



Grandstream Networks, Inc.

GWN78xx Series

GWN78xx – IGMP Snooping Configuration Guide



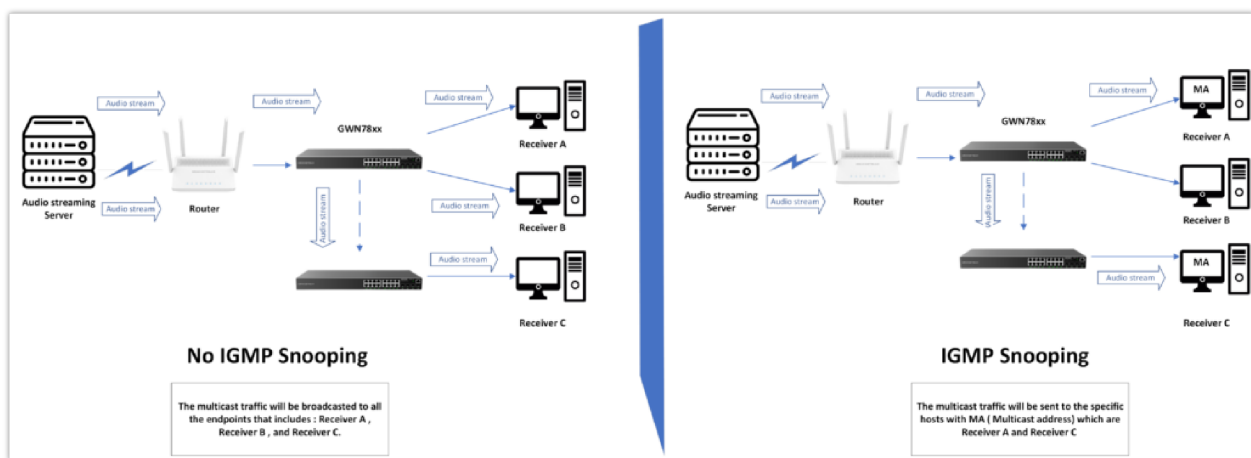
GWN78XX(P) - IGMP Snooping Configuration Guide

Overview

When working in a network that includes multiple receivers or endpoints, multicast traffic is used. It improves unicast in terms of efficiency since it lets traffic be transmitted only once instead of sending traffic to each endpoint individually, saving significant bandwidth. In addition, it outperforms broadcast by delivering traffic exclusively to receivers who are interested in the incoming traffic, avoiding traffic flooding.

IGMP snooping is the method that allows the GWN78xx network switches to identify multicast groups, these groups will all receive the same traffic based on a specified multicast address, and the multicast address helps the switch to forward incoming traffic to the concerned devices in the network, to avoid flooding and to optimize the network traffic.

To manage multicast traffic, GWN78xx uses the Internet Group Management Protocol (IGMP) for IPv4 networks and the Multicast Listener Discovery (MLD) for IPv6 networks, to learn about which multicast groups are being used on the network and which hosts are members of those group.S



IGMP Snooping vs no IGMP Snooping

IGMP Snooping Configuration Example

In this section of the guide, we will present an example of how to configure IGMP snooping on a GWN78XX(P) network switch.

Switch Configuration for IGMP Snooping

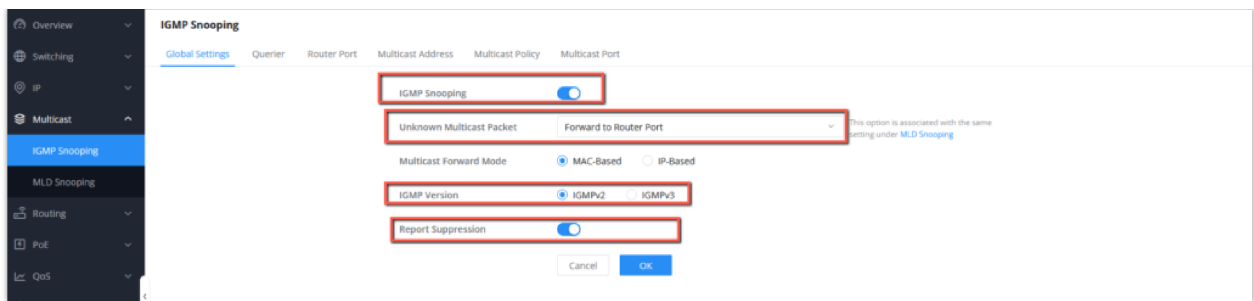
Consider the following scenario, we want to stream a music file to different users connected on a network via a GWN78xx switch.

To do that please follow the below steps :

Note

Please make sure that all devices that are connected to the switch and are part of the multicast process belong to the same VLAN.

1. Go to **Multicast** → **IGMP snooping** → **Global settings**, and enable IGMP snooping globally
2. Set the Unknown multicast traffic to "**Forward to Router Port**", this will forward all the traffic that is not part of the multicast streaming to the trunk port.
3. Keep the IGMP version to IGMPv2.
4. Enable "**Report Suppression**", this option is useful to suppress the number of multicast reports sent by the connected endpoints to the switch, it limits the membership reports sent to the querier from different devices of the same multicast group.



Enable IGMP Snooping

VLAN	Status	Router Port Auto-Learning	Port Fast Leave	Query Robustness	Query Interval (s)	Query Max Response Interval (s)	Last Member Query Count	Last Member Query Interval (s)	Operation
1	Enabled	Enabled	Enabled	2	125	10	2	1	
20	Disabled	Enabled	Disabled	2	125	10	2	1	

Choosing the VLAN

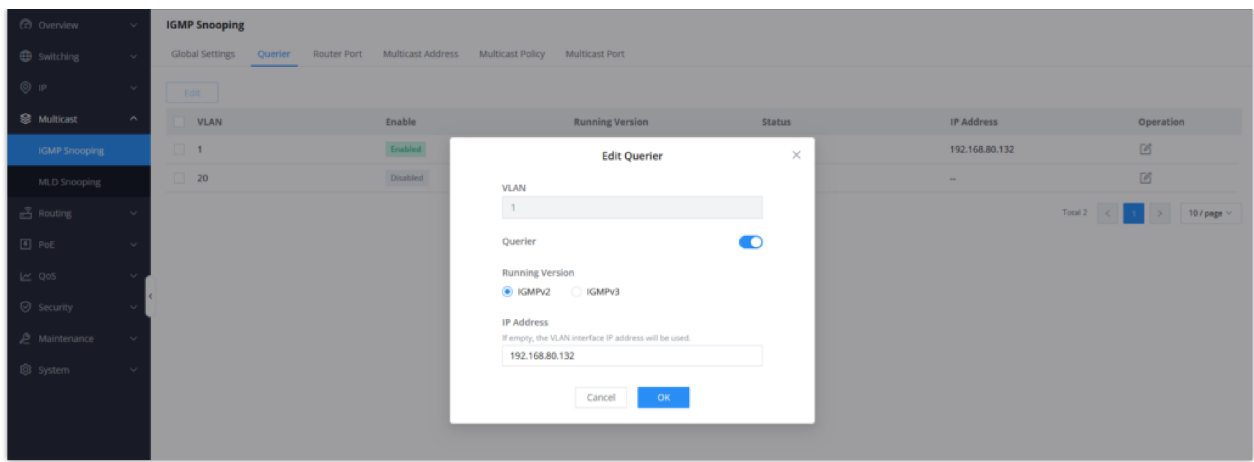
- Under **Multicast** → **IGMP Snooping** → **VLAN Settings**, select the VLAN on which the Multicast will be applied and click the edit button.
- Enable the IGMP Snooping for the specific VLAN
- We will enable **Port Fast Leave**, this will reduce the time it takes to block unlisted IGMP traffic sent to the device port.

Note

Port fast leave should not be activated in cases where the device linked to the interface is not the ultimate endpoint responsible for sending membership reports. Instead, if the connected device is an unmanaged switch with various endpoints connected to it, enabling port fast leave would result in blocking multicast traffic. In this scenario, if only one device wishes to leave and sends a request to the querier, the remaining devices connected to that unmanaged switch will also be prevented from receiving multicast traffic.

Global Settings

- Go to **Multicast** → **IGMP Snooping** → **Querier**, select the Multicast VLAN, enable the switch to act as a Querier for that specific VLAN, and set the IP Address to the switch's IP Address.



Edit Querier

Note

Querier: In the absence of a multicast capable router, the GWN78xx switch can be set as an IGMP Querier, and by definition, an IGMP Querier is a device responsible for querying the multicast group memberships of hosts on the network. IGMP (Internet Group Management Protocol) is used by hosts to signal their membership in multicast groups to routers or multicast-capable switches such as the GWN78xx.

In case the multicast traffic travels more than one switch, the switch with the lowest IP Address will be set as the IGMP querier.

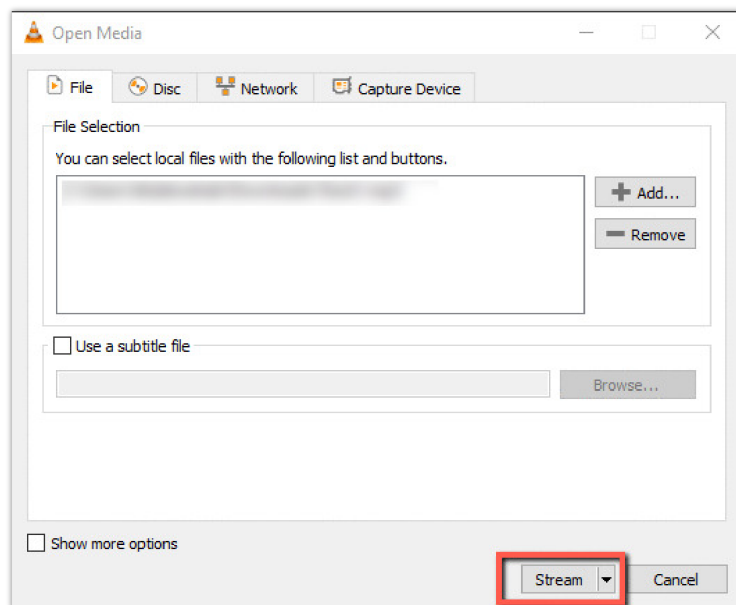
Example: We have two switches connected and are part of multicast traffic distribution, switch A with IP address 192.168.80.7 and switch B with IP Address 192.168.80.20, in this case, switch A will be the IGMP querier since it has the lowest IP Address, and switch B will be the backup querier.

o **Audio Streaming from the Server**

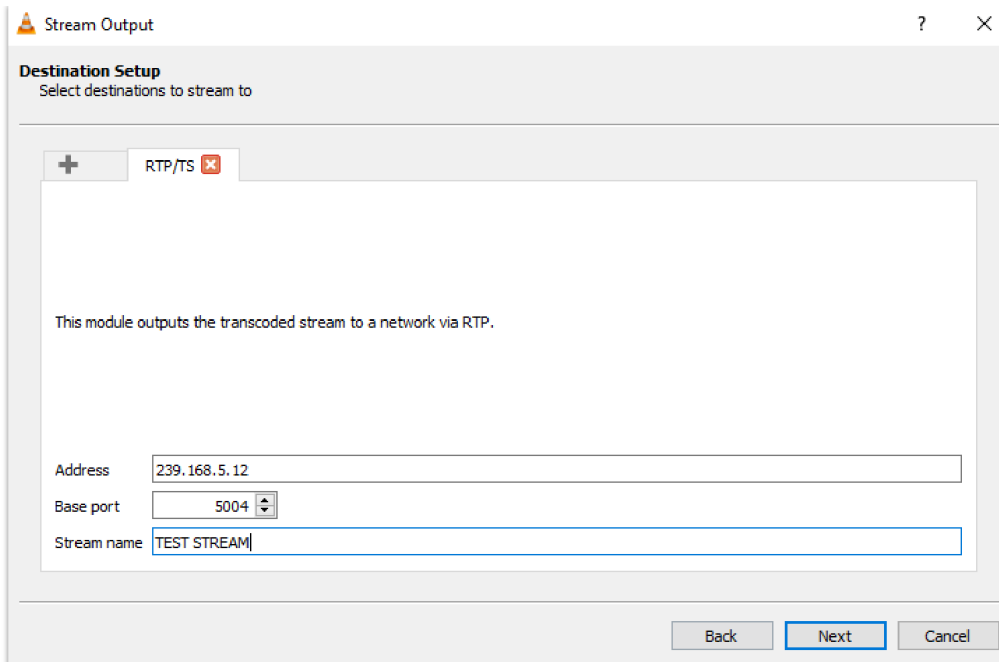
Once the configuration is completed, any device connected to the multicast port will have its multicast address dynamically learned.

We can now verify the multicast traffic output by using a media player server such as VLC to stream audio, to do so:

1. Open the VLC media player, and go to **Media → Stream**.
2. Select the track that you want to stream and choose "stream"

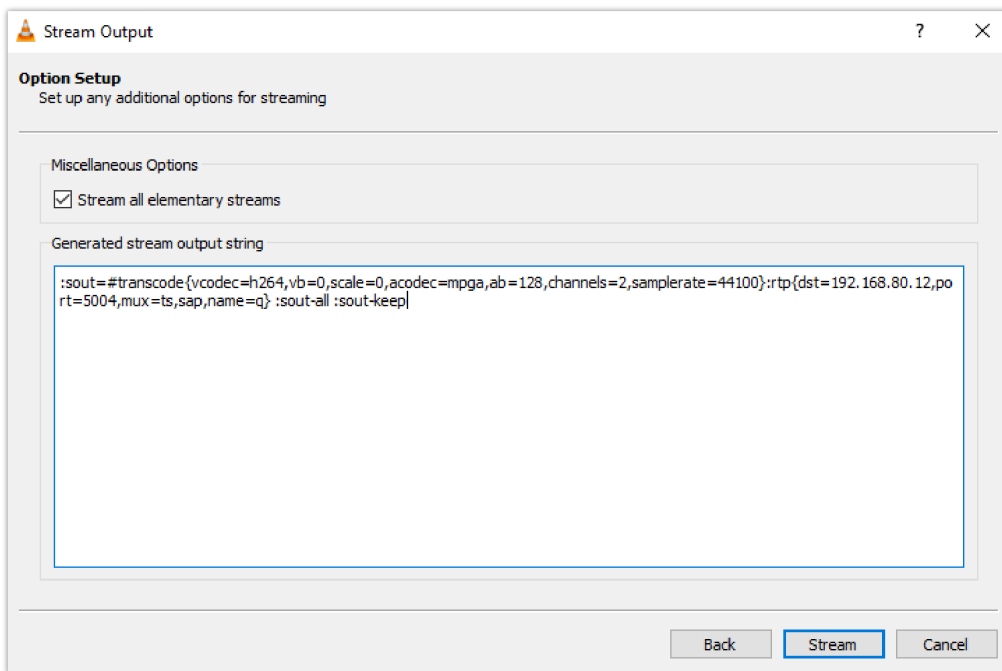


3. Choose the RTP / MPEG Transport stream option, then click "Add". In the address, you can enter a multicast address of your choice with base port 5004.



4. Activate Transcoding and set the Audio codec necessary for streaming music.

5. Choose all elementary stream options and finally click stream.



Under multicast address, we can see the multicast addresses that have been dynamically learned by the switch through IGMP messages.

After all of this is configured, any subscriber who joined the stream will see the multicast group address defined reflecting.

VLAN	Multicast Address	Source IP Address	Member Port	Address Type	Aging Time (s)	Operation
1	224.0.1.116	--	1/0/15	Dynamic	259	[Edit] [Delete]
1	224.111.111.1	--		Dynamic	91	[Edit] [Delete]
1	239.0.0.1	--	1/0/15	Dynamic	184	[Edit] [Delete]
1	239.168.5.12	--	1/0/15	Dynamic	252	[Edit] [Delete]
1	239.255.255.250	--	1/0/1	Dynamic	181	[Edit] [Delete]

Additional Settings

Additional configuration for the IGMP snooping can be applied on the GWN78xx network switches, among these configurations:

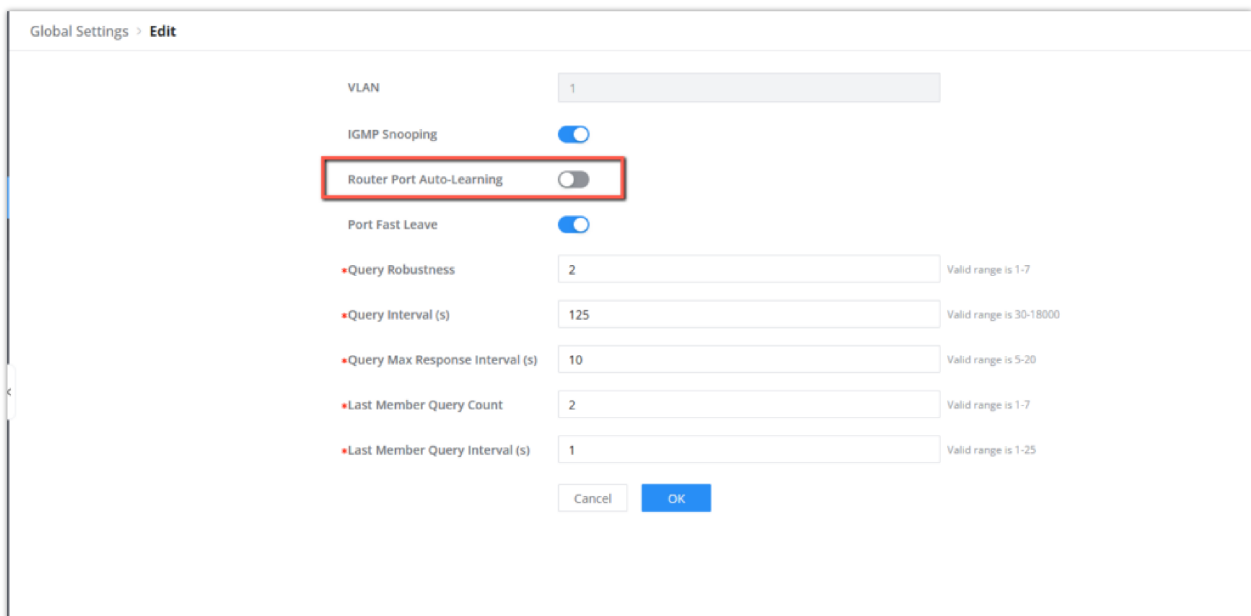
- [Static Router Port Configuration](#)
- [Set static Multicast Address](#)
- [Set a Multicast Policy](#)

Static Router Port Configuration

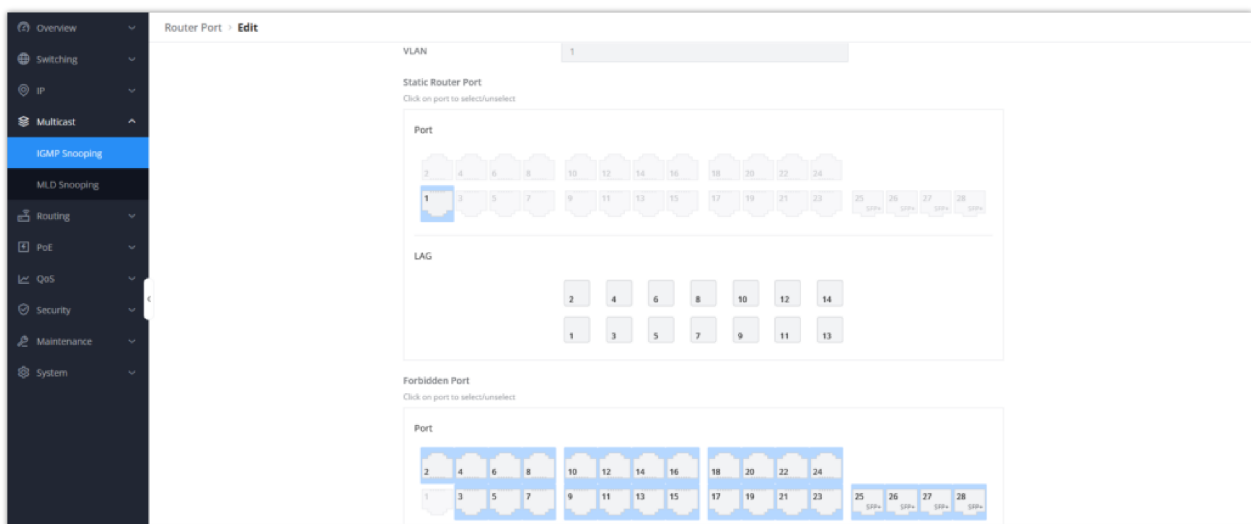
There are cases where you will need to manually configure the router port, this is usually configured when the router port is not dynamically learned, and the router port auto-learning is disabled.

To configure this:

- First, make sure the Router port auto-learning is disabled on the multicast VLAN used.

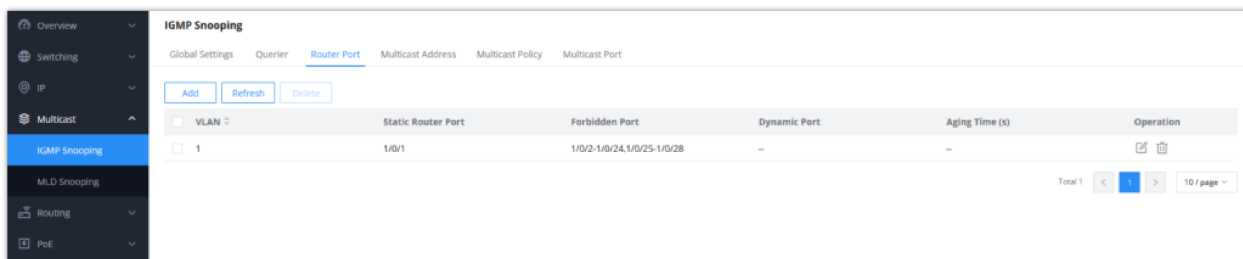


- Go to **Multicast** → **IGMP Snooping** → **Router Port** and click **Add** to add a new static router port, we will set port 1/0/1 as our router port.
- For added security we can define the ports that are not allowed to be set as router ports and can only connect host devices, this can be defined in the forbidden ports section



Defining the router port and forbidden ports

- Click save, and now the router port will be statically defined to port 1/0/1.

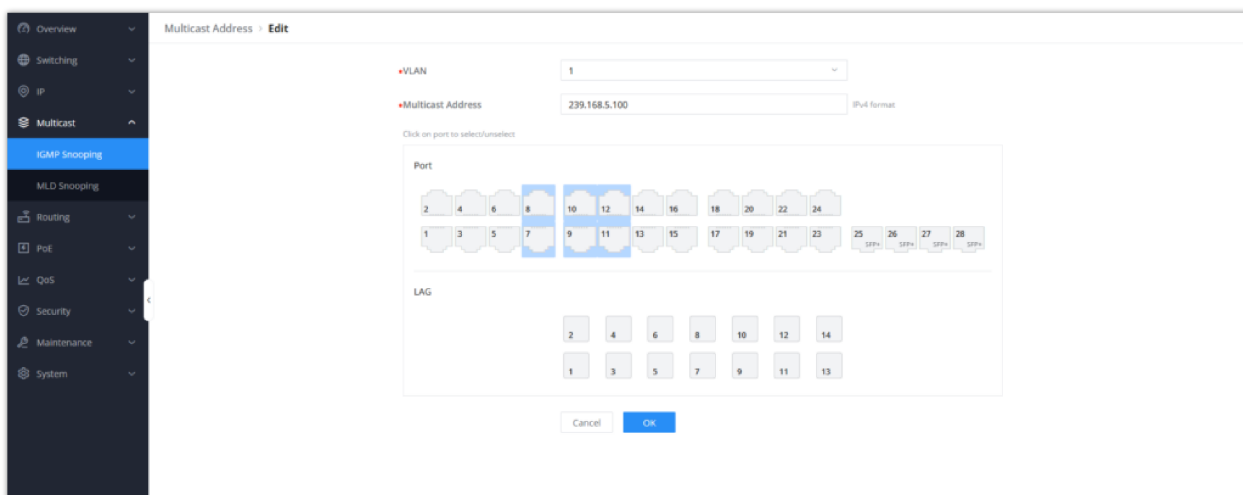


Results

Set Static Multicast Address

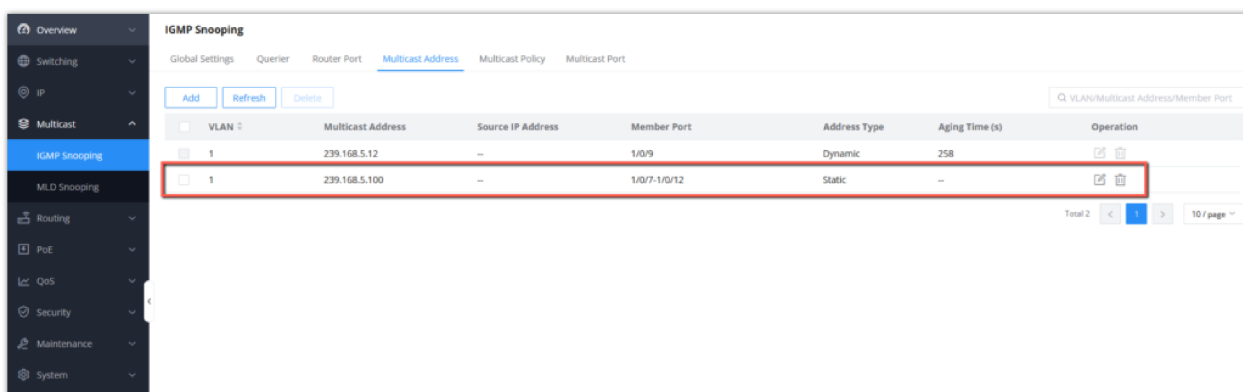
In a situation where you have a host device that does not support IGMP snooping connected to a switch interface, you can statically define the multicast address for that host, to do that:

- Go to **Multicast** → **IGMP Snooping** → **Multicast Address**
- Click on **Add** to add a new device multicast address.
- Define the VLAN and the multicast IP Address for the device, and select the interfaces that will connect the host device, this way the switch will always forward the multicast traffic to the selected interfaces. this means that the connected host will receive the multicast traffic from the defined multicast address, even if it hasn't been subscribed to it.



Static Multicast Address

- Click save, the static multicast address will be displayed

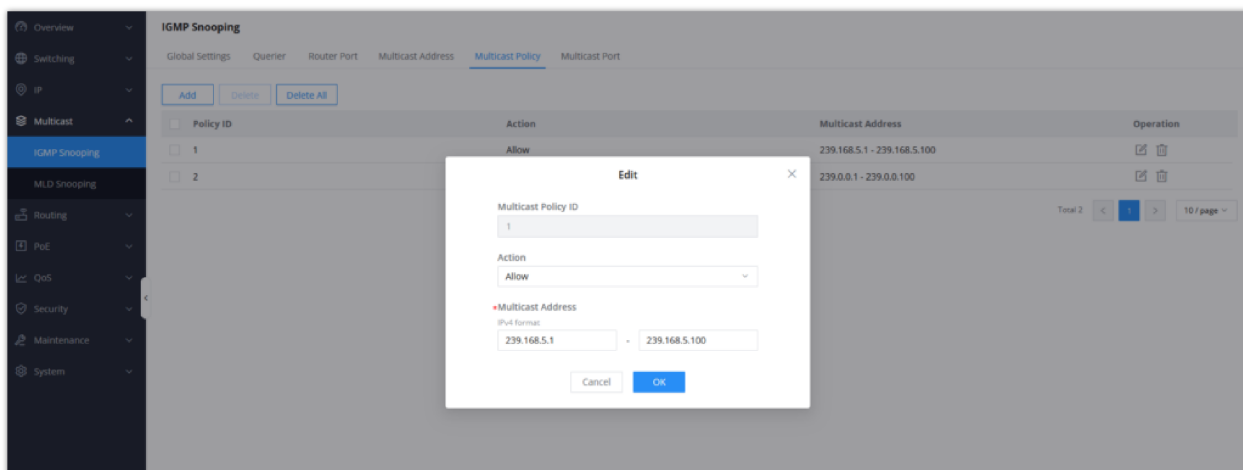


Set Multicast Policy

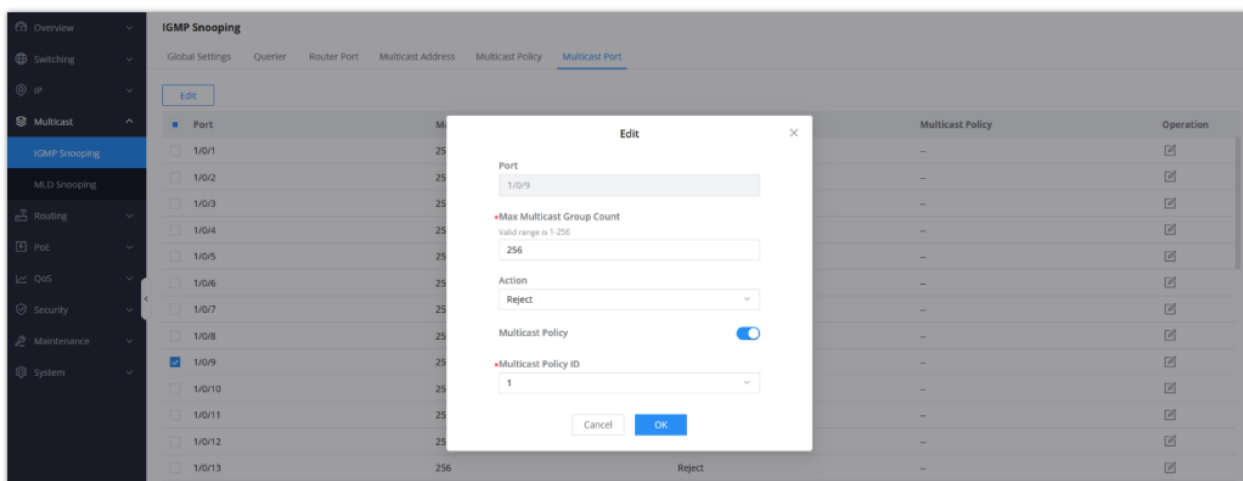
In case you need to define a specific range of multicast addresses that can be used on your network, you can define this in the Multicast policy section, to do this:

- Go to **Multicast** → **IGMP Snooping** → **Multicast Policy**
- Click **Add** to add a new policy.

- Define the multicast range where hosts can or can not join the multicast stream. For example, we will allow the multicast stream to come only from addresses 239.168.5.1 to 239.168.5.100, if a stream is coming from a different multicast address, it will be blocked.



- Go to **Multicast** → **IGMP Snooping** → **Multicast Port**
- Apply the policy created on the specific port where the multicast traffic receiver is connected, in our example, the connected endpoint on port 1/0/9 will receive only traffic coming from the multicast address range 239.168.5.1 to 239.168.5.100, any other multicast traffic will be rejected.



Supported Devices

Device Name	Supported	Firmware Required
GWN7801	Yes	1.0.1.20 or higher
GWN7801P	Yes	1.0.1.20 or higher
GWN7802	Yes	1.0.1.20 or higher
GWN7802P	Yes	1.0.1.20 or higher
GWN7803	Yes	1.0.1.20 or higher
GWN7803P	Yes	1.0.1.20 or higher
GWN7811	Yes	1.0.1.8 or higher
GWN7811P	Yes	1.0.1.8 or higher

GWN7812P	Yes	1.0.1.8 or higher
GWN7813	Yes	1.0.1.8 or higher
GWN7813P	Yes	1.0.1.8 or higher
GWN7806	Yes	1.0.1.14 or higher
GWN7806P	Yes	1.0.3.3 or higher
GWN7830	Yes	1.0.3.3 or higher
GWN7831	Yes	1.0.3.3 or higher
GWN7832	Yes	1.0.3.3 or higher

List of supported devices

Need Support?

Can't find the answer you're looking for? Don't worry we're here to help!

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