

Chapter 25: IGMP Snooping



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Chapter 25 IGMP Snooping

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 multicast group 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 the group 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
Configure IGMP Snooping Querier	Optional	25.2.6
Configure IGMP Snooping Multicast Learning Strategy	Optional	25.2.7
Configure IGMP Snooping Router-Port	Optional	25.2.8
Configure IGMP Snooping Port Multicast VLAN	Optional	25.2.9

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 <i>seconds</i>	300s by default
Configure maximum leave time	igmp-snooping max-response-time <i>seconds</i>	10s by default

25.2.4 Configure IGMP-snooping Fast-leave

Under normal circumstances, IGMP-Snooping on IGMP leave message is received directly

will not 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 the port from the multicast group. When the port is only one user, can be quickly removed to save bandwidth.

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 <i>interface-num</i> } interface- name }	
Configure the number of the multicast group allowed learning	igmp-snooping group-limit <i>number</i>	

25.2.6 Configure IGMP Snooping Querier

In an IP multicast network running IGMP, a multicast router or Layer 3 multicast Switch 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 at the 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 allowing multicast 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 <i>vlan-id</i> }	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 <i>interface-num</i>	
Configure the port multicast black list	igmp-snooping {permit deny} group-range multicast-mac-address multi-count <i>num</i> vlan <i>vlan-id</i>	Configure the port to learn (not learn) VID of the start of continuous <i>num</i> mac multicast groups
Configure the port multicast black list	igmp-snooping {permit deny} group multicast-mac-address vlan <i>vlan-id</i>	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 <i>vlan-id</i>	
Configured to send general query message interval	igmp-snooping query-interval <i>interval</i>	
Configuration is generally the maximum query response time of message	igmp-snooping query-max-respond <i>time</i>	
Configured to send general inquiries packet source IP address	igmp-snooping general-query source-ip <i>ip-address</i>	

25.2.8 Configure IGMP Snooping Router-Port

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

When the Switch receives a host membership report sent packets, the port will be forwarded to the 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 <i>age-time</i> }	
Configure static routing port	igmp-snooping route-port vlan <i>vlan-id</i> interface {all ethernet <i>interface-num</i> }	

25.2.9 Configure IGMP Snooping Port Multicast VLAN

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

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

25.2.10 Configure Host Port Record MAC Functions

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

Operation	Command	Remarks
Enter global configuration mode	system-view	
Enter port configuration mode	Interface ethernet <i>interface-num</i>	
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 Switch drops the IGMP query message.

Default port to receive all IGMP packets.

Operation	Command	Remarks
Enter global configuration mode	system-view	
Enter port configuration mode	interface ethernet <i>interface-num</i>	
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 Switch drops the IGMP report message.

Default port to receive all IGMP packets.

Operation	Command	Remarks
Enter global configuration mode	system-view	

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

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 <i>ip-address</i> vlan <i>vlan-id</i> interface ethernet <i>interface-num</i>	
Configuration when the long single preview, preview interval, duration and allows preview preview reset the number of	igmp-snooping preview { <i>time-once</i> <i>time-once</i> <i>time-interval</i> <i>time-interval</i> <i>time-reset</i> <i>time-reset</i> <i>permit-times</i> <i>preview-times</i> }	

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 configure the 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 or MAC 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 that port 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 <i>profile-id</i>	
Configuration profile types	profile limit { permit deny }	
Configuration profile ip range	ip range <i>start-ip end-ip</i> [<i>vlan vlan-id</i>]	
Range of configuration profile mac	mac range <i>start-mac end-mac</i> [<i>vlan vlan-id</i>]	
Enter port configuration mode	interface ethernet <i>interface-num</i>	
Reference configuration profile	igmp-snooping profile refer <i>profile-list</i>	

25.2.15 Display and Maintenance of IGMP Snooping

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

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 [<i>interface ethernet interface-num</i>]	
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 <i>interface-num</i>] [<i>profile-list</i>]	
Display multicast group	display multicast [interface ethernet <i>interface-num</i>]	