EasyIP Multicast and Dante configuration for Luxul AMS/XMS switches

Introduction

This step-by-step guide will walk you through setting up your Luxul switch correctly when using EasyIP Multicast and Dante available on Vaddio's EasyIP devices running firmware 2.0.0 or later.

The steps described in this guide assume the switch is in an out-of-the-box state. If you have made any changes to the multicast configuration of your switch, for example, to handle Dante multicast streaming, your setup might already match the settings described in this document.

- EasyIP video consumes considerably more bandwidth than Dante audio. Where misconfiguration using Dante audio will not immediately be obvious on your AV network performance, an error in your IGMP multicast settings is much more likely to create issues when streaming high bandwidth EasyIP Multicast video.
- If your EasyIP switch is connected to a wider corporate network, do NOT enable Multicast in your EasyIP product without consulting the IT department managing the network. A single EasyIP Camera or Transmitter (like EasyIP Tx/Rx) in Multicast mode has the power to bring down large parts of a corporate network if the network is not properly configured for IGMP multicast. Don't underestimate the Force.

Supported switches in this guide

The following products are covered in this guide:

- Vaddio EasyIP Switch
- Luxul AMS-1208P
- Luxul XMS-1208P
- Luxul AMS-1816P
- Luxul AMS-2624P
- Luxul XMS-2624P
- Luxul SW-610-24P-R
- Luxul SW-510-48P-F
- Luxul SW-610-48P-F

Steps in this guide assume the latest firmware available for these products. Please make sure your switch firmware is up to date by checking the Luxul firmware update page at https://legrandav.com/firmware/

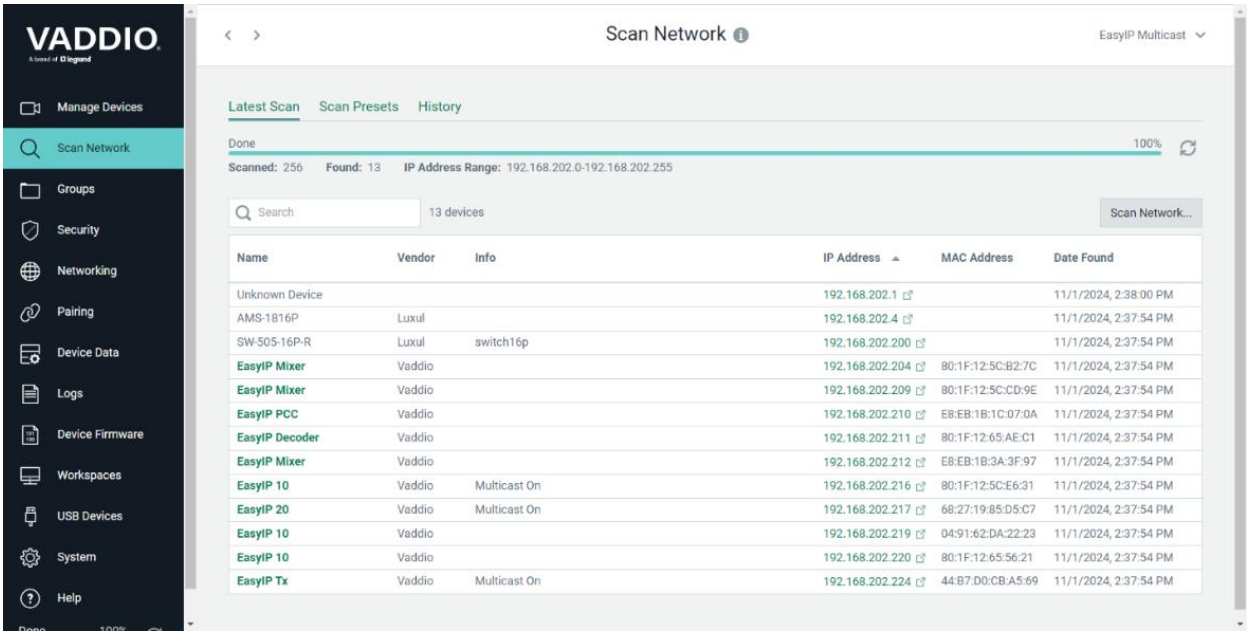
If you own a different model Luxul switch, check out the configuration documentation for the SW-505/515/615 switches in the Resources section here:
https://www.legrandav.com/resources/360_product_overviews/easyip_ecosystem

Connecting to the admin interface of your switch:

Start by logging into your network switch using a web browser with the admin credentials you have set up earlier.

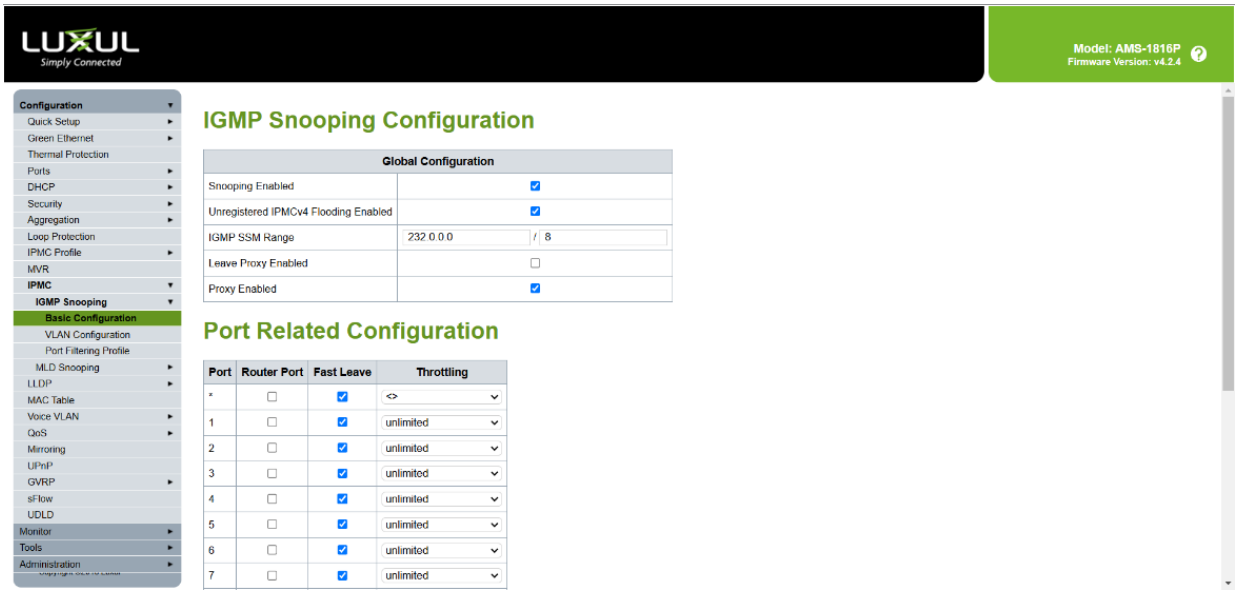
In a default setup, the IP address of the switch would be 192.168.0.4.

Alternatively, you can use the latest version of the Vaddio Deployment Tool to scan your network and discover the IP address of your Luxul switch. Click the link in the IP Address column to connect your web browser to the admin interface of your Luxul switch:



Step-by-Step instructions for enabling IGMP Multicast:

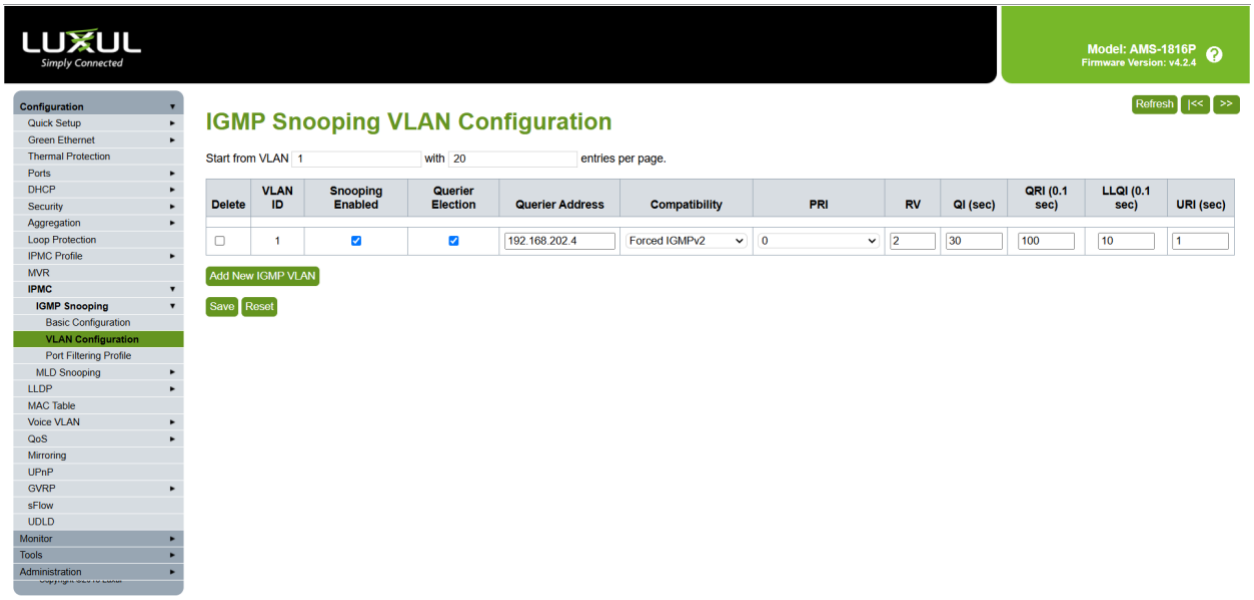
Navigate using the menu on the left to **Configuration → IPMC → IGMP Snooping → Basic Configuration**



Enable the option **Snooping Enabled** in the Global Configuration section. Verify that other settings in this window reflects the setup on your switch.

Scroll down and select **Apply** to save your changes.

Navigate using the menu on the left to **Configuration → IPMC → IGMP Snooping → VLAN Configuration**

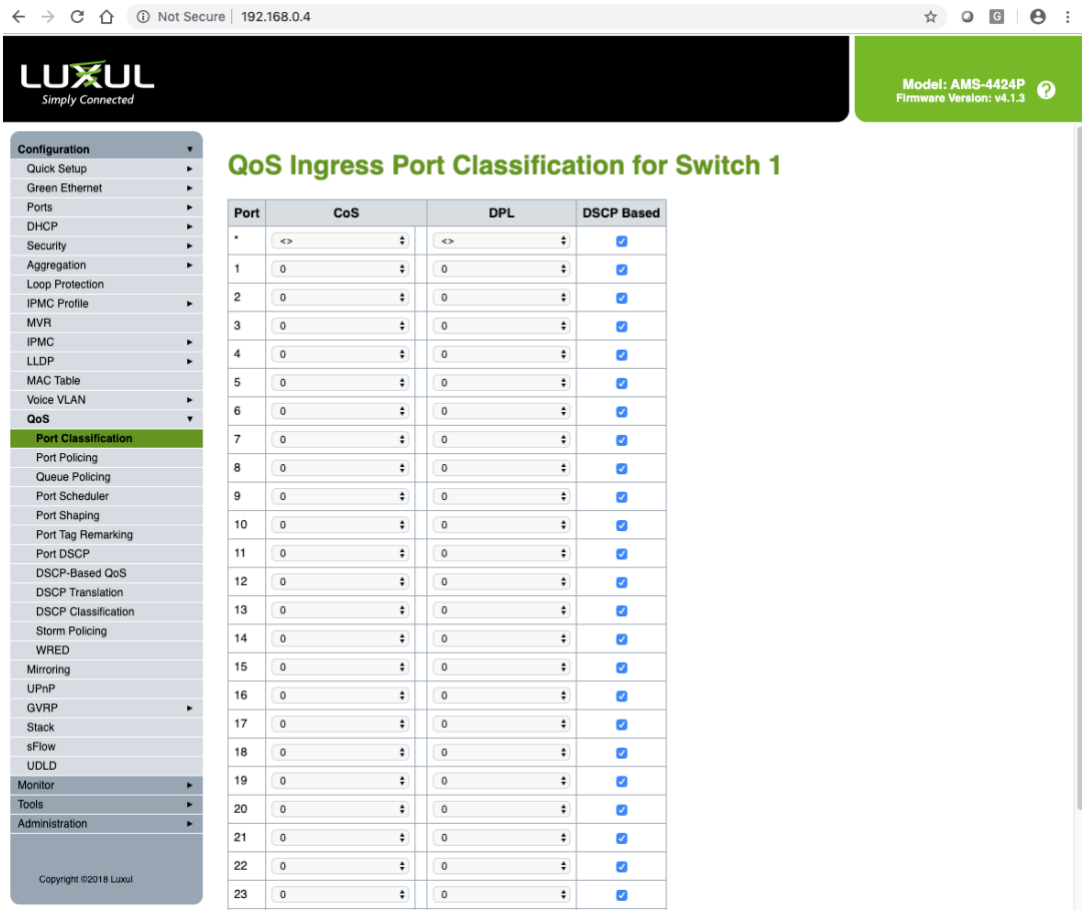


Make these adjustments:

- Enable **Querier Election**
- In the **Querier Address** field either keep the default 0.0.0.0 address for auto-configuration or change it to the fixed IP address of your switch. If your setup has multiple connected switches, define one as the Querier for your network and use its IP address in all switches in your network.
- Select **Compatibility**: Forced IGMPv2
- Change **QI (sec)** to: 30
- Confirm your changes by selecting **Save**

Your almost done, just a few more settings for Dante operation

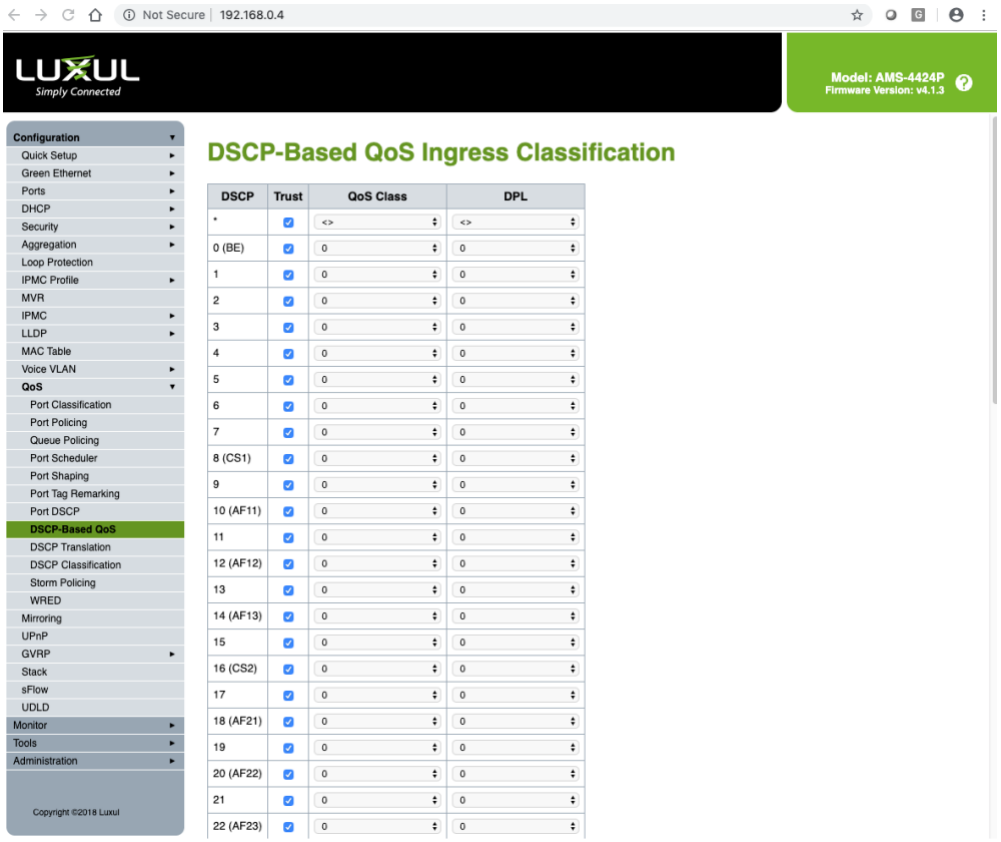
Navigate to **Configuration → QoS → Port Classification**



Select **DSCP** Based option for all ports.
Clicking the top row with the *** globally selects all ports**.

Scroll down and select **Apply** to save your changes.

In the same QoS menu section, navigate to **DSCP-Based QoS**



Select **Trust** for all DSCP classes. It is also acceptable to select Trust only on the classes that are required for Dante.

Set Class 0 to priority 0
Set Class 8 to priority 5
Set Class 46 to priority 6
Set Class 56 to priority 7

Scroll down and select **Apply** to save your changes.

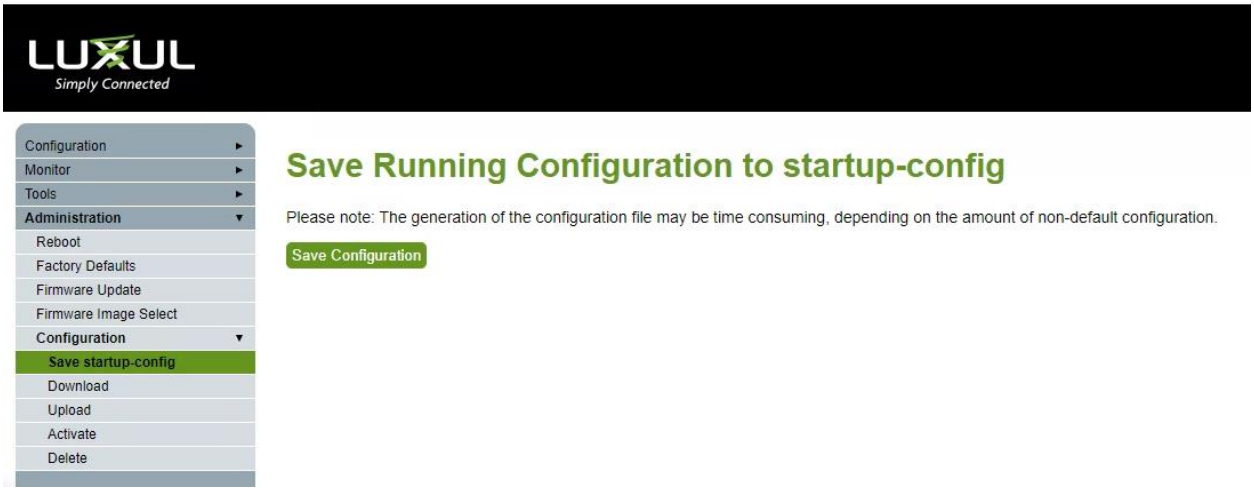
Priority	Usage	DSCP Label	Hex	Decimal	Binary
High	Time critical PTP events	CS7	0x38	56	111000
Medium	Audio, PTP	EF	0x2E	46	101110
Low	(reserved)	CS1	0x08	8	001000
None	Other traffic	BestEffort	0x00	0	000000

Class info can be found at https://www.audinate.com/faq/how-does-dante-use-dscp-diffserv-priority-values-when-configuring-qos

This completes your switch configuration for EasyIP Multicast. You can now enable EasyIP Multicast on your Vaddio EasyIP device.

Test your setup to see if it behaves as expected. When everything is in working order, don't forget to save the configuration to the startup-config:

Navigate using the menu on the left to **Administration → Configuration → Save startup-config:**



Select **Save Configuration**, so that after a restart of the switch, the settings are remembered. If you skip this step all changes will be lost upon a reboot of the switch!

On the following pages we show a few ways you can verify if IGMP multicast is working correctly.

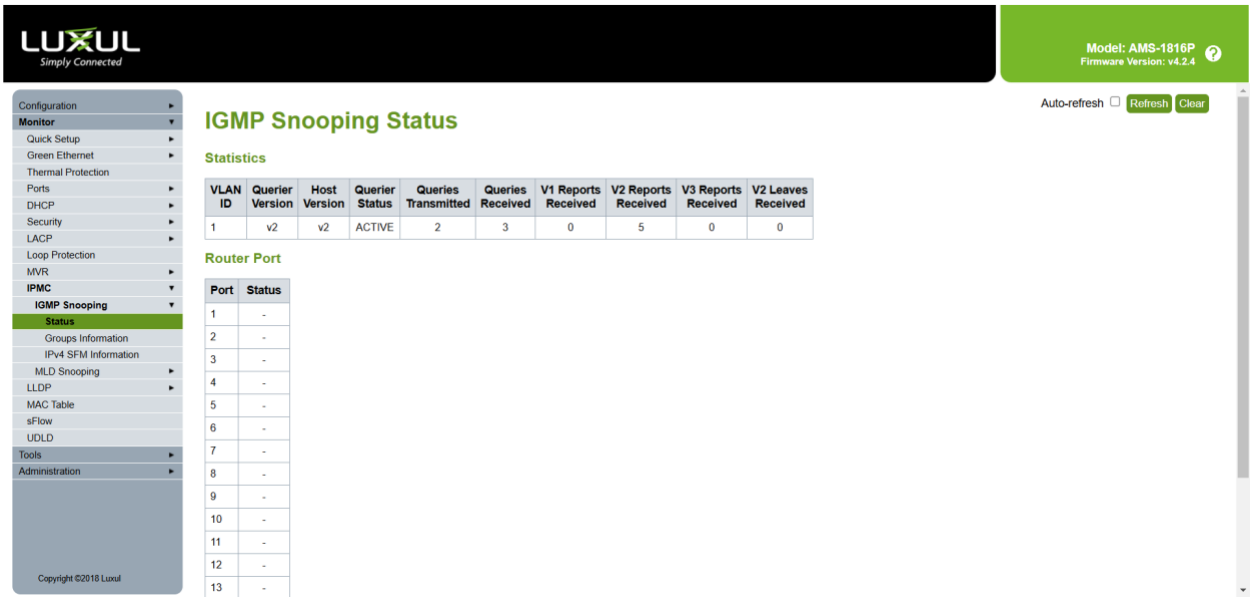
Verify your IGMP Multicast setup: IGMP Snooping Status

Apart from monitoring the video output on your EasyIP receiver, there are also tools available in the Luxul switches to verify if IGMP multicast on your switch is working correctly.

Navigate using the menu on the left to **Monitor → IPMC → IGMP Snooping → Status**

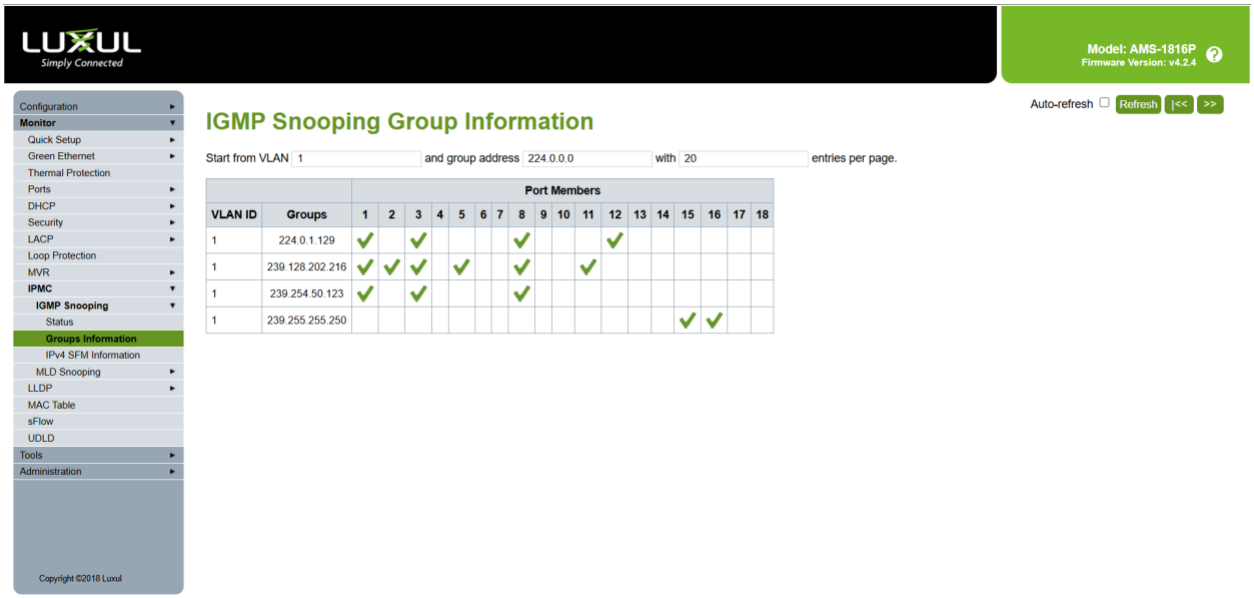
Verify that the **Querier Status** is **ACTIVE**, and (when you have connected your EasyIP Multicast devices) that the **Queries Transmitted** and **Received** increase over the space of a few minutes by refreshing this page.

This indicates that the IGMP Querier is successfully communicating with devices on the network.



Verify your IGMP Multicast setup: IGMP Snooping Group Information

Navigate using the menu on the left to **Monitor → IPMC → IGMP Snooping → Groups Information:**



In the **IGMP Snooping Group Information** table the switch lists all IGMP multicasts groups it is managing, and which switch ports are active members of those groups.

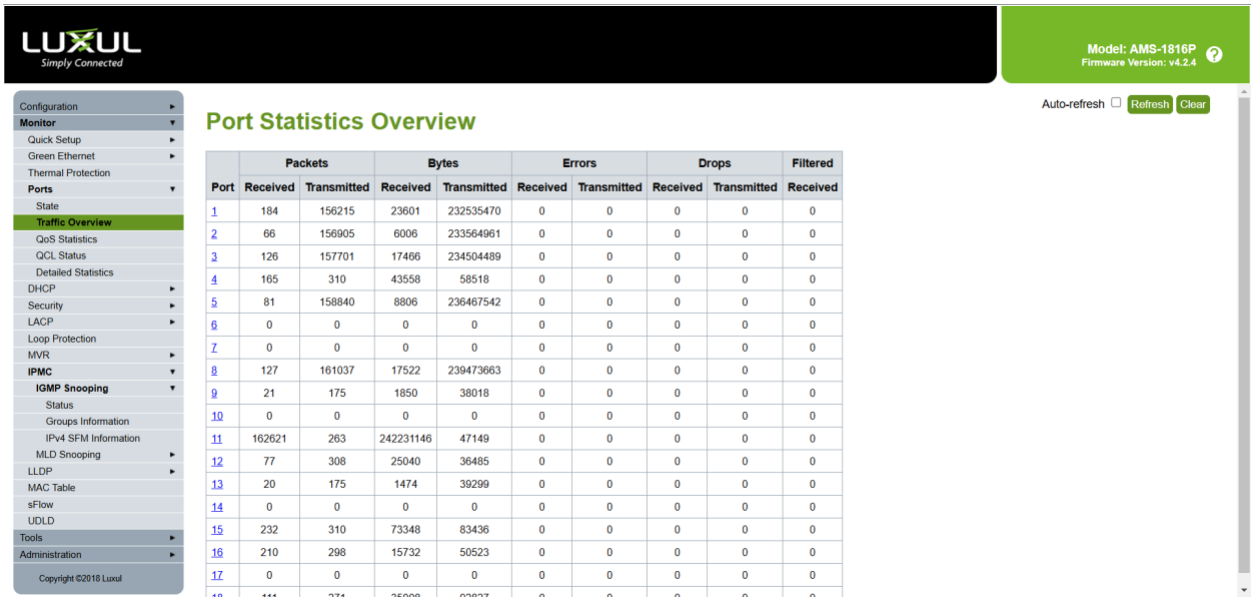
EasyIP Multicast groups show up in this overview with the last two digits of the IP address of the EasyIP transmitter. In the example above, the IP address of the EasyIP 20 Camera is 192.168.*202.216*. The entry 239.128.*202.216* shows all ports that are members of this camera's multicast group.

In the example above an EasyIP 20 Camera is connected to port 11, and there are 5 receivers actively receiving the multicast stream on ports 1, 2, 3, 5 and 8.

If you enable Auto-refresh in the top right corner, and switch one of the EasyIP receivers to another input (therefore stopping the multicast stream to that port), its corresponding checkmark in the Group Information table will also disappear.

Verify your IGMP Multicast setup: Port Statistics

Navigate using the menu on the left to **Monitor → Ports → Traffic Overview:**



	Packets		Bytes		Errors		Drops		Filtered
Port	Received	Transmitted	Received	Transmitted	Received	Transmitted	Received	Transmitted	Received
1	184	156215	23601	232535470	0	0	0	0	0
2	66	156905	6006	233564961	0	0	0	0	0
3	126	157701	17466	234504489	0	0	0	0	0
4	165	310	43558	58518	0	0	0	0	0
5	81	158840	8806	236467542	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0
8	127	161037	17522	239473663	0	0	0	0	0
9	21	175	1850	38018	0	0	0	0	0
10	0	0	0	0	0	0	0	0	0
11	162621	263	242231146	47149	0	0	0	0	0
12	77	308	25040	36485	0	0	0	0	0
13	20	175	1474	39299	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0
15	232	310	73348	83436	0	0	0	0	0
16	210	298	15732	50523	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0

This page shows all data that flows through the switch over a period of time.

Like on the previous page, the example above shows an EasyIP 20 Camera connected to port 11, and there are 5 receivers actively receiving the multicast stream on ports 1, 2, 3, 5 and 8.

- When interpreting the data the switch reports, realize that it takes the switch over a second to collect all ports' information in this table, one row at a time. An EasyIP transmitter is sending data at roughly 130Mbit/s (16.2 million bytes/second). Because of polling time difference, looking at the Bytes Transmitted column, you can notice a difference between each receiving port of about 1 million bytes. This is normal and not a sign your switch is leaking bytes.

To generate the data to analyze, click **Clear** in the top right corner, wait approximately 15 seconds and click **Refresh**. This snapshot of data gives you detailed information on the traffic flowing through your switch during these 15 seconds.

When inspecting the table above, you can notice that the EasyIP 20 Camera on port 11 has sent roughly the same amount of data to the switch (in the column **Bytes Received** by the switch) as the amount of data which is being sent to all active receivers on ports 1, 2, 3, 5 and 8 (in the column **Bytes Transmitted** from the switch). The other devices on the network have received a substantially lower amount of data over the same period.

This indicates that IGMP is working correctly by only sending the stream data to the ports on the switch that subscribe to receive the data. If IGMP would not work correctly, the multicast stream would be sent as a broadcast stream to all ports on the switch, and all ports' Bytes Transmitted counter would show similar amounts of data being transmitted.

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