

Multicast Command

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Chapter 1 Multicast Common Command

1.1 Multicast Common Command

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” form of the command to close debug information.

debug ip mpacket *access-list group-address detail*

no debug ip mpacket

Parameter

Parameter	Description
<i>access-list</i>	Range for tracked multicast packets
<i>group-address</i>	The tracked multicast packet group address
detail	Details for multicast packet processing

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
```

```
MINPUT : IP Ethernet0/1 (100.168.20.151,224.1.1.1) , len=112
```

```
MOUPUT : IP Ethernet0/1 (192.168.20.99,224.0.0.5) , len=64
```

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” form of the command to close debug information.

Syntas

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 mrouting” 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.

Syntas

debug ip mroute-cache *group-address*

no debug ip mroute-cache

Parameter

Parameter	Description
<i>group-address</i>	The tracked multicast routing cache group address

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 mrouting. you can use the “no” format of the command to close the .

Syntas

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

Parameter

Parameter	Description
alert	Track the alert interaction among multicast routing components
border-router	Track related events of multicast border router MBR

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.

BDCOM’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.

Syntas

ip mroute *source-address mask [rpf-address type-number [distance]]*

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

Parameter

Parameter	Description
<i>source-address</i>	Multicast source IP address
<i>mask</i>	Multicast source IP address mask
<i>rpf-address</i>	RPF address of Static multicast routing
<i>type-number</i>	RPF interface of Static multicast routing
<i>distance</i>	Optional management distance

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.

Syntas

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*

Parameter

Parameter	Description
<i>size</i>	Maximum number of multicast routing item

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

Parameter

Parameter	Description
<i>access-list</i>	the access-list name used to specify the range for processing multicast packets.

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

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

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.

Syntas

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

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

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.

Syntas

ip multicast ttl-threshold *ttl-value*

no ip multicast ttl-threshold

Parameter

Parameter	Description
<i>ttl-value</i>	The multicast packet ttl threshold value on the port.

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 largerer 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.

Syntas

show ip mflow [*group-address*]*source-address*]**interface**

Parameter

Parameter	Description
<i>group-address</i>	The displayed multicast flow information group address.
<i>source-address</i>	The displayed multicast flow information source address.
interface	The displayed port multicast flow information.

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 rcv : 21180 total send : 0   curr-in-flux : 0.00 curr-out-flux : 0.00
(100.168.20.151,224.1.1.1)
total rcv : 16822400 total send : 0   curr-in-flux : 0.00 curr-out-flux : 0.00
(192.168.20.97,232.0.0.1)
total rcv : 240 total send : 0   curr-in-flux : 0.00 curr-out-flux : 0.00
(192.167.20.131,239.1.1.1)
total rcv : 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

Parameter	Description
<i>group-address</i>	The displayed multicast routing cache group address

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)/ (*, 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.

Syntas

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

1.1.16 show ip mroute static

You can use “show ip mroute mstatic” to display information on static multicast routing.

Syntas

show ip mroute static

Parameter

none

Default

none

Command mode

Supervisor mode

Explanation

use “show ip mroute static” to see the static multicast routing configured by the “ip mroute” command.

Example

The following example will display the static multicast routing configuration information:

```
router#show ip mroute static
Mroute: 200.1.1.1/24, RPF nbr: 192.168.20.1, RPF interface: Ethernet0/2
    Administrative distance: 0, metric: 0, valid: TRUE
Mroute: 201.1.1.1/24, RPF nbr: 192.168.20.1, RPF interface: Serial0/0
    Administrative distance: 0, metric: 0, valid: FALSE
```

1.2 IGMP Command

1.2.1 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”.

Syntas

clear ip igmp group *type-number group-address*

Parameter

Parameter	Description
<i>type-number</i>	port type and port number.
<i>group-address</i>	Multicast group's group address to clear information.

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

1.2.2 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” form of the command to close debug information.

Syntas

```
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.

1.2.3 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" form of the command to close debug information.

Syntas

```
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.

1.2.4 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.

Syntas

```
ip igmp helper-address destination-address  
no ip igmp helper-address destination-address
```

Parameter

Parameter	Description
<i>destination-address</i>	The destination address of transitting IGMP packet °

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
```

1.2.5 ip igmp join-group

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

Syntas

```
ip igmp join-group group-address [{include|exclude} source-address]
```

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

Parameter

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

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
```

1.2.6 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”.

Syntas

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

Parameter

Parameter	Description
<i>list-name</i>	Pre-configured ip standard access-list name

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
```

1.2.7 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

Parameter	Description
<i>time</i>	The value of last member query interval configured on the port. Its unit is millisecond.

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
```

1.2.8 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

Parameter	Description
<i>time</i>	other querier timeout. Its unit is second.

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
```

1.2.9 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.

Syntas

ip igmp query-interval *time*

no ip igmp query-interval

Parameter

Parameter	Description
<i>time</i>	Interval of sending general query packet. Its unit is second.

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
```

1.2.10 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.

Syntas

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

Parameter

Parameter	Description
<i>time</i>	Value of the maximum response time configured on the port.

Default

10 seconds

Command mode

interface configuration mode

Explanation

you can use this command “ip igmp query-max-resposne-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
```

1.2.11 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.

Syntas

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

Parameter

Parameter	Description
*	All multicast groups.
group-address	specified multicast group address.
source-address	specified host source address.

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”

1.2.12 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.

Syntas

ip igmp version *version-number*
no ip igmp version

Parameter

Parameter	Description
version-number	The value 1.2 or 3 indicates separately the IGMP version number 1,2 or3.

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
```

1.2.13 ip olnk

Use this command "**ip olnk**" to run igmp only-link on the interface, and then enable the multicast function; command "**no ip olnk**" can cancel the multicast function on the port.

Syntas

```
ip olnk
no ip olnk
```

Parameter

none

Default

The port doesn't support multicast forwarding.

Command mode

interface configuration mode

Explanation

The olnk is a multicast routing protocol without protocol exchanging process, and it can generate the multicast routing list only according to the configuration information and IGMP group information, and provide services for multicast packet forwarding.

In the simple topology environment, using olnk can prevent the dynamic multicast routing protocol from occupying CPU usage and bandwidth.

Example

The following example is a configuration to run olnk on f0/0 interface:

```
router_config_f0/0#ip olnk
```

Relevant command**show ip mroute olnk****1.2.14 show ip igmp groups**

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

Syntas**show ip igmp groups {interface | group-address | detail}****Parameter**

Parameter	Description
interface	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.
group-address	The multicast group address to see. If you don't add this parameter, all multicast groups information on the router will be displayed.
detail	The router whether you want to see the multicast group information.

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)
  Source address:  Uptime   Timer   Fwd   Flags
  192.168.20.5     00:03:46 stopped Yes   S
  192.168.20.3     00:03:46 stopped Yes   S
  192.168.20.1     00:03:46 stopped Yes   S
.....
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)
  Source address:  Uptime   Timer   Fwd   Flags
  192.168.20.5     00:02:42 stopped Yes   S
  192.168.20.3     00:02:42 stopped Yes   S
  192.168.20.1     00:02:42 stopped Yes   S
show ip igmp groups
Running this command will display the following message:

```

```

Interface    Group address  Uptime  Expires  Last Reporter  Flags
Ethernet0/0  239.255.255.250 00:01:08 00:02:05 192.168.20.141 R
Ethernet0/0  224.2.127.254  00:01:09 00:02:00 32.1.1.67     R
Ethernet0/0  224.1.1.1      00:01:24 stopped  0.0.0.0       S
Ethernet0/0  233.33.1.5     00:01:24 stopped  0.0.0.0       S
Ethernet0/0  233.33.1.3     00:01:24 stopped  0.0.0.0       S
Ethernet0/0  233.33.1.1     00:01:24 stopped  0.0.0.0       S

```

```

Interface    Group address  Uptime  Expires  Last Reporter  Flags
Loopback10   239.255.255.250 00:01:08 00:02:05 192.168.20.141 R
Loopback10   224.2.127.254  00:01:09 00:02:00 32.1.1.67     R

```

1.2.15 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

Parameter	Description
interface	The specified port to display information. If you don't add this parameter, all information on ports where IGMP is activated will be displayed.

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
```

1.2.16 show ip igmp-host

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

Syntas

```
show ip igmp { interface } detail
```

Parameter

Parameter	Description
interface	The specified port to display information.
detail	Display igmp host detailed information.

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 igmp 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)
```

1.2.17 show ip mroute olnk

You can use this command “**show ip mroute mstatic**” to display olnk multicast routing list information.

Syntas

```
show ip mroute olnk [group-address | statistics]
```

Parameter

Parameter	Description
<i>group-address</i>	The specified group address.
<i>mask</i>	Routing item statistic information.

default

none

Command mode

Supervisor mode

Explanation

Each multicast routing protocol has a multicast routing list at local, which has the similar structure to the global multicast forwarding list, including some related information with protocol.

Example

The following example will display olnk multicast routing list information:

```
router#show ip mroute olnk
IGMP only-link Multicast Routing Table
Timers: Uptime/Expires
Total Group: 6
Total (S,G): 4
(192.168.20.1/32, 225.1.1.1/32) 00:01:46/00:00:05 Packets: 22
```

```
Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, Owner: OLNK, Packets: 35
Outgoing interface list:
Loopback0          Packets out: 35
(192.168.20.141/32, 225.1.1.1/32) 00:00:10/00:00:05 Packets: 3
Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, Owner: OLNK, Packets: 3
Outgoing interface list:
Loopback0          Packets out: 3
(192.168.20.110/32, 239.0.0.101/32) 00:08:52/00:00:05 Packets: 532
Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, Owner: OLNK, Packets: 532
Outgoing interface list:
Loopback0          Packets out: 532
(192.168.20.138/32, 239.1.1.1/32) 01:40:54/00:00:05 Packets: 6052
Incoming interface: Ethernet0/2, RPF nbr 0.0.0.0, Owner: OLNK, Packets: 6052
Outgoing interface list:
Loopback0          Packets out: 4066
```

1.2.18 show ip rpf olnk

use “show ip rpf olnk” to display RPF information on which olnk to reach multicast source:

Syntas

```
show ip rpf olnk
```

Parameter

none

Default

none

Command mode

Supervisor mode

Explanation

You can use this command to see the RPF information of specified multicast source. such as RPF interface, RPF neighbor address, network number, mask and routing information.

Example

The following example will display RPF information on which olnk reaches multicast source 192.168.20.1:

```
router#show ip rpf olnk 192.168.20.1
RPF information for (192.168.20.1)
RPF interface: Ethernet0/2
RPF neighbor: 0.0.0.0
RPF route/mask: 192.168.20.1/24
RPF type: connect (ucast)
Metric preference: 0
Metric: 0
```


Relevant command**ip mroute****1.3 PIM-DM Command****1.3.1 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:

Syntas

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

Parameter

Parameter	Description
*	Delete all multicast routing list items submitted by pim-dm.
group	Delete all list items submitted by pim-dm and satisfied in the specified group.
source	(optional) Delete all list items submitted by pim-dm and satisfied in the specified group's source.

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.

1.3.2 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:

Syntas

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

Parameter

Parameter	Description
count	(optional) Delete all multicast packet statistic values on PIM-DM port.
type number	(optional) Delete multicast packet statistic values on the specified port.

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.

1.3.3 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

debug ip pim-dm [group|alert]

Parameter

Parameter	Description
group	(optional) Track the specified group status.
alert	(optional) Track the alert status received from mrouting.

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 224.0.0.13 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 224.0.0.13 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)
2003-3-26 12:04:39 PIM-DM: (192.168.20.138, 239.1.1.1)'s upstream:192.168.20.132 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
2003-3-26 12:11:20 receive alert_sg_prune alert from mroute
2003-3-26 12:11:56 receive alert_group_report alert from mroute
2003-3-26 12:11:56 receive alert_sg_join 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 upstream: 192.168.20.132 Adding in MRT success
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

```

1.3.4 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.

Syntas

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

1.3.5 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.

Syntas

ip pim-dm dr-priority *priority*

no pim-dm dr-priority

Parameter

Parameter	Description
<i>priority</i>	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.

Default

default DR priority on PIM port is 1.

Command mode

interface configuration mode

Explanation

- (4) 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.
- (5) 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.

1.3.6 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.

Syntas

ip pim-dm hello-interval *interval*

no ip pim-dm hello-interval

Parameter

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

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

1.3.7 ip pim version

This command is used to configure PIM-DM edition on router port.

Syntas

ip pim version [*version*]

Parameter

Parameter	Description
<i>version</i>	PIM-DM edition

Default

version : 2

Command mode

Interface configuration mode

Explanation

It should install edition 2 to run under default condition. If one interface already configure edition 2, and this interface found a neighbor of not PIM-DM edition 2, the router doesn't change the PIM-DM edition of interface. We only bear edition 2.

Example

Router_config_e1/1#ip pim version 2

1.3.8 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".

Syntas

ip pim state-refresh origination-interval [*interval*]

no ip pim state-refresh origination-interval

Parameter

Parameter	Description
interval	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.

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

1.3.9 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.

Syntas

ip pim-dm neighbor-filter *access-list-name*

no ip pim-dm neighbor-filter *access-list-name*

Parameter

Parameter	Description
<i>access-list-name</i>	Standard access-list, whose definition is to deny PIM packets from the specified source.

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****1.3.10 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.

Syntas

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

1.3.11 show ip mroute pim-dm

Display PIM-DM multicast routing list information.

Syntas

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

Parameter

Parameter	Description
<i>group-address</i>	(optional) group address
source	(optional) source address

Default

none

Command mode

The mode except 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:
Loopback1 NoInfo 00:00:07 /00:00:00
Ethernet1/1 NoInfo 00:02:43 /00:00:00
```

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
```

Example3: Display the specified (S,G) in local MRT.

```
Router#show ip mroute pim-dm 224.1.1.1 192.168.20.131
```

PIM-DM Multicast Routing Table

1.3.12 show ip pim-dm neighbor

Display the PIM-DM neighbor and selected DR.

Syntas

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

Parameter

Parameter	Description
interface-type	interface type(e.g. Ethernet1/1,Serial1/0 and so on)
<i>interface-number</i>	interface number(e.g. Ethernet1/1,Serial1/0 and so on).

Default

none

Command mode

Other mode except user mode

Explanation

You can use this command to determine which router configuration is running PIM-DM or PIM-SM on LAN.

Example

Example 1:

```
Router#show ip pim-dm neighbor
```

PIM-DM Neighbor Table

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

Example 2:

```
Router# show ip pim-dm neighbor Ethernet2/1
```

PIM-DM Neighbor Table

Neighbor Address	Interface	Uptime/Expires	Ver	DR	Prior/Mode
192.168.20.132	Ethernet2/1	19:39:22/00:00:00	v2	1/D	
192.168.20.152	Ethernet2/1	00:00:30/00:01:15	v2	1/D	
192.168.20.204	Ethernet2/1	00:00:04/00:02:16	v2	20/D	(DR)

Relevant 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

1.3.13 show ip pim-dm interface

You can use this command to display the overall status for PIM-DM port.

Syntas

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

Parameter

Parameter	Description
interface-type	(optional) interface type and number (e.g. Ethernet1/1, Serial1/0 and so on).

Default

none

Command mode

Other mode except user mode

Explanation

This command displays only the port where PIM-DM is configured. If you didn't specify any port, it will display all pim-dm interfaces information.

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
```

Relevant 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

1.3.14 show ip rpf pim-dm

You can use this command to display the way how a multicast routing performs reverse path forwarding.

Syntas

show ip rpf pim-dm *source-address*

Parameter

Parameter	Description
source-address	displays the RFP information of specified source address.

Default

none

Command mode

other mode except user mode

Explanation

The pim-dm routing protocol can get the reverse path forwarding information from various type of routing lists (unicast routing list, DVMRP routing list or configured static multicast routing). This command also indicates the users where the RPF information is get from.

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
```

1.4 PIM-SM Command

1.4.1 debug ip pim-sm

Syntas

debug ip pim-sm [hello|jp|register|assert|bsr|timer] [packet|state-machine]

Parameter

Parameter	Description
hello	Tracking hello send/receive message
jp	Tracking Join/Prune message
register	Tracking register message
assert	Tracking register message
bsr	Tracking BSR message
timer	Tracking timer message
packet	Tracking send/receive message
state-machine	Tracking state-machine activity message

Default

None

Command mode

Supervisor state

Explanation

This command track PIM-SM router's state change and message receive.

Example

Example 1:tracking hello message interactive

```
R142#debug ip pim-sm hello
2003-4-21 16:44:00 PIM-SM: Ethernet1/1, Rcv Hello Msg, Source = 192.168.100.143,
Destination = 224.0.0.13, len = 34
2003-4-21 16:44:07 PIM-SM: Ethernet1/1, Send Hello Msg, Destination = 224.0.0.13, len = 34
2003-4-21 16:44:08 PIM-SM: Serial2/0, Send Hello Msg, Destination = 224.0.0.13, len = 34
2003-4-21 16:44:10 PIM-SM: Serial2/0, Rcv Hello Msg, Source = 192.168.21.144, Destination =
224.0.0.13, len = 34
```

Example 2: tracking JP message interactive and state change.

```
R142#debug ip pim-sm jp
R142#PIM-SM: downstream Ethernet1/1, RP = 192.166.100.142, GP = 224.2.127.254
SM state = PS_ST_JP_NI, ev = PS_EV_JP_JOIN.
PIM-SM: downstream Ethernet1/1, RP = 192.166.100.142, GP = 224.2.127.254
SM state = PS_ST_JP_J, ev = PS_EV_JP_PRUNE.
PIM-SM: downstream Ethernet1/1, RP = 192.166.100.142, GP = 239.255.255.250
SM state = PS_ST_JP_NI, ev = PS_EV_JP_JOIN.
PIM-SM: downstream Ethernet1/1, RP = 192.166.100.142, GP = 239.255.255.250
SM state = PS_ST_JP_J, ev = PS_EV_JP_PRUNE.
2003-4-21 16:48:52 PIM-SM: Ethernet1/1, Rcv J/P Msg, Source = 192.168.100.143, Destination
```

= 224.0.0.13, len = 42

PIM-SM: downstream Ethernet1/1, RP = 192.166.100.142, GP = 225.1.1.10

SM state = PS_ST_JP_NI, ev = PS_EV_JP_JOIN.

Example 2: tracking register message interactive and state change.

R142#debug ip pim-sm register

R142#2003-4-21 16:52:19 Line protocol on Interface Ethernet1/1, changed state to up

2003-4-21 16:52:29 PIM-SM: Ethernet1/1, Rcv Register Msg, Source = 192.168.100.143, Destination = 192.166.100.142, len = 57

2003-4-21 16:52:29 PIM-SM: Ethernet1/1, Rcv Register Msg, Source = 192.168.100.143, Destination = 192.166.100.142, len = 57

Relevant command

None

1.4.2 clear ip mroute pim-sm

Syntas

clear ip mroute pim-sm [* | *group-address*] [*source-address*]

Parameter

Parameter	Description
*	Del all PIM-SM multicast route.
<i>group-address</i>	Del interfix group multicast route.
<i>source-address</i>	Del interfix source multicast route.

Default

None

Command mode

Supervisor state

Explanation

This command clear message of multicast route when the keeping multicast route message has error.

Example

Example 1:

Clear native MRT middle/upper reach port which is found by PIM-SM.

Router#clear ip mroute pim-sm *

Example 2:

Clear native MRT middle/upper reach which is found by PIM-SM (group address : 239.1.1.1).

Router#clear ip mroute pim-sm 239.1.1.1

Example 3:

Clear native MRT middle/upper reach Clear native MRT middle/upper reach which is

found by PIM-SM (192.168.20.138, 239.1.1.1).

Router#clear ip mroute pim-sm 239.1.1.1 192.168.20.131

Relevant command

None

1.4.3 clear ip pim-sm rp-mapping

Syntas

clear ip pim-sm rp-mapping [*rp-address* | <cr>]

Parameter

Parameter	Description
<i>rp-address</i>	Converge point (RP) address

Default

None

Command mode

Supervisor state

Explanation

This command clears RF-mapping message keeping in router when the RF-mapping message has error.

Relevant command

None

1.4.4 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

1.4.5 ip pim-sm accept-register**Syntax**

ip pim-sm accept-register access-list *filter-name*

no ip pim-sm accept-register access-list

Parameter

Parameter	Description
<i>filter-name</i>	Incept Register filter access list name.

Default

Non-BSR boundary

Command mode

Global configuration mode

Explanation

Incept Register filter access list. You can keep only a receive register message filter.

Relevant command

None

1.4.6 ip pim-sm accept-rp**Syntax**

ip pim-sm accept-register access-list *filter-name*

no ip pim-sm accept-register access-list

Parameter

Parameter	Description
<i>filter-name</i>	Incept Register filter access list name.

Default

None

Command mode

Global configuration mode

Explanation

Incept Register filter access list,use the “no”command to cacle configuration.

Example

Make accept-rp 100.1.1.1 to 224.2.2.2 JP message.

```
ip pim-sm accept-rp 100.1.1.1 3
ip access-list standard 3
permit 224.2.2.2 255.255.255.255
```

Relevant command

None

1.4.7 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 difineition BSR boundary to make BSM message can not effect each other in different PIM-SM domain.

Relevant command

None

1.4.8 ip pim-sm bsr-candidate

Syntas

ip pim-sm bsr-candidate type *number* [*hash-mask-length*] [*priority*]

no ip pim-sm bsr-candidate type *number*

Parameter

Parameter	Description
type	Interface type
number	Interface number
hash-mask-length	Hash mask length.
priority	BSR priority

Default

Hash mask length is 30,

BSR priority is 0.

Command mode

Global configuration mode

Explanation

Configure specify source multicast,use “no”to recovery default configuration.

The local BSR message must update after BSR convergence,even if computation result of the router is BSR.

Relevant command

None

1.4.9 ip pim-sm dr-priority

Syntas

ip pim-sm dr-priority *priority-value*

no ip pim-sm dr-priority

Parameter

Parameter	Description
<i>priority-value</i>	Configure DR priority value.

Default

DR priority is 1.

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

1.4.10 ip pim-sm hello-interval**Syntas**

ip pim-sm hello-interval *time-interval*

no ip pim-sm hello-interval

Parameter

Parameter	Description
<i>time-interval</i>	Hello message sending interval.

Default

Hello message sending interval 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

1.4.11 ip pim-sm lan-prune-delay

使用 **ip pim-sm lan-prune-delay** 配置改 低速 的剪枝 播延 信息，使用 命令的 **no** 形式 取消配置。

Syntas

ip pim-sm lan-prune-delay [*tbit|lan-delay dly|override-interval ov-itv*]

no ip pim-sm lan-prune-delay [**tbit** | **lan-delay** *dly* | **override-interval** *ov-itv*]

Parameter

Parameter	Description
tbit	Cancel joined suppression
lan-delay	Network delay
<i>dly</i>	Network delay time
override-interval	Overlay time
<i>ov-itv</i>	Overlay time interval

Default

None

Command mode

Global configuration mode

Explanation

None

Relevant command

None

1.4.12 ip pim-sm neighbor-filter

Syntax

ip pim-sm neighbor-filter *filter-name*

no ip pim-sm neighbor-filter *filter-name*

Parameter

Parameter	Description
<i>filter-name</i>	Neighbor filter access list name.

Default

Disable neighbor filter.

Command mode

Global configuration mode

Explanation

Configure neighbor filter, to filter PIM-SM message neighbor, use "no" command to

cancel filter.

This command can configure several filter in a interface.

Relevant command

None

1.4.13 ip pim-sm register-rate-limit

Syntax

ip pim-sm register-rate-limit *packet-number-per-second*

no ip pim-sm register-rate-limit

Parameter

Parameter	Description
<i>packet-number-per-second</i>	Incept Register message filter access list .

Default

Disable speed limit.

Command mode

Global configuration mode

Explanation

To configure Register message speed limit value,use “no”command to renew default value.

Limit register message speed of local DR all (S,G),throw away the register message which larger than this speed, minish the occupancy rate of bandwidth between DR and RP;otherwise,it can lose message when the great traffic source registered in the first time

Relevant command

None

1.4.14 ip pim-sm register-source

Syntax

ip pim-sm register-source [*type number*]

no ip pim-sm register-source

Parameter

Parameter	Description
type	Interface type
<i>number</i>	Interface number.

Default

Register message sending source address default address is DR lower reach interface address.

Command mode

Global configuration mode

Explanation

Configure Register message sending source address,use “no”command to renew default value.

If the interface have not IP address and belong non-unnumbered port ,the configuration is inefficacy.the protocol UP/DOWN isn’t influence to configuration.

Relevant command

None

1.4.15 ip pim-sm rp-address**Syntas**

ip pim-sm rp-address rp-add [override|acl-name]

no ip pim-sm rp-address rp-add

Parameter

Parameter	Description
override	Substitute RP mapping list by BSR.
acl-name	Access-list name

Default

None

Command mode

Global configuration mode

Explanation

Configure static state RP address,use “no”command to cancel configuration.

static state RP priority:If configure override then the PRI is excelled RP maping of BSR;if not configure override then the RP mapping of BSR is priority.

Relevant command

None

1.4.16 ip pim-sm rp-candidate

Syntas

ip pim-sm rp-candidate [*type number*] [*interval*]**group-list** *acl-name*]

no ip pim-sm rp-candidate [*type number*]

Parameter

Parameter	Description
type	Port type
<i>number</i>	Port number
<i>interval</i>	RP candidate broadcast interval
group-list	Multicast address access list.
<i>acl-name</i>	Access list name

Default

None

Command mode

Global configuration mode

Explanation

Configure candidate RP, use “no” command to cacle configuration.

Relevant command

None

1.4.17 ip pim-sm spt-threshold

Syntas

ip pim-sm spt-threshold [*infinity*]*traffic-rate-value*]

no ip pim-sm spt-threshold

Parameter

Parameter	Description
infinity	Disable switching

<i>traffic-rate-value</i>	Data speed (unit: Kbit/s)
---------------------------	---------------------------

Default

None

Command mode

Global configuration mode

Explanation

Configure the speed limit from share tree to source tree,use “no”command to review default value °

Relevant command

None

1.4.18 ip pim-sm ssm**Syntas**

ip pim-sm ssm [default|range *acl-name*]

no ip pim-sm ssm

Parameter

Parameter	Description
Default	Specify source multicast,use 232/8 multicast.
range	Use access list to limit multicast group .
<i>acl-name</i>	Access list name.

Default

None

Command mode

Global configuration mode

Explanation

Configure specify source multicast,use “no”command to review defalult configuration.
You must use the same extent in the same PIM-SM domain to avoid (*, G) conflict.

Example

ip access-list standard 4 permit 224.2.151.141exitip pim-sm ssm range 4

Relevant command

None

1.4.19 show ip mroute pim-sm

Syntas

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

Parameter

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

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
(192.166.1.253, 225.1.1.10), 00:15:14/00:02:46, flags: STJ
Incoming interface: Ethernet1/1, RPF nbr 192.168.100.143
Outgoing interface list:
Serial2/0, Forward/Sparse, 00:15:14/00:02:46
(192.168.20.141, 225.1.1.10), 00:15:14/00:02:46, flags: STJ
Incoming interface: Ethernet1/1, RPF nbr 192.168.100.143
Outgoing interface list:
Serial2/0, Forward/Sparse, 00:15:14/00:02:46
```

Relevant command

None

1.4.20 show ip pim-sm bsr-router

Syntas

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

1.4.21 show ip pim-sm interface

Syntas

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

Parameter

Parameter	Description
<i>type</i>	Port type
<i>number</i>	Port number

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

1.4.22 show ip pim-sm neighbor**Syntas****show ip pim-sm neighbor** [*type number*]**Parameter**

Parameter	Description
type	Port type
<i>number</i>	Port number

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

1.4.23 show ip pim-sm rp**Syntas****show ip pim-sm rp [mapping|metric]****Parameter**

Parameter	Description
mapping	Display RP—GROUP mapping relation.
metric	Display each RP simple-cast route metric

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

1.4.24 show ip pim-sm rp-hash**Syntas****show ip pim-sm rp-hash [group-address]****Parameter**

Parameter	Description
<i>group-address</i>	Group address.

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

1.4.25 show ip rpf pim-sm**Syntas****show ip rpf pim-sm {source-address} metric****Parameter**

Parameter	Description
<i>source-address</i>	Source address.
metric	Simple-cast route Metric

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

1.5 DVMRP Command

1.5.1 clear ip dvmrp neighbor

If you want to clear the relationship with the neighbors of DVMRP, you can use the command "Clear ip dvmrp neighbor" in Supervisor state.

Syntas

clear ip dvmrp neighbor [*ip-address* | *interface-type interface-number*]

Parameter

Parameter	Description
<i>ip-address</i>	(optional)The address of the DVMRP neighbor to be cleared.
<i>interface-type/ interface-number</i>	(optional)The interface type and number.

Default

none

Command mode

Supervisor state

Explanation

It is used to clear all neighbors for specified interface or neighbor address.

Example

It will delete all neighbors in the interface E1/1 in the following example.

```
clear ip dvmrp neighbor E1/1
```

Relevant command

show ip dvmrp neighbor

1.5.2 clear ip dvmrp route

If you want to clear the specified routes of DVMRP, you can use the command "Clear ip dvmrp route" in Supervisor state.

Syntas

clear ip dvmrp route [*network-address* [*network-mask*]]

Parameter

Parameter	Description
<i>network-address</i>	(optional)network address.
<i>network-mask</i>	(optional)network mask.

Default

The network mask is nature in default.

Command mode

Supervisor state

Explanation

We can use this command to delete specified routes. When the mask is not provided, it appears with nature mask of the network address. Note that it does nothing with the connected routes.

Example

It will delete the route 192.168.20.0/24 in the following example.

```
clear ip dvmrp route 192.168.20.0
```

Relevant command

show ip dvmrp route

1.5.3 clear ip mroute dvmrp

If you want to clear the specified multicast routes of DVMRP, you can use the command "Clear ip mroute dvmrp" in Supervisor state.

```
clear ip mroute dvmrp { * | source-address [group-address] }
```

Parameter

Parameter	Description
*	Delete all multicast routes
<i>source-address</i>	The source address of the specified multicast routes.
<i>group-address</i>	(optional)The group address of the specified multicast routes.

Default

In default it isn't necessary to input the group address, in order to delete all multicast routes with the specified source address.

Command mode

Supervisor state

Explanation

The command is used to delete any multicast routes specified. without the group address, it will delete all multicast routes with special source address.

Example

It will delete the multicast routes (192.168.20.141, 224.0.0.10) in the following example.

```
clear ip mroute dvmrp 192.168.20.141 224.0.0.10
```

Relevant command

```
show ip mroute dvmrp
```

1.5.4 debug ip dvmrp mroute

If you want to track the process for the multicast routes of DVMRP, you can use this command "debug ip dvmrp mroute", and use the "no" form of the command to close debug information.

Syntas

```
debug ip dvmrp mroute
```

```
no debug ip dvmrp mroute
```

Parameter

none

Default

none

Command mode

Supervisor state

Explanation

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

Example

The following example tracks the information in multicast routes.

```
debug ip dvmrp mroute
```

Example of Output:

```
DVMRP: create a mroute(192.168.20.141,224.1.1.10) with 192.168.20.0/24
```

```
DVMRP: add downstream interface Ethernet1/1 for (192.168.20.141, 224.1.1.10)
```

```
DVMRP: delete downstream interface Ethernet1/1 for (192.168.20.141, 224.1.1.10)
```

```
DVMRP: resend prune for (192.168.20.141, 224.1.1.10) with lifetime 7200
```

```
DVMRP: downstream neighbor 200.1.1.143 changes to prune state for (192.168.20.141, 224.1.1.10) with lifetime 100
```

```
DVMRP: received prune from 200.1.1.143 for (192.168.20.141, 224.1.1.10) with lifetime 100
```

```
DVMRP: create a mroute(192.169.1.220,225.1.1.70) with none unicast route
```

DVMRP: delete (192.169.1.220, 225.1.1.70) for mroute expired

Relevant command

show ip mroute dvmrp

1.5.5 debug ip dvmrp neighbor

If you want to track the maintaining information of DVMRP neighbors, you can use this command "debug ip dvmrp neighbor", and use the "no" form of the command to close debug information.

Syntas

debug ip dvmrp neighbor

no debug ip dvmrp neighbor

Parameter

none

Default

none

Command mode

Supervisor state

Explanation

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

Example

The following example tracks the information with the DVMRP neighbors.

debug ip dvmrp neighbor

Example of Output:

DVMRP: delete neighbor 200.1.1.143 for manually cleared

DVMRP: delete neighbor 202.117.93.144 for manually cleared

DVMRP: add neighbor 200.1.1.143 for new adjacency

DVMRP: add neighbor 202.117.93.144 for new adjacency

DVMRP: add neighbor 192.168.20.148 for new adjacency

Relevant command

show ip mroute neighbor

1.5.6 debug ip dvmrp route

If you want to track the information for the unicast routes of DVMRP, you can use this command "debug ip dvmrp route", and use the "no" form of the command to close debug information.

Syntas

debug ip dvmrp route
no debug ip dvmrp route

Parameter

none

Default

none

Command mode

Supervisor state

Explanation

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

Example

The following example tracks the information with the DVMRP unicast routes.

debug ip dvmrp route

Example of Output:

DVMRP: depend metric[34/34] for 192.168.20.0/24 from 200.1.1.143

DVMRP: infinite metric[32/32] for 200.1.1.0/24 from 200.1.1.143

DVMRP: depend metric[34/34] for 202.117.93.0/24 from 200.1.1.143

DVMRP: DF wins with 172.168.0.0/16 in Serial1/0 for 202.117.93.142

DVMRP: DF wins with 172.168.0.0/16 in Ethernet2/1 for 192.168.20.142

DVMRP: add entry 172.168.0.0/16

DVMRP: send flash report packet

DVMRP: delete entry 10.1.1.0/24

The explanation of the main fields.

Parameter	Description
finite/infinite/depend metric	Finite Cost (<32)/Infinite Cost (=32)/Depend cost (>32 and <64) of the route
[34/34]	The metric after local calculation/in report of neighbor of the route
DF wins	The router attains the ability to designed forwarding in the interface for the route.
DF loses	The router lost the ability to designed forwarding in the interface for the route(as a result that there is no neighbors in the interface).

Relevant command

show ip mroute route

1.5.7 debug ip dvmrp packet

If you want to track the information for the specified packets of DVMRP, you can use

this command "debug ip dvmrp packet", and use the "no" form of the command to close debug information.

Syntas

debug ip dvmrp packet [graft | graft-ack | report | probe | prune]

no debug ip dvmrp packet [graft | graft-ack | report | probe | prune]

Parameter

Parameter	Description
graft	(optional)Track the graft packets.
graft-ack	(optional)Track the graft acknowledge packets.
report	(optional)Track the report packets.
probe	(optional)Track the probe packets.
prune	(optional)Track the prune packets.

Default

none

Command mode

Supervisor state

Explanation

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

Example

The following example tracks the information with the specified packets of DVMRP.

debug ip dvmrp packet

Example of Output:

DVMRP: send probe packet to 224.0.0.4 with length 24 in Ethernet2/1

DVMRP: send probe packet to 224.0.0.4 with length 16 in Ethernet1/1

DVMRP: receive probe packet from 192.168.20.144 with length 24 in Ethernet2/1

DVMRP: receive probe packet from 200.1.1.143 with length 16 in Ethernet1/1

DVMRP: receive probe packet from 202.117.93.144 with length 16 in Serial1/0

DVMRP: send probe packet to 224.0.0.4 with length 16 in Serial1/0

DVMRP: send probe packet to 224.0.0.4 with length 24 in Ethernet2/1

DVMRP: receive probe packet from 192.168.20.148 with length 24 in Ethernet2/1

DVMRP: send probe packet to 224.0.0.4 with length 16 in Ethernet1/1

DVMRP: receive report packet from 192.168.20.144 with length 37 in Ethernet2/1

DVMRP: receive probe packet from 192.168.20.144 with length 24 in Ethernet2/1

Relevant command

show ip mroute route

1.5.8 ip dvmrp

If you want to enable DVMRP in the interface, you can use this command "ip dvmrp", and use the "no" form of the command to disable DVMRP in the interface.

Syntas

ip dvmrp
no ip dvmrp

Parameter

none

Default

none

Command mode

interface configuration state

Explanation

We can use this command to enable and disable DVMRP in a interface. As PIM-SM and PIM-DM, the router start the DVMRP task when there is at lease one interface been enabled DVMRP.

Before we use this command, we have never configured the command "ip multicast-routing", the router should warn: WARNING: "ip multicast-routing" is not configured, IP Multicast packets will not be forwarded". Now DVMRP processes normally except that can not learn any multicast routes. After we enable the command "ip multicast-routing", there is normal.

Once disable DVMRP in the interface, the interface stop the DVMRP, it has nothing with others configures in the interface. After enable DVMRP again, all configure is available.

Example

It will enable DVMRP in interface E1/1 with the following interface.

```
R142_config_e1/1# ip dvmrp
```

Relevant command

show ip dvmrp interface

1.5.9 ip dvmrp advert-metric

If you want to add other metric into the routes sent from the interface, you can use this command "ip dvmrp advert-metric", and use the "no" form of the command to disable in the interface.

Syntas

ip dvmrp advert-metric offset [*access-list acl-name*]

no ip dvmrp advert-metric offset [access-list acl-name]

Parameter

Parameter	Description
offset	The offset metric for the routes sent out of the interface.
<i>access-list</i>	(optional) Add offset metric into the routes specified by Standard IP Access List.
<i>acl-name</i>	Standard IP Access List Name.

Default

In default, DVMRP has nothing with the metric of the routes sent which is the metric in the topology table directly.

Command mode

interface configuration state

Explanation

There can be more than one IP access list. For the routes falls into more than one IP access list, we accept the first one that "permit" the routes. For the routes has no according access list, it accept the value in the command "ip dvmrp advert-metric offset". See the example for detail.

The IP access list in the command must be standard and with the extend IP access list means that it is "permit any".

Example

The Following example will add specified offset metric into the routes sent from the interface E2/1. We assume that we will send 3 routes out of the interface E2/1: 192.168.20.0/24, 192.168.30.0/24, 192.167.20.0/24.

Though the route 192.168.20.0/24 falls into the ACL "per16", its additional metric is 4 for the first ACL "per24".

For the route 192.168.30.0/24 only falls into the ACL "per16", its additional metric is 3.

Since the route 192.167.20.0/24 has none accordingly ACL, it's additional metric is 2.

Example:

```
!
interface Ethernet2/1
ip address 192.167.20.142 255.255.255.0
ip dvmrp
ip dvmrp advert-metric 2
ip dvmrp adver-metric 4 access-list per24
ip dvmrp adver-metric 3 access-list per16
!
ip access-list standard per24
permit 192.168.20.0 255.255.255.0
!
ip access-list standard per16
```

```
permit 192.168.0.0 255.255.0.0  
!
```

Relevant command

show ip dvmrp route

1.5.10 ip dvmrp auto-summary

If you want to enable auto-summary in the interface, you can use this command "ip dvmrp auto-summary", and use the "no" form of the command to disable auto-summary in the interface.

Syntas

ip dvmrp auto-summary

no ip dvmrp auto-summary

Parameter

none

Default

In default, auto-summary is enable in each DVMRP interface.

Command mode

interface configuration state

Explanation

Auto-summary isn't related with the manual summary in the same interface and summary routes don't appear in the DVMRP topology table.

If there may be a route loop between the interfaces and its neighbor routers, is is commended that configure same summary in each interface in order to avoid route loop.

Example

The following example will cancel the ability of auto-summary in interface E2/1.

```
R142_config_e2/1# no ip dvmrp auto-summary
```

Relevant command

ip dvmrp summary-address

1.5.11 ip dvmrp default-information

If you want to enable default route in the interface, you can use this command "ip dvmrp default-information", and use the "no" form of the command to disable default route in the interface.

Syntas

ip dvmrp default-information
no ip dvmrp default-information

Parameter

none

Default

In default, the default route is disable.

Command mode

interface configuration state

Explanation

Whether we enable the default route in a router, it has nothing with default route appearing in the topology table.

If there may be a route loop between the interfaces and its neighbor routers, is is commended that configure same default-information in each interface in order to avoid route loop.

Example

The following example enable the default-information in interface E2/1.

```
R142_config_e2/1# ip dvmrp default-information
```

Relevant command

show ip dvmrp route

1.5.12 ip dvmrp force-leaf

If you want to force a interface to act as leaf node (as result of deleting all neighbors), you can use this command "ip dvmrp force-leaf", and use the "no" form of the command to disable in the interface.

Syntas

ip dvmrp force-leaf
no ip dvmrp force-leaf

Parameter

none

Default

In default, force-leaf is disabled.

Command mode

interface configuration state

Explanation

By the function, we can separate two routers which is connected physically.

Example

The following example force the interface E2/1 to act leaf node.

```
R142_config_e2/1# ip dvmrp force-leaf
```

Relevant command

show ip dvmrp neighbor

1.5.13 ip dvmrp metric

If you want to add other metric into the routes received from the interface, you can use this command "ip dvmrp metric", and use the "no" form of the command to disable in the interface.

Syntas

ip dvmrp metric offset [*access-list acl-name*]

no ip dvmrp metric offset [*access-list acl-name*]

Parameter

Parameter	Description
offset	The offset metric for the routes received from the interface.
<i>access-list</i>	(optional) Add offset metric into the routes specified by Standard IP Access List.
<i>acl-name</i>	(optional) Standard IP Access List Name.

Default

In default, DVMRP add 1 metric into all routes received from a interface.

Command mode

interface configuration state

Explanation

There can be more than one IP access list. For the routes falls into more than one IP access list, we accept the first one that "permit" the routes. For the routes has no according access list, it accept the value in the command "ip dvmrp metric offset". See the example for detail.

The IP access list in the command must be standard and with the extend IP access list means that it is "permit any".

Example

The Following example will add specified offset metric into the routes received from the interface E2/1. We assume that we will send 3 routes out of the interface E2/1: 192.168.20.0/24, 192.168.30.0/24, 192.167.20.0/24.

Though the route 192.168.20.0/24 falls into the ACL "per16", its additional metric is 4 for the first ACL "per24".

For the route 192.168.30.0/24 only falls into the ACL "per16", its additional metric is 3.

Since the route 192.167.20.0/24 has none accordingly ACL, it's additional metric is 2.

Example:

```
!
interface Ethernet2/1
ip address 192.167.20.142 255.255.255.0
ip dvmrp
ip dvmrp metric 4 access-list per24
ip dvmrp metric 3 access-list per16
!
ip access-list standard per24
permit 192.168.20.0 255.255.255.0
!
ip access-list standard per16
permit 192.168.0.0 255.255.0.0
!
```

Relevant command

show ip dvmrp route

1.5.14 ip dvmrp prune-lifetime

If you want to set the lifetime of prune state within the prune packet, you can use this command "ip dvmrp prune-lifetime", and use the "no" form of the command to disable in the interface.

Syntas

ip dvmrp prune-lifetime *lifetime*

no ip dvmrp prune-lifetime*lifetime*

Parameter

Parameter	Description
lifetime	the lifetime of prune state.

Default

In default, the lifetime of a multicast route without downstream neighbors is 7200 seconds, while it should be the average of all prune lifetime for all downstream neighbors.

Command mode

interface configuration state

Explanation

Some routers (e.g. mrouted <3.3 and all currently known versions of cisco's IOS) do not use the DVMRP generation ID to determine that a neighbor has rebooted. In order to avoid the effect of the downstream neighbor reboot, the value must be small enough to force the downstream neighbor to receive message quickly.

However, smaller values cause less state to be kept both at this router and the parent, at the cost of more frequent broadcasts. So it may be a suitable value according to the environment.

Example

The following example sets the lifetime of all prune packets sent from the interface E2/1 with the value 1000 seconds.

```
R142_config_e2/1# ip dvmrp prune-lifetime 1000
```

Relevant command

show ip mroute dvmrp

1.5.15 ip dvmrp route-filter

The command is used to set and reset the filter for all routes received and sent in the interface.

Syntas

ip dvmrp route-filter { in | out } *acl-name*

no ip dvmrp router-filter { in | out } *acl-name*

Parameter

Parameter	Description
in	filter the routes received.
out	filter the routes sent.
<i>acl-name</i>	IP standard access list name.

Default

none

Command mode

interface configuration state

Explanation

There can be only one filter in each interface for sending or receiving routes.

The IP access list in the command must be standard and with the extend IP access list means that it is "permit any".

Example

The example will deny any routes received from interface E2/1 and beyond the IP access list.

Example:

```
!  
interface Ethernet2/1  
ip address 192.167.20.142 255.255.255.0  
ip dvmrp  
ip dvmrp route-filter in per24  
!  
ip access-list standard per24  
permit 192.168.20.0 255.255.255.0  
!
```

Relevant command

show ip dvmrp route

1.5.16 ip dvmrp summary-address

If you want to enable manual summary in the interface, you can use this command "ip dvmrp summary-address", and use the "no" form of the command to disable manual summary in the interface.

Syntas

ip dvmrp summary-address *network-address mask-address*

no ip dvmrp auto-summary *network-address mask-address*

Parameter

Parameter	Description
<i>network-address</i>	network address for manual summary
<i>mask-address</i>	network mask for manual summary

Default

none

Command mode

interface configuration state

Explanation

Auto-summary isn't related with the manual summary in the same interface and summary routes don't appear in the DVMRP topology table.

If there may be a route loop between the interfaces and its neighbor routers, is is

commented that configure same summary in each interface in order to avoid route loop.

Example

The following example will enables the manual summary for 192.168.20.0/16 in interface E2/1.

```
R142_config_e2/1# ip dvmrp summary-address 192.168.0.0 255.255.0.0
```

Relevant command

ip dvmrp auto-summary

1.5.17 show ip dvmrp interface

The command may show the information of the specified interface.

Syntas

show ip dvmrp interface [*interface-type interface-number*]

Parameter

Parameter	Description
<i>interface-type</i>	(optional) interface type
<i>interface-number</i>	(optional) interface number

Default

none

Command mode

Other state except user state

Explanation

The command shows only the information of the DVMRP interface. If user doesn't specify the interface, it shows all the information of DVMRP interfaces.

Example

The following example shows the information of all DVMRP interfaces.

```
R142_config#show ip dvmrp interface
```

DVMRP interface information

```
Address   interface   flags  neighbors  200.1.1.142  Ethernet1/1  0x0000  1
202.117.93.142  Serial1/0  0x0000  1  192.168.20.142  Ethernet2/1  0x0000  4
```

Relevant command

ip dvmrp

1.5.18 show ip dvmrp neighbor

The command can be used to show the information of the neighbors.

Syntas

show ip dvmrp neighbor [*interface-type interface-number*]

Parameter

Parameter	Description
<i>interface-type</i>	(optional) interface type
<i>interface-number</i>	(optional) interface number

Default

none

Command mode

Other state except user state

Explanation

The command shows the information of the neighbors in the specified interface.

Example

The following example shows the information of all neighbors.

```
R142_config#show ip dvmrp neighbor
DVMRP neighbor information
Address      interface  flags version hold/Expire time
200.1.1.143  Ethernet1/1 0x010F 3.255 1d16h21m/00:00:31
202.117.93.144 Serial1/0 0x010F 3.255 1d16h04m/00:00:27
192.168.20.144 Ethernet2/1 0x010F 3.255 23:42:04/00:00:33
192.168.20.148 Ethernet2/1 0x010E 3.255 23:41:57/00:00:34
192.168.20.204 Ethernet2/1 0x040A 12.3 23:41:09/00:02:14
192.168.20.156 Ethernet2/1 0x040A 12.3 18:31:14/00:01:29
```

Explanation The main fields:

field	Bit	Explanation
-------	-----	-------------

flags	0x0001	The neighbor supports force-leaf.
	0x0002	The neighbor supports prune packets.
	0x0004	The neighbor supports GenID field in PROBE packets.
	0x0008	The neighbor supports mtrace.
	0x0010	The neighbor supports SNMP.
	0x0020	The neighbor supports the mask field in prune, graft and graft ack packets.
	0x0100	The neighbor supports the two-way relationship.
	0x0200	The two-way relationship has never constructed.
	0x0400	The neighbor is a Cisco router.

Relevant command

ip dvmrp

show ip dvmrp interface

debug ip dvmrp neighbor

1.5.19 show ip dvmrp route

The command shows the information of the special routes.

Syntas

show ip dvmrp route [*network-address* [*network-mask*]]

Parameter

Parameter	Description
network-address	(optional) network address.
network-mask	(optional) network address.

Default

none

Command mode

Other state except user state

Explanation

The command shows the information of the special routes. If there is network address without network mask, the mask must be the nature mask of the network address.

Example

Example 1. It will show the information of all routes.

R142_config_e2/1#show ip dvmrp route

DVMRP topology information

H 10.1.1.0/24, from 202.117.93.144(Serial1/0) with metric 3

Create Time 00:01:03, Expire Time 00:02:17

Downstream interface:
 DF Ethernet1/1, 1 neighbors
 Ethernet2/1, 0 neighbors, DF neighbor 192.168.20.204, DF metric 1
 172.168.0.0/16, from 200.1.1.143(Ethernet1/1) with metric 11
 Create Time 1d16h57m, Expire Time 00:02:11
 Downstream interface:
 DF Serial1/0, 0 neighbors
 DF Ethernet2/1, 4 neighbors
 172.168.30.0/24, from 202.117.93.144(Serial1/0) with metric 3
 Create Time 00:01:03, Expire Time 00:02:17
 Downstream interface:
 DF Ethernet1/1, 0 neighbors
 Ethernet2/1, 0 neighbors, DF neighbor 192.168.20.148, DF metric 1
 192.168.20.0/24, from Local(Ethernet2/1) with metric 1
 Create Time 1d00h18m
 Downstream interface:
 DF Ethernet1/1, 1 neighbors
 DF Serial1/0, 0 neighbors

The explanation of the main fields:

Flags	Explanation
H	Route is in Hold-down state, otherwise route is in normal state
DF	Route has the ability to Designed Forwarding in the interface, otherwise hasn't.

Example 2. It will show the information of the specified unicast route (172.168.30.2/24).

```
R142_config_e2/1#show ip dvmrp route 172.168.30.0 255.255.255.0
DVMRP topology information
172.168.30.0/24, from 202.117.93.144(Serial1/0) with metric 3
Create Time 00:07:28, Expire Time 00:01:52
Downstream interface:
DF Ethernet1/1, 0 neighbors
Ethernet2/1, 0 neighbors, DF neighbor 192.168.20.148, DF metric 1
```

Relevant command

```
show ip dvmrp neighbor
show ip mroute dvmrp
debug ip dvmrp route
```

1.5.20 show ip mroute dvmrp

The command is used to show the information of the specified multicast routes.

Syntas

```
show ip mroute dvmrp [interface-type interface-number] source-address [group-address]
```


Parameter

Parameter	Description
<i>interface-type</i>	(optional) Interface type
<i>interface-number</i>	(optional) Interface number
<i>source-address</i>	(optional) The source address of the multicast routes.
<i>group-address</i>	(optional) The group address of the multicast routes.

Default

none

Command mode

Other state except user state

Explanation

The command is used to show the information of the specified multicast routes.

Example

Example 1. It will show the information of all multicast routes.

```
R142_config_e2/1#show ip mroute dvmrp
IP Multicast Routing Table
(192.168.20.2, 224.1.1.10), 1d00h34m/00:00:00
  Incoming interface: Ethernet2/1, RPF nbr 192.168.20.142
  Outgoing interface list: Null
(192.169.1.220, 225.1.1.70), 00:00:30/00:00:00
  Incoming interface: Ethernet2/1, RPF nbr 192.168.20.142
  Outgoing interface list: Null
(192.168.20.141, 239.255.255.250), 21:14:00/00:00:00
  Incoming interface: Ethernet2/1, RPF nbr 192.168.20.142
  Outgoing interface list:
    Ethernet1/1, Forward/DVMRP, 19:45:51/00:00:00
```

Example 2. It will show the information of the specified multicast route (192.168.20.2, 224.1.1.10).

```
R142_config_e2/1#show ip mroute dvmrp 192.168.20.2
IP Multicast Routing Table
(192.168.20.2, 224.1.1.10), 1d00h36m/00:00:00, Owner, Prune
  Incoming interface: Ethernet2/1, RPF nbr 192.168.20.142
  relate route: 192.168.20.0/24, 2/2 downstream interfaces
  Outgoing interface list:
    Ethernet1/1, 1/1 neighbors, Prune
    Serial1/0, 0/0 neighbors, Prune
```

Relevant command

show ip dvmrp neighbor

debug ip dvmrp mroute

debug ip dvmrp route

1.5.21 show ip rpf dvmrp

The command can be used to show the information of Reverse Path Forwarding (RPF) for the specified source address.

Syntas

show ip rpf dvmrp *source-address*

Parameter

Parameter	Description
source-address	Show the RPF information of the specified source address.

Default

none

Command mode

Other state except user state

Explanation

The command can be used to show the information of Reverse Path Forwarding for the specified source address.

Example

The Example will show the information of Reverse Path Forwarding for the source address 192.168.20.2.

```
R142_config_e2/1#show ip rpf dvmrp 192.168.20.2
RPF information for (192.168.20.2)
RPF interface: Ethernet2/1
RPF neighbor: directly connected
RPF route/mask: 192.168.20.0/24
RPF type: unicast (connected)
```

Relevant command

show ip mroute dvmrp