Chapter 25: IGMP Snooping

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25.1 IGMP Snooping Overview

IGMP (Internet Group Management Protocol) is a part of IP protocol which is used to support and manage the IP multicast between host and multicast router. IP multicast allows transferring IP data to a host collection formed by multicast group. The relationship of multicastgroup member is dynamic and host can dynamically add or exit this group to reduce network load to the minimum to realize the effective data transmission in network.

IGMP Snooping is used to monitor IGMP packet between host and routers. It can dynamically create, maintain, and delete multicast address table according to the adding and leaving of thegroup members. At that time, multicast frame can transfer packet according to his own multicast address table.

25.2 IGMP Snooping Configuration

25.2.1 IGMP Snooping Configuration List

Configuration Task	Description	Detailed Configuration
Enable IGMP Snooping	Required	25.2.2
Configure IGMP Snooping Timer	Optional	25.2.3
Configure Port Fast-leave	Optional	25.2.4

Configure Number of Multicast Group Allowed Learning	Optional	25.2.5
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Configure IGMP Snooping Router-Port	Optional	25.2.8
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Configure Host Port Record MAC Functions	Optional	25.2.10
Configure Port of Dropped Query Packets or Not	Optional	25.2.11
Configure Port of Discarded Packets Report or Not	Optional	25.2.12
Configure multicast preview	Optional	25.2.13
Configure Profile of Black and White List	Optional	25.2.14
Display and Maintenance of IGMP Snooping	Optional	25.2.15

25.2.2 Enable IGMP Snooping

Operation	Command	Remarks
Enter global configuration mode	**system-view**	

Enable IGMP Snooping	**igmp-snooping**	igmp-snooping is disabled by default.
Disable IGMP Snooping	**undo igmp-snooping**	

25.2.3 Configure IGMP Snooping Timer

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Configure IGMP Snooping host aging time	**igmp-snooping host-aging-time** *seconds*	300s by default
Configure maximum leave time	**igmp-snooping** **max-response-time** *seconds*	10s by default

25.2.4 Configure IGMP-snooping Fast-leave

Under normal circumstances, IGMP-Snooping on IGMP leave message is received directly willnot remove the port from the multicast group, but to wait some time before the port from the multicast group.

Enabling quickly delete function, IGMP-Snooping IGMP leave packet received, directly to theport from the multicast group. When the port is only one user, can be quickly removed to savebandwidth.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	

Enter port configuration mode	**interface** { { **ethernet** *interface-num* } | *interface-name* }	
Configure IGMP-snooping fast-leave	**igmp-snooping fast-leave**	Disable by default

25.2.5 Configure Number of Multicast Group Allowed Learning

Use igmp-snooping group-limit command to configure the number of the multicast group allowed learning.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Enter port configuration mode	**interface** { { **ethernet** *interface-num* } | *interface-name* }	
Configure the number of the multicast group allowed learning	**igmp-snooping group-limit** *number*	

25.2.6 Configure IGMP Snooping Querier

In an IP multicast network running IGMP, a multicast router or Layer 3 multicast GPON is responsible for sending IGMP general queries, so that all Layer 3 multicast devices can establish and maintain multicast forwarding entries, thus to forward multicast traffic correctly atthe network layer .This router or Layer 3 switch is called IGMP querier.

However, a Layer 2 multicast switch does not support IGMP, and therefore cannot send general queries by default. By enabling IGMP Snooping on a Layer 2 switch in a VLAN where multicast traffic needs to be Layer-2 switched only and no multicast routers are present, the

Layer 2 switch will act as the IGMP Snooping querier to send IGMP queries, thus allowingmulticast forwarding entries to be established and maintained at the data link layer.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Configuration is not black and white list in the multicast group to learn the rules of the default	**igmp-snooping** { **permit** | **deny** } { **group all** | **vlan** *vlan-id* }	By default, not black and white list in the multicast group to learn the rules for the learning of all multicast group
Enter port configuration	**interface ethernet** *interface-num*	
Configure the port multicast black list	**igmp-snooping** { **permit** | **deny** } **group-range** multicast-*mac-address* **multi-count** *num* **vlan** *vlan-id*	Configure the port to learn (not learn) VID of the start of continuous num mac multicast groups
Configure the port multicast black list	**igmp-snooping** { **permit** | **deny** } **group** multicast-*mac-address* **vlan** *vlan-id*	By default, any multicast group

		are not black and white list are added

25.2.7 Configure IGMP Snooping Multicast Learning Strategy

Configured multicast learning strategies, the administrator can control the router only to learn the specific multicast group. If a multicast group is added to the blacklist, then the router will not learn the multicast group; the contrary, in the white list in the router can learn multicast group.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Open the IGMP-Snooping querier	**igmp-snooping querier**	
Configure VLAN general query messages	**igmp-snooping querier-vlan** *vlan-id*	
Configured to send general query message interval	**igmp-snooping query-interval** *interval*	
Configuration is generally the maximum query response time of message	**igmp-snooping query-max-respond** *time*	
Configured to send general inquiries packet source IP address	**igmp-snooping general-query source-ip** *ip-address*	

25.2.8 Configure IGMP Snooping Router-Port

You can configure the router port will be automatically added to the dynamic IGMP SnoopingMulticast learn to make routing port also has a multicast packet forwarding capability.

When the GPON receives a host membership report sent packets, the port will be forwarded tothe route.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Configure hybrid routing port	**igmp-snooping route-port forward**	
Configure dynamic routing port aging time	**igmp-snooping router-port-age** { **on** | **off** | *age-time* }	
Configure static routing port	**igmp-snooping route-port vlan** *vlan-id* **interface** { **all** | **ethernet** *interface-num* }	

25.2.9 Configure IGMP Snooping Port Multicast VLAN

Multicast VLAN on the port function, regardless of the port receiving the IGMP messagesbelong to which VLAN, the GPON will be modified as a multicast VLAN.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Enter port configuration mode	**Interface ethernet** *interface-num*	
Configure IGMP Snooping port multicast VLAN	**igmp-snooping multicast vlan** *vlan-id*	

25.2.10 Configure Host Port Record MAC Functions

When this feature is enabled on the port, the GPON will record the source packet IGMP report MAC address.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Enter port configuration mode	**Interface ethernet** *interface-num*	
Configure the host port record MAC	**igmp-snooping record-host**	

25.2.11 Configure Port of Dropped Query Packets

When this feature is enabled on a port, the GPON drops the IGMP query message. Defaultport to receive all IGMP packets.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Enter port configuration mode	**interface ethernet** *interface-num*	
Discard the query message to the configuration port	**igmp-snooping drop query**	
Configure the port to receive the query message	**undo igmp-snooping drop query**	

25.2.12 Configure Port of Discarded Report Packets

When this feature is enabled on a port, the GPON drops the IGMP report message. Defaultport to receive all IGMP packets.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	

Enter port configuration mode	**interface ethernet** *interface-num*	
Configure the port discarded packets report	**igmp-snooping drop report**	
Configure the port to receive a report with	**undo igmp-snooping drop report**	

25.2.13 Configure Multicast Preview

Multicast IGMP Snooping provides preview feature, users can configure the multicast channel preview, you can configure a single multicast length preview, preview interval, duration, and reset to allow preview times.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Configure Multicast preview	**igmp-snooping preview**	
Configure multicast channel preview	**igmp-snooping preview group-ip** *ip-address* **vlan** *vlan-id* **interface ethernet** *interface-num*	
Configuration when the long single preview, preview interval, duration and allows preview preview reset the number of	**igmp-snooping preview** { **time-once** *time-once* | **time-interval** *time-interval* | **time-reset** *time-reset* | **permit-times** *preview-times* }	

25.2.14 Configure Profile of Black and White List

IGMP Snooping provides the way black and white list feature profile, first in global configuration mode to create a number of profile, then the port configuration mode to configurethe port reference profile list. Users can configure the IGMP Snooping profile of the type and scope, which refers to the type of permit / deny, you can use the multicast IP address range orMAC address to configure. IGMP Snooping profile only the port referenced to take effect, the configuration port reference profile, the more the type of profile must be the same between thatport can only refer to the same type (permit or deny) the profile. When the port is referenced permit the profile, the profile can only learn the definition of the corresponding multicast group;when the port reference deny the profile, the profile can be defined in addition to learning outside of all multicast group; when the port does not refer to any profile, in accordance with Normally learning multicast group.

Operation	Command	Remarks
Enter global configuration mode	**system-view**	
Create a profile, and enter profile configuration mode	**igmp-snooping profile** *profile-id*	
Configuration profile types	**profile limit** { **permit** | **deny** }	
Configuration profile ip range	**ip range** *start-ip end-ip* [**vlan** *vlan-id*]	
Range of configuration profile mac	**mac range** *start-mac end-mac* [**vlan** *vlan-id*]	
Enter port configuration mode	**interface ethernet** *interface-num*	
Reference configuration profile	**igmp-snooping profile refer** *profile-list*	

25.2.15 Display and Maintenance of IGMP Snooping

After completing the above configuration, can use the following command to viewconfiguration.

Operation	Command	Remarks
See the related configuration IGMP Snooping	**display igmp-snooping**	
See dynamic routing port	**display igmp-snooping router-dynamic**	
Display static router port configuration	**display igmp-snooping router-static**	
Display Record in host MAC	**display *igmp-snooping*** **record-host** [**interface ethernet** *interface-num*]	
Display information about multicast preview	**display igmp-snooping preview**	
Display the current state of multicast channel preview	**display igmp-snooping preview status**	
Display profile configuration information	**display igmp-snooping profile** [**interface ethernet** *interface-num*] [*profile-list*]	
Display multicast group	**display multicast** [**interface ethernet** *interface-num*]	