Multicast Configuration Commands
Table of Contents

<table>
<thead>
<tr>
<th>Chapter 1 Basic Multicast Commands</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1 Basic Multicast Commands</td>
<td>1</td>
</tr>
<tr>
<td>1.1.1 debug ip mpacket</td>
<td>1</td>
</tr>
<tr>
<td>1.1.2 debug ip mrouting</td>
<td>2</td>
</tr>
<tr>
<td>1.1.3 debug ip mroute-cache</td>
<td>3</td>
</tr>
<tr>
<td>1.1.4 debug ip multicast</td>
<td>3</td>
</tr>
<tr>
<td>1.1.5 ip mroute</td>
<td>5</td>
</tr>
<tr>
<td>1.1.6 ip mroute-cache</td>
<td>6</td>
</tr>
<tr>
<td>1.1.7 ip multicast-routing</td>
<td>6</td>
</tr>
<tr>
<td>1.1.8 ip multicast route-limit</td>
<td>7</td>
</tr>
<tr>
<td>1.1.9 ip multicast boundary</td>
<td>8</td>
</tr>
<tr>
<td>1.1.10 ip multicast helper-map</td>
<td>9</td>
</tr>
<tr>
<td>1.1.11 ip multicast rate-limit</td>
<td>11</td>
</tr>
<tr>
<td>1.1.12 ip multicast ttl-threshold</td>
<td>12</td>
</tr>
<tr>
<td>1.1.13 show ip mflow</td>
<td>13</td>
</tr>
<tr>
<td>1.1.14 show ip mroute-cache</td>
<td>14</td>
</tr>
<tr>
<td>1.1.15 show ip mroute mfc</td>
<td>15</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 2 IGMP Configuration Commands</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 IGMP Configuration Commands</td>
<td>17</td>
</tr>
<tr>
<td>2.1.1 clear ip igmp group</td>
<td>17</td>
</tr>
<tr>
<td>2.1.2 debug ip igmp</td>
<td>18</td>
</tr>
<tr>
<td>2.1.3 debug ip igmp-host</td>
<td>18</td>
</tr>
<tr>
<td>2.1.4 ip igmp helper-address</td>
<td>19</td>
</tr>
<tr>
<td>2.1.5 ip igmp join-group</td>
<td>20</td>
</tr>
<tr>
<td>2.1.6 ip igmp immediate-leave group-list</td>
<td>21</td>
</tr>
<tr>
<td>2.1.7 ip igmp last-member-query-interval</td>
<td>22</td>
</tr>
<tr>
<td>2.1.8 ip igmp querier-timeout</td>
<td>22</td>
</tr>
<tr>
<td>2.1.9 ip igmp query-interval</td>
<td>23</td>
</tr>
<tr>
<td>2.1.10 ip igmp query-max-response-time</td>
<td>24</td>
</tr>
<tr>
<td>2.1.11 ip igmp static-group</td>
<td>25</td>
</tr>
<tr>
<td>2.1.12 ip igmp version</td>
<td>26</td>
</tr>
<tr>
<td>2.1.13 show ip igmp groups</td>
<td>27</td>
</tr>
<tr>
<td>2.1.14 show ip igmp interface</td>
<td>28</td>
</tr>
<tr>
<td>2.1.15 show ip igmp-host</td>
<td>29</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Chapter 3 PIM-DM Configuration Commands</th>
<th>31</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1 PIM-DM Configuration Commands</td>
<td>31</td>
</tr>
<tr>
<td>3.1.1 clear ip mroute pim-dm</td>
<td>31</td>
</tr>
<tr>
<td>3.1.2 clear ip pim-dm interface</td>
<td>32</td>
</tr>
<tr>
<td>3.1.3 debug ip pim-dm</td>
<td>33</td>
</tr>
<tr>
<td>3.1.4 ip pim-dm</td>
<td>35</td>
</tr>
<tr>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>3.1.5 ip pim-dm dr-priority</td>
<td>36</td>
</tr>
<tr>
<td>3.1.6 ip pim-dm hello-interval</td>
<td>37</td>
</tr>
<tr>
<td>3.1.7 ip pim-dm state-refresh origination-interval</td>
<td>38</td>
</tr>
<tr>
<td>3.1.8 ip pim-dm neighbor-filter</td>
<td>39</td>
</tr>
<tr>
<td>3.1.9 ip pim-dm state-refresh disable</td>
<td>40</td>
</tr>
<tr>
<td>3.1.10 show ip mroute pim-dm</td>
<td>41</td>
</tr>
<tr>
<td>3.1.11 show ip pim-dm neighbor</td>
<td>42</td>
</tr>
<tr>
<td>3.1.12 show ip pim-dm interface</td>
<td>43</td>
</tr>
<tr>
<td>3.1.13 show ip rpf pim-dm</td>
<td>45</td>
</tr>
<tr>
<td>3.1.5 ip pim-dm dr-priority</td>
<td>36</td>
</tr>
<tr>
<td>3.1.6 ip pim-dm hello-interval</td>
<td>37</td>
</tr>
<tr>
<td>3.1.7 ip pim-dm state-refresh origination-interval</td>
<td>38</td>
</tr>
<tr>
<td>3.1.8 ip pim-dm neighbor-filter</td>
<td>39</td>
</tr>
<tr>
<td>3.1.9 ip pim-dm state-refresh disable</td>
<td>40</td>
</tr>
<tr>
<td>3.1.10 show ip mroute pim-dm</td>
<td>41</td>
</tr>
<tr>
<td>3.1.11 show ip pim-dm neighbor</td>
<td>42</td>
</tr>
<tr>
<td>3.1.12 show ip pim-dm interface</td>
<td>43</td>
</tr>
<tr>
<td>3.1.13 show ip rpf pim-dm</td>
<td>45</td>
</tr>
</tbody>
</table>

Chapter 4 PIM-SM Configuration Commands.......................................................... 46

4.1 PIM-SM Configuration Commands................................................................. 46

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.1 ip pim-sm</td>
<td>46</td>
</tr>
<tr>
<td>4.1.2 ip pim-sm admin-scope</td>
<td>46</td>
</tr>
<tr>
<td>4.1.3 ip pim-sm asrt-hold</td>
<td>48</td>
</tr>
<tr>
<td>4.1.4 ip pim-sm bsr-border</td>
<td>49</td>
</tr>
<tr>
<td>4.1.5 ip pim-sm dr-pri</td>
<td>49</td>
</tr>
<tr>
<td>4.1.6 ip pim-sm hello-intvl</td>
<td>50</td>
</tr>
<tr>
<td>4.1.7 ip pim-sm holdtime</td>
<td>51</td>
</tr>
<tr>
<td>4.1.8 ip pim-sm horizon-split</td>
<td>52</td>
</tr>
<tr>
<td>4.1.9 ip pim-sm jp-hold</td>
<td>53</td>
</tr>
<tr>
<td>4.1.10 ip pim-sm jp-intvl</td>
<td>54</td>
</tr>
<tr>
<td>4.1.11 ip pim-sm lan-delay</td>
<td>55</td>
</tr>
<tr>
<td>4.1.12 ip pim-sm nbma-mode</td>
<td>56</td>
</tr>
<tr>
<td>4.1.13 ip pim-sm nbr-filter</td>
<td>57</td>
</tr>
<tr>
<td>4.1.14 ip pim-sm nbr-track</td>
<td>58</td>
</tr>
<tr>
<td>4.1.15 ip pim-sm override</td>
<td>59</td>
</tr>
<tr>
<td>4.1.16 router pim-sm</td>
<td>60</td>
</tr>
<tr>
<td>4.1.17 hello-option</td>
<td>61</td>
</tr>
<tr>
<td>4.1.18 accept bsm-adv</td>
<td>62</td>
</tr>
<tr>
<td>4.1.19 accept crp-adv</td>
<td>63</td>
</tr>
<tr>
<td>4.1.20 accept rp-addr</td>
<td>64</td>
</tr>
<tr>
<td>4.1.21 accept register</td>
<td>66</td>
</tr>
<tr>
<td>4.1.22 anycast-rp</td>
<td>67</td>
</tr>
<tr>
<td>4.1.23 reg-rate-limit</td>
<td>70</td>
</tr>
<tr>
<td>4.1.24 reg-src</td>
<td>71</td>
</tr>
<tr>
<td>4.1.25 spt-threshold</td>
<td>72</td>
</tr>
<tr>
<td>4.1.26 ssm</td>
<td>73</td>
</tr>
<tr>
<td>4.1.27 c-bsr intf_type intf_name</td>
<td>75</td>
</tr>
<tr>
<td>4.1.28 c-bsr admin-scope</td>
<td>76</td>
</tr>
<tr>
<td>4.1.29 bsm-policy</td>
<td>77</td>
</tr>
<tr>
<td>4.1.30 static-rp</td>
<td>79</td>
</tr>
<tr>
<td>4.1.31 c-rp intf_type intf_name</td>
<td>81</td>
</tr>
<tr>
<td>4.1.32 intvl-time</td>
<td>83</td>
</tr>
<tr>
<td>4.1.33 holdtime</td>
<td>84</td>
</tr>
<tr>
<td>4.1.34 log</td>
<td>86</td>
</tr>
<tr>
<td>4.1.35 show running-configure</td>
<td>87</td>
</tr>
<tr>
<td>4.1.36 show ip pim-sm bsr-router</td>
<td>88</td>
</tr>
<tr>
<td>Section</td>
<td>Description</td>
</tr>
<tr>
<td>---------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>4.1.37</td>
<td>show ip pim-sm interface</td>
</tr>
<tr>
<td>4.1.38</td>
<td>show ip pim-sm neighbor</td>
</tr>
<tr>
<td>4.1.39</td>
<td>show ip pim-sm rp</td>
</tr>
<tr>
<td>4.1.40</td>
<td>show ip pim-sm rp-hash</td>
</tr>
<tr>
<td>4.1.41</td>
<td>show ip mroute pim-sm</td>
</tr>
<tr>
<td>4.1.42</td>
<td>show ip rpf pim-sm</td>
</tr>
<tr>
<td>4.1.43</td>
<td>debug ip pim-sm alert</td>
</tr>
<tr>
<td>4.1.44</td>
<td>debug ip pim-sm assert</td>
</tr>
<tr>
<td>4.1.45</td>
<td>debug ip pim-sm bsr</td>
</tr>
<tr>
<td>4.1.46</td>
<td>debug ip pim-sm rp</td>
</tr>
<tr>
<td>4.1.47</td>
<td>debug ip pim-sm entry</td>
</tr>
<tr>
<td>4.1.48</td>
<td>debug ip pim-sm event</td>
</tr>
<tr>
<td>4.1.49</td>
<td>debug ip pim-sm hello</td>
</tr>
<tr>
<td>4.1.50</td>
<td>debug ip pim-sm jp</td>
</tr>
<tr>
<td>4.1.51</td>
<td>debug ip pim-sm nbr</td>
</tr>
<tr>
<td>4.1.52</td>
<td>debug ip pim-sm packet</td>
</tr>
<tr>
<td>4.1.53</td>
<td>debug ip pim-sm register</td>
</tr>
<tr>
<td>4.1.54</td>
<td>debug ip pim-sm timer</td>
</tr>
<tr>
<td>Chapter 5</td>
<td>Multicast VPN Settings</td>
</tr>
<tr>
<td>5.1.1</td>
<td>ip multicast-routing vrf vpn-instance-name</td>
</tr>
<tr>
<td>5.1.2</td>
<td>mdt share-group group-address binding mtunnel number</td>
</tr>
<tr>
<td>5.1.3</td>
<td>mdt connect-src interface</td>
</tr>
<tr>
<td>5.1.4</td>
<td>mdt switch-group-pool group-address group-mask threshold</td>
</tr>
<tr>
<td>5.1.5</td>
<td>mdt mdt switch-delay</td>
</tr>
<tr>
<td>5.1.6</td>
<td>mdt hold-down</td>
</tr>
<tr>
<td>5.1.7</td>
<td>mdt rd-list</td>
</tr>
<tr>
<td>5.1.8</td>
<td>show ip mroute vrf vpn-instance pim-s jointlv</td>
</tr>
<tr>
<td>5.1.9</td>
<td>debug ip pim-s mvpn</td>
</tr>
<tr>
<td>5.1.10</td>
<td>debug ip multicast mvpn</td>
</tr>
</tbody>
</table>
Chapter 1  Basic Multicast Commands

1.1  Basic Multicast Commands

1.1.1  debug ip mpacket

If you want to track the process for the multicast packet, you can use this command "debug ip mpacket", and use the 'no' forma of the command to close debug information.

debug ip mpacket access-list group-address detail

no debug ip mpacket

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>access-list</td>
<td>Range for tracked multicast packets</td>
</tr>
<tr>
<td>group-address</td>
<td>The tracked multicast packet group address</td>
</tr>
<tr>
<td>detail</td>
<td>Details for multicast packet processing</td>
</tr>
</tbody>
</table>

Default

Close debug information output

Command mode

Supervisor mode

Explanation

You can use this command to track the main process for igmp-host end protocol.

Example

The following example shows some situations for multicast packet processing.

You have received the (100.168.20.151,224.1.1.1) packet on e0/1 port, and the packet length is 112 bytes.

You have sent the (192.168.20.99,224.0.0.5) packet on e0/1 port, and the packet length is 64 bytes.

router#debug ip mpacket
1.1.2 debug ip mrouting

Use this command "debug ip mrouting" to enable "mrouting" tracking function, then you can see the change from the multicast transfer list. In addition, use the "no" forma of the command to close debug information.

Syntax

    debug ip mrouting
    no debug ip mrouting

Parameter

None

default

Close all tracking functions.

Command mode

Supervisor mode

Explanation

You can use this command to see the change from the multicast transfer list, such as (S, G)/(*,G) adding/deleting and downstream interface adding/deleting.

Example

The following example shows you some changes from the multicast transfer list. First the (192.168.20.110, 239.0.0.100) item is created, and then Loopback0 is added for downstream interface. Finally, the item is deleted due to timeout.

    router#debug ip mrouting
    MBR: create (192.168.20.110, 239.0.0.100)
    MBR: w/ oif Loopback0
    MBR: delete (192.168.20.110, 239.0.0.100)

Relevant command

    ip multicast-routing
1.1.3 debug ip mroute-cache

Use this command “debug ip mroute-cache” to enable “mroute-cache” tracking function, then you can see the change from the multicast routing cache. In addition, you can use the “no” format of the command to close the tracking.

Syntax

ddebug ip mroute-cache  
group-address

no debug ip mroute-cache

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>The tracked multicast routing cache group address</td>
</tr>
</tbody>
</table>

Default

Close all tracking functions.

Command mode

Supervisor mode

Explanation

You can use this command to see the change of the adding/deleting of multicast routing cache.

Example

The following example shows you some changes on the multicast routing cache, and the creating and timeout of (192.168.20.97,230.0.0.1) cache.

router#debug ip mroute-cache
MRC: create (192.168.20.97,230.0.0.1) mroute-cache
MRC: expired (192.168.20.97,230.0.0.1) mroute-cache

1.1.4 debug ip multicast

You can use this command “debug ip multicast” to enable multicast event tracking function, and then see the interaction between the multicast protocol and mrouter. You can use the “no” format of the command to close the function.
Syntas

```
debug ip multicast [alert | border-router]
```

```
no debug ip multicast [alert | border-router]
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>alert</td>
<td>Track the alert interaction among multicast routing components</td>
</tr>
<tr>
<td>border-router</td>
<td>Track related events of multicast border router MBR</td>
</tr>
</tbody>
</table>

Default

Close all tracking functions.

Command mode

Supervisor mode

Explanation

Defining some standard events between multicast routing protocol and mrouting indicates “alert”, for example: creation alert/deletion alert which related (S,G). You can use “debug ip multicast alert” to see these alerts.

’s multicast routing protocol supports MBR, and each multicast routing protocol is a “component”. You can use “debug ip multicast border-router” to see the component’s running information.

Example

In the following example, the alert router is turned on for output:

```
router#debug ip multicast alert
MBR: [(S, G) deletion alert], originated by OLNK, sent to all components
MBR: [(S, G) creation alert], originated by NONE, sent to all components
MBR: src = 192.168.20.110, grp = 239.0.0.100
MBR: sent to owner OLNK first
MBR: [(S, G) join alert], originated by NONE, sent to OLNK
MBR: src = 192.168.20.110, grp = 239.0.0.100
MBR: [(S, G) firstuse alert], originated by NONE, sent to OLNK
MBR: src = 192.168.20.110, grp = 239.0.0.100
MBR: [(S, G) deletion alert], originated by OLNK, sent to all components
MBR: src = 192.168.20.110, grp = 239.0.0.100
```
1.1.5 ip mroute

Use the command "ip mroute" to configure the static multicast routing, and use "no ip mroute" to delete the configured static multicast routing.

Syntax

```
ip mroute source-address mask [rpf-address type-number [distance]]
no ip mroute source-address mask [rpf-address type-number [distance]]
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>source-address</td>
<td>Multicast source IP address</td>
</tr>
<tr>
<td>mask</td>
<td>Multicast source IP address mask</td>
</tr>
<tr>
<td>rpf-address</td>
<td>RPF address of Static multicast routing</td>
</tr>
<tr>
<td>type-number</td>
<td>RPF interface of Static multicast routing</td>
</tr>
<tr>
<td>distance</td>
<td>Optional management distance</td>
</tr>
</tbody>
</table>

Default

The default management distance is 0.

Command mode

global configuration mode

Explanation

This command allows you to manually configure the location information for the multicast source. It is used when the multicast and unicast topologies are not identical.

Example

The following example will configure a static multicast routing through the specified interface:

```
router_config#ip mroute 100.1.1.0 255.255.255.0 192.1.1.1 f0/0
```

Relevant command

```
show ip mroute static
```
1.1.6  ip mroute-cache

Use this command “ip mroute-cache” to configure a multicast routing cache on the port, and “no ip mroute-cache” to disable the multicast routing cache.

Syntax

ip mroute-cache

no ip mroute-cache

Parameter

None

Default

The default is to use the multicast routing cache on the port.

Command mode

interface configuration mode

Explanation

Use the command when a port uses the multicast routing cache to receive/send the packet, ip will search the cache when a multicast packet is received. If there is no routing information in the cache, the port will ask for multicast routing module.

Example

The following example will enable multicast routing cache on interface e1/0.

router_config_e1/0#ip mroute-cache

Relevant command

show ip mroute-cache

1.1.7  ip multicast-routing

Use this command “ip multicast-routing” to enable IP multicast packet transferring function, and “no ip multicast-routing” to disable the function.
Syntas

   ip multicast-routing
   no ip multicast-routing

Parameter

   none

Default

   The default is not to transfer multicast packets.

Command mode

   global configuration mode

Explanation

   If you disable this function, the router will no longer transfer multicast packets, meanwhile, the multicast routing list and the multicast cache will be empty.

Example

   The following example will configure the router to transfer multicast packets:

   router_config#ip multicast-routing

Relevant command

   show ip mroute mfc

1.1.8   ip multicast route-limit

   Use this command “ip multicast route-limit” to configure the maximum number of multicast routing item, and “no ip multicast route-limit” to un-limit the number.

Syntas

   ip multicast route-limit size
   no ip multicast route-limit size
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>size</td>
<td>Maximum number of multicast routing item</td>
</tr>
</tbody>
</table>

**Default**

The default multicast routing item number is unlimited.

**Command mode**

global configuration mode

**explanation**

If you have configured this function, the multicast routing item number will be limited.

**example**

The following example will configure the maximum number of multicast routing list to 2000:

```
router_config# ip multicast route-limit 2000
```

**Relevant command**

```
show ip mroute mfc
```

1.1.9 ip multicast boundary

Use this command “ip multicast boundary” to manage the range for the port allowed processing multicast packets; it is valid for input/output packets on the port. use “no ip multicast boundary” to cancel this command.

**Syntas**

```
ip multicast boundary access-list
no ip multicast boundary
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>access-list</td>
<td>the access-list name used to specify the range for processing multicast</td>
</tr>
</tbody>
</table>
Default

Process all multicast packets.

Command mode

interface configuration mode

Explanation

If the function is configured, the range for the port allowed processing multicast packets will be limited.

Example

The following example will configure the range for the port e1/0 allowed processing multicast packets to the range limited by the access-list testacl:

```
router_config_e1/0#ip multicast boundary testacl
```

1.1.10  ip multicast helper-map

Use this command “ip multicast helper-map” to configure the connection of two broadcast networks with the multicast routing on the multicast network, and “no ip multicast helper-map” to cancel this command.

```
ip multicast boundary helper-map {group-address|broadcast} {broadcast-address |multicast-address } access-list
no ip multicast boundary helper-map {group-address|broadcast} {broadcast-address |multicast-address } access-list
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>The multicast packet group address which needed to be converted to the broadcast packet. It is used with the broadcast-address keyword.</td>
</tr>
<tr>
<td>broadcast</td>
<td>It can convert the broadcast packet to the multicast packet. It is used with the multicast-address keyword.</td>
</tr>
<tr>
<td>broadcast-address</td>
<td>The target address of broadcast packet which is sent after converting. It is used with the group-address keyword.</td>
</tr>
<tr>
<td>multicast-address</td>
<td>The target address of multicast packet which is sent after converting. It is used with the broadcast keyword.</td>
</tr>
<tr>
<td>access-list</td>
<td>IP extended access-list name. You can use it to specify the port number for packet converting.</td>
</tr>
</tbody>
</table>
Default

Not perform the conversion between any multicast packets and broadcast packets.

Command mode

interface configuration mode

Explanation

If two broadcast networks are connected with a multicast network, you can convert the broadcast flow to multicast flow on the first hop router connected with the source broadcast network, and then convert the multicast flow to broadcast flow on the last hop router connected with the target broadcast network. Thus, you can utilize the multicast network’s multicast characteristic between the two broadcast networks which are required to be connected with each other. Furthermore, it can prevent the packets between two broadcast networks from being sent repeatedly, and utilize the “quick forward” characteristic on the multicast network.

Before using "ip multicast helper-map", you should have configured this command "ip directed-broadcast" on the port.

Example

Configuration on the router is as follow:

if you configure command “ip directed-broadcast” on port e0 of the first hop router, it will be allowed to process the link broadcast packets.

If you have configured “ip multicast helper-map broadcast 230.0.0.1 testacl1”, you can convert the udp broadcast packet, whose port number is 4000 ("ip forward-protocol" command specified) and the source address is 192.168.20.97/24 (testacl1 specified) to multicast packet whose target address is 230.0.0.1 ("ip multicast helper-map" command specified).

if you configure command “ip directed-broadcast” on port e1 of the last hop router, it will be allowed to process the link broadcast packets.

If you have configured “ip multicast helper-map broadcast 230.0.0.1 172.10.255.255 testacl2”, you can convert the multicast packet, whose port number is 4000("ip forward-protocol" command specified), the source address is 192.168.20.97/24 (testacl2 specified) and target address is 230.0.0.1 , to broadcast packet whose target address is 170.10.255.255 ("ip multicast helper-map" command specified).

On the first hop router which is connected with the source broadcast network:

interface ethernet 0
ip directed-broadcast
ip multicast helper-map broadcast 230.0.0.1 testacl
ip pim dense-mode
!
ip access-list extended testacl permit udp 192.168.20.97 255.255.255.0 any
ip forward-protocol udp 4000

On the last hop router which is connected with the target broadcast network:

interface ethernet 1
ip directed-broadcast
ip multicast helper-map 230.0.0.1 172.10.255.255 testacl2
ip pim dense-mode
!
ip access-list extended testacl2 permit udp 192.168.20.97 255.255.255.0 any
ip forward-protocol udp 4000

Relevant command

ip forward-protocol
ip directed-broadcast

1.1.11 ip multicast rate-limit

Use this command "ip multicast rate-limit" to limit the multicast packet flow receiving and sending in the range of a source/group on the port, and "no ip multicast rate-limit" to cancel this flow limitation.

Syntax

ip multicast rate-limit {in | out} [group-list access-list] [source-list access-list] kbps
no ip multicast rate-limit {in | out} [group-list access-list] [source-list access-list]

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>in</td>
<td>Limit the input packet flow on the port.</td>
</tr>
<tr>
<td>out</td>
<td>Limit the output packet flow on the port.</td>
</tr>
<tr>
<td>group-list access-list</td>
<td>(optional) Limit the multicast packet flow for the group address in access-list.</td>
</tr>
<tr>
<td>source-list access-list</td>
<td>(optional) Limit the multicast packet flow for the source address in access-list.</td>
</tr>
<tr>
<td>kbps</td>
<td>(optional) Allowed maximum flow. If its value is 0, no packet will be allowed to pass.</td>
</tr>
</tbody>
</table>

Default

No limitation to the flow.
Command mode

interface configuration mode

Explanation

The packet flow in specified range has exceeded the limit at last second. You have to discard the packet, or the packet will be forwarded.

Example

The maximum output packet flow rate on port s0 (192.168.20.97 , 230.0.0.1) is limited to 64kbps.

interface serial 0
ip multicast rate-limit out group-list gacl source-list sacl 64
ip access-list standard sacl
permit 192.168.20.97 255.255.255.255
ip access-list standard gacl
permit 230.0.0.1 255.255.255.255

1.1.12   ip multicast ttl-threshold

Use this command “ip multicast ttl-threshold” to configure the maximum threshold value of multicast packet ttl on the port, and “no ip multicast ttl-threshold” to restore default.

Syntax

ip multicast ttl-threshold ttl-value

no ip multicast ttl-threshold

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ttl-value</td>
<td>The multicast packet ttl threshold value on the port.</td>
</tr>
</tbody>
</table>

Default

The default ttl threshold value on the port is 1.

Command mode

interface configuration mode
**Explanation**

The ttl value of receiving/sending packet should be larger than the specified threshold value on the port, you can use this command to configure a router to border router.

**Example**

The ttl threshold value configured on port s0 is 200, it means only the multicast packet with ttl value more than 200 is allowed to be received/sent on the port.

```
interface serial 0
ip multicast ttl-threshold 200
```

1.1.13 show ip mflow

You can use this command “show ip mflow” to display global flow information processed by system and multicast flow information processed on the port.

**Syntax**

```
show ip mflow [group-address|source-address]interface
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>The displayed multicast flow information group address.</td>
</tr>
<tr>
<td>source-address</td>
<td>The displayed multicast flow information source address.</td>
</tr>
<tr>
<td>interface</td>
<td>The displayed port multicast flow information.</td>
</tr>
</tbody>
</table>

**Default**

none

**Command mode**

Supervisor mode

**Explanation**

Display the processed packet number from the multicast flow, wrong incoming interface packet number, and current flow value.

**Example**

The following example will display global multicast flow information:
router#show ip mflow
IP Multicast Flow
(100.168.20.151,224.1.1.1)
total process : 0  wrong_if_count : 0 curr-flux : 0.00
(192.167.20.131,239.1.1.1)
total process : 0  wrong_if_count : 0 curr-flux : 0.00

The following example will display port multicast flow information:

router#show ip mflow interface e0/1

IP Multicast Flow
(192.168.20.97,230.0.0.1)
total recv : 21180  total send : 0  curr-in-flux : 0.00 curr-out-flux : 0.00
(100.168.20.151,224.1.1.1)
total recv : 16822400  total send : 0  curr-in-flux : 0.00 curr-out-flux : 0.00
(192.168.20.97,232.0.0.1)
total recv : 240  total send : 0  curr-in-flux : 0.00 curr-out-flux : 0.00
(192.167.20.131,239.1.1.1)
total recv : 103264  total send : 0  curr-in-flux : 0.90 curr-out-flux : 0.00

1.1.14  show ip mroute-cache

use this command “show ip mroute-cache” to display the information on the multicast routing cache.

Syntas

show ip mroute-cache [group-address]

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>The displayed multicast routing cache group address</td>
</tr>
</tbody>
</table>

Default

none

Command mode

Supervisor mode

Explanation

MRC (Multicast Route Cache) is a global multicast routing cache, and every MRC item contains the (S, G) or (*, G) information, upstream/downstream interface information received from the multicast routing.
Example

The following example will display multicast routing list information:

```
router#show ip mroute-cache
IP Multicast Route Cache
(192.168.20.97, 230.0.0.1)|(192.168.20.97,230.0.0.1)
  Incoming interface: Ethernet0/2, Last used : 00:00:34
  Outgoing interface list:
    Loopback0
(192.168.20.97, 230.0.0.2)|(192.168.20.97,230.0.0.2)
  Incoming interface: Ethernet0/2, Last used : 00:00:12
  Outgoing interface list:
    Loopback1
```

1.1.15 show ip mroute mfc

You can use this command “show ip mroute mfc” to display the multicast forwarding list information, and then activate the multicast function.

Syntax

```
show ip mroute mfc
```

Parameter

```
none
```

Default

```
none
```

Command mode

```
Supervisor mode
```

Explanation

MFC (Multicast Forwarding Cache) is a global multicast forwarding list, and the multicast packet is forwarded by it. Every MFC item has (S, G)/ (*, G) information and upstream/downstream interface information.

Example

The following example will display multicast routing list information:

```
router#show ip mroute mfc
```
IP Multicast Forwarding Cache
(192.168.20.110/32, 239.0.0.100/32)
  Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, owned by OLNK
  Outgoing interface list:
    Loopback0, owned by OLNK
(192.168.20.110/32, 239.0.0.101/32)
  Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, owned by OLNK
  Outgoing interface list:
    Loopback0, owned by OLNK
(192.168.20.138/32, 239.1.1.1/32)
  Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, owned by OLNK
  Outgoing interface list:
    Loopback0, owned by OLNK

Relevant command

  show ip mroute olnk
  show ip mroute static
Chapter 2  IGMP Configuration Commands

2.1  IGMP Configuration Commands

2.1.1  clear ip igmp group

If you want to clear the multicast group member information saved in multicast router
that supports IGMP, you can use the command “clear ip igmp group”.

Syntax

clear ip igmp group type-number group-address

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type-number</td>
<td>port type and port number.</td>
</tr>
<tr>
<td>group-address</td>
<td>Multicast group's group address to clear information.</td>
</tr>
</tbody>
</table>

Default

None

Command mode

Supervisor mode

Explanation

Using this command, you can clear the multicast group member information saved in
router when the saved multicast group information has a problem.

Example

The following example shows you how to clear the information of multicast group
233.33.1.1 on e1/0 port.

    clear ip igmp group e1/0 233.33.1.1

Relevant command

None
2.1.2 debug ip igmp

If you want to track the process for igmp-router end protocol, you can use this command “debug ip igmp”, and use the “no” forma of the command to close debug information.

Syntax

d debug ip igmp

no debug ip igmp

Parameter

None

Default

Close debug information output

Command mode

Supervisor mode

Explanation

You can use this command to track the main process for igmp-router end protocol to find the reason for protocol processing failure.

Example

igmp-router function module’s debug information usually use the natural language to make description. Due to its simplicity, we will not list all of the debug information.

2.1.3 debug ip igmp-host

If you want to track the process for igmp-host end protocol, you can use this command “debug ip igmph”, and use the “no” forma of the command to close debug information.

Syntax

d debug ip igmph group-address

no debug ip igmph
Parameter

None

Default

Close debug information output

Command mode

Supervisor mode

Explanation

You can use this command to track the main process for igmp-host end protocol to find the reason for protocol processing failure.

Example

Igmp-host function module’s debug information usually use the natural language to make description. Due to its simplicity, we will not list all of the debug information.

2.1.4 ip igmp helper-address

If you want a port to transit IGMP packet, you can use this command to configure the port. One port can configure the command only once time, so the next configured command will overwrite the original command.

Syntax

ip igmp helper-address  destination-address

no ip igmp helper-address  destination-address

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>destination-address</td>
<td>The destination address of transitting IGMP packet.</td>
</tr>
</tbody>
</table>

Default

The port will not transit IGMP packet

Command mode

interface configuration mode
Explanation

Use this command "ip igmp helper-address" to transit all received igmp packets.

Example

ip igmp helper-address 192.168.20.10

2.1.5 ip igmp join-group

If you want to add a multicast group on the port, you can use this command to perform it.

Syntax

```
ip igmp join-group group-address [{include|exclude} source-address]
no ip igmp join-group group-address [{include|exclude} source-address]
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>The multicast group required to be added to the port</td>
</tr>
<tr>
<td>include</td>
<td>The mode of SSM needed to add a multicast group is “include”.</td>
</tr>
<tr>
<td>exclude</td>
<td>The mode of SSM needed to add a multicast group is “exclude”.</td>
</tr>
<tr>
<td>source-address</td>
<td>Source filter address whose port is added to multicast group.</td>
</tr>
</tbody>
</table>

Default

No multicast group will be added to the port.

Command mode

interface configuration mode

Explanation

Use this command “ip igmp join-group” to dynamically add a multicast group to the port.

Example

```
ip igmp join-group 230.0.0.1
ip igmp join-group 230.0.0.1 exclude 192.168.20.10
```
2.1.6 ip igmp immediate-leave group-list

If you want the router port running IGMP version 2 to run the multicast group function “Exit Now”, you can use this command "ip igmp immediate-leave group-list" to perform configuring. In addition, you can use the “no” format of the command to forbid the IGMP host to “exit now”.

Syntax

```
ip igmp immediate-leave group-list list-name

no ip igmp immediate-leave group-list
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>list-name</td>
<td>Pre-configured ip standard access-list name</td>
</tr>
</tbody>
</table>

Default

The IGMP host is not allowed to run “Exit Now” function.

Command mode

global configuration mode/interface configuration mode

Explanation

This command is available only for the port of running IGMP version 2. It can be used when the network connecting with the port has only one IGMP host. Through configuring this command, the host can immediately exit from a multicast group without the process for packet exchanging and delaying from the router. Besides, you can configure this command in “global configuration mode” and “interface configuration mode”, but this command configured in “global configuration mode” will be prior to the command configured in “interface configuration mode”. If you have configured the command in “global configuration mode”, the next command configured in “interface configuration mode” will be ignored. On the other hand, the command configured in “global configuration mode” will overwrite the original command configured in “interface configuration mode”.

Example

Prefer to “Configure multicast routing”.

Relevant command

```
ip access-list
```
2.1.7  ip igmp last-member-query-interval

To change the query interval of last group member I on the current port, use this command “ip igmp last-member-query-interval”. You can use the “no” format of the command to restore default settings.

Syntas

ip igmp last-member-query-interval time

no ip igmp last-member-query-interval

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time</td>
<td>The value of last member query interval configured on the port. Its unit is millisecond.</td>
</tr>
</tbody>
</table>

Default

The default of the last group member query interval on the port is 1000ms.

Command mode

interface configuration mode

Explanation

You can use this command “ip igmp last-member-query-interval” to modify the last group member query interval on the port.

Example

The following example will modify the last member query interval on the port to 2 seconds.

interface ethernet 0/0
ip igmp last-member-query-interval 2000

2.1.8  ip igmp querier-timeout

You can use this command “ip igmp querier-timeout” to modify other routers for IGMP querier timeout, use the “no” format of this command to restore default.

Syntas

ip igmp querier-timeout time
no ip igmp querier-timeout

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time</td>
<td>other querier timeout. Its unit is second.</td>
</tr>
</tbody>
</table>

Default

125 seconds

Command mode

interface configuration mode

Explanation

You can use this command “ip igmp querier-timeout” to modify other routers for querier timeout. This command is available only for the port which running IGMP version 2.

Example

The following example shows that the querier-timeout specified on interface Ethernet 0/0 is 100 seconds.

```
interface ethernet 0/0
ip igmp querier-timeout 100
```

2.1.9 ip igmp query-interval

To set the interval for IGMP General Query packet sending on the port, you can use this command “ip igmp query-interval”. Use the “no” format of this command to restore default.

Syntax

```
ip igmp query-interval time
no ip igmp query-interval
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time</td>
<td>Interval of sending general query packet. Its unit is second.</td>
</tr>
</tbody>
</table>
Default

60 seconds

Command mode

interface configuration mode

Explanation

you can use this command “ip igmp query-interval” to set the interval for IGMP General Query packet sending on the port.

Example

The following example shows that the interval of sending general query packet on Ethernet 0/0 port is specified to 50 seconds.

interface ethernet 0/0
ip igmp query-interval 50

2.1.10 ip igmp query-max-response-time

To specify the maximum interval for IGMP host to respond General Query packet, you can use this command “ip igmp query-max-resposne-time”. Use the “no” format of this command to restore default.

Syntax

ip igmp query-max-response-time time
no ip igmp query-max-response-time

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>time</td>
<td>Value of the maximum response time configured on the port.</td>
</tr>
</tbody>
</table>

Default

10 seconds

Command mode

interface configuration mode
Explanation

you can use this command `ip igmp query-max-response-time` to specify the maximum interval for IGMP host to respond General Query packet. This command is available only for the port which running IGMP version 2 and 3.

Example

The following example will set the IGMP maximum response time on Ethernet 0/0 port as 15 seconds.

interface ethernet 0/0
ip igmp query-max-response-time 15

2.1.11 ip igmp static-group

If you want to configure a static multicast group on the port, you can use this command "ip igmp static-group" to perform it. Use the "no" format of this command to restore default.

Syntax

```
ip igmp static-group { * | group-address } {include source-address }
```

```
no ip igmp static-group { * | group-address } {include source-address }
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>All multicast groups.</td>
</tr>
<tr>
<td>group-address</td>
<td>specified multicast group address.</td>
</tr>
<tr>
<td>source-address</td>
<td>specified host source address.</td>
</tr>
</tbody>
</table>

Default

In default, no multicast group is static configured on the port.

Command mode

interface configuration mode

Explanation

Configure the static IGMP multicast group information on the current port.

Notes:
For the same group-address, you can configure several “include source-address” commands for the corresponding static multicast group to have several source-addresses existing. However, for the same group-address, you can’t configure both commands with/without “include source-address”.

Example

Refer to “Configure multicast routing”

2.1.12 ip igmp version

To set the IGMP version number running on the port, you can use this command “ip igmp version”. use the “no” format of the command to restore default.

Syntax

```
ip igmp version version-number
no ip igmp version
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>version-number</td>
<td>The value 1.2 or 3 indicates separately the IGMP version number 1 or 3.</td>
</tr>
</tbody>
</table>

Default

If you don’t configure this command, the default version number for IGMP-Router end protocol running on the port is 3.

Command mode

```
interface configuration mode
```

Explanation

Use this command “ip igmp version” can set the IGMP version number running on the port.

Example

The following example will specify the IGMP version number running on Ethernet 0/0 port as 2.
```
interface ethernet 0/0
ip igmp version 2
```
2.1.13  show ip igmp groups

You can use the following command to see the multicast group member information that is saved on the current router.

Syntax

```
show ip igmp groups {interface | group-address | detail}
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface</td>
<td>The port where you want to see the multicast group information. If you don’t add this parameter, all multicast groups information on the port will be displayed.</td>
</tr>
<tr>
<td>group-address</td>
<td>The multicast group address to see. If you don’t add this parameter, all multicast groups information on the router will be displayed.</td>
</tr>
<tr>
<td>detail</td>
<td>The router whether you want to see the multicast group information.</td>
</tr>
</tbody>
</table>

Default

None

Command mode

Supervisor mode/global configuration mode/interface configuration mode.

Explanation

You can use this command to see the multicast group member information that is saved on the router.

Example

```
show ip igmp groups e0/0 detail
```

Running this command will display the following message:

```
---------------------------
Interface: Ethernet0/0
Group address: 233.33.1.3
Uptime: 00:03:46
Group status: Static
Group filter mode: INCLUDE
Last reporter: 0.0.0.0
Group source-list: (Flags: S-Static, R-Remote)
  Source address:   Uptime   Timer   Fwd   Flags
  192.168.20.5      00:03:46 stopped Yes S
```
Interface: Ethernet0/0
Group address: 233.33.1.1
Uptime: 00:03:46
Group status: Static
Group filter mode: INCLUDE
Last reporter: 0.0.0.0
Group source-list:  (Flags: S-Static, R-Remote)

<table>
<thead>
<tr>
<th>Source address</th>
<th>Uptime</th>
<th>Timer</th>
<th>Fwd</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.20.5</td>
<td>00:03:46</td>
<td>stopped</td>
<td>Yes</td>
<td>S</td>
</tr>
<tr>
<td>192.168.20.3</td>
<td>00:03:46</td>
<td>stopped</td>
<td>Yes</td>
<td>S</td>
</tr>
<tr>
<td>192.168.20.1</td>
<td>00:03:46</td>
<td>stopped</td>
<td>Yes</td>
<td>S</td>
</tr>
</tbody>
</table>

show ip igmp groups 233.33.1.1 detail
Running this command will display the following message:

Interface: Ethernet0/0
Group address: 233.33.1.1
Uptime: 00:02:42
Group status: Static
Group filter mode: INCLUDE
Last reporter: 0.0.0.0
Group source-list:  (Flags: S-Static, R-Remote)

<table>
<thead>
<tr>
<th>Source address</th>
<th>Uptime</th>
<th>Timer</th>
<th>Fwd</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.20.5</td>
<td>00:02:42</td>
<td>stopped</td>
<td>Yes</td>
<td>S</td>
</tr>
<tr>
<td>192.168.20.3</td>
<td>00:02:42</td>
<td>stopped</td>
<td>Yes</td>
<td>S</td>
</tr>
<tr>
<td>192.168.20.1</td>
<td>00:02:42</td>
<td>stopped</td>
<td>Yes</td>
<td>S</td>
</tr>
</tbody>
</table>

show ip igmp groups
Running this command will display the following message:

<table>
<thead>
<tr>
<th>Interface</th>
<th>Group address</th>
<th>Uptime</th>
<th>Expires</th>
<th>Last Reporter</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethernet0/0</td>
<td>239.255.255.250</td>
<td>00:01:08</td>
<td>00:02:05</td>
<td>192.168.20.141</td>
<td>R</td>
</tr>
<tr>
<td>Ethernet0/0</td>
<td>224.2.127.254</td>
<td>00:01:09</td>
<td>00:02:00</td>
<td>32.1.1.67</td>
<td>R</td>
</tr>
<tr>
<td>Ethernet0/0</td>
<td>233.33.1.5</td>
<td>00:01:24</td>
<td>stopped</td>
<td>0.0.0.0</td>
<td>S</td>
</tr>
<tr>
<td>Ethernet0/0</td>
<td>233.33.1.3</td>
<td>00:01:24</td>
<td>stopped</td>
<td>0.0.0.0</td>
<td>S</td>
</tr>
<tr>
<td>Ethernet0/0</td>
<td>233.33.1.1</td>
<td>00:01:24</td>
<td>stopped</td>
<td>0.0.0.0</td>
<td>S</td>
</tr>
<tr>
<td>Loopback10</td>
<td>239.255.255.250</td>
<td>00:01:08</td>
<td>00:02:05</td>
<td>192.168.20.141</td>
<td>R</td>
</tr>
<tr>
<td>Loopback10</td>
<td>224.2.127.254</td>
<td>00:01:09</td>
<td>00:02:00</td>
<td>32.1.1.67</td>
<td>R</td>
</tr>
</tbody>
</table>

2.1.14 show ip igmp interface

You can use this command to see information on the current router’s port where IGMP is activated.
Syntas

show ip igmp interface interface

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface</td>
<td>The specified port to display information. If you don’t add this parameter, all information on ports where IGMP is activated will be displayed.</td>
</tr>
</tbody>
</table>

Default

None

Command mode

Supervisor mode/global configuration mode/interface configuration mode

Explanation

You can use this command to display information on the port where IGMP is activated.

Example

show ip igmp interface e0/0

Running this command will display the following information:

Ethernet0/0 is up, line protocol is up
Internet address is 192.168.20.167
Current IGMP router version is 3
Router plays role of querier on the interface now
IGMP is enable on the interface
IGMP query-interval is 60 seconds
IGMP max query response time is 10 seconds
IGMP Last member query response time is 1000 milliseconds
IGMP querier timeout is 125 seconds
Multicast routing is enabled on the interface

2.1.15 show ip igmp-host

You can use this command to see IGMP host information on the port of current router.

Syntas

show ip igmph { interface } detail
Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface</td>
<td>The specified port to display information.</td>
</tr>
<tr>
<td>detail</td>
<td>Display igmp host detailed information.</td>
</tr>
</tbody>
</table>

Default

none

Command mode

Supervisor mode/global configuration mode/interface configuration mode

Explanation

You can use this command to display basic IGMP host information on the port.

Example

show ip igmph interface e0/0

Running this command will display the following information:

IGMP host Mode is IGMP_V3_ROUTER
IGMP host Query Interval is 23 second
IGMP host Query Response Interval is 125
IGMP host Query Robustness Variable is 2
IGMP host Last Query Interval is 0
IGMP interface timer is 0
IGMP host group joined(number of users):
   230.0.0.1(1)
Chapter 3  PIM-DM Configuration Commands

3.1  PIM-DM Configuration Commands

3.1.1  clear ip mroute pim-dm

Use the following command in supervisor mode to clear the (S,G) routing list items submitted by PIM-DM to mrouting:

**Syntax**

```
clear ip mroute pim-dm {* | group [source]}
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>*</td>
<td>Delete all multicast routing list items submitted by pim-dm.</td>
</tr>
<tr>
<td>group</td>
<td>Delete all list items submitted by pim-dm and satisfied in the specified group.</td>
</tr>
<tr>
<td>source</td>
<td>(optional) Delete all list items submitted by pim-dm and satisfied in the specified group’s source.</td>
</tr>
</tbody>
</table>

**Default**

None

**Command mode**

Supervisor mode

**Explanation**

The command will delete all or part of table lists of local multicast router table, and it is possible to affect the normal multicast packet forwarding. This command can only delete the (S,G) items, whose upstream port is created by PIM-DM multicast routing protocol, and inform mrouting, then mrouting will determine if it should re-establish the corresponding (S,G).

**Example**

Example1:

```
Router#clear ip mroute pim-dm *
```
All (S,G) items, whose middlestream/upstream port is created by PIM-DM, on local MRT will be cleared.

Example2:

Router#clear ip mroute pim-dm 239.1.1.1

All (S,G) items with the group address 239.1.1.1, whose middlestream/upstream port is created by PIM-DM, on local MRT will be cleared.

Example3:

Router#clear ip mroute pim-dm 239.1.1.1 192.168.20.131

All (S,G) items with the address (192.168.20.138, 239.1.1.1), whose middlestream/upstream port is created by PIM-DM, on local MRT will be cleared.

3.1.2 clear ip pim-dm interface

Reset the multicast packet statistic value forwarded through (S,G) on PIM-DM port. You can use the command in supervisor mode:

**Syntax**

```
clear ip pim-dm interface {count | type number[count]}
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>count</td>
<td>(optional) Delete all multicast packet statistic values on PIM-DM port.</td>
</tr>
<tr>
<td>type number</td>
<td>(optional) Delete multicast packet statistic values on the specified port.</td>
</tr>
</tbody>
</table>

**Default**

none

**Command mode**

supervisor mode

**Explanation**

This operation will reset the multicast packet number statistic values forwarded through PIM-DM port in local multicast routing list. This command can only reset the (S,G) items, whose upstream port is created by PIM-DM multicast routing protocol.

**Example**

Example1:
Router#clear ip pim-dm interface count

It will reset all multicast packet number statistic values forwarded by (S,G) items, whose upstream port is created by PIM-DM, on local MRT.

Example2:
Router#clear ip pim-dm interface Ethernet1/1 count

It will reset all multicast packet number statistic values forwarded by (S,G) items, whose upstream port is Ethernet1/1 and created by PIM-DM, on local MRT.

3.1.3 debug ip pim-dm

use this command to track input/output PIM packets and caused events. Set this command to “no” to stop tracking.

Syntas

d.debug ip pim-dm [group|alert]

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group</td>
<td>(optional) Track the specified group status.</td>
</tr>
<tr>
<td>alert</td>
<td>(optional) Track the alert status received from mrouting.</td>
</tr>
</tbody>
</table>

Default

none

Command mode

supervisor mode

Explanation

receive Alert from mrouting.

Send alert to other components.

Example

Example 1, the output information is as follows:

Hello packet prompt sent to each port.

Hello packet prompt received from each port.
A new neighbor is found.
Delete neighbor.
Port sending status refresh packet.
Port receiving status refresh packet.
Port is sending Assert packet.
Port is receiving Assert packet.
Port is sending prune packet.
Port is receiving prune packet.
Port is sending graft ack packet.
Port is receiving graft ack packet.
Port is sending graft packet.
Port is receiving graft packet.
Port is sending join/prune packet.
Port is receiving join/prune packet.

When a new (S,G) is created

When deleting (S,G)

Router#debug ip pim-dm
2003-3-26 11:45:17 received V2 hello packet on Ethernet2/1 from 192.168.20.133(GenID = 3539)
2003-3-26 11:45:17 Ethernet2/1 create new nbr 192.168.20.133
2003-3-26 11:45:25 send hello packet to 224.0.0.0.5 on Loopback1
2003-3-26 11:50:29 Ethernet2/1 delete nbr 192.168.20.133
2003-3-26 11:50:51 received V2 hello packet on Ethernet2/1 from 192.168.20.152
2003-3-26 11:50:51 send hello packet to 224.0.0.0.13 on Ethernet2/1
2003-3-26 12:04:37 PIM-DM: delete (192.168.20.138, 239.1.1.1) in MRT success
2003-3-26 12:04:37 PIM-DM: clear (192.168.20.138, 239.1.1.1) from MRT successful
2003-3-26 12:04:39 PIM-DM: ignored V2 packet on Ethernet2/1 from 192.168.10.204 (validate source address failed)
Adding in MRT success
2003-3-26 12:04:39 PIM-DM: (192.168.20.138, 239.1.1.1)Adding in MRT

Example 2, output received alert message:

Router#debug ip pim-dm alert
2003-3-26 12:09:51 receive alert_rt_change alert from mroute
2003-3-26 12:09:54 receive alert_rt_change alert from mroute
2003-3-26 12:11:08 PIM-DM: send sg_deletion alert
2003-3-26 12:11:19 receive alert_sg_creation alert from mroute
Example 3, track the specified group status:

Router#deb ip pim-dm 239.1.1.1

Router#2003-3-26 12:35:27 PIM-DM: clear (192.168.20.138, 239.1.1.1) forwd pkt count success
2003-3-26 12:35:37 PIM-DM: delete (192.168.20.138, 239.1.1.1) in MRT success
2003-3-26 12:35:37 PIM-DM: clear (192.168.20.138, 239.1.1.1) from MRT successful
2003-3-26 12:35:37 PIM-DM: (192.168.20.138, 239.1.1.1)'s downstream: 1.1.1.1 create success
2003-3-26 12:35:37 PIM-DM: (192.168.20.138, 239.1.1.1)'s downstream: 192.167.20.132 create success
2003-3-26 12:35:42 PIM-DM: (192.168.20.138, 239.1.1.1) Adding in MRT

3.1.4 ip pim-dm

This command is used to run PIM-DM on the port. set this command to “no” to disable PIM-DM on the port.

Syntax

ip pim-dm
no ip pim-dm

Parameter

None

Default

None

Command mode

interface configuration mode

Explanation

1. If the “ip multicast-routing” is not configured before configuring this command, it will display the following warning: WARNING: "ip multicast-routing" is not configured, IP Multicast packets will not be forwarded
2. Once this function is disabled, PIMDM will no longer run on the port but it will not affect other PIM-DM configurations. After rerun PIM-DM on the port, all PIM-DM configurations are still valid.

3. Enabling this function means it is available for forwarding multicast packet on the port, however, you have to enable the global multicast packet forwarding function first.

Example

Router_config#ip multicast-routing
Router_config#interface Ethernet1/1
Router_config_e1/1#ip pim-dm

Relevant command

- ip multicast-routing
- show ip pim-dm interface

3.1.5 ip pim-dm dr-priority

Set a router as the priority to specified router (DR). You can set this command to “no” to restore default DR priority on the port.

Syntax

ip pim-dm dr-priority priority

no pim-dm dr-priority

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>priority</td>
<td>Port DR priority. The larger the value is, the higher the priority is. Its range is from 0 to 4294967294, and the default is 1.</td>
</tr>
</tbody>
</table>

Default

default DR priority on PIM port is 1.

Command mode

interface configuration mode
Explanation

1. If all PIM neighbors support DR Priority on the port, select the one with the highest priority as DR. If all have the same priority, just select the one with the highest port IP value as DR.

2. If router didn’t advertise its priority in Hello packet and there are several routers have the same situation, just select the router with the highest port IP value as DR.

3.1.6 ip pim-dm hello-interval

This command is used to configure the interval of regularly sent PIM-Hello packets on the port. You can set this command to “no” to restore default interval.

Syntax

ip pim-dm hello-interval interval

no ip pim-dm hello-interval

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>The interval of regularly sent PIM-Hello packets. Its range is from 0 to 65535, and the default is 30 seconds.</td>
</tr>
</tbody>
</table>

Default

30 seconds

Command mode

interface configuration mode

Explanation

Regularly sending Hello packets can check if the neighbor exists. Generally, if Hello packets is not received after the 3.5 times hello-interval timeout configured by neighbor, the neighbor will be considered disappeared.

For IGMP v1, you can select the specified router (DR) through PIM-DM Hello packet.

Example

Router_config#interface Ethernet1/1
Router_config_e1/1#ip pim-dm hello-interval 30
Relevant command

ip igmp query-interval

3.1.7 ip pim-dm state-refresh origination-interval

It allows the router to generate original PIM-DM state refresh packet and configure the state refresh interval. To cancel the generation for original PIM-DM state refresh packet, set this command to "no".

Syntax

ip pim state-refresh origination-interval [interval]
no ip pim state-refresh origination-interval

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interval</td>
<td>For the first port router connected with the source directly, it is the interval of regularly sending state refresh packet. For the following router, it is interval of allowed receiving and processing state refresh packet for the port. This parameter is configured optionally, and its range is from 4 to 100 seconds. The default is 60 seconds.</td>
</tr>
</tbody>
</table>

Default

This parameter is configured optionally.

The default is 60 seconds.

Command mode

interface configuration mode

Explanation

Configure this command on the first router’s, neighboring directly on the multicast source, incoming port. By default, it will generate original state refresh packet. During configuring this command on the following router’s port, you can use interval to limit the process for received state refresh packet interval. By default, all routers where is running PIM-DM can process and forward state refresh packet.
Example

Router_config_e1/1#ip pim-dm state-refresh origination-interval 80

Relevant command

ip pim-dm state-refresh disable

3.1.8 ip pim-dm neighbor-filter

This command is used to prevent some routers from participating PIM-DM operation. Set this command to “no” to cancel the limit.

Syntax

ip pim-dm neighbor-filter accessing-list-name

no ip pim-dm neighbor-filter accessing-list-name

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>accessing-list-name</td>
<td>Standard access-list, whose definition is to deny PIM packets from the specified source.</td>
</tr>
</tbody>
</table>

Default

No filter function.

Command mode

interface configuration mode

Explanation

You can use multiple filter lists. The router denied by anyone of the lists can’t be a neighbor of local PIM-DM.

Example

router_config_e1/1#ip pim-dm neighbor-filter nbr_filter
router_config#ip access-list standard nbr_filter
router_config_std_nacl#deny 192.167.20.132 255.255.255.255
router_config_std_nacl#permit 192.168.20.0 255.255.255.0
Relevant command

access-list

3.1.9 ip pim-dm state-refresh disable

It will not allow running router process for PIM-DM multicast protocol or forward PIM-DM state refresh control message. You can set this command to “no” to restore the forwarding function.

Syntax

ip pim-dm state-refresh disable

no ip pim-dm state-refresh disable

Parameter

none

Default

By default, it is allowed to run forwarding PIM dense mode state refresh control message.

Command mode

Supervisor mode

Explanation

After configuring this command to forbid processing and forwarding PIM-DM state refresh control message, the Hello message in PIM-DM will no longer contain state refresh control options and receive/send state refresh control packet.

Example

The following command forbids forwarding state refresh control message to downstream neighbors of PIM dense mode.

ip pim-dm state-refresh disable

Relevant command

ip pim-dm state-refresh origination-interval
3.1.10  show ip mroute pim-dm

Display PIM-DM multicast routing list information.

Syntax

```
show ip mroute pim-dm group-address source
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>(optional) group address</td>
</tr>
<tr>
<td>source</td>
<td>(optional) source address</td>
</tr>
</tbody>
</table>

Default

none

Command mode

All modes except the user mode.

Explanation

It can display all (S,G) or specified (S,G) only in local MRT.

Example

Example1: Display all (S,G) in local MRT.

Router#show ip mroute pim-dm
PIM-DM Multicast Routing Table
Timers: Uptime/Expires
State: Interface state
RPF nbr: RPF neighbor address
(192.168.20.151, 224.1.1.1), 00:00:03 /00:03:27
Incoming interface:
  Ethernet2/1 Forwarding 0.0.0.0
Outgoing interface list:
  Loopback1 NoInfo 00:00:07 /00:00:00

(192.168.20.138, 239.1.1.1), 00:00:03 /00:03:27
Incoming interface:
  Ethernet2/1 Forwarding 0.0.0.0
Outgoing interface list:
Example 2: Display the specified \((S,G)\) in local MRT.

Router#show ip mroute pim-dm 224.1.1.1

PIM-DM Multicast Routing Table
Timers: Uptime/Expires
State: Interface state
RPF nbr: RPF neighbor address
\((192.168.20.151, 224.1.1.1), \ 00:00:01 / 00:03:29\)
Incoming interface:
Ethernet2/1 Forwarding 0.0.0.0
Outgoing interface list:
Loopback1 NoInfo 00:03:50 / 00:00:00

Example 3: Display the specified \((S,G)\) in local MRT.

Router#show ip mroute pim-dm 224.1.1.1 192.168.20.131

3.1.11  show ip pim-dm neighbor

To display the PIM-DM neighbor and the selected DR, run the following command:

```
show ip pim-dm neighbor [interface-type interface-number]
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface-type</td>
<td>Type and ID of the interface, such as Ethernet1/1 and serial 11/0</td>
</tr>
<tr>
<td>interface-number</td>
<td></td>
</tr>
</tbody>
</table>

Default

None

Command mode

All modes except the user mode

Explanation

This command is used to check on which LAN routers PIM-DM or PIM-SM is configured.
Example

Example 1:
Router#show ip pim-dm neighbor

<table>
<thead>
<tr>
<th>Neighbor Address</th>
<th>Interface</th>
<th>Uptime/Expires</th>
<th>Ver</th>
<th>DR Prior/Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.167.20.132</td>
<td>Ethernet1/1</td>
<td>03:13:34 / 00:00:00</td>
<td>v2</td>
<td>4/D (DR)</td>
</tr>
<tr>
<td>1.1.1.1</td>
<td>Loopback1</td>
<td>03:52:30 / 00:00:00</td>
<td>v2</td>
<td>1/D (DR)</td>
</tr>
<tr>
<td>192.168.20.132</td>
<td>Ethernet2/1</td>
<td>19:35:56 / 00:00:00</td>
<td>v2</td>
<td>1/D</td>
</tr>
<tr>
<td>192.168.20.152</td>
<td>Ethernet2/1</td>
<td>00:00:04 / 00:01:41</td>
<td>v2</td>
<td>1/D</td>
</tr>
<tr>
<td>192.168.20.204</td>
<td>Ethernet2/1</td>
<td>00:00:36 / 00:01:44</td>
<td>v2</td>
<td>20/D (DR)</td>
</tr>
</tbody>
</table>

Example 2:
Router# show ip pim-dm neighbor Ethernet2/1

<table>
<thead>
<tr>
<th>Neighbor Address</th>
<th>Interface</th>
<th>Uptime/Expires</th>
<th>Ver</th>
<th>DR Prior/Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>192.168.20.132</td>
<td>Ethernet2/1</td>
<td>19:39:22 / 00:00:00</td>
<td>v2</td>
<td>1/D</td>
</tr>
<tr>
<td>192.168.20.152</td>
<td>Ethernet2/1</td>
<td>00:00:30 / 00:01:15</td>
<td>v2</td>
<td>1/D</td>
</tr>
<tr>
<td>192.168.20.204</td>
<td>Ethernet2/1</td>
<td>00:00:04 / 00:02:16</td>
<td>v2</td>
<td>20/D (DR)</td>
</tr>
</tbody>
</table>

Related command

- ip pim-dm
- ip pim-dm dr-priority
- ip pim-dm hello-interval
- ip pim version
- ip pim-dm neighbor-filter
- show ip pim-dm interface

3.1.12 show ip pim-dm interface

To display the state of the PIM-DM interface, run the following command:

show ip pim-dm interface [interface-type interface-number] [count][detail]

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>interface-type interface-number</td>
<td>Type and ID of the interface, such as Ethernet1/1 and serial 11/0</td>
</tr>
</tbody>
</table>
### Default

None

### Command mode

All modes except the user mode

### Explanation

Only the state of the PIM-DM interface can be displayed after this command is run. If the PIM-DM interface is not designated, the information about all PIM-DM interfaces' state will be displayed.

### Example

**Example 1:**

```
Router#show ip pim interface address           Interface          Ver/ Nbr Hello DR     DR
Mode  Count  intvl  Prior
192.167.20.132    Ethernet1/1       v2/D 0      30     4       192.167.20.132
1.1.1.1           Loopback1         v2/D 0      30     1       1.1.1.1
192.168.20.132    Ethernet2/1       v2/D 2      30     1       192.168.20.204
```

**Example 2:**

```
Router#show ip pim interface Ethernet2/1 address           Interface          Ver/ Nbr Hello DR     DR
Mode  Count  intvl  Prior
192.168.20.132    Ethernet2/1       v2/D 2      30     1       192.168.20.204
```

### Related command

- `ip pim-dm`
- `ip pim-dm dr-priority`
- `ip pim-dm hello-interval`
- `ip pim version`
- `ip pim-dm neighbor-filter`
- `show ip pim-dm neighbor`
3.1.13 show ip rpf pim-dm

To display how the multicast route conducts the Reverse Path Forwarding (RPF), run the following command:

`show ip rpf pim-dm source-address`

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>source-address</td>
<td>Displays the RPF information of the designated source address.</td>
</tr>
</tbody>
</table>

Default

None

Command mode

All modes except the user mode

Explanation

The PIM-DM protocol can obtain the RPF information from multiple types of routing tables. This command tells you where the RPF information is obtained.

Example

```
Router#show ip rpf pim 4.1.1.1
RPF information for (4.1.1.1)
RPF interface: Ethernet2/1
RPF neighbor: 192.168.20.80
RPF route/mask: 192.168.20.0/24
RPF type: unicast
Metric preference: 120
Metric: 1
```

Related command

None
Chapter 4  PIM-SM Configuration Commands

4.1  PIM-SM Configuration Commands

4.1.1  ip pim-sm

Syntas

   ip pim-sm
   no ip pim-sm

Parameter

   None

Default

   Disable PIM-SM

Command mode

   Interface configuration mode

Explanation

   To enable PIM-SM function on an interface. You will enable PIM-SM when you configure the routers first in the router interface. You can cancel PIM-SM configure in the last interface to stop PIM-SM running.

Relevant command

   None

4.1.2  ip pim-sm admin-scope

To configure the multicast administrator scope, run ip pim-sm admin-scope gaddr gmask. The designated multicast address ranges between 239.0.0.0 and 239.255.255.255. This command is configured only on the edge routers which interlace other S7s.
ip pim-sm admin-scope gaddr gmask

no ip pim-sm admin-scope

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Name</th>
<th>English prompt</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>admin-scope</td>
<td>admin-scope – pim-sm administrator scope</td>
<td>Only the C-BSRs and the ZBRs need to be configured to know about the existence of the scope zones. Other routers, including the C-RPs, learn of their existence from Bootstrap messages.</td>
</tr>
<tr>
<td></td>
<td>gaddr</td>
<td>A.B.C.D – private group address prefix</td>
<td>239.0.0.0 to 239.255.255.255</td>
</tr>
<tr>
<td></td>
<td>gmask</td>
<td>gmask – sz group mask</td>
<td></td>
</tr>
</tbody>
</table>

Default value

The global domain is 224.0.0.0/4 by default.

Command mode

Port configuration mode

Instruction

This command is configured on the boundary of the PIM-SM administrator scope and used to check the BSM information which is received from the outside of the administrator scope. If the SZ scope of the received BSM information is smaller than or equal to the locally configured administrator scope, the received BSM information will be discarded. Otherwise, the received BSM information will enter the local administrator scope. When the BSM information is forwarded locally, the same principle is followed. At present, Huawei only supports the global domain and the private domain, but does not support the covering of the group address. RP in SZ1 will not notify the global SZ of the C-RP-ADV information. But the global BSM information can get in.

Example

The following example shows how to configure the boundary scope on routerA to pim-sm sz1(239.1.1.1/24).

RouterA_config_f0/0#ip pim-sm admin-scope 239.1.1.1 255.255.255.0
RouterB_config_ps# c-bsr interface lo1
RouterB_config_ps# c-bsr admin-scope 239.1.1.1 255.255.255.0
### Related command

- `ip pim-sm bsr-border`
- `c-bsr intf_type intf_name`

#### 4.1.3 ip pim-sm asrt-hold

To configure the holdtime for the **assert** state on the port corresponding to PIM-SM, run the following command.

```
ip pim-sm asrt-hold intvl
```

```
o ip pim-sm asrt-hold [intvl]
```

#### Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>pim-sm</code></td>
<td><code>pim-sm</code> - Enable PIM sparse mode operation</td>
<td></td>
</tr>
<tr>
<td><code>asrt-hold</code></td>
<td><code>asrt-hold</code> – assert status hold timer</td>
<td></td>
</tr>
<tr>
<td><code>intvl</code></td>
<td><code>&lt;7-65535&gt;</code> - time value (second)</td>
<td>The default value is 180 seconds.</td>
</tr>
</tbody>
</table>

#### Default value

180 seconds

#### Command mode

Port configuration mode

#### Instruction

#### Example

The following example shows how to configure the timeout time in **assert** state on port f0/0 to 200 seconds.

```
Router_config_f0/0#ip pim-sm holdtimer assert 200
```
4.1.4  ip pim-sm bsr-border

Syntas

   ip pim-sm bsr-border
   no ip pim-sm bsr-border

Parameter

None

Default

Non-BSR boundary.

Command mode

Global configuration mode

Explanation

This command can set interface to BSR boundary. In this interface didn’t send/receive BSM message; use “no” command to recovery default.

This command change definition BSR boundary to make BSM message can not effect each other in different PIM-SM domain.

Relevant command

None

4.1.5  ip pim-sm dr-pri

Syntas

   ip pim-sm dr-pri pri-value
   no ip pim-sm dr-pri pri-value
Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>dr-pri</td>
<td>dr-pri - pim-sm interface DR priority</td>
</tr>
<tr>
<td>Pri-value</td>
<td>&lt;0-4294967294&gt; - DR priority, preference given to larger value</td>
</tr>
</tbody>
</table>

**Default**

DR priority is 1 by default in global mode.

**Command mode**

Interface configuration mode

**Explanation**

To change interface DR priority, use “no” command to recovery default value.

The highest priority routers will be DR. if the priority is same, then the highest address is DR.

**Relevant command**

None

4.1.6 ip pim-sm hello-intvl

**Syntax**

`ip pim-sm hello-intvl seconds`

`no pim-sm hello-intvl [seconds]`

**Parameter**

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
</tr>
</thead>
<tbody>
<tr>
<td>hello-intvl</td>
<td>hello-intvl- pim-sm hello advertisement interval</td>
</tr>
<tr>
<td>seconds</td>
<td>&lt;1-65535&gt; - periodic pim hello message are sent(unit:s)</td>
</tr>
</tbody>
</table>
Default

The interval of sending Hello messages is 30s.

Command mode

Interface configuration mode

Explanation

To configure hello message sending interval, use "no" command to renew default value.

To change the hold-time of neighbor router, hold-time is 3.5 times of hello message sending interval.

Relevant command

None

4.1.7 ip pim-sm holdtime

To configure the interval of the hello timer on the PIM-SM port, run the following first command. The value of the interval ranges between 4 and 65535.

```
ip pim-sm holdtime seconds
no pim-sm holdtime [seconds]
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holdtime</td>
<td>holdtime – keep alive time to neighbor</td>
<td></td>
</tr>
<tr>
<td>seconds</td>
<td>&lt;4-65535&gt; - keep alive time value</td>
<td></td>
</tr>
</tbody>
</table>

Default value

105 seconds

Command mode

Interface configuration mode
Instruction

This command is first run in port configuration mode and then in global configuration mode, or the default value is chosen. If the value of the holdtime is smaller than that of Hello interval, the configured value is then invalid. The value of the holdtime is \textit{hello-intvl}^{*}3.5.

Example

The following example sets the holdtime value to 100 for interface pimsm configuration:

```
Router_config#interface f0/0
Router_config_f0/0#ip address 10.0.1.2 255.255.255.0
Router_config_f0/0#ip pim-sm holdtime 100
```

Related command

- ip pim-sm hold-intvl
- intvl-time hello \textit{hlo-intvl}

4.1.8 ip pim-sm horizon-split

To configure the horizon split strategy of the BSM packets on a port, run the following first command.

- ip pim-sm horizon-split
- no ip pim-sm horizon-split

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>\textit{horizon-split}</td>
<td>Horizon-split – permit interface horizon split</td>
<td></td>
</tr>
</tbody>
</table>

Default value

The horizontal split is disabled by default.

Command mode

Interface configuration mode
Instruction

After this command takes effect, you can set the corresponding label bit of the PIM-SM port. The BSM packets that are received from a port will not be transmitted from the port.

Example

The following example sets the DR priority value to 200 for the interface f0/0:

```
Router_config#interface f0/0
Router_config_f0/0#ip address 10.0.1.2 255.255.255.0
Router_config_f0/0#ip pim-sm horizon-split
```

Related command

bsm policy

4.1.9 ip pim-sm jp-hold

To configure the holdtime for the join-prune state on the port corresponding to PIM-SM, run the following first command.

```
ip pim-sm jp-null intvl

no ip pim-sm jp-null [intvl]
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pim-sm</strong></td>
<td>pim-sm - Enable PIM sparse mode operation</td>
<td></td>
</tr>
<tr>
<td><strong>jp-null</strong></td>
<td>Join-prune --join-prune status hold timer</td>
<td></td>
</tr>
<tr>
<td><strong>intvl</strong></td>
<td>&lt;1-65535&gt; - time value (second)</td>
<td>The default value is 210 seconds.</td>
</tr>
</tbody>
</table>

Default value

210 seconds

Command mode

Port configuration mode
### Instruction

#### Example

The following example shows how to configure the timeout time in join state on port f0/0 to 200 seconds.

```
Router_config_f0/0#ip pim-sm jp-hold 200
```

4.1.10 ip pim-sm jp-intvl

To set the interval of transmitting the join or prune packets periodically, run the following first command. The interval, whose unit is second, ranges between 1 and 65535.

```
ip pim-sm jp-intvl [seconds]
no ip pim-sm jp-intvl
```

#### Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>pim-sm</td>
<td>pim-sm - Enable PIM sparse mode operation</td>
<td></td>
</tr>
<tr>
<td>jp-intvl</td>
<td>jp-intvl – regular Join/Prune message interval (unit:s)</td>
<td></td>
</tr>
<tr>
<td>Seconds</td>
<td>&lt;1-65535&gt; - time value (second)</td>
<td>The default value is 60 seconds.</td>
</tr>
</tbody>
</table>

**Default value**

60 seconds

**Command mode**

Port configuration mode

**Instruction**

At each configuration the PIM-SM database must be entirely searched for the (s, g) pairs or the (*, g) pairs; if the configured port is an upstream one, the interval of the jp timer of the corresponding (s, g) or (*, g) pair should be reset. The interval in port configuration mode is prior to the join/prune interval in global mode. If the Join packets from the downstream neighbor have not been received in three JP timeout periods, the downstream that corresponds to the multicast item will be shifted to the prune state. The default holdtime is 3 minutes. If this value is changed randomly, CPU shock and service-forwarding shock may be caused.
Example

The following example changes the PIM join message interval to 90 seconds:

```
Router_config_f0/0# ip pim-sm jp-intvl 90
```

Related command

`ip pim-sm jp-hold`

4.1.11 ip pim-sm lan-delay

To designate the prune delay time of the PIM-SM port, run the following first command.

```
ip pim-sm lan-delay delay-intvl
```

```
no pim-sm lan-delay
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>lan-delay</td>
<td>lan-delay - pim-sm prune delay</td>
<td></td>
</tr>
<tr>
<td>delay-intvl</td>
<td>&lt;1-32767&gt; - prune delay time out interval(unit:ms)</td>
<td>The default value is 500 milliseconds.</td>
</tr>
</tbody>
</table>

Default value

500ms

Command mode

Interface configuration mode

Instruction

If the local port is the downstream port, the finally calculated prune delay time is based on all maximum values reported by downstream neighbors. In this case, the override timer of transmitting the `join` packets towards the upstream neighbors will be affected. If the `prune_delay` option is not supported by all downstream neighbors, the default value will be used as the overtime interval of the `prune pending` timer. If the interval of the `prune delay` timer is locally set, it will be reported to upstream neighbors through the HELLO packets.

Example

The following example sets the prune delay value to 200 ms for the pim-sm interface.
Related command

ip pim-sm override

4.1.12 ip pim-sm nbma-mode

If the following first command is configured on all NBMA interfaces, the central node will forward all information that is transmitted from the sub-nodes and the other sub-nodes can obtain the corresponding information.

ip pim-sm nbma-mode

no ip pim-sm nbma-mode

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>nbma-mode</td>
<td>nbma-mode - Use Non-Broadcast Multi-Access (NBMA) mode on interface</td>
<td>Currently our products do not support this function.</td>
</tr>
</tbody>
</table>

Default value

Disable

Command mode

Interface configuration mode

Instruction

Traditional NBMA networks (frame relay, ATM and SMDS) adopt the point-to-multipoint mode; when a sub-node need be pruned, it will report this information directly to the central node and other sub-nodes, however, cannot receive this information. In this case, other sub-nodes cannot respond and the interface of the central node will be incorrectly pruned.

If the following first command is configured on all NBMA interfaces, the central node will forward all information that is transmitted from the sub-nodes and the other sub-nodes can obtain the corresponding information.

This command cannot be used in multicast LANs, such as Ethernet or FDDI.
**Example**

The following example configures an interface to be in NBMA mode:

```
Router_config#interface s1/0
Router_config_s1/0#ip address 10.0.1.2 255.255.255.0
Router_config_s1/0#ip pim-sm nbma-mode
```

**Related command**

4.1.13   ip pim-sm nbr-filter

To stop a device from being added to PIM, run the following first command; to cancel this function, run the following second command.

```
ip pim-sm nbr-filter acl-name
no ip pim-sm nbr-filter
```

**Parameter**

<table>
<thead>
<tr>
<th>Name</th>
<th>English prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>nbr-filter</td>
<td>nbr-filter - PIM peering filter</td>
<td></td>
</tr>
<tr>
<td>acl-name</td>
<td>WORD – ip stand access list name</td>
<td></td>
</tr>
</tbody>
</table>

**Default value**

Disable

**Command mode**

Interface configuration mode

**Instruction**

If this command is configured, the neighbors need be filtered when Hello packets are received and then a new neighbor can be created. If it is in deny state, the corresponding new neighbor need not be created. Multiple neighbor access lists can be configured (New CISCO bin only allows to configure a neighbor access list; old bin allows to configure multiple neighbor access lists). Once a neighbor is filtered, the neighbor is then denied.
Example

The following example shows how to configure stub multicast routing on router A and how router B uses access list 1 to filter all PIM information from router A.

Router A Configuration

```
Router_config# ip multicast-routing
Router_config#interface f0/0
Router_config_f0/0# ip address 10.0.0.1 255.255.255.0
Router_config#interface f0/1
Router_config_f0/1# ip igmp-helper 10.0.0.2
```

Router B Configuration

```
Router_config# ip multicast-routing
Router_config#interface f0/0
Router_config_f0/0# ip address 10.0.0.2 255.255.255.0
Router_config_f0/0# ip pim-sm nbr-filter 1
Router_config#ip access-list standard 1
Router_config_std_nacl# deny 10.0.0.1
Router_config_std_nacl# permit any
```

Related command

- `ip pim-sm jp-intvl`

4.1.14 `ip pim-sm nbr-track`

To forbid the limitation of the JOIN packets globally and enable neighbor tracking, run the following first command:

- `ip pim-sm nbr-track`

- `no ip pim-sm nbr-track`

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>nbr-track</td>
<td>nbr-track - pim-sm interface neighbor tracking</td>
<td></td>
</tr>
</tbody>
</table>

- 58 -
Default value

If the global configuration mode is not configured, neighbor tracking is forbidden.

Command mode

Interface configuration mode

Instruction

This command is used to forbid the limitation function of the join packets and enable neighbor tracking.

Example

The following example sets the DR priority value to 200 for the interface f0/0:

```
Router_config#interface f0/0
Router_config_f0/0#ip address 10.0.1.2 255.255.255.0
Router_config_f0/0#ip pim-sm nbr-track
```

Related command

None

4.1.15  ip pim-sm override

To designate the prune deny time of the PIM-SM port, run the following first command.

```
ip pim-sm override override-intvl
```

```
no ip pim-sm override
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>override</td>
<td>override - pim-sm override timer</td>
<td></td>
</tr>
<tr>
<td>override-intvl</td>
<td>&lt;1-65535&gt; - override time out interval(unit:100ms)</td>
<td></td>
</tr>
</tbody>
</table>

Default value

2.5s
Command mode

Interface configuration mode

Instruction

The finally calculated prune deny time is based on the maximum value among all the values reported by all neighbors. If some neighbor does not support prune deny, the default value is selected. If OT is enabled, the value can be random. If the interval of the prune deny timer is locally set, it will be reported to upstream neighbors through the HELLO packets.

Example

The following example sets the override value to 2000 ms for pim-sm interface f0/0 configuration:

```
Router_config#interface f0/0
Router_config_f0/0#ip address 10.0.1.2 255.255.255.0
Router_config_f0/0#ip pim-sm override 200
```

Related command

ip pim-sm lan-delay

4.1.16 router pim-sm

To enter the global PIM-SM view, under which there is common attributes, run the following first command:

```
router pim-sm
```

Parameter

None

Default value

The system will not generate the PIM-SM view by default.

Command mode

Global configuration mode
Instruction

If the `router pim-sm` command is configured globally or the PIM-SM related configuration is first configured on the port, the global PIM-SM view will be created. If there is some PIM-SM related configuration on the port, the global view cannot be deleted.

Example

The following command shows how to create the global PIM-SM view:

```
Router_config#router pim-sm
Router_config_ps#
```

Related command

`ip pim-sm`

4.1.17 hello-option

To configure in the global PIM-SM view, the global DR priority, the prune delay time, the transmission interval of HELLO packets, the prune deny time, neighbor tracking and neighbor timeout time, run the following command:

```
hello-option { dr-pri pri-value | lan-delay delay-intvl |
override override-intvl | nbr-track | holdtime hold-intvl }
```

```
no hello-option [dr-pri | lan-delay | override | nbr-track | holdtime]
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>dr-pri</td>
<td>dr-pri - pim-sm global DR priority</td>
<td></td>
</tr>
<tr>
<td>pri-value</td>
<td>&lt;0-4294967294&gt; - DR priority, preference given to larger value</td>
<td>If this command is not configured, the default DR priority of this process is 1.</td>
</tr>
<tr>
<td>lan-delay</td>
<td>lan-delay - pim-sm prune delay time</td>
<td>Configures the prune delay time.</td>
</tr>
<tr>
<td>override</td>
<td>Override – override for rcvd prune</td>
<td>Configures the prune deny.</td>
</tr>
<tr>
<td>delay-intvl</td>
<td>&lt;0-32767&gt; – value for prune delay</td>
<td>The default prune delay time is 500ms.</td>
</tr>
<tr>
<td>override-intvl</td>
<td>&lt;0-65535&gt; – value for override delay</td>
<td>The default prune deny time is 2500ms.</td>
</tr>
<tr>
<td>nbr-track</td>
<td>nbr-track – neighbor track enable</td>
<td>If this command is configured, the JOIN packets will not be limited.</td>
</tr>
</tbody>
</table>
47-Multicast Configuration

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>holdtime</td>
<td>holdtime – neighbor keep alive timer</td>
<td>In normal case, its value is 3.5 times larger than the Hello interval on a port.</td>
</tr>
<tr>
<td>hold-intvl</td>
<td>&lt;4-65535&gt; – value for neighbor timeout</td>
<td>The default neighbor holdtime is 105 seconds.</td>
</tr>
</tbody>
</table>

**Default value**

See the table above.

**Command mode**

Global PIM-SM view

**Instruction**

If there is no corresponding configuration items on a port, the globally configured attributes will be used as the corresponding attributes on the port. The change of the global DR priority may affect the new DR selection.

The rules of DR selection are shown below:

1. The highest DR priority on a port will be selected as the DR of the network segment to which this port belongs; if there are many same DR values, the relatively large IP address among the main IP address on the local port and the main IP address of the neighbor will be selected as DR.

2. If there are neighbors on a port or the DR priority is not supported on a port, the relatively large mainaddress will serve as DR.

**Example**

The following example sets the DR priority value to 200 for global pimsm configuration:

```
Router_config#Router pim-sm
Router_config_ps#dr-priority 200
```

4.1.18 accept bsm-adv

You can run `accept bsm-adv` in global mode to set the filtration list. The filtration list settings is especially for filtrating specific BSM source addresses and receive the designated BSM source address. To cancel the filtration, you can run `no accept bsm-adv [list std-acl]`.

```
accept bsm-adv list std-acl
no accept bsm-adv [list std-acl]
```
### Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>accept</td>
<td>Accept – configure accept policy</td>
<td></td>
</tr>
<tr>
<td>bsm-adv</td>
<td>bsm-adv - BSM packet source address</td>
<td>accept filter</td>
</tr>
<tr>
<td>list</td>
<td>list - IP access-list for bsm source-list</td>
<td></td>
</tr>
<tr>
<td>std-acl</td>
<td>WORD -- stand access list name</td>
<td>It is used to limit the range of the BSM source address.</td>
</tr>
</tbody>
</table>

#### Default value

This filtration is disabled by default.

#### Command mode

```
pim-sm global view
```

#### Instruction

Only one filtration command can be set.

#### Example

The following example shows that the BSM notifications only from network segment 192.2.2.0/30 can be received.

```
Router_config#router pim-sm
Router_config_ps#accept bsm-adv list adv-src
Router_config_ps#exit
Router_config#ip access-list stand adv-src
Router_config_std_nacl#permit 192.2.2.0 255.255.255.252
```

**4.1.19 accept crp-adv**

To set the filtration list specially for filtrating the address range of specific groups, limiting to receive the C-RP-ADV packets from specific candidate rp unicast, and specifying the group address’ range in the received packets through ACL. To cancel the filtration, you can run `no accept crp-adv *.*.*.* [std-acl]`.

```
accept crp-adv *.*.*.* [std-acl]
```

```
no accept crp-adv *.*.*.* [std-acl]
```
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>accept</td>
<td>Accept – configure accept policy</td>
<td></td>
</tr>
<tr>
<td>c-rp-adv</td>
<td>crp-adv – C-RP-ADV accept filter</td>
<td></td>
</tr>
<tr>
<td>A.B.C.D</td>
<td>A.B.C.D - IP address of candidate RP for group</td>
<td></td>
</tr>
<tr>
<td>std-acl</td>
<td>WORD – ip stand access-list name for group</td>
<td></td>
</tr>
</tbody>
</table>

**Default value**

Disable (not filtrating C-RP-ADV from c-rp)

**Command mode**

pim-sm global view

**Instruction**

After this command is set, BSR only processes C-RP-ADV from RP. Additionally, the range of the group address must be allowed by the standard ACL.

**Example**

The following example states that the router will accept c-rp messages RP address is 100.1.1.1 for the multicast group 224.2.2.2:

```
Router_config#router pim-sm
Router_config_ps#accept crp-adv 100.1.1.1 grp-acl
Router_config#ip access-list stand grp-acl
Router_config_std_nacl#permit 224.2.2.2 255.255.255.255
```

**4.1.20 accept rp-addr**

Run accept-rp in global configuration mode to set the filtration list to filter the specific group address range, deciding whether the join/prune of (*, G) is acceptable and responding to the registration information of specific destination group addresses. To cancel this setting above, run the “no” form of this command.

```
accept rp-addr A.B.C.D [std-acl]
```
no accept rp-addr A.B.C.D[std-acl]

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>accept</td>
<td>Accept – configure accept policy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accept – Configure the policy of packet reception.</td>
<td></td>
</tr>
<tr>
<td>rp-addr</td>
<td>rp-addr - RP address accept filter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>rp-addr – Configure the acceptable RP address filter.</td>
<td></td>
</tr>
<tr>
<td>A.B.C.D</td>
<td>A.B.C.D – IP address of RP for group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>A.B.C.D – Designate the RP address of a multicast group.</td>
<td></td>
</tr>
<tr>
<td>std-acl</td>
<td>WORD – ip stand access-list name for group</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WORD – Stands for the standard access list that is used for multicast group filtration.</td>
<td>If omitting it, the router will process all the PIM-SM message to any group which is mapped to the RP.</td>
</tr>
</tbody>
</table>

Default value

Disable (All Join, Prune or Register packets will be processed)

Command mode

pim-sm global view

Instruction

After this command is set, the router processes only those Join packets which are mapped to the designated RP. Another point deserving attention is that the range of the group address must be allowed by the standard access list. The aggregation point of the corresponding group must be the calculated RP, and when the aggregation point matches up with the RP can the access filtration list be applied. If the group address is denied, RP will reject the Join and Register packets; after the Register packets are received, RP will return a Register Stop packet to the registration packet generator.

This command can be set many times if the rp-addr parameters in this command are different. If the RP that the group address is mapped to is not in the configured range, the RP will be denied directly.

Example

The following example states that the router will accept join or prune messages destined for the RP at address 100.1.1.1 for the multicast group 224.2.2.2:

```
Router_config#router pim-sm
Router_config_ps#accept rp 100.1.1.1 no-ssm-range
```
Router_config#ip access-list extended no-ssm-range
Router_config_std_nacl#permit 224.2.2.2

%PIM-6-INVALID_RP_JOIN: Received (*, 238.1.1.1) Join from 192.17.20.173 for invalid RP 1.1.1.1

Router#show ip mroute
(*, 238.1.1.1), 00:02:52/00:00:07, RP 1.1.1.1, flags: S
	Incoming interface: Null, RPF nbr 0.0.0.0
	Outgoing interface list:
	FastEthernet0/0, Forward/Sparse, 00:02:52/00:00:07

It can be seen that the previous address, *, 238.1.1.1, ages after the filtration is set.

4.1.21 accept register

When the Register range list is set on C-RP, the selection is RP and the PIM-SM Register packet is received, the filtration list should be used to filter the Register packets. In this case, you should run accept-register, and if you want to cancel the filtration, run the “no” form of this command.

accept register (list ext-acl | route-map map-name)

no accept register [list ext-acl | route-map map-name]

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>accept</td>
<td>Accept – configure accept policy</td>
<td>Accept – Configure the policy of packet reception.</td>
</tr>
<tr>
<td>register</td>
<td>register - Registers accept filter</td>
<td>Register – Stands for the filter of receiving the Register message.</td>
</tr>
<tr>
<td>list</td>
<td>list – access list</td>
<td>list – stands for the access list.</td>
</tr>
<tr>
<td>route-map</td>
<td>Route-map – route map</td>
<td>route-map – stands for the route map list.</td>
</tr>
<tr>
<td>ext-acl</td>
<td>WORD – IP extend access list name</td>
<td>WORD – stands for the name of the extensible IP access control list.</td>
</tr>
<tr>
<td>map-name</td>
<td>WORD – route map name</td>
<td>WORD – stands for the name of the route map list.</td>
</tr>
</tbody>
</table>
Default value

The access list filtration or the route-map filtration will not be conducted to the Register packets.

Command mode

`pim-sm global view`

Instruction

This command is used to prevent those unauthenticated data source from sending the Register packets to RP. If an unauthenticated data source sends a Register packet to RP, RP will return a Register Stop packet at once. This command takes effect only on the machine that runs as RP.

Example

The following example shows how to restrict the RP from allowing sources in the Source Specific Multicast (SSM) range of addresses to register with the RP.

```
Router_config#router pim-sm
Router_config_ps#accept register list no-ssm-range
Router_config#ip access-list extended no-ssm-range
Router_config_std_nacl#deny ip any 232.0.0.0 0.255.255.255
Router_config_std_nacl#permit ip any any
```

Related command

`reg-src`

4.1.22 anycast-rp

Through configuring `anycast-rp` and the corresponding neighbor address, you can specify the corresponding peer neighbor to share the load of RP. To cancel this setting above, run the "no" form of this command.

```
anycast-rp A.B.C.D nbr *.*.*
```

```
no anycast-rp A.B.C.D nbr *.*.*
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>anycast-rp</td>
<td>anycast-rp –anycast rp for pim-sm</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Prompt</td>
<td>Remarks</td>
</tr>
<tr>
<td>------</td>
<td>--------</td>
<td>---------</td>
</tr>
<tr>
<td>A.B.C.D</td>
<td>A.B.C.D – anycast rp address</td>
<td></td>
</tr>
<tr>
<td>nbr</td>
<td>nbr – anycast rp neighbor</td>
<td></td>
</tr>
<tr>
<td>****</td>
<td>A.B.C.D – anycast rp neighbor address</td>
<td></td>
</tr>
</tbody>
</table>

Default value

This command takes no effect by default.

Command mode

pim-sm global view

Instruction

PIM-SM only regulates the standards of the single RP, but a big data flow can cause single RP overload easily. In this case, this command will be used to solve the overload of RP in the PIM-SM domain.

Note:

1. You’d better configure this command on the equipment with good connectivity in the PIM domain in the backbone network. That is, this command is not suitable to be set on the mute terminal router that connects other PIM equipments in the PIM domain through dial-up.

2. If the inside-domain MSDP is not used, the machine that specifies anycast rp must at the same time specify the address of a neighbor with the same RP address so as to facilitate the processing of the register.

3. The command, anycast-rp A.B.C.D nbr, is used on those devices that have no MSDP settings and provide an address as the static RP. All peer neighbors need be specified. The neighbors are reachable to one another.

4. If MSDP is set, the device, if it has provided the static RP address, need not specify anycast rp nbr.

Example

1. The following example shows how to set the anycast-rp address when MSDP is used.
Designate the static RP address on other devices, for example, do it on router Ra:

Ra:
  router pim-sm
  static-rp 10.0.0.1

2. The following example shows how to make settings when the MSDP is not used.

RP1:
  Interface loopback 0
  ip address 10.0.0.1 255.255.255.255
  ip pim-sm
  Interface loopback 1
  ip address 10.1.1.1 255.255.255.255
  ip msdp peer 10.1.1.2 connect-source loopback 1
  ip msdp originator-id loopback 1

RP2:
  Interface loopback 0
  ip address 10.0.0.1 255.255.255.255
  ip pim-sm
  Interface loopback 1
  ip address 10.1.1.2 255.255.255.255
  ip msdp peer 10.1.1.1 connect-source loopback 1
  ip msdp originator-id loopback 1

Designate the static RP address on other devices, for example, do it on router Ra:

Ra:
  router pim-sm
  static-rp 10.0.0.1

2. The following example shows how to make settings when the MSDP is not used.
static-rp 10.0.0.1

RP2:
Interface loopback 0
ip address 10.0.0.1 255.255.255.255
ip pim-sm
Interface loopback 1
ip address 10.1.1.2 255.255.255.255
router pim-sm
anycast-rp 10.0.0.1 nbr 10.1.1.1
anycast-rp 10.0.0.1 nbr 10.1.1.2
static-rp 10.0.0.1

Designate the static RP address on other devices, for example, do it on router Ra:

Ra:
router pim-sm
static-rp 10.0.0.1

Related command

4.1.23 reg-rate-limit

As to (s, g), if you want to set the regeneration rate limit of the PIM-SM registration packets per second, you should use the `reg-rate-limit` command; to cancel this settings, you can run `no reg-rate-limit [rate]`.

```
reg-rate-limit rate
no reg-rate-limit [rate]
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>reg-rate-limit</td>
<td>reg-rate-limit - Rate limit for PIM data registers</td>
<td></td>
</tr>
<tr>
<td>rate</td>
<td>&lt;1-65535&gt; Packets per second</td>
<td></td>
</tr>
</tbody>
</table>

Default value

The regeneration rate of the registration packets of any (s,g) can be limited to one packet per second.
Command mode

pim-sm global view

Instruction

This command can be used to limit the regeneration rate of registration packets of (s,g) on the DR router. After this command is enabled, the load of the DR router will be limited. At the initial establishment of multicast path, the sudden eruption of large traffic of the multicast source may lead to packet loss due to the rate limit and the multicast receiver cannot receive all the multicast packets.

Example

The following example shows how to do the corresponding settings to let each (s,g) generate two registration packets per second.

```
Router_config#router pim-sm
Router_config_ps#reg-rate-limit 2
```

4.1.24 reg-src

To specify an IP address of a port to run as the source address for DR to transmit the PIM-SM registration packets, replacing the default port's address that connects the data source, run `reg-src`. If you use the `reg-src` command, the specified port must be active. To cancel this settings, you can run `no reg-src [intf-type intf-number]`.

```
reg-src intf-type intf-number
no reg-src [intf-type intf-number]
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>reg-src</td>
<td>reg-src - Source address for PIM Register</td>
<td></td>
</tr>
<tr>
<td>intf-type</td>
<td>Type of the designated port and its name</td>
<td>If a port has no main IP address or has no ID, the settings will take no effect. The L3 protocol of a designated port must be up.</td>
</tr>
<tr>
<td>intf-number</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Default value

By default, the port that connects DR and the data source will be used as the source address of the Register packet to conduct packet encapsulation.
Command mode

    pim-sm global view

Instruction

When the default source address of the Register packet is not the only routable destination address for RP to return the Register Stop packet, you should use this command to set a new source address for the Register packet. For example, in cases that the source address of the Register packet will be filtered on RP by ACL or the source address is not the only IP address, the Register Stop packet returned by RP may not reach the corresponding DR correctly and then the PIM-SM registration finally may fail.

If the source address of the Register packet is not specified or the specified source address takes no effect, DR will choose the port, which connects the data source, as the source address of the Register packet. Therefore, it is recommended to set for the PIM-SM domain a unique routable address on the loopback port as the source address of the Register packet.

Example

The following example shows how to designate the address of the loopback3 port of DR as the source address of the Register packet.

    Router_config#router pim-sm
    Router_config_ps#reg-src loopback 3

4.1.25   spt-threshold

To set the traffic threshold for a flow to switch over to the shortest path tree, run spt-threshold in PIM-SM configuration mode. To resume the default settings, run no spt-threshold.

    spt-threshold {infinity/kbps} [stand-acl]

no spt-threshold

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>spt-threshold</td>
<td>spt-threshold - Source-tree switching threshold</td>
<td></td>
</tr>
<tr>
<td>infinity</td>
<td>Infinity - Never switch to source-tree</td>
<td></td>
</tr>
<tr>
<td>kbps</td>
<td>&lt;0-4294967&gt; Traffic rate in kilobits per second</td>
<td></td>
</tr>
</tbody>
</table>
**Name** | **Prompt** | **Remarks**
--- | --- | ---
*stand-acl* | *stand-acl – ip standard access list name for group* | 

Default value

There is no traffic limit for switchover. When the downstream receiver tries to join the data source, the data source will switch over to the SPT forwarding when it receives the data.

Command mode

`pim-sm global view`

Instruction

If the forwarding rate of a multicast source reaches or exceeds the designated threshold, the leaf node will send a `(s,g)` Join packet to the multicast source for constructing the source tree—the shortest path tree.

If the threshold is set to `infinity`, all multicast sources for the designated group take the sharing tree for packet forwarding. The group access list designates which groups use the configured threshold for SPT switchover. If the message flow from the data source is less than the designated threshold, the PIM-SM router of the leaf node will be switched back to the sharing tree after a period of time and then send the Prune message to the source tree.

Example

The following example sets a threshold of 4 kbps, above which traffic to a group from a source will cause the router to router to the shortest path tree to that source:

```
Router_config# router pim-sm
Router_config_ps# spt-threshold 4
```

Related command

None

4.1.26 **ssm**

To set the range of a specific multicast group, run `ssm {default | range std-acl}`. To cancel the designated SSM range, run `no ssm`.

`ssm {default | range std-acl}`

`no ssm`
Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>ssm</td>
<td>ssm - Configure Source Specific Multicast</td>
<td></td>
</tr>
<tr>
<td>Default</td>
<td>default - Use 232/8 group range for SSM</td>
<td></td>
</tr>
<tr>
<td>Range</td>
<td>range - ACL for group range to be used for SSM</td>
<td></td>
</tr>
<tr>
<td>std-acl</td>
<td>WORD - ip standard access list name</td>
<td></td>
</tr>
</tbody>
</table>

Default value

disable

Command mode

pim-sm global view

Instruction

When PIM-SM is enabled, the default or configured range of the multicast group address can be used. If the multicast group is in the designated SSM range, the locally corresponding (*,g) must be canceled. This requires the same strategic SSM shall be set in the whole PIM-SM.

Note:

1. The same SSM strategy shall be set in the whole PIM-SM, otherwise the configured SSM will take no effect on preventing (*,g) Join for IGMPv3 can also specify the addition of (s,g) Join. Additionally, the (*,g) collision may be caused.
2. PIM-SM cannot be used together with other protocols. The configuration of SSM prevents the transmission of (*,g) Join and (*,*,rp) Join, and the PMBR device cannot send specific (s,g) Join to the upstream devices.
3. After SSM is set, MSDP cannot generate or receive SAs belonging to the designated range of the multicast group address. Our solution is that MSDP notification will be omitted if the group in the (S,G) items of PIM-SM is in the designated SSM group range.
4. If the group range covers BIDIR group range, the previous configuration will be kept, and display error message to the later(not support now).

Example

The following example shows how to configure SSM service for the IP address range defined by access list 4:
Router_config#router pim-sm
Router_config_ps# ssm range grp_range
Router_config#ip access-list stand grp_range
Router_config_std_nacl# permit 224.2.151.141

Related command
None

4.1.27  c-bsr intf_type intf_name

To set a router to be a candidate BSR router, run the first of the following two commands; to cancel this settings, run the second one of the following two commands.

c-bsr intf_type intf_name [hash-length [priority]]

no c-bsr [intf_type][intf_name][hash-length][priority]

Parameter

Default value

Dynamic BSR selection is disabled.

Command mode

pim-sm global view

Instruction

After this command is set, the designated address of a port will be used as the BSR address and it will send BSM (bootstrap messages) to all PIM-SM neighbors on the local machine. Each neighbor will compare the previously received BSM with the currently received BSM, and if the BSR address in the current BSM is larger than or equal to that in the previously received BSM, the locally stored BSM will be updated and the current BSM will be forwarded; otherwise, the current BSM will be dropped directly. Before the candidate BSR receives the BSM with higher priority, it always regards itself as the BSM router in the corresponding management domain.

Note:

1. You’d better configure this command on the equipment with good connectivity in the PIM domain in the backbone network. That is, this command is not suitable to be set on the mute terminal router that connects other PIM equipments in the PIM domain through dial-up.
2. On accepting C-RP-Adv, BSR only accepts those contents that satisfy the SZ range; if the content exceeds the SZ range, it will be omitted.
3. You can specify only one port of a device as the BSR address; if multiple commands are set, the previously configured candidate BSRs will be replaced.

4. The condition for this command to be effective is that the IP address of the designated port is in PIM-SM state and the protocol is up.

Example

The following example configures the IP address of the router on Ethernet interface 0 to be a candidate BSR with priority of 10:

```
Router_config# router pim-sm
Router_config_ps# c-bsr f0/0 10 100
```

Related command

```
c-bsr admin-scope {global | gaddr gmask} [hash-length [priority]]
```

4.1.28 c-bsr admin-scope

To set a candidate BSR in the administration domain, run the first one of the following two commands.

```
c-bsr admin-scope {global | gaddr gmask} [hash-length [priority]]
```

```
no c-bsr admin-scope
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>c-bsr</td>
<td>c-bsr – Candidate bootstrap router</td>
<td>(candidate BSR)</td>
</tr>
<tr>
<td>admin-scope</td>
<td>admin-scope – pim-sm administrator scope</td>
<td></td>
</tr>
<tr>
<td>global</td>
<td>global – global range</td>
<td>224.0.0.0/255.0.0.0</td>
</tr>
<tr>
<td>gaddr</td>
<td>gaddr – sz group address</td>
<td>239.0.0.0 to 239.255.255.255</td>
</tr>
<tr>
<td>gmask</td>
<td>gmask – sz group mask</td>
<td></td>
</tr>
<tr>
<td>hash-length</td>
<td>&lt;0-32&gt; - Hash Mask length for RP selection</td>
<td></td>
</tr>
<tr>
<td>Priority</td>
<td>&lt;0-255&gt; - Priority value for candidate bootstrap router</td>
<td></td>
</tr>
</tbody>
</table>
Default value

The global domain is 224.0.0.0/4 by default.

Command mode

pim-sm global view

Instruction

This command is used to set the candidate BSR in the administration domain. This command corresponds to the admin-scope command in the domain boundary and is used to specify the range of the administration domain.

Note:
1. If the command, c-bsr intf type intf name, is not configured, this command takes no effect.
2. It is recommended to set this command in the administration range (239.0.0.0--239.255.255.255).

Example

The following example shows that C-BSR only takes effect in the administration domain 239.1.1.0/24:

```
Router_config# router pim-sm
Router_config_ps#c-bsr f0/0 10 250
Router_config_ps#c-bsr admoni-scope 239.1.1.1 255.255.255.0
```

Related command

c-bsr intf_type intf_name [hash-length [priority]]

4.1.29   bsm-policy

To set the BSM reception policy, run the first one of the following two commands in PIM-SM configuration mode. To resume the default settings, run the other command.

```
bsm-policy { unicast {rcvd | send} | forward-all | backward}
```

```
no bsm-policy { unicast {rcvd | send} | forward-all }
```
<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>bsm</td>
<td>bsm – bsm packet received</td>
<td></td>
</tr>
<tr>
<td>policy</td>
<td>Policy – the policy for BSM receive and forward</td>
<td>The default value allows the reception of the unicast BSM packets.</td>
</tr>
<tr>
<td>unicast</td>
<td>unicast – unicast bsm packet</td>
<td>The backward compatibility supports the transmission of unicast BSM.</td>
</tr>
<tr>
<td>rvd</td>
<td>rcvd-permit receive bsm message</td>
<td></td>
</tr>
<tr>
<td>forward-all</td>
<td>forward-all – forward all bsm packet</td>
<td>The horizontal division port will not forward all BSM packets, including unicast or no-forward-bit reset packets.</td>
</tr>
<tr>
<td>backward</td>
<td>backward - backwards compatibility support send unicast BSM.</td>
<td></td>
</tr>
</tbody>
</table>

Default value

There is no BSM reception or transmission policy.

Command mode

pim-sm global view

Instruction

Refer to the description of this command.

Example

The following example configures the local router can receive bsm unicasted from neighbor:
Router_config# router pim-sm
Router_config_ps# bsm-policy  unicast rcvd

Related command

None

4.1.30 static-rp

To set the static RP of PIM-SM, run the first one of the following two commands; to resume the default settings, run the other command.

```
static-rp rp-addr [std-acl] [override][bidir]
```

```
no static-rp rp-addr
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>static</td>
<td>static - configure static rp-address for pim-sm</td>
<td></td>
</tr>
<tr>
<td>rp-addr</td>
<td>A.B.C.D – pim-sm rp-address (Rendezvous Point)</td>
<td></td>
</tr>
<tr>
<td>std-acl</td>
<td>WORD – IP stand access list</td>
<td></td>
</tr>
<tr>
<td>override</td>
<td>override –If conflict, the static rp prevails over the dynamic RP</td>
<td>When static RP goes against dynamic RP, if the parameter is not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>designated, the dynamic RP will be chosen first, and if no dynamic RP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>exists or dynamic RP takes no effect can static RP take effect.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bidir</td>
<td>bidir - Group range treated in bidirectional shared-tree mode</td>
<td>It is not supported currently.</td>
</tr>
</tbody>
</table>

Default value

disable

Command mode

pim-sm global view
Instruction

The designated IP address of static RP must be legal unicast address and cannot be the loopback address (127.0.0.0/8). If ACL is designated, the configured static RP will serve the matched multicast group; if ACL is not designated, the configured static RP will serve all multicast groups (224.0.0.0/4). When static RP goes against dynamic RP, the former will be first chosen.

In PIM-SM or BIDIR mode, each group will be provided with an RP. All routers in the same administration domain must follow the identical rule to set RP for the group. RP can be obtained through two mechanisms: static configuration of the RP address or the BSR mechanism’s dynamic learning of RP address. The `static rp-address` command can be used to set an RP to be the aggregation point of multiple groups. The ACL configured by static RP defines the RP application range. If the standard ACL is not set, the designated static RP will be applied to all groups. One PIM router can use multiple RPs, but it can use the only RP for a specific group.

If multiple `static rp-address` commands are set, the matchup rules of group-to-rp are listed below:

**NK** If a group matches up with multiple static RP rules, suitable RPs can be chosen according to the longest matchup principle specified by the standard ACL. As to the static configuration without designated ACL, it can be applied to all groups, but the entries in the ACL must be first set.

**OK** If a group and multiple ACLs accord to the longest matchup principle, the IP addresses of RPs must be compared and those RPs with big IP addresses come prior in choice.

**PK** If the static RP configuration is adopted, the reachability test will not be conducted to the designated RP. If an RP is selected, the RP with a comparatively low RP will not be chosen even though the route of the selected RP does not exist locally.

**OK** Each command can be used to specify a static RP address. If the designated static RP address or ACL rule is same during configuration, the new configuration will replace the previous configurations.

In case static RP and dynamic RP are used together, the rules of group-to-rp are listed below:

**NK** When the override is not specified, the RPs, dynamically learned through the BSR mechanism, come prior to static RPs.

**OK** If dynamic RP is used, the `c-rp intf_type intf_name` command must be set.

**Note:**

1. The same RP cannot be used simultaneously on BIDIR and PIM-SM.
2. The statically configured RP only supports global SZ or provides support even if global SZ has not yet created.

**Example**

The following example shows how to designate 198.92.37.33 to be the static RP address.
Router_config#router pim-sm
Router_config_ps#static-rp 198.92.37.33

Related command

c-rp intf_type intf_name

4.1.31  c-rp intf_type intf_name

To set a port to be C-RP and to send the unicast notification periodically to a
designated BSR router in the PIM-SM domain, run the first one of the following two
commands. To resume the default settings, run the other command.

c-rp intf-type intf-name [group-list std-acl] [bidir][intvl seconds][pri pri-value]

no c-rp intf-type intf-name

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>c-rp</td>
<td>c-rp - To be a PIMv2 RP candidate</td>
<td></td>
</tr>
<tr>
<td>intf-type</td>
<td>Designating the interface type and the interface's name</td>
<td>PIM-SM must be enabled on C-RP.</td>
</tr>
<tr>
<td>intf-name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>group-list</td>
<td>group-list – ip access list for group-list</td>
<td>It is the prefix of the group address.</td>
</tr>
<tr>
<td>std-acl</td>
<td>WORD – ip stand access list</td>
<td></td>
</tr>
<tr>
<td>bidir</td>
<td>bidir - Group range treated in bidirectional shared-tree mode</td>
<td>It is not supported currently.</td>
</tr>
<tr>
<td>intvl</td>
<td>Interval - RP candidate advertisement interval</td>
<td></td>
</tr>
<tr>
<td>Seconds</td>
<td>&lt;1-32767&gt; - number of seconds</td>
<td></td>
</tr>
<tr>
<td>pri</td>
<td>pri – RP priority</td>
<td></td>
</tr>
<tr>
<td>pri-value</td>
<td>&lt;0-255&gt; - RP priority value</td>
<td>The smaller the value is, the higher the priority is. The default value is 192.</td>
</tr>
</tbody>
</table>
Default value

Dynamic RP selection is disabled.

Command mode

pim-sm global view

Instruction

This command is used to notify all BSRs on C-RP. The range of the group address is listed in a form of the standard ACL.

Note:

1. PIM-SM must be enabled on the port that serves as C-RP.
2. You’d better set C-RP on the main PIM-SM domain to avoid static configuration on similar routers or the on-demand dialup stub routers.
3. If C-RP is not specified with a multicast group range, C-RP will serve all multicast groups.
4. If you want to set a router to be C-RP for multiple group ranges, you need to represent multiple group ranges with multiple rules when configuring STD-AC1 that group-list corresponds to.
5. One port can only be set to one C-RP and the following configuration will replace the previous configuration, including the replacement of STD-AC1.
6. You can set C-RP for multiple ports on the same PIM-SM router.
7. Multiple C-RPs can use the same standard ACL.
8. If this command is run many times on a same interface, the previous configuration will be replaced.
9. If multiple SZs are known on C-RP, unicast C-RP-Adv will be sent to the BSR of each SZ. It is noted that the established group range cannot exceed the group range of the destination SZ.
10. If C-RP itself is the ZBR of an SZ, the Admin Scope Bit in the C-RP-Adv packet must be reset; otherwise, this bit will not be reset. At present, it is used for BSR to record logs but possible to be used for protocol expansion.

Example

The following example shows how to designate lo172 and lo173 to be C-RP ports, the former limiting to provide RP to the group of prefix 239.1/16.

```
Router_config#router pim-sm
Router_config_ps# c-rp loopback172 group-list grp-range
Router_config# ip access-list standard grp-range
Router_config_std_nacl# permit 239.1.0.0 255.255.0.0
Router_config_ps# c-rp loopback173
```
### Related command

None

### 4.1.32 intvl-time

To enable the periodical transmission of join/prune packets and set the interval of periodically transmitting the Hello, BSM or C-RP-Adv packets, run the first of the following two commands:

```
intvl-time { join-prune jp-intvl | hello hlo-intvl | c-bsr cbsr-intvl | crp-adv crp-intvl | spt-check [spt-intvl] }
```

```
```

### Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>join-prune</td>
<td>join-prune - pim-sm regular join/prune packet periodic</td>
<td>The default interval of transmitting Join/Prune packets is 60 seconds.</td>
</tr>
<tr>
<td>jp-intvl</td>
<td>&lt;1-65535&gt; - value for JP timer</td>
<td>The default interval of transmitting Join/Prune packets is 60 seconds.</td>
</tr>
<tr>
<td>Hello</td>
<td>hello – pim-sm hello advertisement interval</td>
<td>Sets the interval of transmitting the Hello packets.</td>
</tr>
<tr>
<td>hlo-intvl</td>
<td>&lt;1-65535&gt; - value for JP timer</td>
<td>The default interval of transmitting Hello packets is 30 seconds.</td>
</tr>
<tr>
<td>c-bsr</td>
<td>c-bsr – Candidate bootstrap router (candidate BSR)</td>
<td></td>
</tr>
<tr>
<td>cbsr-intvl</td>
<td>&lt;1-65535&gt; - value for c-bsr timer</td>
<td>The default interval of self selecting packets is 60 seconds.</td>
</tr>
<tr>
<td>crp-adv</td>
<td>crp-adv – pim-sm C-RP-ADV interval</td>
<td>Sets the interval of transmitting the C-RP-Adv packets.</td>
</tr>
<tr>
<td>crp-intvl</td>
<td>&lt;1-65535&gt; - value for CRP timer</td>
<td>The default interval of transmitting Report packets is 60 seconds.</td>
</tr>
<tr>
<td>spt-check</td>
<td>Spt-check – spt switch timer</td>
<td></td>
</tr>
<tr>
<td>spt-intvl</td>
<td>&lt;1-65535&gt; - value for spt switch query timer</td>
<td></td>
</tr>
</tbody>
</table>
Default value

See the above-mentioned table.

Command mode

pim-sm global view

Instruction

If the holdtime of Join-prune packet is not set and the Join packets from the downstream neighbor have not been received in three JP timeout periods, the downstream that corresponds to the multicast entry will be shifted to the prune state. The default holdtime is 3 minutes. The interval in port configuration mode is prior to the join/prune interval in global mode.

Example

The following example sets the join/prune advertisement interval value to 30 for global pim-sm configuration:

```
Router_config#Router pim-sm
Router_config_ps#timer join-prune 30
```

Related command

holdtime

4.1.33 holdtime

To set the interval of the timeout timer of PIM-SM, run the first one of the following two commands. To resume the default settings, run the other command.

```
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>holdtime</td>
<td>holdtime – hold timer for keep the status</td>
<td></td>
</tr>
<tr>
<td>join-prune</td>
<td>Join-prune – join-prune status hold timer</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Prompt</td>
<td>Remarks</td>
</tr>
<tr>
<td>----------</td>
<td>---------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
<tr>
<td><em>jp-hold</em></td>
<td><code>&lt;1-65535&gt; - time value (second)</code></td>
<td>The default value is 210 seconds.</td>
</tr>
<tr>
<td>assert</td>
<td>assert – assert status hold timer</td>
<td></td>
</tr>
<tr>
<td><em>asrt-hold</em></td>
<td><code>&lt;7-65535&gt; - time value (second)</code></td>
<td>The default value is 180 seconds.</td>
</tr>
<tr>
<td>c-bsr</td>
<td>c-bsr – Candidate bootstrap router</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(candidate BSR)</td>
<td></td>
</tr>
</tbody>
</table>
| *cbsr-hold* | `<1-65535> - time value (second)`          | By default, it is as follows:  
holdtime timeout time= 
holdtime’s interval*2+10  
By default, the holdtime’s 
interval is 60 seconds and 
the holdtime’s timeout time 
is therefore 130 seconds. |
| c-rp     | c-rp – Candidate bootstrap router          |                                                                         |
|          | (candidate BSR)                            |                                                                         |
| *crp-hold* | `<1-65535> - time value (second)`          | The default value is 150 seconds.                                        |
| sz       | sz – scope zone timer                      |                                                                         |
| *sz-hold* | `<10-4294967295> - time value (second)`    | The default value is 1300 seconds.                                       |

Default value

See the above-mentioned table.

Command mode

pim-sm global view
Instruction

If the holdtime is set on a port, first comes the configuration of this port and then the global configuration; finally, if neither configuration is done, the default configuration will be chosen.

Note:
- When configuring the holdtime of C-RP, you should set the timeout time of C-RP to 2.5 holdtime transmission intervals or beyond to prevent the C-RP loss in the BSR holdtime packet.
- The timeout time of SZ must be longer than the BSR timeout time and you'd better set it to be 10 BSR timeout times.

Example

The following example shows how to set the holdtime of C-RP to 150 seconds, among which C-RP and C-BSR are not set on Ra.

```
Ra_config# router pim-sm
Ra_config_ps# holdtime c-rp 200
```

Related command

```
intvl-time
```

4.1.34 log

To enable the log switch to record DR’s change, neighbor’s up or down, address conflict and abnormal packets, run the first one of the following two commands:

```
log \{ nbr-change | ipaddr-conflict | pkt-conflict \}
```

```
no log \{ nbr-change | ipaddr-conflict | pkt-conflict \}
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log</td>
<td>log - To log conflict</td>
<td></td>
</tr>
<tr>
<td>nbr-change</td>
<td>nbr-change – neighbor up/down or DR changes</td>
<td></td>
</tr>
<tr>
<td>ipaddr-conflict</td>
<td>ipaddr-conflict –secondary ip address is conflict with the other neighbor</td>
<td></td>
</tr>
</tbody>
</table>
Default value

The log function is disabled.

Command mode

pim-sm global view

Instruction

If there is the log server, the corresponding logs will be recorded to the log server.

Example

The following example configures the router to log the conflict when the exist secondary ip address is also contained in hello packet when receivd from another neighbor.

```bash
Router_config_ps# log nbr-change
```

Related command

None

4.1.35 show running-configure

To display the global PIM-SM information and the main configuration information about a port, run the following command:

```bash
show running-configure
```

Parameter

None

Default value

None

Command mode

EXEC
Instruction

According to the output information, you can check the configuration information about the current PIM-SM.

Example

4.1.36  show ip pim-sm bsr-router

Syntax

show ip pim-sm bsr

Parameter

None

Default

None

Command mode

Management mode

Explanation

Display PIM-SM router BSR message.

Example

R142#show ip pim-sm bsr-router
PIMv2 BSR information:
I am BSR!
Address of BSR: 192.166.100.142
BSR Priority: 201 Hash Mask Length: 30 Uptime: 00:10:56
Next BSM will be sent in 00:00:04
Candidate-RP: 192.166.100.142(Loopback0)
Interval of Advertisements: 60 seconds
Next Advertisement will be sent in 00:00:04

Relevant command

None
4.1.37 show ip pim-sm interface

Syntax

```
show ip pim-sm interface [type number]
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Port type</td>
</tr>
<tr>
<td>number</td>
<td>Port number</td>
</tr>
</tbody>
</table>

Default

None

Command mode

Management mode

Explanation

Display PIM-SM router port information.

Example

```
R142#show ip pim-sm interface
Address       Interface   Ver/   Nbr   Query   DR      DR Mode Count Intvl Prior
192.168.21.142 Serial2/0   v2/S    1     30      1      192.168.21.144
192.168.100.142 Ethernet1/1 v2/S     1    30     100     192.168.100.142
192.166.100.142 Loopback0   v2/S    0     30      1      192.166.100.142
```

Relevant command

None

4.1.38 show ip pim-sm neighbor

Syntax

```
show ip pim-sm neighbor [type number]
```
### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>type</td>
<td>Port type</td>
</tr>
<tr>
<td>number</td>
<td>Port number</td>
</tr>
</tbody>
</table>

**Default**

None

**Command mode**

Management mode

**Explanation**

Display PIM-SM router neighbor information.

**Example**

```
R142#show ip pim-sm neighbor
PIM Neighbor Table
Neighbor     Interface  Uptime/Expires Ver  DR
Address                                      Prio
192.168.21.144     Serial2/0     00:03:53/00:01:22     v2     1
192.168.100.143    Ethernet1/1   00:03:34/00:01:41     v2     1
```

**Relevant command**

None

4.1.39 show ip pim-sm rp

**Syntax**

```
show ip pim-sm rp [mapping/metric]
```

### Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>mapping</td>
<td>Displays RP—GROUP mapping relation.</td>
</tr>
<tr>
<td>metric</td>
<td>Displays each RP simple-cast route metric.</td>
</tr>
</tbody>
</table>

**Default**

None
**Command mode**

Management

**Explanation**

Display PIM-SM router RP mapping information.

**Example**

R144#show ip pim-sm rp
GROUP: 225.1.1.10, RP: 9.1.1.1, Version2 Uptime: 1d01h07m, Expires in 00:02:16

**Relevant command**

None

**4.1.40 show ip pim-sm rp-hash**

**Syntax**

```
show ip pim-sm rp-hash [group-address]
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>group-address</code></td>
<td>Group address.</td>
</tr>
</tbody>
</table>

**Default**

None

**Command mode**

Management mode

**Explanation**

Display specify multicast address hash account value.

**Example**

R142#show ip pim-sm rp-hash 225.1.1.10
RP: 192.166.100.142
Info Source: 192.166.100.142, via BSR
Uptime: 00:00:08, Expires: 00:02:22
Relevant command

None

4.1.41 show ip mroute pim-sm

Syntax

show ip mroute pim-sm [group-address|source-address] [type number] [summary|count] [active kbps]

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>group-address</td>
<td>Group address.</td>
</tr>
<tr>
<td>source-address</td>
<td>source-address</td>
</tr>
<tr>
<td>type</td>
<td>Port type</td>
</tr>
<tr>
<td>number</td>
<td>Port number</td>
</tr>
<tr>
<td>summary</td>
<td>Display table PIM-SM entry</td>
</tr>
<tr>
<td>count</td>
<td>Display (S,G) stat information</td>
</tr>
<tr>
<td>active</td>
<td>Activity sending data speed</td>
</tr>
</tbody>
</table>

Default

None

Command mode

Management mode

Explanation

Display PIM-SM multicast route information.

Example

R142#show ip mroute pim-sm
IP Multicast Routing Table
Flags: D - Dense, S - Sparse, B - Bidir group, s - SSM group,
I - IGMP report, R - RP-bit set, F - Register flag, T - SPT-bit set,
J - Join Needed, P - Pruned,
Timers: Uptime/Expires
(*, 225.1.1.10), 00:15:14/00:02:37, RP 9.1.1.1, flags: SRJ
Incoming interface: Ethernet1/1, RPF nbr 192.168.100.143
Outgoing interface list:
Serial2/0, Forward/Sparse, 00:13:23/00:02:37
Relevant command

None

4.1.42 show ip rpf pim-sm

Syntax

show ip rpf pim-sm {source-address} metric

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>source-address</td>
<td>Source address.</td>
</tr>
<tr>
<td>metric</td>
<td>Simple-cast route Metric</td>
</tr>
</tbody>
</table>

Default

None

Command mode

Management mode

Explanation

Display specify source address converse forwarding information.

Example

R142#show ip rpf pim-sm 192.166.1.143
RPF information for 192.166.1.143
RPF interface: Ethernet1/1
RPF neighbor: 192.168.100.143
RPF route/mask: 192.166.1.0/24
RPF type: unicast (rip)
RPF recursion count: 0
Doing distance-preferred lookups across tables
Relevant command

None

4.1.43  debug ip pim-sm alert

To display the alert information from mrouting or IP, run the first one of the following two commands.

d debug ip pim-sm alert

no debug ip pim-sm alert

Parameter

None

Default value

None

Command mode

EXEC

Instruction

VTY will be exported if the alert information from mrouting or aged (s,g).

Example

The following example shows that the route event of RIP is monitored.

router# debug ip rip database
RIP-DB: Adding summary route 192.1.0.0/24 <metric 0> to RIP database

The fields in the previous example are explained in the following table:

<table>
<thead>
<tr>
<th>Domain</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>summary</td>
<td>Route type which is added to the routing table</td>
</tr>
<tr>
<td>192.1.0.0/24</td>
<td>Route which is added to the routing table</td>
</tr>
<tr>
<td>&lt;metric 0&gt;</td>
<td>Value of the route's metric</td>
</tr>
</tbody>
</table>
4.1.44 debug ip pim-sm assert

To monitor the Assert event of PIM-SM, run the first one of the following two commands:

```
debug ip pim-sm assert [packet | state-machine | A.B.C.D ]
no debug ip pim-sm assert [packet | state-machine | A.B.C.D ]
```

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>state-machine</td>
<td>Show state machine activity debug information</td>
<td></td>
</tr>
<tr>
<td>packet</td>
<td>Trace information about packet</td>
<td></td>
</tr>
<tr>
<td>A.B.C.D</td>
<td>Group address for stm and packet output</td>
<td></td>
</tr>
</tbody>
</table>

Default value

None

Command mode

EXEC

Instruction

According to the output information, you can check the current assert event of PIM-SM.

Result

- Show (S,G) Assert State-machine Actions
- Show (*,G) Assert Message State Machine actions
- Show activity after timer timerout
- Show packet activity

4.1.45 debug ip pim-sm bsr

To monitor the BSM event of PIM-SM, the C-RP-ADV event or the BSR state machine, run the first one of the following two commands:

```
debug ip pim-sm assert [packet | state-machine]
no debug ip pim-sm assert [packet | state-machine]
```
### Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>state-machine</td>
<td>Show state machine activity debug information</td>
<td></td>
</tr>
<tr>
<td>packet</td>
<td>Trace information about packet</td>
<td></td>
</tr>
</tbody>
</table>

**Default value**

None

**Command mode**

EXEC

**Instruction**

According to the output information, you can check the BSM event of PIM-SM, the C-RP-ADV event or the BSR state machine.

**Example**

4.1.46   debug ip pim-sm rp

To monitor the related events and packets about PIM-SM-RP-SET change, run the first one of the following two commands:

- `debug ip pim-sm rp`
- `no debug ip pim-sm rp`

**Parameter**

None

**Default value**

None

**Command mode**

EXEC
Instruction

This command is used to export the reception and transmission of C-RP-ADV and the RP-SET change. As to the change of static RP, no debugging information will be exported at present.

Example

4.1.47 debug ip pim-sm entry

To export the creation and update of (*,*), (*,g), (s,g,rpt) and (s,g,spt) and their simultaneous change of them at the time of RP change, run the first one of the following two commands.

dump ip pim-sm entry

no debug ip pim-sm entry

Parameter

None

Default value

None

Command mode

EXEC

Instruction

According to the output information, you can browse the information about PIMSM creation and update of multicast routing entries.

Example

4.1.48 debug ip pim-sm event

To export all events that PIMSM main task receives, run the first one of the following two commands.

dump ip pim-sm event

no debug ip pim-sm event
Parameter

None

Default value

None

Command mode

EXEC

Instruction

According to the output information, you can browse all events of current PIMSM.

Example

4.1.49   debug ip pim-sm hello

To display the Hello packet received or transmitted by PIM-SM for debugging the neighbor’s information, run the first one of the following two commands.

debug ip pim-sm hello

no debug ip pim-sm hello

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>pim-sm</td>
<td>Show state machine activity debug information</td>
<td></td>
</tr>
<tr>
<td>hello</td>
<td>Show information about packet sending and receiving</td>
<td></td>
</tr>
</tbody>
</table>

Default value

None

Command mode

EXEC
Instruction

According to the output information, you can browse the Hello packets, including those received or transmitted by PIM-SM, to know what's going on the local machine or the neighbors.

Results

- The ports, source addresses and genid of the currently received or transmitted Hello packets can be displayed.

Example

4.1.50 debug ip pim-sm jp

To trace the Join/Prune event of (*,g) or (s,g), run the first one of the following two commands.

ddebug ip pim-sm jp [packet | state-machine | A.B.C.D ]

no debug ip pim-sm jp [packet | state-machine | A.B.C.D ]

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>state-machine</td>
<td>Show state machine activity debug information</td>
<td></td>
</tr>
<tr>
<td>packet</td>
<td>Trace information about packet</td>
<td></td>
</tr>
<tr>
<td>A.B.C.D</td>
<td>Group address for stm and packet output</td>
<td></td>
</tr>
</tbody>
</table>

Default value

None

Command mode

EXEC

Instruction

Example

4.1.51 debug ip pim-sm nbr

To trace the related events of a neighbor, such as the addition of neighbor, aging deletion or DR selection, run the first one of the following two commands.
debug ip pim-sm nbr

no debug ip pim-sm nbr

Parameter

None

Default value

None

Command mode

EXEC

Instruction

According to the output information of this command, you can browse neighbor change, neighbor refreshment, GENID change and DR selection.

Example

4.1.52   debug ip pim-sm packet

To trace the protocol control packets received or transmitted by PIM-SM, run the following command.

ddebug ip pim-sm packet

Parameter

None

Default value

None

Command mode

EXEC

Instruction

After this command is run, the PIM-SM packet's type will be displayed.
Example

4.1.53  debug ip pim-sm register

To display the registration packet and register state event of PIM-SM, run the first one of the following two commands.

debug ip pim-sm register [packet | state- machine | A.B.C.D ]
no debug ip pim-sm register [packet | state- machine | A.B.C.D ]

Parameter

<table>
<thead>
<tr>
<th>Name</th>
<th>Prompt</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>state- machine</td>
<td>Show state machine activity debug information</td>
<td></td>
</tr>
<tr>
<td>packet</td>
<td>Trace information about packet</td>
<td></td>
</tr>
<tr>
<td>A.B.C.D</td>
<td>Group address for stm and packet output</td>
<td></td>
</tr>
</tbody>
</table>

Default value

None

Command mode

EXEC

Instruction

According to the output information, you can check the register event of PIM-SM.

Example

4.1.54  debug ip pim-sm timer

To display the change of all PIM-SM timers, including creation, deletion, stop and timeout, run the first one of the following two commands.

debug ip pim-sm timer
no debug ip pim-sm timer

Parameter

None
Default value

None

Command mode

EXEC

Instruction

The PIM-SM timers include the Hello timer, the neighbor timeout timer, the Join/Prune timer, the override timer, the prune pending timer, the keepalive timer, the assert timer, the register timer, the register limit timer, the BSM timer, and so on.

Example
Chapter 5  Multicast VPN Settings

The MVPN functionality is supported on the routers.

5.1.1  **Ip multicast-routing vrf vpn-instance-name**

To enable the multicast on VRF, run the following command:

`Ip multicast-routing vrf vpn-instance-name`

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>vpn-instance-name</code></td>
<td>Enables the VPN instance of multicast.</td>
</tr>
</tbody>
</table>

Default value

None

Command mode

EXEC mode

Instruction

After this command is run, the system enters the MVPN configuration mode.

If you run the “no” form of this command, the related VPN multicast will be disabled.

Example

The following example shows how to enable the multicast on VRF.

```
R4_config#ip multicast-r vrf RED
R4_config_mvpn_(RED)#
```

Related command

`Ip vrf vpn-instance`

Before enabling the VPN multicast, you have to configure related VPN.
5.1.2 **mdt share-group** group-address **binding mtunnel** number

To designate the share group address of this VPN multicast and the bound Mtunnel ID, run the following command:

```
mdt share-group 232.1.1.1 binding mtunnel 0
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>Stands for the Mtunnel ID, which is an indispensable parameter and disabled by default. One Mtunnel is bound to only one MVPN.</td>
</tr>
<tr>
<td>group-address</td>
<td>Stands for the share group's address, which is an indispensable parameter and disabled by default.</td>
</tr>
</tbody>
</table>

Default value

None

Command mode

MVPN configuration mode

Instruction

This command can be regarded as the switch of global MVPN.

If you want to cancel the share-group settings and the Mtunnel binding, you shall run **no mdt share-group**.

Before you want to modify the share group's address or bind other Mtunnel, you have to cancel the previous binding through the **no mdt share-group** command.

Example

The following example shows how to set the share group and bind Mtunnel.

```
R4_config_mvpn_(RED)#mdt share-group 232.1.1.1 binding mtunnel 0
```

Related command
5.1.3 **mdt connect-src interface**

To designate the connect-source address of VPN multicast, run the following command:

```
mdt connect-src interface
```

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface</td>
<td>Stands for the currently existent port, such as loopback0.</td>
</tr>
</tbody>
</table>

Default value

None

Command mode

MVPN configuration mode, which can be entered through the `ip multicast-routing vrf vpn-instance` command

Instruction

This command can be used to bind the address of the Mtunnel port. When the Mtunnel obtains its binding address, the Mtunnel is up and then receives or transmits the packets.

It is recommended that the Mtunnel address should be the same as the connect-src address of BGP and that the loopback port should be used as the binding port of Mtunnel.

Example

The following example shows how to designate the loopback0 as the binding address of mvpn

```
R4_config_mvpn_(RED)#mdt connect-src loopback0
```

Related command

5.1.4 **mdt switch-group-pool group-address group-mask threshold**

To designate the range of the switch pool, run the following command:

```
mdt switch-group-pool 238.1.1.1 255.255.255.0 threshold number
```
number | Designates the value of threshold, whose unit is packet/second. The default threshold is 10 packets/second.

Group-address group-mask | Designates a switch pool on the condition that the group mask must be between 225.225.225.0 and 225.255.255.255.

Default value

None

Command mode

MVPN configuration mode, which can be entered through the `ip multicast-routing vrf vpn-instance` command

Instruction

This command is used to designate the range of the switch pool and then the switch pool is used for data MDT switchover.

Example

The following example shows how to designate 238.1.1.1/24 as the switch pool and how to set the switchover threshold to 10 packets/second.

```
R4_config_mvpn_(RED)# group-pool 238.1.1.1 255.255.255.0 threshhold 10
```

Related command

5.1.5 `mdt mdt switch-delay`

To set how long the system switches over to data MDT after the switchover conditions are ready and the JointLV packet is transmitted, run the following command:

```
mdt mdt switch-delay number
```

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>INTEGER&lt;3-60&gt; Value of multicast-domain switch-delay(second)</td>
</tr>
</tbody>
</table>

Default value

5 seconds
Command mode

MVPN configuration mode, which can be entered through the ip \texttt{multicast-routing vrf vpn-instance} command

Instruction

This command is used to designate the switchover time of data MDT.

Example

The following example shows how to set the switchover time to 4 seconds.

\begin{verbatim}
R4_config_mvpn_(RED)#mdt switch-delay 4
\end{verbatim}

Related command

5.1.6 \texttt{mdt hold-down}

To designate the hold-down timer of data MDT, run the following command.

\texttt{mdt hold-down} number

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>INTEGER:&lt;0-180&gt;</td>
</tr>
</tbody>
</table>

Default value

60 seconds

Command mode

MVPN configuration mode, which can be entered through the ip \texttt{multicast-routing vrf vpn-instance} command

Instruction

This command is used to designate the hold-down time of data MDT to prevent the twitter. Before the hold-down time times out, the data MTD mapping cannot be deleted.
Example

The following example shows how to set the hold-down time to 70 seconds.

```
R4_config_mvpn_(RED)#mdt holddown-time 70
```

Related command

### 5.1.7 `mdt rd-list`

To set the RD of the peer VRF, run the following command:

```
mdt rd-list rd
```

**Parameter**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>rd</td>
<td>ASN:nn or IP-address:nn</td>
</tr>
<tr>
<td></td>
<td>-- VPN Route Distinguisher</td>
</tr>
</tbody>
</table>

**Default value**

None

**Command mode**

MVPN configuration mode, which can be entered through the `ip multicast-routing vrf vpn-instance` command

**Instruction**

Example

The following example shows how to make settings to enable VRF RED to accept the multicast flow of VRF BLUE.

```
ip vrf RED
   rd 100:1

ip vrf BULE
   rd 200:1

R4_config_mvpn_(RED)#mdt rd-list 200:1
```
Related command

5.1.8  **show ip mroute vrf vpn-instance pim-s jointlv**

To browse the Join Tlv options of VPN, run this command.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vpn-instance</td>
<td>Browses the name of VPN instance.</td>
</tr>
</tbody>
</table>

Default value

None

Command mode

Instruction

Example

```
R4#show ip mroute vrf RED pim-s joint
(1.1.1.160 239.1.1.1) p sg:(10.0.1.1 232.2.1.1) couter:0  flag:R
mi:00:00:00 dd:00:00:00 hd:00:00:00 dt:00:02:51
```

In this example, **psg** stands for the sg address peer encapsulated by the public network, **flag** stands for the local distribution when it is **a**, or the remote distribution if it is **r**.

The second line shows 4 related timers.

Related command

5.1.9  **debug ip pim-s mvpn**

To trace the events related to MVPN and PIM-SM, run **debug ip pim-s mvpn**. To resume this default settings, run **no debug ip pim-s mvpn**.
Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

Default value

None

Command mode

Instruction

Example

R4#show ip mroute vrf RED pim-s joinatb

(20.0.4.4 232.1.1.1) assigner:0.0.0.0 proxy:172.16.34.4

atb_t:00:00:00    rd: 100:1

In this example, the assigner address is the address of the JINATB releaser. If the assigner address is 0.0.0.0, it means the local distribution.

The proxy address stands for the agent address for this flow to send the Join packet.

If it is the remote distribution, **atb_t** will time out.

Related command

5.1.10 **debug ip multicast mvpn**

To trace and observe the MVPN-related events, run this command.

Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>
Default value

None

Command mode

Instruction

Example

Related command