

7000 Series - Configuring IGMP Snooping (Multicasting)

The aim of this document is to describe the steps to setup and test IGMP Snooping

The purpose Internet Group Management Protocol (IGMP) snooping is to restrain multicast traffic in a switched network. By default, a LAN switch floods multicast traffic within the broadcast domain and this can consume a lot of bandwidth if many multicast servers are sending streams to the segment.

Multicast IP addresses are Class D IP addresses. Therefore, all IP addresses from 224.0.0.0 to 239.255.255.255 are multicast IP addresses.

IGMP Snooping can be very effective in network environments where Multicast applications like Video/Audio streaming are being used.

Table of Contents

Software	2
Physical Setup	2
Logical Setup	2
Network Diagram	2
CONFIGURATION – Management IP address and IGMP	3
Set the Management IP address	3
IGMP snooping implementation	3
Enable IGMP Snooping (CLI) on VLAN 1	3
Enable IGMP snooping on any VLAN	3
TESTING - Multicast	4

Software

Native VLAN:1Multicast software:VLC version 0.8.6d (supports IGMP v1,v2,v3)Multicast stream:700 Mb AVI FileNetgear Switch:GSM7312 FW 6.0.0.15, 6.1.0.9 and 6.2.0.14Multicast Sender:WinXP 192.168.0.2Multicast Receiver:WinXP 192.168.0.10 and 192.168.0.20Multicast address:239.255.0.1Packet capturing software:Wireshark 0.99

Physical Setup

1x GSM7312 Prosafe Layer 3 Managed switch 3x Windows XP Computers

Logical Setup

Sender:	192.168.0.2
Receiver:	192.168.0.10
	192.168.0.20

Network Diagram



CONFIGURATION – Management IP address and IGMP

Set the Management IP address

- 1) Plugged the console cable to the Serial port of the switch and the serial port on the PC
- Open a new Hyper Terminal session (connecting via the COM port) settings 9600, 8, None, 1, None
- 3) Power Cycle the switch
- 4) Upon POST the User: prompt will appear
- 5) Username is admin , password "blank"
- 6) Type **Enable** to access the privileged mode (password "**blank**")
- 7) Type **network protocol none** to reset the network settings
- 8) Type network parms <<Management IP>> <<Subnet Mask>> <<Default Gateway IP>>. For example network parms 192.168.0.2 255.255.255.0 192.168.0.1
- 9) User copy system:running-config nvram:startup-config to save the configuration
- 10) Check with **show network** if the settings are correct

The switch should now be accessible patching a CAT5 Straight-through cable. The PC NIC must be configured with an IP address within the same subnet used to configure the management IP of the switch (Example: 192.168.0.2 255.255.255.0

IGMP snooping implementation

Enable IGMP Snooping (CLI) on VLAN 1

(GSM7312)# config (GSM7312) (config) #ip igmpsnooping (GSM7312) (config) #ip igmpsnooping unknown-multicast filter (GSM7312) (config) #ip igmpsnooping interfacemode (GSM7312) (config) #exit

(GSM7312)# vlan database

This command activate IGMP on all the ports in VLAN 1 (GSM7312) (vlan) #ip igmp 1

This command activate the Querier to be the VLAN address (In this case 192.168.0.1) (GSM7312) (vlan) #ip igmpsnooping querier 1

(GSM7312) (vlan) #exit

Enable IGMP snooping on any VLAN

In order to activate IGMP on any other VLAN the following list of commands must be modified replacing <VLAN-ID> with the VLANID number:

GSM7312)# vlan database (GSM7312) (vlan) #ip igmp <VLAN-ID> (GSM7312) (vlan) #ip igmpsnooping querier <VLAN-ID> (GSM7312) (vlan) #exit

TESTING - Multicast

- 1- Activated Wireshark on the Receivers to filter Multicast traffic
- 2- Activated VLC on the Sender, to send Multicast to 239.255.0.1, Source File a 700 MB AVI

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3- Activated VLC on the Receivers , to listen to Multicast for the address 239.255.0.1

Fig.1

Both receivers would display the output in Fig.1 and receive the Multicast AVI transmission on the VLC viewer

4- Closed VLC on one of the Receiver

Intel(R) PRO/1000 PL Network Connection (Mic	rosoft's Packet Scheduler) : Cap	pturing - Wireshark	5 🗙
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22206 239.780055 192.168.0.2	259.255.0.1	UUP Source port: 4312 Destination port: 1234	
2220/ 239./848/3 192.108.0.2	239.200.0.1	UDP Source port: 4312 Destination port: 1234	
22209 290 812378 1924168 0.4	224.0.0.1	IGMP V2 Membership Ouerv	
22210 300.668827 192.168.0.20	239.255.255.250	IGMP V2 Membership Report	
22211 351.541961 192.168.0.1	224.0.0.1	IGMP V2 Membership Query	
22212 359.168850 192.168.0.20	239.255.255.250	IGMP V2 Membership Report	
22213 412.271555 192.168.0.1	224.0.0.1	IGMP V2 Membership Query	
22214 422.100090 192.100.0.20	239,233,233,239	TOMP V2 Membership Query	
22216 476 668925 192.168 0.20	239.255.255.250	IGMP V2 Membership Report	
22217 533.750799 192.168.0.1	224.0.0.1	IGMP V2 Membership Query	
22218 535.668946 192.168.0.20	239.255.255.250	IGMP V2 Membership Report	
22219 594.470428 192.168.0.1	224.0.0.1	IGMP V2 Membership Query	
22220 600.168973 192.168.0.20	239.255.255.250	IGMP V2 Membersh1p Report	
22221 655.260049 192.168.0.1	224.0.0.1	IGMP V2 Membersh1p Query	
22222 001.108995 192.108.0.20	239/2031233/230	1GMP V2 Membership keport	- 2
St			>
# Internet Protocol, Src: 192.168.0.2 # User Datagram Protocol, Src Port: 43 Data (1328 bytes)	(192.168.0.2), Dst: 239. 12 (4312), Dst Port: 1234	4 (1234)	
0000 01 00 5e 7f 00 01 00 09 5b 8d 9 0010 05 4c 1f 49 00 00 05 11 e0 ad co 0020 00 01 10 d8 04 d2 05 38 9a 27 80 0030 52 50 00 08 57 41 47 00 45 11 33 0040 7f ec 57 fd 52 86 55 1c 8b 29 a 0040 7f ec 57 fd 52 86 55 1c 8b 29 a	50 08 00 45 00 a8 00 02 ef ff 21 0f 2e c2 7b 25 be 02 e9 3d 50 5 f 22 44	[PE. 	
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Fig.2

Fig.2 show the output on one of the clients once the Client stops claiming Multicast membership