

Chapter 23

Summary of PIM Configuration Statements

The following sections explain each of the Protocol Independent Multicast (PIM) configuration statements. The statements are organized alphabetically.

address

See the following sections:

- address (Anycast RPs) on page 243
- address (Local RPs) on page 244
- address (Static RPs) on page 244

address (Anycast RPs)

Syntax	address <i>address</i> [forward-msdp-sa];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp local family anycast-pim rp-set], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp local family anycast-pim rp-set], [edit protocols pim rp local family anycast-pim rp-set], [edit routing-instances <i>routing-instance-name</i> protocols pim rp local family anycast-pim rp-set]
Release Information	Statement introduced in JUNOS Release 7.4.
Description	Configure the anycast rendezvous point (RP) addresses in the RP set. Multiple addresses can be configured in an RP set. If the RP has peer MSDP connections, then the RP must forward MSP source active (SA) messages.
Options	<i>address</i> —RP address in an RP set. [forward-msdp-sa]—Forward MSDP SAs to this address.
Usage Guidelines	See “Example: Configuring Anycast RP” on page 221.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

address (Local RPs)

Syntax	<code>address address;</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp local family], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp local family] [edit protocols pim rp local family], [edit routing-instances <i>routing-instance-name</i> protocols pim rp local family]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Configure the local rendezvous point (RP) address.
Options	<i>address</i> —Local RP address.
Usage Guidelines	See “Configuring the Local RP Address” on page 206.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

address (Static RPs)

Syntax	<code>address address { version <i>version</i>; group-ranges { <i>destination-mask</i>; } }</code>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim static], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim static], [edit protocols pim static], [edit routing-instances <i>routing-instance-name</i> protocols pim static]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Configure static rendezvous point (RP) addresses. You can configure a static RP in a logical router only if the logical router is not directly connected to a source. For each static RP address, you can optionally specify the PIM version and the groups for which this address can be the RP. The default PIM version is version 1.
Options	<i>address</i> —Static RP address. Default: 224.0.0.0/4
	The remaining statements are explained separately.
Usage Guidelines	See “Configuring Static RPs” on page 208.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

anycast-pim

Statement	<pre>anycast-pim { rp-set { address address [forward-msdp-sa]; } local-address address; }</pre>
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> protocols pim rp local family], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp local family], [edit protocols pim rp local family], [edit routing-instances <i>routing-instance-name</i> protocols pim rp local family]</p>
Release Information	Statement introduced in JUNOS Release 7.4.
Description	Configure properties for anycast RP using PIM.
Options	The statements are explained separately.
Usage Guidelines	See “Example: Configuring Anycast RP” on page 221.
Required Privilege Level	<p>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</p>

assert-timeout

Syntax	assert-timeout <i>seconds</i> ;
Hierarchy Level	<p>[edit logical-routers <i>logical-router-name</i> protocols pim], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim], [edit protocols pim], [edit routing-instances <i>routing-instance-name</i> protocols pim]</p>
Release Information	Statement introduced before JUNOS Release 7.4.
Description	<p>Multicast routers running PIM sparse mode often forward the same stream of multicast packets onto the same LAN through the rendezvous-point tree (RPT) and shortest-path tree (SPT). PIM assert messages help routers determine which router forwards the traffic and prunes the RPT for this group. By default, routers enter an assert cycle every 210 seconds. You can configure this assert timeout between 5 and 210 seconds.</p>
Options	<p><i>seconds</i>—Time for router to wait before another assert message cycle. Range: 5 through 210 seconds Default: 210 seconds</p>
Usage Guidelines	See “Configuring the Assert Timeout” on page 214.
Required Privilege Level	<p>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</p>

auto-rp

Syntax	auto-rp (announce discovery mapping);
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp], [edit protocols pim rp], [edit routing-instances <i>routing-instance-name</i> protocols pim rp]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Configure automatic RP announcement and discovery.
Options	<p>announce—Configures the router to listen only for mapping packets and also to advertise itself if it is an RP.</p> <p>discovery—Configures the router to listen only for mapping packets.</p> <p>mapping—Configures the router to announce, listens for and generates mapping packets, and announces that the router is eligible to be an RP.</p>
Usage Guidelines	See “Configuring Auto-RP Announcement, Mapping, and Discovery” on page 209.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

bootstrap-export

Syntax	bootstrap-export [<i>policy-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp], [edit protocols pim rp], [edit routing-instances <i>routing-instance-name</i> protocols pim rp]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Apply one or more export policies to control outgoing PIM bootstrap messages.
Options	<i>policy-names</i> —Name of one or more import policies.
Usage Guidelines	See “Filtering PIM Bootstrap Messages” on page 209.
Required Privilege Level	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

bootstrap-import

Syntax	bootstrap-import [<i>policy-names</i>];
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp], [edit protocols pim rp], [edit routing-instances <i>routing-instance-name</i> protocols pim rp]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Apply one or more import policies to control incoming PIM bootstrap messages.
Options	<i>policy-names</i> —Name of one or more import policies.
Usage Guidelines	See “Filtering PIM Bootstrap Messages” on page 209.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

bootstrap-priority

Syntax	bootstrap-priority <i>number</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp], [edit protocols pim rp], [edit routing-instances <i>routing-instance-name</i> protocols pim rp]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Configure whether this router is eligible to be a bootstrap router. In the case of a tie, the router with the highest IP address is elected to be the bootstrap router.
Options	<i>number</i> —Priority for becoming the bootstrap router. A value of 0 means that the router is not eligible to be the bootstrap router. Range: 0 through 255 Default: 0
Usage Guidelines	See “Configuring PIM Sparse Mode Properties” on page 202.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

dense-groups

Syntax	dense-groups { <i>addresses</i> ; }
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim], [edit protocols pim], [edit routing-instances <i>routing-instance-name</i> protocols pim]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Configure which groups are operating in dense mode.
Options	<i>addresses</i> —Operate in dense mode.
Usage Guidelines	See “Configuring Sparse-Dense Mode Properties” on page 214.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

disable

See the following sections:

- [disable \(PIM Interfaces\)](#) on page 248
- [disable \(PIM Graceful Restart\)](#) on page 249

disable (PIM Interfaces)

Syntax	disable;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim], [edit logical-routers <i>logical-router-name</i> protocols pim interface <i>interface-name</i>], [edit logical-routers <i>logical-router-name</i> protocols pim rp local family], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim interface <i>interface-name</i>], [edit protocols pim], [edit protocols pim interface <i>interface-name</i>], [edit protocols pim rp local family], [edit routing-instances <i>routing-instance-name</i> logical-routers <i>logical-router-name</i> protocols pim], [edit routing-instances <i>routing-instance-name</i> logical-routers <i>logical-router-name</i> protocols pim rp local family], [edit routing-instances <i>routing-instance-name</i> protocols pim], [edit routing-instances <i>routing-instance-name</i> protocols pim interface <i>interface-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols pim rp local family]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Explicitly disable PIM.

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

disable (PIM Graceful Restart)

Syntax disable;

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim graceful-restart],
 [edit protocols pim graceful-restart],
 [edit routing-instances *routing-instance-name* logical-routers *logical-router-name*
 protocols pim graceful-restart],
 [edit routing-instances *routing-instance-name* protocols pim graceful-restart]

Release Information Statement introduced before JUNOS Release 7.4.

Description Explicitly disable PIM sparse mode graceful restart.

Usage Guidelines See “Configuring PIM Sparse Mode Graceful Restart” on page 203.

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

embedded-rp

Statement embedded-rp {
 maximum-rps *limit*;
 group-ranges {
 destination-mask;
 }
 }

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

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure properties for embedded IP version 6 (IPv6) RPs.
 The statements are explained separately.

Usage Guidelines See “Configuring Embedded RP for IPv6” on page 213.

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

family

Syntax family (inet | inet6) {
 address *address*;
 anycast-pim {
 rp-set {
 address *address* [forward-msdp-sa];
 }
 local-address *address*;
 }
 disable;
 group-ranges {
 destination-mask;
 }
 hold-time *seconds*;
 priority *number*;
 }

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim rp local],
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*
 protocols pim rp local],
 [edit protocols pim rp local],
 [edit routing-instances *routing-instance-name* protocols pim rp local]

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure which IP protocol type local RP properties to apply.

Options inet—Apply IP version 4 (IPv4) local RP properties.

inet6—Apply IPv6 local RP properties.

The remaining statements are explained separately.

Usage Guidelines See “Configuring PIM Sparse Mode Properties” on page 202.

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;
 restart-duration *seconds*;
 }

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim graceful-restart],
 [edit protocols pim graceful-restart],
 [edit routing-instances *routing-instance-name* logical-routers *logical-router-name*
 protocols pim graceful-restart],
 [edit routing-instances *routing-instance-name* protocols pim graceful-restart]

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure PIM sparse mode graceful restart.

Options The statements are explained separately.

Usage Guidelines See “Configuring PIM Sparse Mode Graceful Restart” on page 203.

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

group-ranges

Syntax `group-ranges {
 destination-mask;
}`

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim rp embedded-rp],
[edit logical-routers *logical-router-name* routing-instances *routing-instance-name*
 protocols pim rp embedded-rp],
[edit protocols pim rp embedded-rp],
[edit protocols pim rp local family],
[edit protocols pim rp static address *address*],
[edit routing-instances *routing-instance-name* protocols pim rp embedded-rp],
[edit routing-instances *routing-instance-name* protocols pim rp local family],
[edit routing-instances *routing-instance-name* protocols pim rp static address *address*]

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure the address ranges of the multicast groups for which this router can be an RP.

Default The router is eligible to be the RP for all IPv4 or IPv6 groups (224.0.0.0/4 or FF70::/12 to FFF0::/12).

Options *destination-mask*—Addresses or address ranges for which this router can be an RP.

Usage Guidelines See “Configuring the Groups for Which the Router Is the RP” on page 207 and “Configuring Embedded RP for IPv6” on page 213.

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

hello-interval

Syntax `hello-interval seconds;`

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

Release Information Statement introduced before JUNOS Release 7.4.

Description How often the router sends PIM hello packets out of an interface.

Options *seconds*—Length of time between PIM hello packets.
Range: 0 through 255
Default: 30 seconds

Usage Guidelines See “Modifying the Hello Interval” on page 197.

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

See Also hold-time on page 252

hold-time

Syntax hold-time *seconds*;

Hierarchy Level [edit protocols pim rp local family],
[edit routing-instances *routing-instance-name* protocols pim rp local family]

Release Information Statement introduced before JUNOS Release 7.4.

Description How long a neighbor should consider the sending router (this router) to be operative (up).

Options *seconds*—Hold time.
Range: 0 through 255
Default: 0 seconds

Usage Guidelines See “Configuring the Router’s Local RP Properties” on page 205.

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* protocols pim],
[edit protocols pim],
[edit routing-instances *routing-instance-name* logical-routers *logical-router-name*
protocols pim],
[edit routing-instances *routing-instance-name* protocols pim]

Release Information Statement introduced before JUNOS Release 7.4.

Description Apply one or more policies to routes being imported into the routing table from PIM. Use the import statement to filter PIM join messages from entering the network.

Options *policy-names*—Name of one or more policies.

Usage Guidelines See “Filtering PIM Join Messages” on page 199.

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

interface

Syntax	<pre>interface [all <i>interface-name</i>] { disable; hello-interval <i>seconds</i>; mode (dense sparse sparse-dense); priority <i>number</i>; version <i>version</i>; }</pre>
Hierarchy Level	<pre>[edit logical-routers <i>logical-router-name</i> protocols pim], [edit protocols pim], [edit routing-instances <i>routing-instance-name</i> logical-routers <i>logical-router-name</i> protocols pim], [edit routing-instances <i>routing-instance-name</i> protocols pim]</pre>
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Enable PIM on an interface and configure interface-specific properties.
Options	<p><i>interface-name</i>—Name of the interface. Specify the full interface name, including the physical and logical address components. To configure all interfaces, you can specify <code>all</code>. For details about specifying interfaces, see the <i>JUNOS Network Interfaces and Class of Service Configuration Guide</i>.</p> <p>The remaining statements are explained separately.</p>
Usage Guidelines	See “Configuring PIM Mode-Independent Interface Properties” on page 196.
Required Privilege Level	<pre>routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.</pre>

local

Syntax	<pre>local { family (inet inet6) { address <i>address</i>; anycast-pim { rp-set { address <i>address</i> [forward-msdp-sa]; } local-address <i>address</i>; } disable; group-ranges { <i>destination-mask</i>; } hold-time <i>seconds</i>; priority <i>number</i>; } }</pre>
Hierarchy Level	<pre>[edit logical-routers <i>logical-router-name</i> protocols pim rp], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp],</pre>

[edit protocols pim rp],
 [edit routing-instances *routing-instance-name* protocols pim rp]

- Release Information** Statement introduced before JUNOS Release 7.4.
- Description** Configure the router’s RP properties.
- Options** The statements are explained separately.
- Usage Guidelines** See “Configuring the Router’s Local RP Properties” on page 205.
- Required Privilege Level** routing—To view this statement in the configuration.
 routing-control—To add this statement to the configuration.

local-address

Syntax local-address *address*;

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim rp local family anycast-pim],
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*
 protocols pim rp local family anycast-pim],
 [edit protocols pim rp local family anycast-pim],
 [edit routing-instances *routing-instance-name* protocols pim rp local family anycast-pim]

Release Information Statement introduced in JUNOS Release 7.4.

Description Configure the router’s local address for anycast rendezvous point (RP). If this statement is omitted, the router ID is used as this address.

Options *address*—Anycast RP IPv4 or IPv6 address, depending on family configuration.

Usage Guidelines See “Example: Configuring Anycast RP” on page 221.

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

maximum-rps

Statement maximum-rps *limit*;

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim rp embedded-rp],
 [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*
 protocols pim rp embedded-rp],
 [edit protocols pim rp embedded-rp],
 [edit routing-instances *routing-instance-name* protocols pim rp embedded-rp]

Release Information Statement introduced before JUNOS Release 7.4.

Description Limit the number of RPs that the routing platform acknowledges.

Options *limit*—Number of RPs.
Range: 1 through 500
Default: 100

Usage Guidelines See “Configuring Embedded RP for IPv6” on page 213.

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

mode

Syntax mode (dense | sparse | sparse-dense);

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

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure PIM to operate in sparse, dense, or sparse-dense mode.

Options dense—Operate in dense mode.
sparse—Operate in sparse mode.
sparse-dense—Operate in sparse-dense mode.

Default: sparse

Usage Guidelines See “Configuring PIM Dense Mode Properties” on page 201, “Configuring PIM Sparse Mode Properties” on page 202, and “Configuring Sparse-Dense Mode Properties” on page 214.

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

pim

Syntax pim {
 assert-timeout *seconds*;
 dense-groups {
 addresses;
 }
 disable;
 import [*policy-names*];
 interface *interface-name* {
 disable;
 hello-interval *seconds*;
 mode (dense | sparse | sparse-dense);
 priority *number*;
 version *version*;
 }
 rib-group *group-name*;
 rp {
 auto-rp (announce | discovery | mapping);
 bootstrap-import [*policy-names*];

```

bootstrap-export [ policy-names ];
bootstrap-priority number;
embedded-rp {
    maximum-rps limit;
    group-ranges {
        destination-mask;
    }
}
local {
    family (inet | inet6) {
        disable;
        address address;
        anycast-pim {
            rp-set {
                address address [forward-msdp-sa];
            }
            local-address address;
        }
        group-ranges {
            destination-mask;
        }
        hold-time seconds;
        priority number;
    }
}
static {
    address address {
        version version;
        group-ranges {
            destination-mask;
        }
    }
}
}
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* protocols],
[edit logical-routers *logical-router-name* routing-instances *routing-instance-name*
protocols],
[edit protocols],
[edit routing-instances *routing-instance-name* protocols]

Release Information Statement introduced before JUNOS Release 7.4.

Description Enable PIM on the router.

Default PIM is disabled on the router.

Options The statements are explained separately.

Usage Guidelines See “PIM Configuration Guidelines” on page 195.

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

priority

See the following sections:

- priority (PIM Interfaces) on page 257
- priority (PIM RPs) on page 257

priority (PIM Interfaces)

Syntax `priority number;`

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

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure the router’s likelihood to be elected as the designated router.

Options *number*—Router’s priority for becoming the designated router. A higher value corresponds to a higher priority.
Range: 1 through a 32-bit number
Default: 1 (The router has the least likelihood of becoming the designated router.)

Usage Guidelines See “Configuring the Designated Router Priority” on page 197.

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

priority (PIM RPs)

Syntax `priority number;`

Hierarchy Level [edit protocols pim rp local family],
[edit routing-instances *routing-instance-name* protocols pim rp local family]

Release Information Statement introduced before JUNOS Release 7.4.

Description This router’s priority for becoming an RP. The bootstrap router uses this field when selecting the list of candidate RPs to send in the bootstrap message. A smaller number increases the likelihood that the router becomes the RP for local multicast groups. A priority value of 0 means that bootstrap router can override the group range being advertised by the candidate RP.

Options *number*—Router’s priority for becoming an RP. A lower value corresponds to a higher priority.
Range: 0 through 255
Default: 1

Usage Guidelines See “Configuring the Router’s Local RP Properties” on page 205.

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

restart-duration

Syntax restart-duration *seconds*;

Hierarchy Level [edit logical-routers *logical-router-name* protocols pim graceful-restart],
 [edit protocols pim graceful-restart],
 [edit routing-instances *routing-instance-name* logical-routers *logical-router-name* protocols pim graceful-restart],
 [edit routing-instances *routing-instance-name* protocols pim graceful-restart]

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure the duration of the graceful restart interval.

Options *seconds*—Time the routing platform waits to complete PIM sparse mode graceful restart.
Range: 30 through 300
Default: 60

Usage Guidelines See “Configuring PIM Sparse Mode Graceful Restart” on page 203.

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 logical-routers *logical-router-name* protocols pim],
 [edit protocols pim],
 [edit routing-instances *routing-instance-name* logical-routers *logical-router-name* protocols pim],
 [edit routing-instances *routing-instance-name* protocols pim]

Release Information Statement introduced before JUNOS Release 7.4.

Description Associate a routing table group with PIM.

Options *group-name*—Name of the routing table group. The name must be one that you defined with the `rib-group` statement at the [edit routing-options] hierarchy level.

Usage Guidelines See “Configuring a PIM RPF Routing Table” on page 198.

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

rp

```

Syntax rp {
    auto-rp (announce | discovery | mapping);
    bootstrap-export [ policy-names ];
    bootstrap-import [ policy-names ];
    bootstrap-priority number;
    embedded-rp {
        maximum-rps limit;
        group-ranges {
            destination-mask;
        }
    }
    local {
        family (inet | inet6) {
            disable;
            address address;
            anycast-pim {
                rp-set {
                    address address [forward-msdp-sa];
                }
                local-address address;
            }
            group-ranges {
                destination-mask;
            }
            hold-time seconds;
            priority number;
        }
    }
    static {
        address address {
            version version;
            group-ranges {
                destination-mask;
            }
        }
    }
}

```

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

Release Information Statement introduced before JUNOS Release 7.4.

Description	Configure the router as an actual or potential RP. A router can be an RP for more than one group.
Default	If you do not include the <code>rp</code> statement, the router can never become the RP.
Options	The statements are explained separately.
Usage Guidelines	See “Configuring PIM Sparse Mode Properties” on page 202.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

rp-set

Syntax	<pre>rp-set { address address [forward-msdp-sa]; }</pre>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim local family anycast-pim], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim local family anycast-pim], [edit protocols pim local family anycast-pim], [edit routing-instances <i>routing-instance-name</i> protocols pim local family anycast-pim]
Release Information	Statement introduced in JUNOS Release 7.4.
Description	Configure a set of rendezvous point (RP) addresses for anycast RP. You can configure up to 15 RPs.
Options	The statement is explained separately.
Usage Guidelines	See “Example: Configuring Anycast RP” on page 221.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

static

Syntax	<pre>static { address address { version version; group-ranges { destination-mask; } } }</pre>
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim rp], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols pim rp], [edit protocols pim rp], [edit routing-instances <i>routing-instance-name</i> protocols pim rp]
Release Information	Statement introduced before JUNOS Release 7.4.

Description Configure static RP addresses. The default static RP address is 224.0.0.0/4. To configure other addresses, include one or more **address** statements. You can configure a static RP in a logical router only if the logical router is not directly connected to a source.

For each static RP address, you can optionally specify the PIM version and the groups for which this address can be the RP. The default PIM version is version 1.

Options The statements are explained separately.

Usage Guidelines See “Configuring Static RPs” on page 208.

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* protocols pim],
 [edit protocols pim],
 [edit routing-instances *routing-instance-name* logical-routers *logical-router-name* protocols pim],
 [edit routing-instances *routing-instance-name* protocols pim]

Release Information Statement introduced before JUNOS Release 7.4.

Description Configure PIM tracing options.

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

Default The default PIM trace options are those inherited from the routing protocol’s traceoptions statement included at the [edit routing-options] hierarchy level.

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 tracing output in the `pim-log` file.

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.

PIM Tracing Flags

- *assert*—Assert messages
- *bootstrap*—Bootstrap messages
- *cache*—Packets in the PIM sparse mode routing cache
- *graft*—Graft and graft acknowledgment messages
- *hello*—Hello packets
- *join*—Join messages
- *mt*—Multicast tunnel messages
- *packets*—All PIM packets
- *prune*—Prune messages
- *register*—Register and register stop messages
- *rp*—Candidate RP advertisements

Global Tracing Flags

- *all*—All tracing operations
- *general*—A combination of the *normal* and *route* trace operations
- *normal*—All normal operations
Default: If you do not specify this option, only unusual or abnormal operations are traced.
- *policy*—Policy operations and actions
- *route*—Routing table changes
- *state*—State transitions
- *task*—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.

no-world-readable—(Optional) Disallow any user to read the log file.

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 *trace-file* again reaches its maximum size, *trace-file.0* is renamed *trace-file.1* and *trace-file* is renamed *trace-file.0*. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you must also specify a maximum number of trace files with the **files** option.

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

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

Default: 1 MB

world-readable—(Optional) Allow any user to read the log file.

Usage Guidelines See “Tracing IGMP Protocol Traffic” on page 54, “Tracing DVMRP Protocol Traffic” on page 156, “Configuring PIM Trace Options” on page 200, and “Tracing MSDP Protocol Traffic” on page 285.

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.

version

Statement	version <i>version</i> ;
Hierarchy Level	[edit logical-routers <i>logical-router-name</i> protocols pim interface <i>interface-name</i>], [edit logical-routers <i>logical-router-name</i> protocols pim rp static address <i>address</i>], [edit protocols pim interface <i>interface-name</i>], [edit protocols pim rp static address <i>address</i>], [edit routing-instances <i>routing-instance-name</i> logical-routers <i>logical-router-name</i> protocols pim interface <i>interface-name</i>], [edit routing-instances <i>routing-instance-name</i> logical-routers <i>logical-router-name</i> protocols pim rp static address <i>address</i>], [edit routing-instances <i>routing-instance-name</i> protocols pim interface <i>interface-name</i>], [edit routing-instances <i>routing-instance-name</i> protocols pim rp static address <i>address</i>]
Release Information	Statement introduced before JUNOS Release 7.4.
Description	Specify the version of PIM.

Options *version*—PIM version number.
Range: 1 or 2
Default: PIM version 2

Usage Guidelines See “Changing the PIM Version” on page 197.

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

vpn-group-address

Syntax `vpn-group-address address;`

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

Release Information Statement introduced before JUNOS Release 7.4.

Description Specify a group address on which to encapsulate multicast traffic from a virtual private network (VPN) instance.

Options *address*—IP address whose high-order four bits are 1110, giving an address range from 224.0.0.0 through 239.255.255.255, or simply 224.0.0.0/4. For more information about addresses, see “Multicast Addresses” on page 30.

Usage Guidelines See “Configuring Multicast for Layer 3 VPNs” on page 215.

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