

Chapter 41

Summary of PIM Configuration Statements

The following sections explain each of the PIM configuration statements. The statements are organized alphabetically.

address

address (static RPs)

Syntax address *address* {
 version *version*;
 group-ranges {
 destination-mask;
 }
 }

Hierarchy Level [edit protocols pim static]

Description Configure static RP addresses.

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 *address*—Static RP address.
 Default: 224.0.0.0/4

The remaining statements are explained separately.

Usage Guidelines See “Configure Static RPs” on page 414.

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

address (local RPs)

Syntax	address <i>address</i> ;
Hierarchy Level	[edit protocols pim rp]
Description	Configure the local RP address.
Options	<i>address</i> —Local RP address.
Usage Guidelines	See “Configure the Local RP Address” on page 412.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

auto-rp

Syntax	auto-rp (announce discovery mapping);
Hierarchy Level	[edit protocols pim rp]
Description	Configure auto-RP.
Options	announce—Configures the router to advertise that it can be the RP. discovery—Configures the router to advertise that it can be the RP and to automatically discover the list of RP by listening for RP mapping messages. mapping—Configure the router to advertise, listen, and be the mapping agent that runs the RP election algorithm and that advertises the elected RPs.
Usage Guidelines	See “Configure Auto-RP” on page 414.
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 protocols pim rp]
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 “Configure the Router’s Properties for Becoming a Candidate RP” on page 411.
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 protocols pim interface <i>interface-name</i>]
Description	Configure which groups are operating in dense mode.
Options	<i>addresses</i> —Operate in dense mode.
Usage Guidelines	See “Configure Dense, Sparse, or Sparse-Dense Mode” on page 409.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

disable

Syntax	disable;
Hierarchy Level	[edit protocols pim]
Description	Explicitly disable PIM.
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 { <i>destination-mask</i> ; }
Hierarchy Level	[edit protocols pim rp local], [edit protocols pim rp static address <i>address</i>]
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 groups (224.0.0.0/4).
Options	<i>destination-mask</i> —Addresses or address ranges for which this router can be an RP.
Usage Guidelines	See “Configure the Groups for Which the Router Is the RP” on page 413.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

hold-time

- Syntax** hold-time *seconds*;
- Hierarchy Level** [edit protocols pim rp]
- 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 “Modify the DVMRP Hold-Time Period” on page 393.
- Required Privilege Level** routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

interface

- Syntax** interface *interface-name* {
disable;
mode (dense | sparse | sparse-dense);
priority *number*;
version *version*;
}
- Hierarchy Level** [edit protocols pim]
- Description** Enable PIM on an interface, and configure interface-specific properties.
- Options** *interface-name*—Name of the interface. Specify the full interface name, including the physical and logical address components. To configure all interfaces, you can specify all. For details about specifying interfaces, see the *JUNOS Internet Software Configuration Guide: Interfaces and Chassis*.
- The remaining statements are explained separately.
- Usage Guidelines** See “Enable PIM” on page 408.
- Required Privilege Level** routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.

local

Syntax	local { address <i>address</i> ; disable; group-ranges { <i>destination-mask</i> ; } hold-time <i>seconds</i> ; priority <i>number</i> ; }
Hierarchy Level	[edit protocols pim rp]
Description	Configure the router's RP properties.
Options	The statements are explained separately.
Usage Guidelines	See "Configure the Router's Properties for Becoming a Candidate RP" on page 411.
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 protocols pim interface <i>interface-name</i>]
Description	Configure PIM to operate in dense, sparse, or sparse-dense mode.
Options	dense—Operate in dense mode. sparse—Operate in sparse mode. sparse-dense—Operate in sparse-dense mode. Default: dense
Usage Guidelines	See "Configure Dense, Sparse, or Sparse-Dense Mode" on page 409.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

pim

```

Syntax  pim {
            disable;
            bootstrap-priority number;
            rib-group group-name;
            traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
              flag flag <flag-modifier> <disable>;
            }
            interface interface-name {
            disable;
            mode (dense | sparse);
            version (1 | 2);
            }
            rp {
            disable;
            group-ranges {
              destination-prefix match-type;
            }
            hold-time seconds;
            priority number;
            }
          }

```

Hierarchy Level [edit protocols]

Description Enable PIM on the router.

Default PIM is disabled on the router.

Options The statements within the pim statement are explained separately.

Usage Guidelines See “Enable PIM” on page 408.

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

priority

priority (PIM interfaces)

Syntax	priority <i>number</i> ;
Hierarchy Level	[edit protocols pim interface <i>interface-name</i>]
Description	Configure the router's likelihood to be elected as the designated router.
Options	<i>number</i> —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 "Configure the Priority to Be Elected the Designated Router" on page 410.
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 <i>number</i> ;
Hierarchy Level	[edit protocols pim rp]
Description	This router's priority for becoming a rendezvous point (RP). The bootstrap router uses this field when selecting the list of candidate RPs to send in the bootstrap message.
Options	<i>number</i> —Router's priority for becoming an RP. Range: 0 through 255 Default: 0 (The bootstrap router can override the group range being advertised by the candidate RP.)
Usage Guidelines	See "Configure the Router's RP Priority" on page 413.
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 protocols pim]
Description	Associate a routing table group with PIM.
Options	<i>group-name</i> —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 “Enable PIM” on page 408.
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 150, rib-groups on page 151

rp

Syntax	<pre>rp { disable; auto-rp (announce discovery mapping); group-ranges { <i>destination-mask</i>; } hold-time <i>seconds</i>; priority <i>number</i>; }</pre>
Hierarchy Level	[edit protocols pim]
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 rp statement, the router can never become the RP.
Options	All statements are explained separately.
Usage Guidelines	See “Configure the Router’s Properties for Becoming a Candidate RP” on page 411.
Required Privilege Level	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

static

```

Syntax  static {
            address address {
                version version;
                group-ranges {
                    destination-mask;
                }
            }
        }

```

Hierarchy Level [edit protocols pim rp]

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.

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 “Configure Static RPs” on page 414.

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 protocols pim]

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 protocols traceoptions statement included at the [edit routing-options] hierarchy level.

To trace the paths of multicast packets, use the mtrace command, as described in the *JUNOS Internet Software Command Reference*.

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.

filename—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—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-SM routing cache
- graft—Graft and graft acknowledgment messages
- hello—Hello packets
- join—Join 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 the *trace-file* again reaches its maximum size, *trace-file.0* is renamed *trace-file.1* and *trace-file* is renamed *trace-file.0*. This renaming scheme continues until the maximum number of trace files is reached. Then, the oldest trace file is overwritten.
-
- If you specify a maximum file size, you must also specify a maximum number of trace files with the files option.
-
- **Syntax:** *xk* to specify KB, *xm* to specify MB, or *xg* to specify GB
- **Range:** 10 KB through the maximum file size supported on your system
- **Default:** 1 MB
-
- world-readable—(Optional) Allow any user to read the log file.
-
- **Usage Guidelines** See “Trace IGMP Protocol Traffic” on page 374, “Trace DVMRP Protocol Traffic” on page 395, “Trace MSDP Protocol Traffic” on page 439, and “Trace PIM Protocol Traffic” on page 415.
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- **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 version;`
- **Hierarchy Level** [edit protocols pim interface *interface-name*],
[edit protocols pim rp static address *address*]
- **Description** Specify the version of PIM.
- **Options** *version*—PIM version number.
 - **Range:** 1 or 2
 - **Default:** PIM Version 2
- **Usage Guidelines** See “Change the PIM Version” on page 410.
- **Required Privilege Level** routing—To view this statement in the configuration.
routing-control—To add this statement to the configuration.