bsr-candidate

Configures the Routing Switch as a candidate PIM Sparse Bootstrap Router (BSR).

**EXAMPLE:**
To configure the Routing Switch as a candidate BSR, enter a command such as the following:

```
ProCurveRS(config-pim-router)# bsr-candidate ethernet 2/2 30 255
BSR address: 207.95.7.1, hash mask length: 30, priority: 255
```

This command configures the PIM Sparse interface on port 2/2 as a BSR candidate, with a hash mask length of 30 and a priority of 255. The information shown in italics above is displayed by the CLI after you enter the candidate BSR configuration command.

**Syntax:**
```
[no] bsr-candidate ethernet <portnum> | loopback <num> | ve <num> <hash-mask-length> [<priority>]
```

The `ethernet` `<portnum>` | `loopback` `<num>` | `ve` `<num>` parameter specifies the interface. The Routing Switch will advertise the specified interface’s IP address as a candidate BSR.

- Enter `ethernet` `<portnum>` for a physical interface (port).
- Enter `ve` `<num>` for a virtual interface.
- Enter `loopback` `<num>` for a loopback interface.

The `<hash-mask-length>` parameter specifies the number of bits in a group address that are significant when calculating the group-to-RP mapping. You can specify a value from 1 – 32.

**NOTE:** Hewlett-Packard recommends you specify 30 for IP version 4 (IPv4) networks.

The `<priority>` specifies the BSR priority. You can specify a value from 0 – 255. When the election process for BSR takes place, the candidate BSR with the highest priority becomes the BSR. The default is 0.

**Possible values:** N/A

**Default value:** N/A

disable-pim

Disables PIM without deleting any multicast configuration.

**EXAMPLE:**
```
ProCurveRS(config-pim-router)# disable-pim
```

**Syntax:** `[no] disable-pim`
Use the [no] version of the command to re-enable PIM.

**Possible values:** N/A

**Default value:** N/A

**end**

Moves activity to the privileged EXEC level from any level of the CLI except the user EXEC level.

**EXAMPLE:**
To move to the privileged level, enter the following from any level of the CLI.

```
ProCurveRS(config-pim-router)# end
ProCurveRS#
```

**Syntax:** `end`

**Possible values:** N/A

**Default value:** N/A

**exit**

Moves activity up one level from the current level. In this case, activity will be moved to the global level.

**EXAMPLE:**

```
ProCurveRS(config-pim-router)# exit
ProCurveRS(config)#
```

**Syntax:** `exit`

**Possible values:** N/A

**Default value:** N/A

**graft-retransmit-timer**

Defines the interval between the transmission of graft messages.

A graft message is sent by a router to cancel a prune state. When a router receives a graft message it will respond with a Graft Ack message. If this Graft Ack message is lost, the router that sent the graft message, resends it. The interval between the transmission of the first and subsequent graft message is what is configurable with the PIM graft retransmit timer.

**EXAMPLE:**

To change the graft retransmit timer from the default of 180 to 90 seconds, enter the following:

```
ProCurveRS(config-pim-router)# graft-retransmit-timer 90
```

**Syntax:** `graft-retransmit-timer <value>`

**Possible values:** 10 – 3600 seconds

**Default value:** 180 seconds

**hardware-drop**

Drops unwanted PIM Dense or PIM Sparse multicast traffic in hardware on Routing Switches running software release 07.8.00 and later. This feature does not apply to DVMRP traffic.

When a multicast stream has no output interfaces, the Routing Switch can drop packets in hardware if the multicast traffic meets either of the following conditions:

- The input port of the traffic has no neighbor, so it is not necessary to send a prune message.
- The input port has neighbors and the traffic is Layer 2 with a source IP address that is on the same subnet as the input port. HP PIM Dense ignores prune message from a Routing Switch which is on the same subnet as the source.
When you enable the hardware-drop feature, the `show ip pim mcache` command includes "drop" in the flag field if a CAM is installed for the purpose of the drop.

**EXAMPLE:**
ProCurveRS(config-pim-router)# hardware-drop

**Syntax:** hardware-drop

**Possible values:** N/A

**Default value:** N/A

**hello-timer**
Defines the time interval at which periodic hellos are sent out on all interfaces of a PIM-capable router. Routers use hello messages to inform neighboring routers of their presence.

**EXAMPLE:**
To apply a PIM hello timer of 120 seconds to all ports on the router operating with PIM, enter the following:
ProCurveRS(config-pim-router)# hello-timer 120

**Syntax:** hello-timer <value>

**Possible values:** 10 – 3600 seconds

**Default value:** 60 seconds

**highest-ip-rpf**
Selects the shortest path back to the source, based on which Reverse Path Forwarding (RPF) neighbor in the IP routing table has the highest IP address, if the cost of the routes are the same. For example, in the table above, Gateway 137.80.129.1 will be chosen as the shortest path to the source because it is the RPF neighbor with the highest IP address.

When choosing the RPF, the router first checks the Multicast Routing Table. If the table is not available, it chooses an RPF from the IP Routing Table. Multicast route is configured using the `ip mroute` command.

**EXAMPLE:**
To enable the Highest IP RPF feature, enter the following
ProCurveRS(config-pim-router)# highest-ip-rpf

**Syntax:** highest-ip-rpf

**Possible values:** N/A

**Default:** N/A

**inactivity-timer**
A forwarding entry is deleted if it is not used to send multicast packets. The PIM inactivity timer defines the time interval after which an inactive forwarding entry is deleted.

**EXAMPLE:**
To apply a PIM inactivity timer of 90 seconds to all ports on the router operating with PIM, enter the following:
ProCurveRS(config-pim-router)# inactivity-timer 90

**Syntax:** inactivity-timer <value>

**Possible values:** 10 – 3600 seconds

**Default value:** 180 seconds

**message-interval**
Changes the PIM Sparse Join/Prune message interval.
By default, the Routing Switch sends PIM Sparse Join/Prune messages every 60 seconds. These messages inform other PIM Sparse routers about clients who want to become receivers (Join) or stop being receivers (Prune) for PIM Sparse groups.

You can change the Join/Prune message interval using the following CLI method.

**NOTE:** Use the same Join/Prune message interval on all the PIM Sparse routers in the PIM Sparse domain. If the routers do not all use the same timer interval, the performance of PIM Sparse can be adversely affected.

**EXAMPLE:**
To change the Join/Prune interval, enter commands such as the following:

```
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# message-interval 30
```

**Syntax:** `[no] message-interval <num>`

The `<num>` parameter specifies the number of seconds and can from 1 – 65535. The default is 60.

**Possible values:** 1 – 65535 seconds

**Default value:** 60 seconds

**nbr-timeout**

If a neighboring PIM router stops sending out PIM Hello messages, the router will eventually discover that the neighbor is not present. Neighbor timeout is the interval after which a PIM-capable router will consider a neighbor to not be present.

**EXAMPLE:**
To apply a PIM neighbor timeout value of 360 seconds to all ports on the router operating with PIM, enter the following:

```
ProCurveRS(config-pim-router)# nbr-timeout 360
```

**Syntax:** `nbr-timeout <value>`

**Possible values:** 60 – 8000 seconds.

**Default value:** 180 seconds

**no**

Disables other commands. To disable a command, place the word **no** before the command.

**prune-timer**

This parameter is used to define how long a ProCurve Routing Switch will maintain a prune state for a forwarding entry.

The first received multicast interface is forwarded to all other PIM interfaces on the Routing Switch. If there is no presence of groups on that interface, the leaf node will send a prune message upstream and store a prune state. This prune state will travel up the tree and install a prune state.

A prune state is maintained until the prune timer expires or a graft message is received for the forwarding entry.

**EXAMPLE:**
To apply a PIM prune timer of 90 seconds to all ports on the Routing Switch operating with PIM, enter the following:

```
ProCurveRS(config-pim-router)# prune-timer 90
```

**Syntax:** `prune-timer <value>`

**Possible values:** 10 – 3600 seconds.

**Default value:** 180 seconds
**prune-wait**

Configures the amount of time a PIM router will wait before stopping traffic to neighbor routers that do not want the traffic. The value can be from zero to three seconds. The default is three seconds. A smaller prune wait value reduces flooding of unwanted traffic.

A prune wait value of zero causes the PIM router to stop traffic immediately upon receiving a prune message. If there are two or more neighbors on the physical port, then the **prune-wait** command should not be used because one neighbor may send a prune message while the other sends a join message at the during time or in less than three seconds.

**EXAMPLE:**

ProCurveRS(config-pim-router)# prune-wait 0

**Syntax:**

`prune-wait <time>`

**Possible values:**

<time> can be 0 - 3 seconds. A value of 0 causes the PIM router to stop traffic immediately upon receiving a prune message.

**Default value:**

3 seconds

**quit**

Returns you from any level of the CLI to the User EXEC mode.

**EXAMPLE:**

ProCurveRS(config-pim-router)# quit

ProCurveRS>

**Syntax:**

`quit`

**Possible values:**

N/A

**Default value:**

N/A

**rp-address**

Statically configures the address of the PIM Sparse Rendezvous Point (RP). Furthermore, beginning with software release 07.6.04, you can limit the number of multicast groups covered by a static RP using standard ACLs. In the ACL, you specify the group to which the RP address applies. See the examples below.

Hewlett-Packard recommends that you use the PIM Sparse protocol's RP election process so that a backup RP can automatically take over if the active RP router becomes unavailable. However, if you do not want the RP to be selected by the RP election process but instead you want to explicitly identify the RP by its IP address, you can do using the following CLI method.

If you explicitly specify the RP, the Routing Switch uses the specified RP for all group-to-RP mappings and overrides the set of candidate RPs supplied by the BSR.

**NOTE:** Specify the same IP address as the RP on all PIM Sparse routers within the PIM Sparse domain. Make sure the router is on the backbone or is otherwise well connected to the rest of the network.

**EXAMPLE:**

To specify the IP address of the RP, enter commands such as the following:

ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-address 207.95.7.1

The command in the example above identifies the router interface at IP address 207.95.7.1 as the RP for the PIM Sparse domain. The Routing Switch will use the specified RP and ignore group-to-RP mappings received from the BSR.

**Syntax:**

`[no] rp-address <ip-address> [ <access-list-num> ] [ override ]`

**Possible values:**

The `<ip-address>` parameter specifies the IP address of the RP.
The `<access-list-num>` parameter is the number of the standard ACL that will filter the multicast group.

The `<override>` parameter directs the Routing Switch to ignore the information learned by a BSR if there is a conflict between the RP configured in this command and the information that is learned by the BSR. In previous releases, static RP configuration precedes the RP address learned from the PIM Bootstrap protocol. With this enhancement, an RP address learned dynamically from PIM Bootstrap protocol takes precedence over static RP configuration unless the override parameter is used.

**Default value:** see above

**NOTE:** Extended ACLs cannot be used to limit static RP groups.

**EXAMPLE:**
To configure an RP that covers multicast groups in 239.255.x.x, enter commands such as the following:

```
ProCurveRS(config)# access-list 2 permit 239.255.162.0 0.0.0.255
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-address 43.43.43.1 2
```

**EXAMPLE:**
To configure an RP that covers multicast groups in the 239.255.x.x range, except the 239.255.162.2 group, enter commands such as the following:

```
ProCurveRS(config)# access-list 5 deny host 239.255.162.2
ProCurveRS(config)# access-list 5 permit 239.255.0.0 0.0.255.255
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-candidate ve 43
ProCurveRS(config-pim-router)# rp-address 99.99.99.5 5
```

**EXAMPLE:**
To configure an RP for multicast groups using the override switch, enter commands such as the following:

```
ProCurveRS(config)# access-list 44 permit 239.255.162.0 0.0.0.255
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-address 43.43.43.1
ProCurveRS(config-pim-router)# rp-address 99.99.99.5 44 override
```

**rp-candidate**

Configures the Routing Switch as a candidate PIM Sparse Rendezvous Point (RP).

**EXAMPLE:**
Enter a command such as the following to configure the Routing Switch as a candidate RP:

```
ProCurveRS(config-pim-router)# rp-candidate ethernet 2/2
```

**Syntax:** `[no] rp-candidate ethernet <portnum> | loopback <num> | ve <num> | [group-list <access-list-num>]`

The `ethernet <portnum> | loopback <num> | ve <num>` parameter specifies the interface. The Routing Switch will advertise the specified interface’s IP address as a candidate RP.

- Enter `ethernet <portnum>` for a physical interface (port).
- Enter `ve <num>` for a virtual interface.
- Enter `loopback <num>` for a loopback interface.

The `group-list <access-list-num>` indicates that a standard ACL is used to filter for which multicast group the advertisement will be made.

By default, this command configures the Routing Switch as a candidate RP for all group numbers beginning with 224. As a result, the Routing Switch is a candidate RP for all valid PIM Sparse group numbers. You can change
this by adding or deleting specific address ranges. The following example narrows the group number range for
which the Routing Switch is a candidate RP by explicitly adding a range.

ProCurveRS(config-pim-router)# rp-candidate add 224.126.0.0 16

Syntax: [no] rp-candidate add <group-addr> <mask-bits>
The <group-addr> <mask-bits> specifies the group address and the number of significant bits in the sub-net mask.
In this example, the Routing Switch is a candidate RP for all groups that begin with 224.126. When you add a
range, you override the default. The Routing Switch then becomes a candidate RP only for the group address
range(s) you add.

You also can change the group numbers for which the Routing Switch is a candidate RP by deleting address
ranges. For example, to delete all addresses from 224.126.22.0 – 224.126.22.255, enter the following command:

ProCurveRS(config-pim-router)# rp-candidate delete 224.126.22.0 24

Syntax: [no] rp-candidate delete <group-addr> <mask-bits>
The usage of the <group-addr> <mask-bits> parameter is the same as for the
rp-candidate add command.
If you enter both commands shown in the example above, the net effect is that the Routing Switch becomes a
candidate RP for groups 224.126.0.0 – 224.126.21.255 and groups 224.126.23.0 – 224.126.255.255.

Possible values: see above
Default value: see above

EXAMPLE:
You can use standard ACLs to control the groups for which the candidate RP will send advertisement messages to
the bootstrap router. For example, ACL 5 can be configured to be applied to the multicast groups within the IP
address 239.x.x.x range. You can configure the Routing Switch to advertise itself as a candidate RP to the
bootstrap router only for groups in the range of 239.x.x.x. Enter commands such as the following:

ProCurveRS(config)# interface ethernet 1/1
ProCurveRS(config-if-1/1)# ip address 99.99.99.5 255.255.255.0
ProCurveRS(config-if-1/1)# ip pim-sparse
ProCurveRS(config-if-1/1)# exit

ProCurveRS(config)# access-list 5 deny host 239.255.162.2
ProCurveRS(config)# access-list 5 permit 239.0.0.0 0.0.255.255
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-candidate ethernet 1/1 group-list 5

The example above shows a configuration for an Ethernet interface.

EXAMPLE:
To configure ACLs that are applied to a virtual routing interface, enter commands such as the following:

ProCurveRS(config)# interface ve 16
ProCurveRS(config-vif-16)# ip address 16.16.16.1 255.255.255.0
ProCurveRS(config-vif-16)# ip pim-sparse
ProCurveRS(config-vif-16)# exit

ProCurveRS(config)# access-list 5 deny host 239.255.162.2
ProCurveRS(config)# access-list 5 permit 239.0.0.0 0.0.255.255
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-candidate ve 16 group-list 5

EXAMPLE:
To configure ACLs that are applied to a loopback interface, enter commands such as the following:

ProCurveRS(config)# interface loopback 1
ProCurveRS(config-lbif-1)# ip address 88.88.88.8 255.255.255.0
ProCurveRS(config-lbif-1)# ip pim-sparse
ProCurveRS(config-lbif-1)# exit
ProCurveRS(config)# access-list 5 deny host 239.255.162.2
ProCurveRS(config)# access-list 5 permit 239.255.0.0 0.0.255.255
ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# rp-candidate loopback 1 group-list 5

NOTE: Extended ACLs cannot be used for group-list.

**show**

Displays a variety of configuration and statistical information about the device. See “Show Commands” on page 40-1.

**spt-threshold**

Changes the PIM Sparse Shortest Path Tree (SPT) threshold, which specifies the number of packets the Routing Switch sends using the RP before switching to the SPT.

**EXAMPLE:**
To change the number of packets the Routing Switch sends using the RP before switching to the SPT, enter commands such as the following:

ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# spt-threshold 1000

**Syntax:** [no] spt-threshold infinity | <num>

The `infinity` | `<num>` parameter specifies the number of packets. If you specify `infinity`, the Routing Switch sends packets using the RP indefinitely and does not switch over to the SPT. If you enter a specific number of packets, the Routing Switch does not switch over to using the SPT until it has sent the number of packets you specify using the RP. The default is 1 packet.

**Possible values:** see above

**Default value:** 1 packet

**ssm-enable**

Enable source specific multicast (SSM) on a ProCurve Routing Switch running PIM-SM and software release 07.8.00.

Enabling IGMP V3 enables source specific multicast (SSM) filtering for DVMRP and PIM Dense (PIM-DM) for multicast group addresses in the 224.0.1.0 through 239.255.255 address range. However, if PIM Sparse is used as the multicast protocol, the SSM protocol should be enabled if you want to filter unwanted traffic before the Shortest Path Tree protocol switchover occurs for groups in the 232/8 range. Not configuring the SSM protocol in PIM Sparse may cause the switch or router to leak unwanted packets with the same group, but containing undesired sources, to clients. After SPT switch over, the leak stops and source specific multicast works correctly even without configuring the SSM protocol.

If the SSM protocol is not enabled and before the SPT switchover, the multicast router creates one (*, G) entry for the entire multicast group, which can have many sources. If the SSM protocol is enabled, one (S,G) entry is created for every member of the multicast group, even for members with non-existent traffic. For example, if there are 1,000 members in the group, 1,000 (S,G) entries will be created. Therefore, enabling the SSM protocol for PIM-SM requires more resources than leaving the protocol disabled.

**EXAMPLE:**

ProCurveRS(config)# router pim
ProCurveRS(config-pim-router)# ssm-enable

**Syntax:** [no] ssm-enable

Enter the `ssm-enable` command under the router pim level to globally enable the SSM protocol on a Routing Switch.
Possible values: N/A
Default value: N/A

write memory
Saves the running configuration into the startup-config file.

EXAMPLE:
ProCurveRS(config-pim-router)# wr mem

Syntax: write memory
Possible values: N/A
Default value: N/A

write terminal
Displays the running configuration of the HP device on the terminal screen.

NOTE: This command is equivalent to the show running-config command.

EXAMPLE:
ProCurveRS(config-pim-router)# wr term

Syntax: write terminal
Possible values: N/A
Default value: N/A