name</i>]
Description	Configure protocol-independent routing properties.
Usage Guidelines	See "Protocol-Independent Routing Properties Configuration Statements" on page 90.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

scope

Syntax	scope <i>scope-name</i> { interface [<i>interface-name</i>]; prefix <i>destination-prefix</i> ; }
Hierarchy Level	[edit routing-options multicast], [edit routing-instances <i>routing-instance-name</i> routing-options multicast]
Description	Configure multicast scoping.
Options	<i>scope-name</i> —Name of the multicast scope. The remaining statements are explained separately.
Usage Guidelines	See "Configure Multicast Scoping" on page 125.
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 146

ssm-groups

Syntax	ssm-groups { <i>address</i> ; }
Hierarchy Level	[edit routing-options multicast], [edit routing-instances <i>routing-instance-name</i> routing-options multicast]
Description	Configure additional SSM groups.
Options	<i>address</i> —Address range of the additional SSM group.
Usage Guidelines	See “Configure Additional Source Specific Multicast Groups” on page 125.
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 146

static

Syntax	static { defaults { <i>static-options</i> ; } route <i>destination-prefix</i> { <i>next-hop</i> ; <i>static-options</i> ; } }
Hierarchy Level	[edit routing-options], [edit routing-instances <i>routing-instance-name</i> routing-options]
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 statements in the configuration.
Options	<i>destination-prefix</i> —Destination of the generated route, specified as: <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. default—For the default route to the destination. This is equivalent to specifying an IP address of 0.0.0.0/0. <i>next-hop</i> —How to reach the destination, specified as: next-hop <i>address</i> —Reach the next-hop router by specifying an IP address. 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.

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.

receive—Install a receive 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);

(no-retain | retain);

(tag | tag2) *string*;

Usage Guidelines See “Configure Static Routes” on page 95.

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

tag

Syntax (tag | tag2) *string*;

Hierarchy Level [edit routing-options (aggregate | generate | static) (defaults | route)],
[edit routing-options rib *routing-table* (aggregate | generate | static) (defaults | route)],
[edit routing-instances *routing-instance-name* routing-options (aggregate | generate | static)
(defaults | route)],
[edit routing-instances *routing-instance-name* routing-options rib *routing-table*
(aggregate | generate | static) (defaults | route)]

Description Associate an OSPF tag with a static, aggregate, or generated route.

Options *string*—OSPF tag string.

Usage Guidelines See “Configure Static Routes” on page 95, “Configure Aggregate Routes” on page 103, and “Configure Generated Routes” on page 111.

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 134, generate on page 141, static on page 154

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 routing-options]
 [edit routing-instances *routing-instance-name* 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 is 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—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

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

normal—All normal operations

policy—Routing policy operations and actions

route—Routing table changes

state—State transitions

	task—Interface transactions and processing	
	timer—Timer usage	
	<i>flag-modifier</i> —(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 <i>size</i> —(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named <i>trace-file</i> reaches this size, it is renamed <i>trace-file.0</i> . When the <i>trace-file</i> again reaches its maximum size, <i>trace-file.0</i> is renamed <i>trace-file.1</i> and <i>trace-file</i> is renamed <i>trace-file.0</i> . 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: <i>xk</i> to specify KB, <i>xm</i> to specify MB, or <i>xg</i> to specify GB Range: 10 KB through the maximum file size supported on your system Default: 1 MB	
Usage Guidelines	See “Trace Global Routing Protocol Operations” on page 129.	
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.	

