Network Switch Set-up Guides

Ubiquiti

EdgeSwitch Series

when used in a 1Gb Blustream Multicast system, in a single switch configuration system
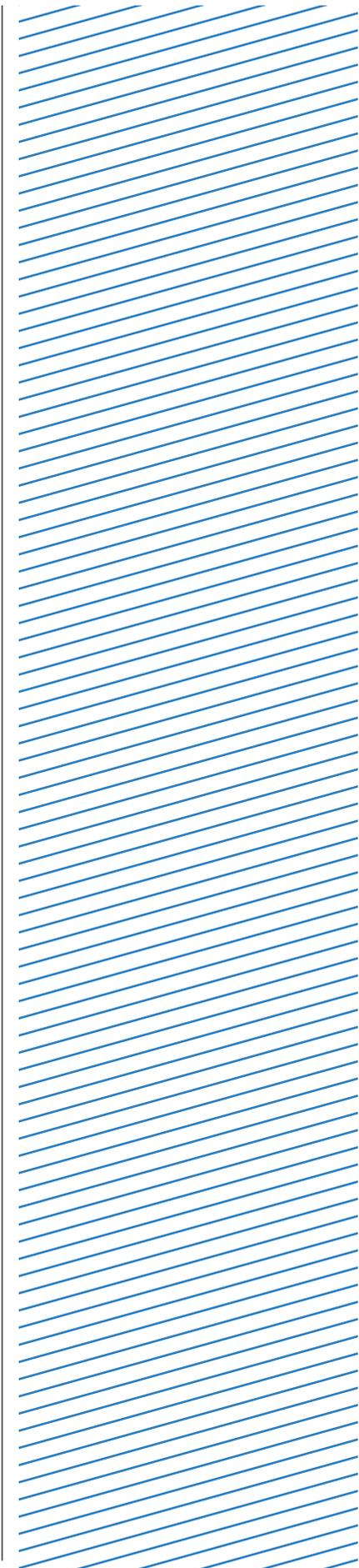
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Introduction

The 1Gb Blustream Multicast solutions require a 1Gb managed network switch in order for HDMI distribution to be achieved reliably, and without any loss of performance.

The following guide is a step-by-step instruction on how to connect and configure your network switch to support 1Gb Blustream Multicast products.

Please ensure each step is followed and checked at each stage. Before exiting the set-up, it is advisable to reboot the switch, log-in, and double check all settings.

Switch Requirements

The following features need to be enabled on the network switch being used for a Blustream Multicast system:

1. Multicast
2. Jumbo Frames / Jumbo Packets / MTU
3. IGMP Management / Snooping
4. PoE (where being utilised)

Feature explanation:

- **Multicast** (one-to-many or many-to-many distribution) is a group communication where information is addressed to a group of network devices simultaneously (Blustream Multicast products).

- **Jumbo Frames / Jumbo Packets / MTU** are Ethernet frames with more than 1,500 bytes of payload. Conventionally, jumbo frames can carry up to 9,216 bytes of payload and must be activated in order to send large packets of data for HDMI distribution. Without this enabled, the ability for the IP***UHD-TX units to transmit the HDMI data will not be achievable.

- **IGMP Management & IGMP Snooping** is the process of listening to Internet Group Management Protocol (IGMP) network traffic. The feature allows a network switch to listen in on the IGMP conversation between hosts, routers & receivers (IP***UHD Transmitters, the network switch, and IP***UHD Receivers). By listening to this flow of traffic the switch maintains a map of which links need which IP multicast streams i.e. which Blustream Multicast products are active and where the signal is being distributed to.

- **PoE** (Power over Ethernet) the Blustream IP***UHD and ACM devices are all capable of being powered by PoE. Power Supply Units are available for Blustream IP***UHD and ACM devices, however, the products are not sold with these included. PoE can be disbaled on the switch if external PSU's are being used.

Network Topology for Multicast

Our recommendation for the set-up of a Blustream Multicast system would be to have the customers business, or home network be kept independent of the Blustream Multicast video distribution network. This negates the possibility of data flowing through one network reducing the performance of the other and vice-versa. The Blustream Control Module will act as a "bridge" between the two networks allowing for control data to be seamlessly transmitted between the two networks.

Where the the business / home network and Multicast network are sharing a switch/es (not recommended). We would suggest creating a separate VLAN for the Multicast network, ensuring there is a minimum 1Gb of bandwidth allocated to the VLAN. A networking professional should be consulted when designing this type of system to ensure the networks can co-exist on the same infrastructure.

Connecting to the switch Web GUI Interface

To login into the Ubiquiti network switch the factory default details are:

IP Address: 192.168.1.2

User Name: ubnt

Password: ubnt

In order to connect to the network switch your computer will need to be physically connected to the Ubiquiti switch using a CAT network cable. The computer must also be in the same IP range as the Ubiquiti switch's default IP address. If you are unsure how to update your computer IP range follow the 'Changing your computer IP address' instructions at the rear of this guide.

1)   Open your internet browser (Google Chrome, Safari, Mozilla, Internet Explorer etc)

2)   Type the network switch default IP address into the web browser bar

3)   Enter the default user name and password

4)   TIck the box to agree to the terms of the License Agreement

5)   Click 'Log In'

Note: If the switch is not using the factory default settings you will need to know these login details or have to factory reset the unit. For details how to factory reset the network switch please refer to the switch user manual.
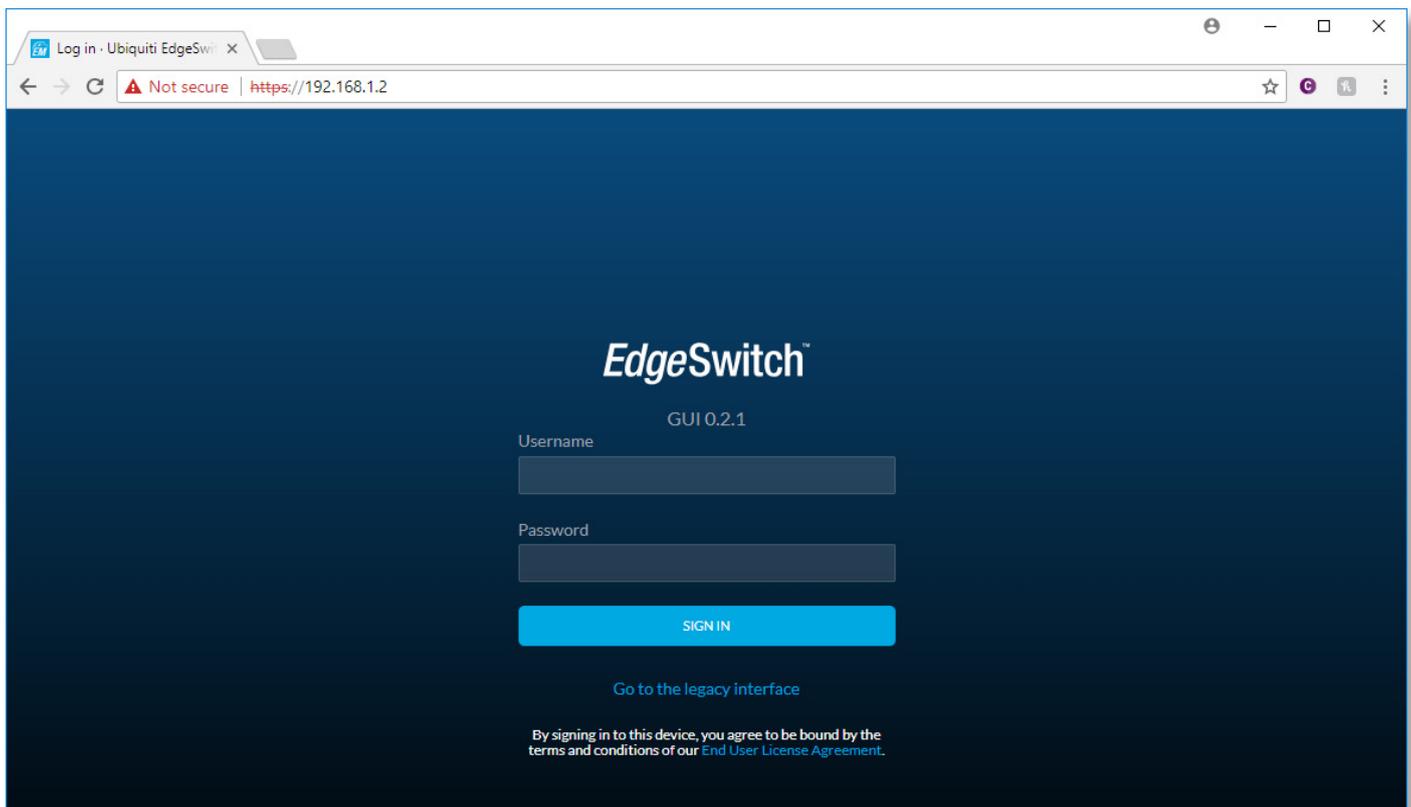
Firmware upgrading the Ubiquiti switch

Once you are logged into the EdgeSwitch, please upgrade the firmware tof the switch o the most recent release which is available on the Ubiquiti website. The firmware file and instructions of how to perform a firmware upgrade can be found at the below address:

> https://www.ubnt.com/download/edgemax/edgeswitch

Once you have upgraded the firmware version to the latest release, and reset the switch, double check your upgrade has been successful by viewing the switch Dashboard - the field marked 'Software Version' in the 'Device Information' section will confirm the firmware version your switch is now running.

Layer 3 Mode

Ubiquiti EdgeSwitches have Layer 3 mode enabled automatically on all firmware updated switches from August 2016 onwards.

If your EdgeSwitch has not been firmware upgraded, Layer 2 mode will be enabled as standard, this will not allow for Blustream Multicast products to be connected and HDMI signals distributed.

Legacy Interface

With firmware version 1.7.4 and above, Ubiquiti has introduced a new interface. Not all settings are accessible via the new interface. Ensure you are using the Legacy Interface by select it from the user drop down in the top right corner of the page.

Jumbo Frames

To enable Jumbo Frames:

Go to the 'Port Summary' tab within the 'Basic' menu structure
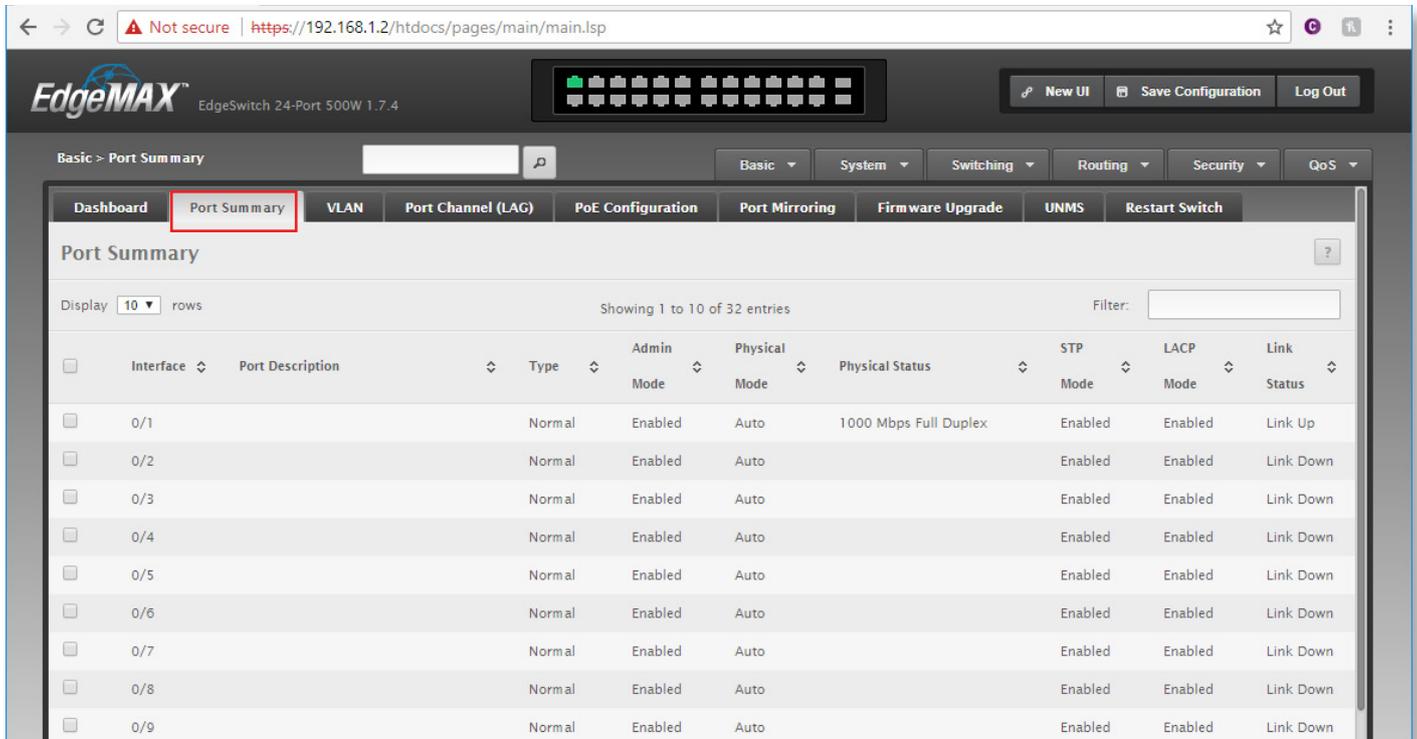
Select all ports on the switch by checking the box adjacent to the 'Interface' header
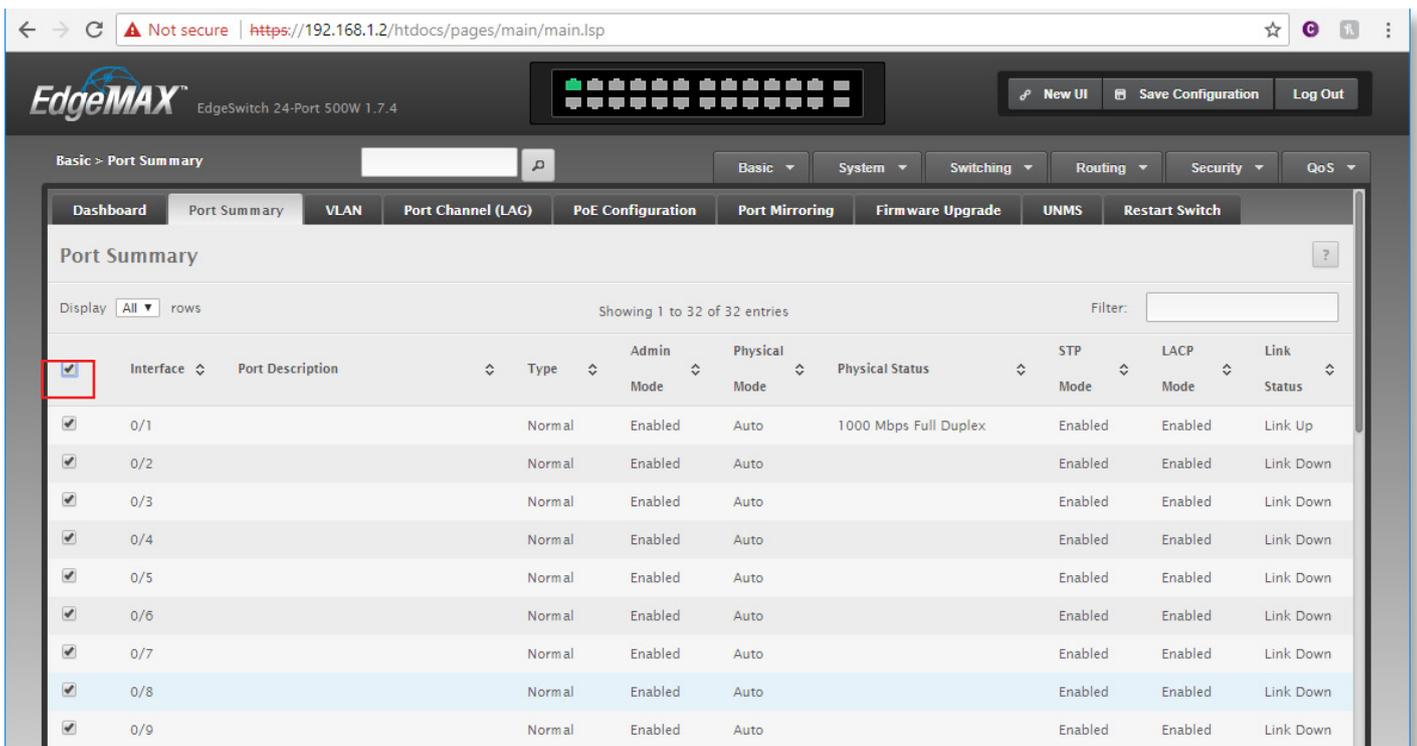
Once all ports have been selected, click the 'Edit'button at the bottom of the screen
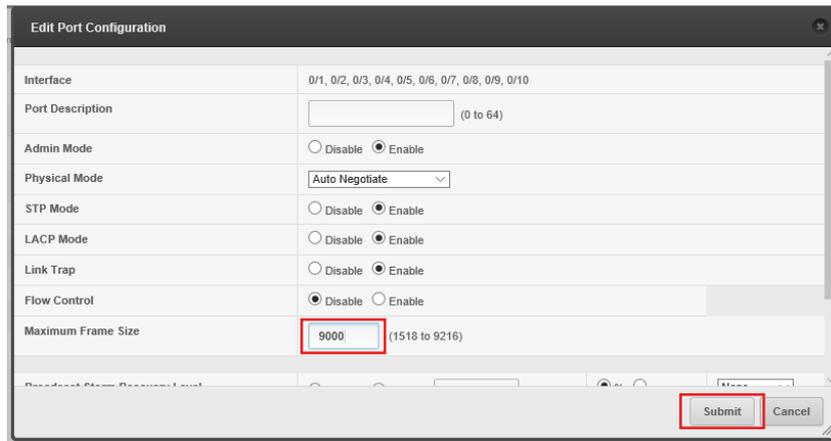
To allow for large packet data to be transferred, amend the 'Maximum Frame Size' field to a value of 9000.

Having Layer 3 activated on your switch will allow this value to be increased as far as 9000. If you cannot exceed a value of aproximately 1500 in this field, then Layer 3 is not activated. Please refer to Page 5 of this manual and firmware update the switch.

Click 'Submit' at the bottom of the window.
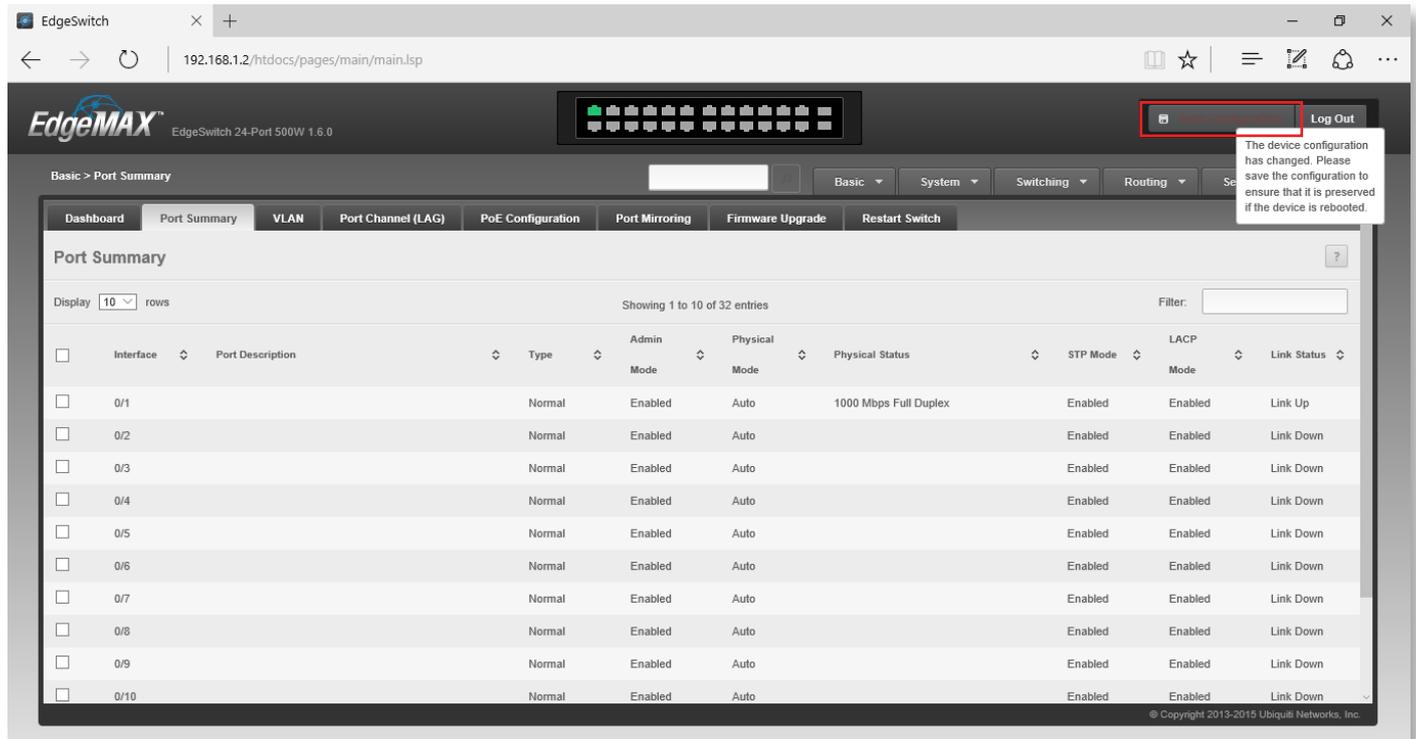
To save this configuration, click the button in the top right hand corner of the page marked 'Save Configuration'which will be flashing in red.

IGMP Snooping

In the 'Switching' tab, hover over 'IGMP Snooping', then select 'Configuration' from the side menu that will appear.
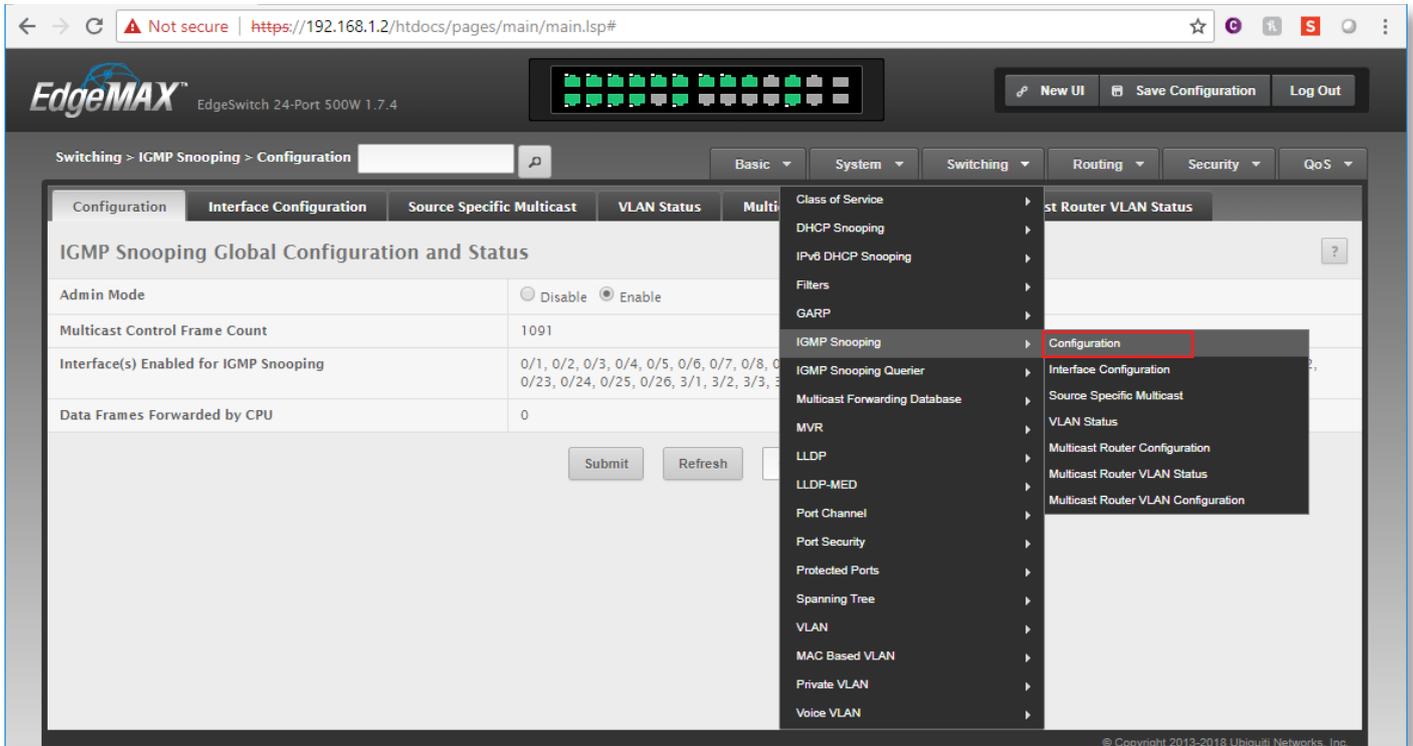

Enable both 'Admin Mode'

Click 'Submit' to confirm your changes.

Click 'Save Configuration' which will be flashing in red in the top right-hand corner of the screen. A confirmation window will appear.
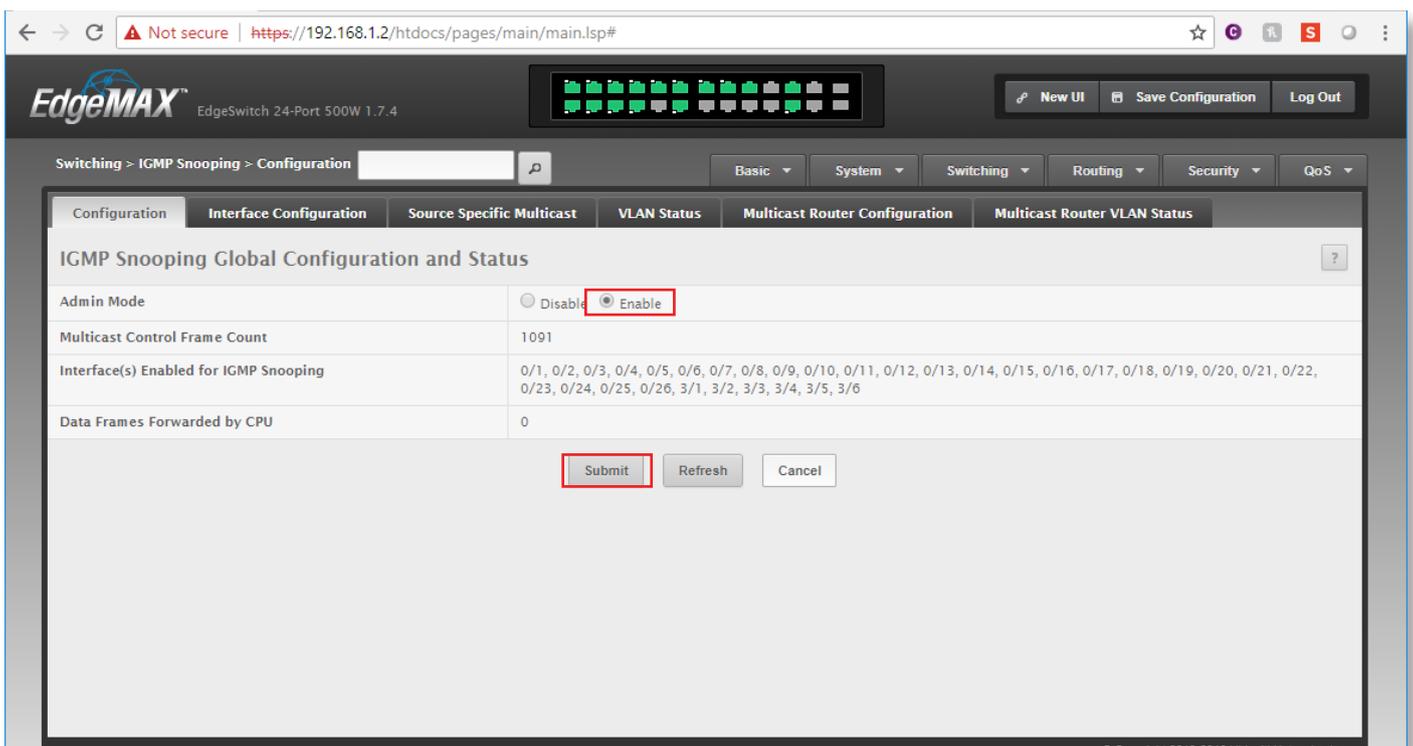
IGMP Snooping

In the 'Switching' tab, hover over 'IGMP Snooping', then select 'Interface Configuration' from the side menu that will appear.
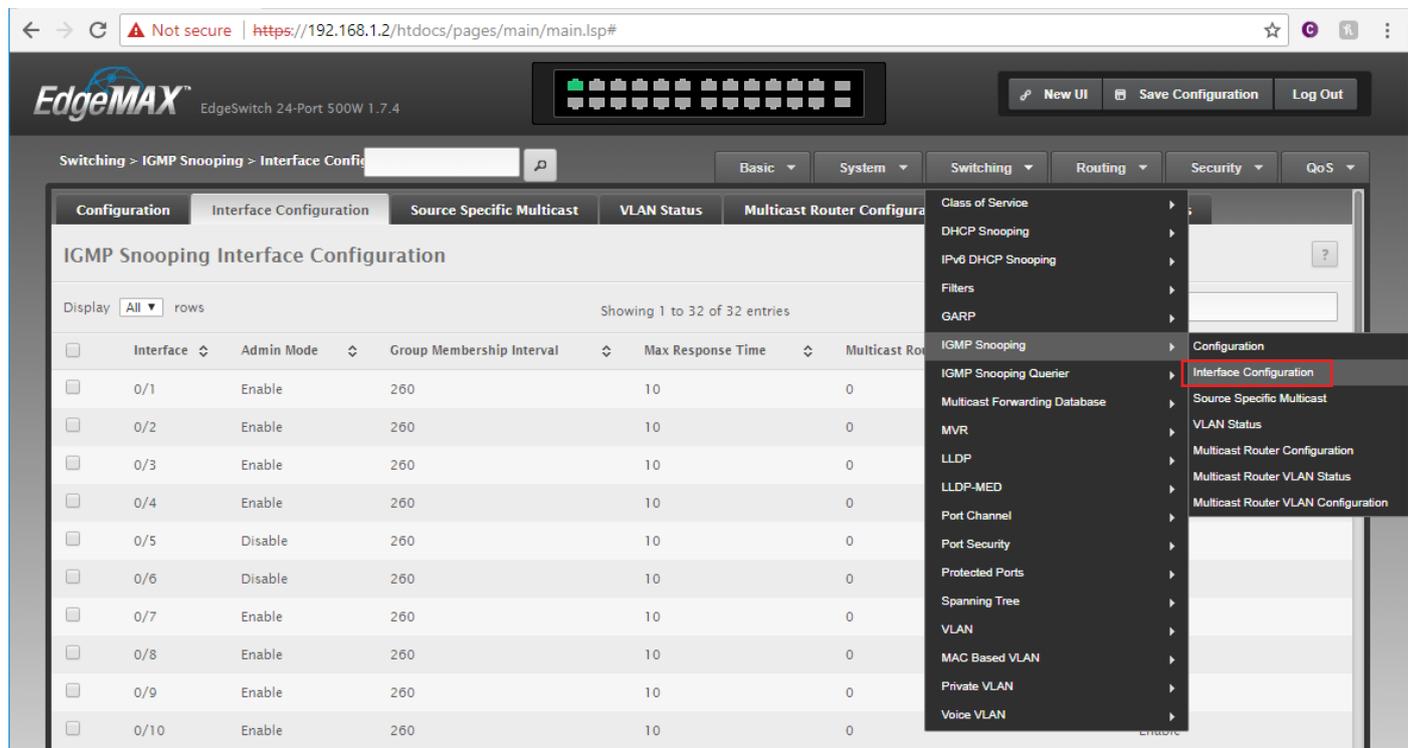
Select the ports you wish to activate IGMP Snooping on using the check boxes on the left.
NOTE - Do not activate IGMP Snooping on the port that the Blustream CM100 is connected to.

Scroll to the bottom of the page and click 'Edit'.
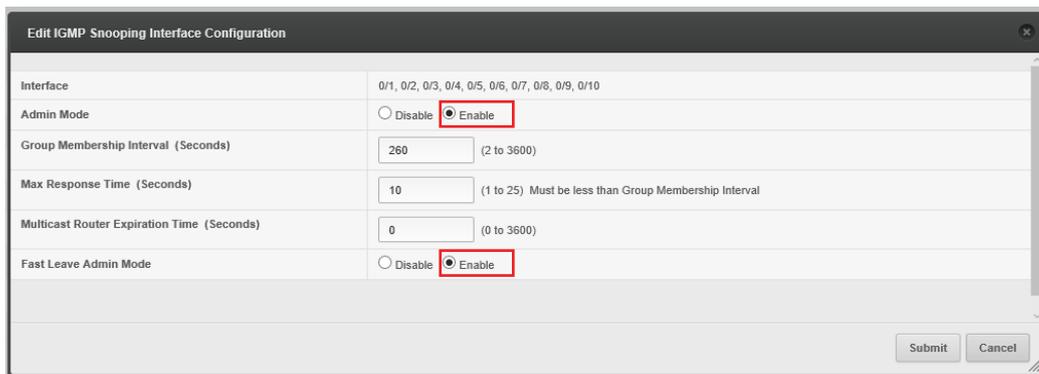
Enable both 'Admin Mode' and 'Fast Leave Admin Mode'

Click 'Submit' to confirm your changes.

Click 'Save Configuration' which will be flashing in red in the top right-hand corner of the screen. A confirmation window will appear.

IGMP Querier

Select the tab marked 'VLAN Status' within the IGMP Snooping menu.

If you do not already have a VLAN present, click 'Add'
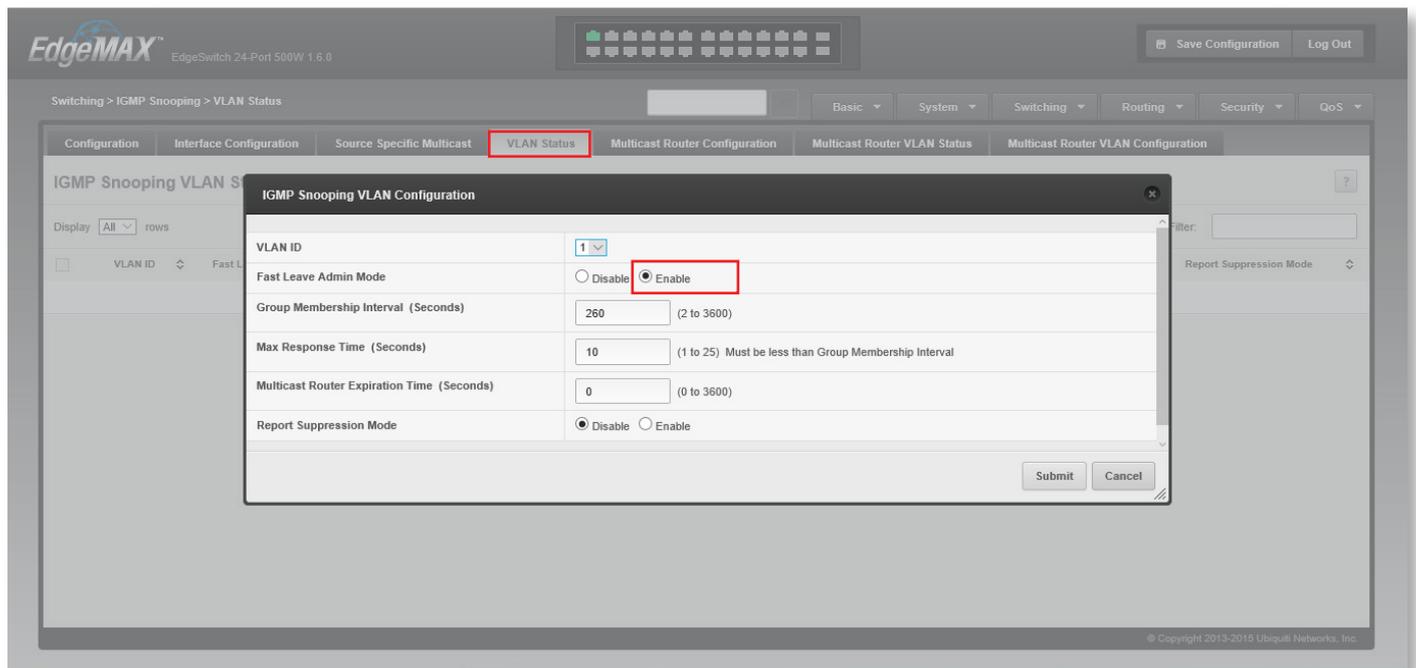
Enable 'Fast Leave Admin Mode' and click 'Submit'.

You will now have a VLAN set-up on the switch. Click the 'Save Configuration' button in the top right hand corner of the screen, then 'OK'.

You must turn on IGMP Snooping Querier on the switch to perform IGMP Snooping functions on the Vlan.

To activate IGMP Snooping Querier navigate to the 'Switching' tab, select 'IGMP Snooping Querier' and 'Configuration'
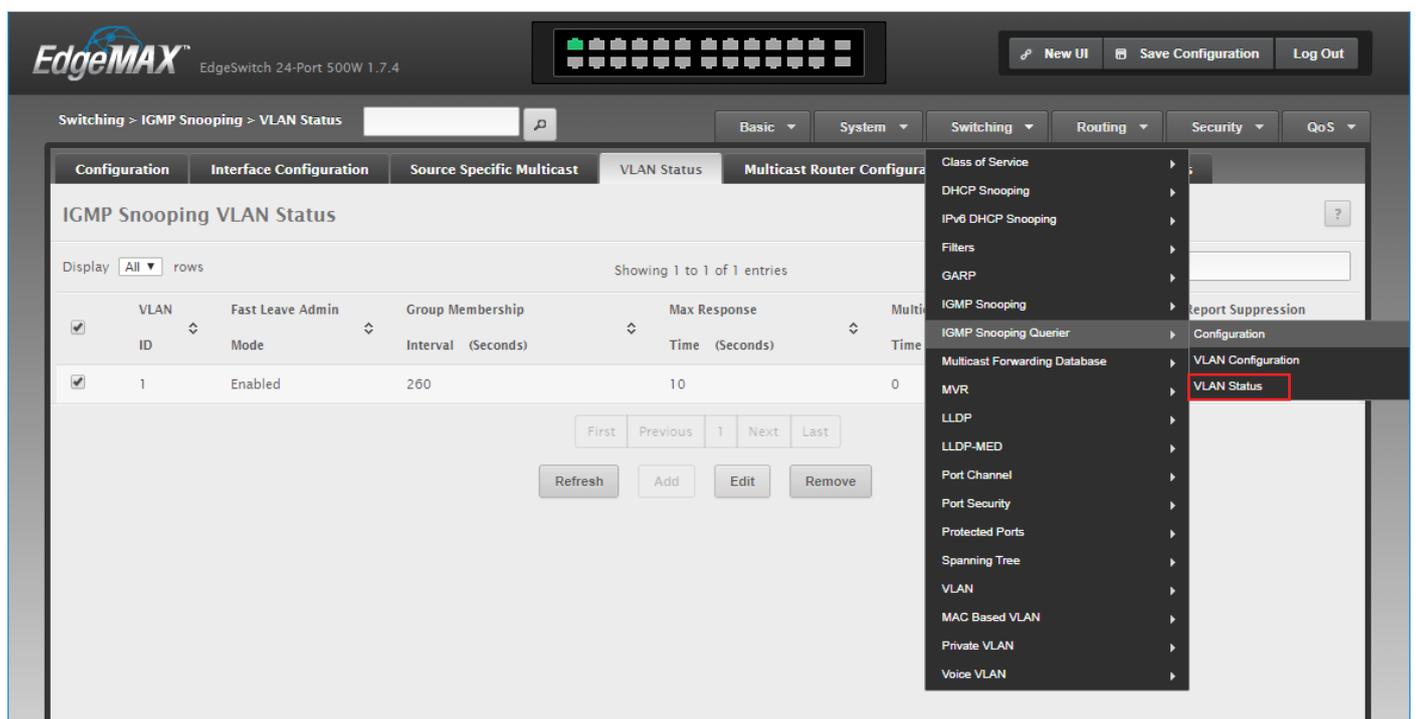
IGMP Querier

Under 'Configuration' enable 'Admin Mode' and 'IGMP v2' and click 'Submit'
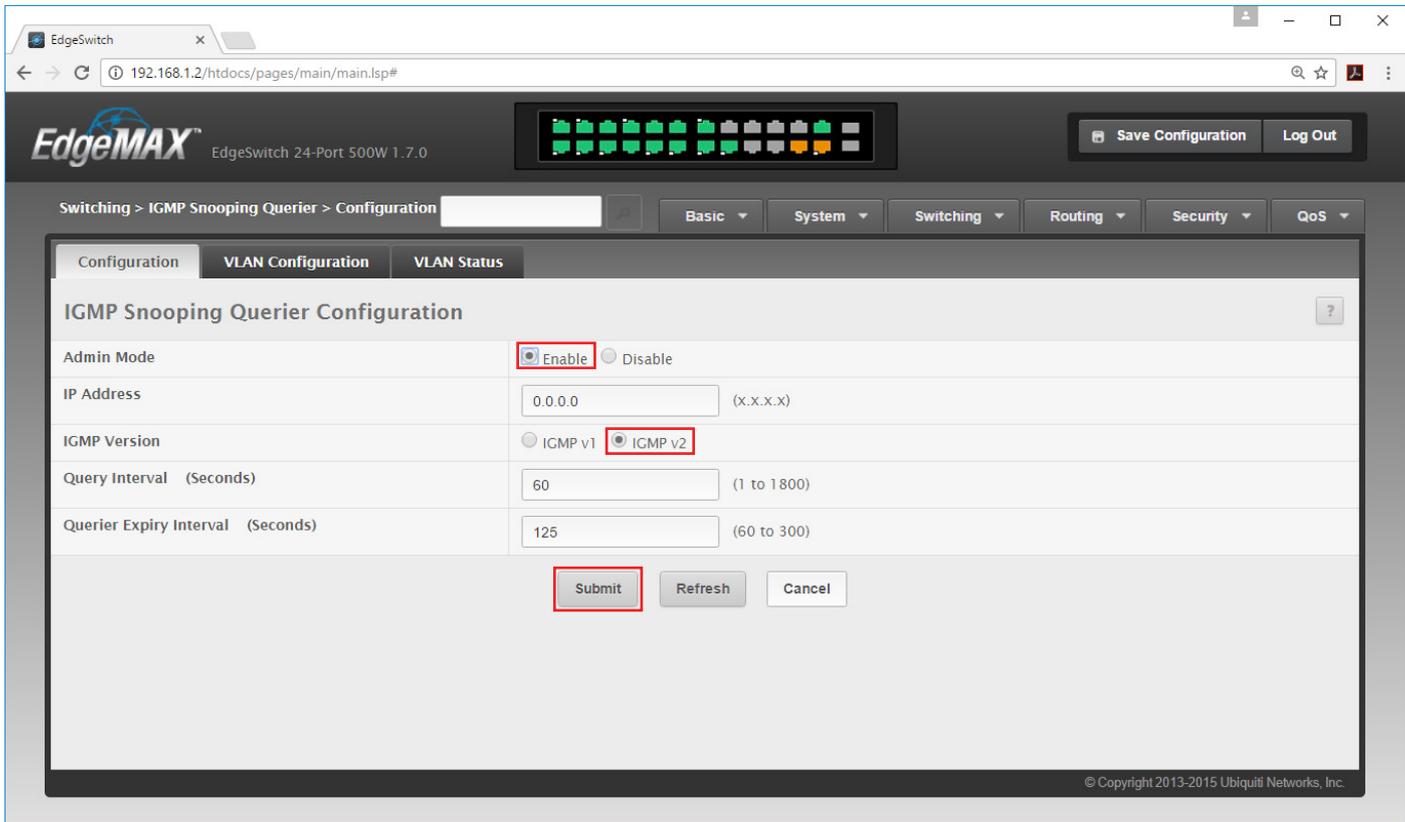
Select the 'VLAN Configuration' tab. You must create a new VLAN by selecting 'Add'
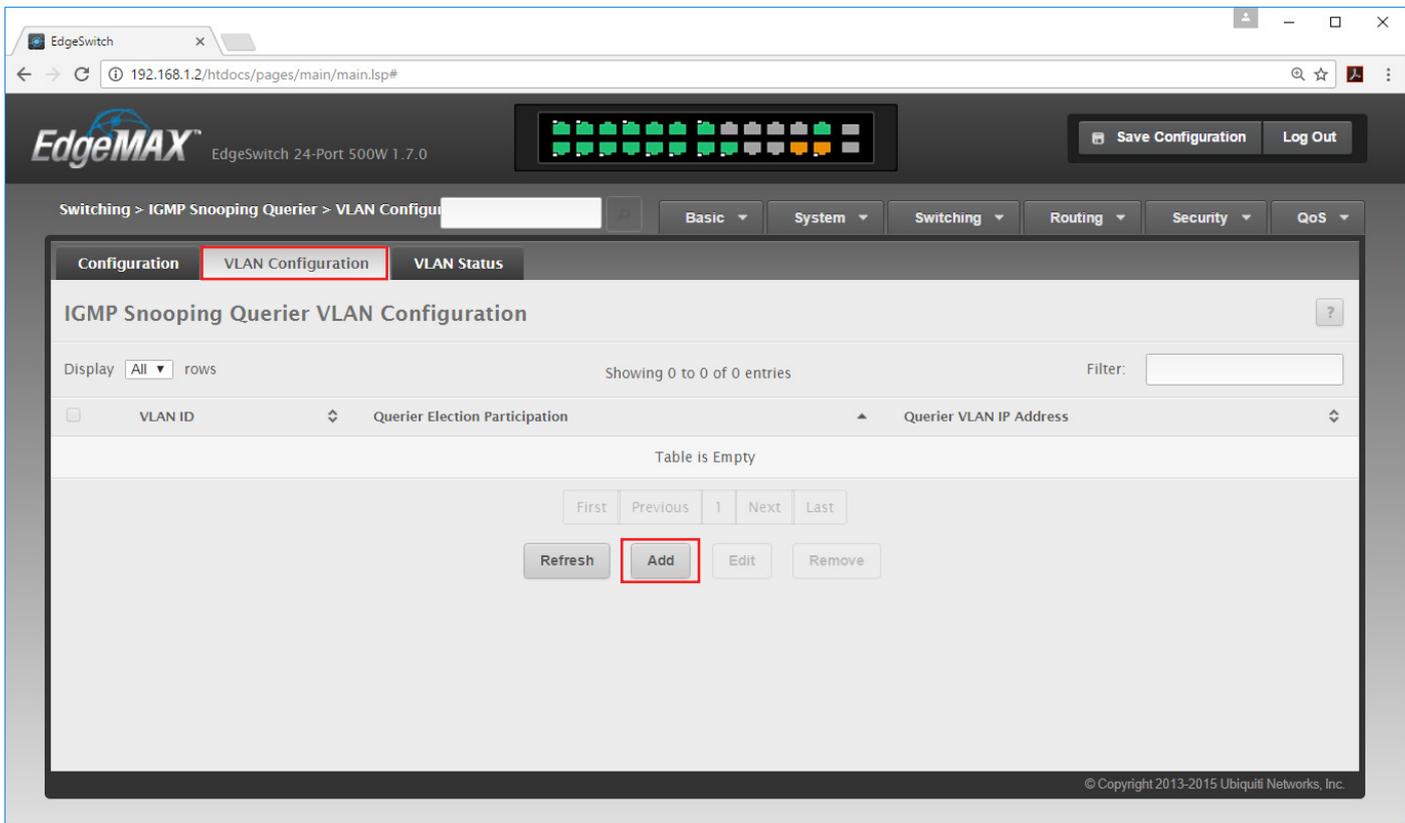
IGMP Querier (Continued)

Select your VLAN ID, by default this will be VLAN 1.

Enable 'Querier Election Participation' and click 'Submit'.
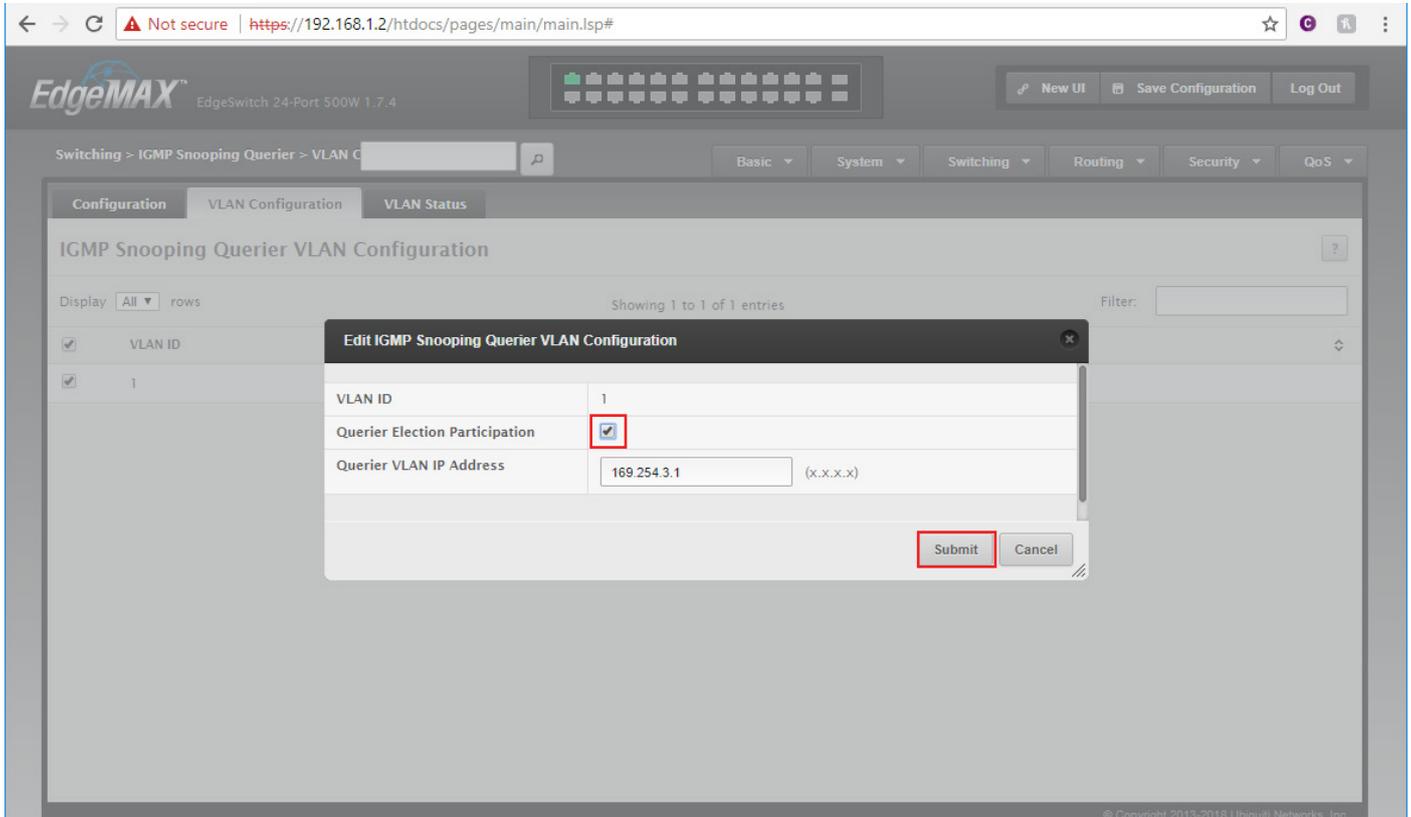
Once configured you will see your new IGMP Snooping Querier VLAN configuration
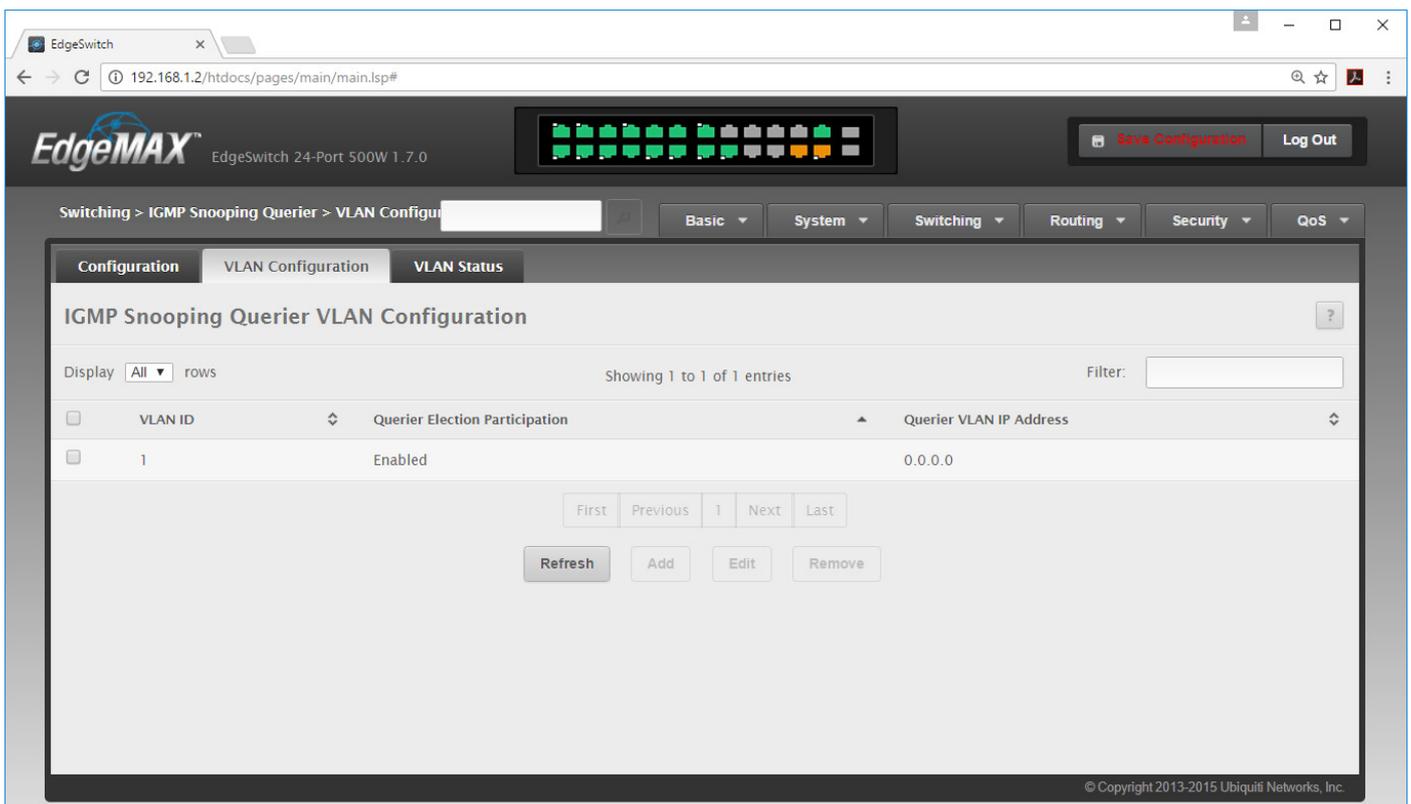
Turning On/Off POE

Not all Ubiquiti switches support POE. If you are unsure if the switch you have has PoE enabled, follow the instructions below to turn this feature on.

Under the 'Basic' menu

Select 'PoE Configuration'
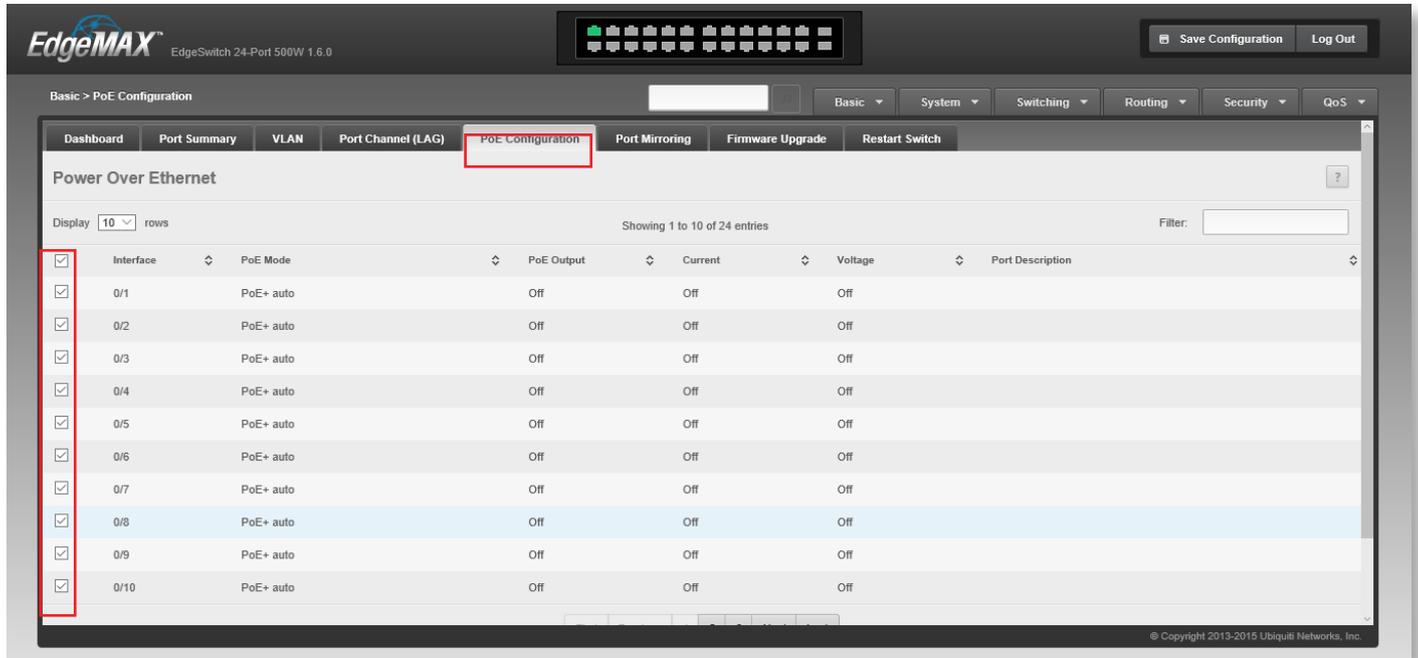
Select all ports by checking the box adjacent to the 'Interface' header.

Scroll to the bottom of the page and select 'Edit'

Ensure that 'PoE + Auto' is selected from the drop down menu.

Click 'Submit'.

Click 'Save Configuration' which will be flashing in red in the top right-hand corner of the screen.

Check this has been activated by plugging in a Blustream Mulitcast product to one of the avaialble ports on the switch. The power LED on the unit will start to blink which confirms that the PoE is active on the switch.

Apply and Save settings

Throughout the process of setting up the Ubiquiti network switch, it is imperative that the settings are saved at each interval of the process.

Blustream cannot guarantee that by not saving a setting before moving onto the next step will not revert the switch's settings back to default if not saved.

Amending your IP Address in Windows

1. Connect the computer to the network switch using an Ethernet cable
2. Navigate to: **CONTROL PANEL / NETWORK & INTERNET / NETWORK CONNECTIONS**
3. Double click on the Ethernet conneciton as highlighted below:
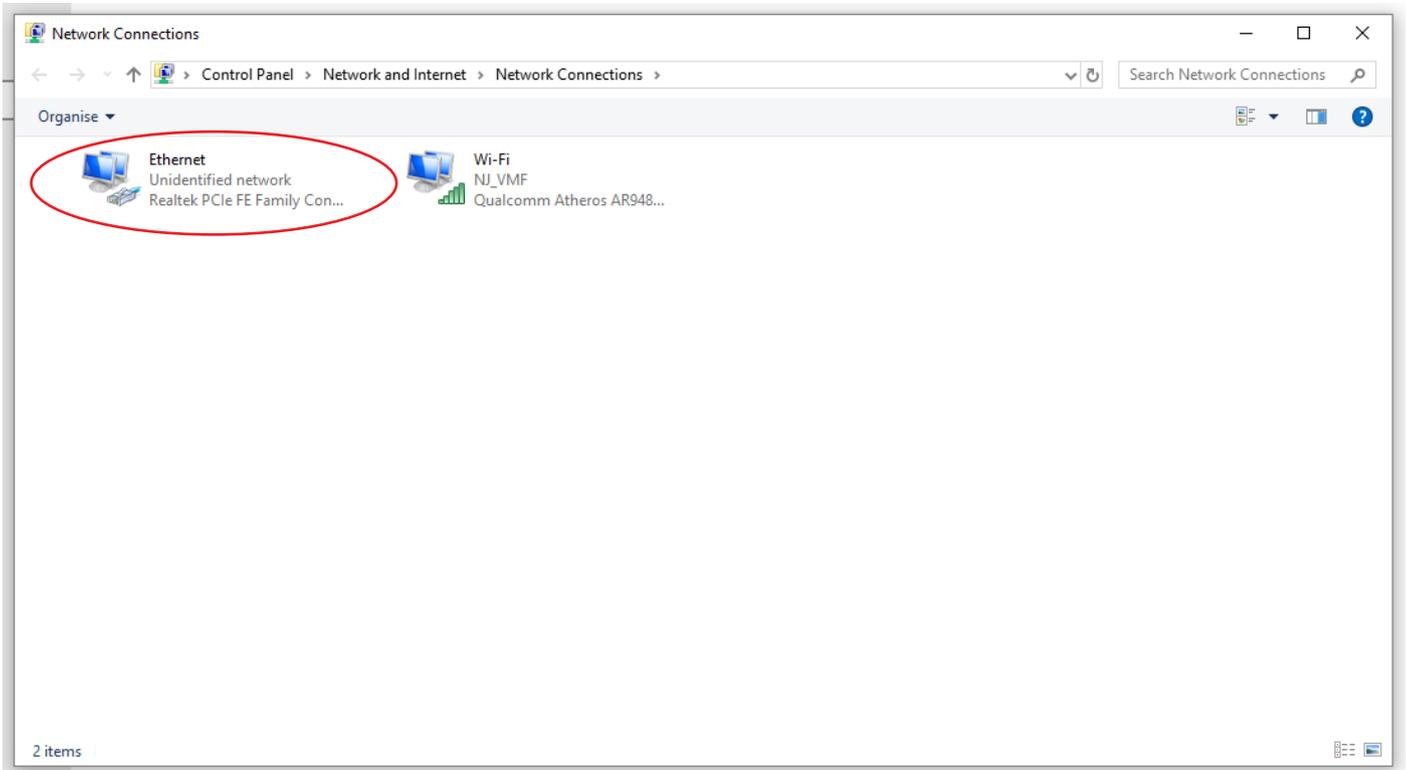
4. In the pop-up window that appears, click on: **PROPERTIES**
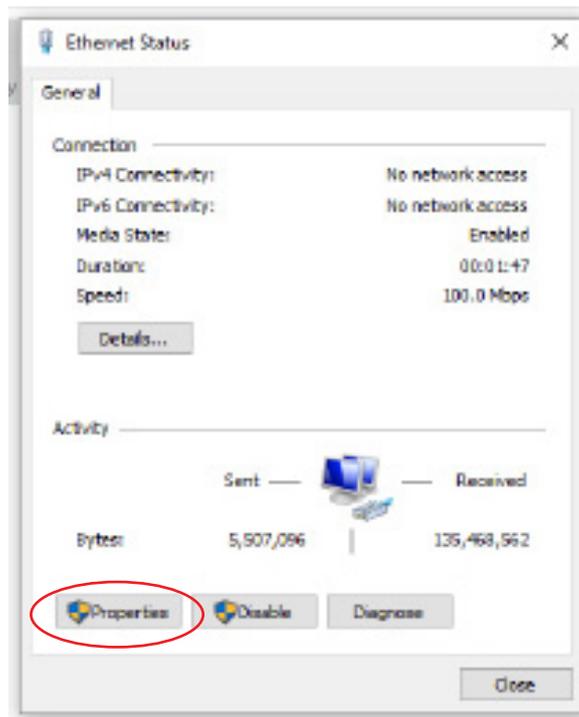
5. In the pop-up window that appears, double-click on: **INTERNET PROTOCOL VERSION 4 (TCP/IPv4)**
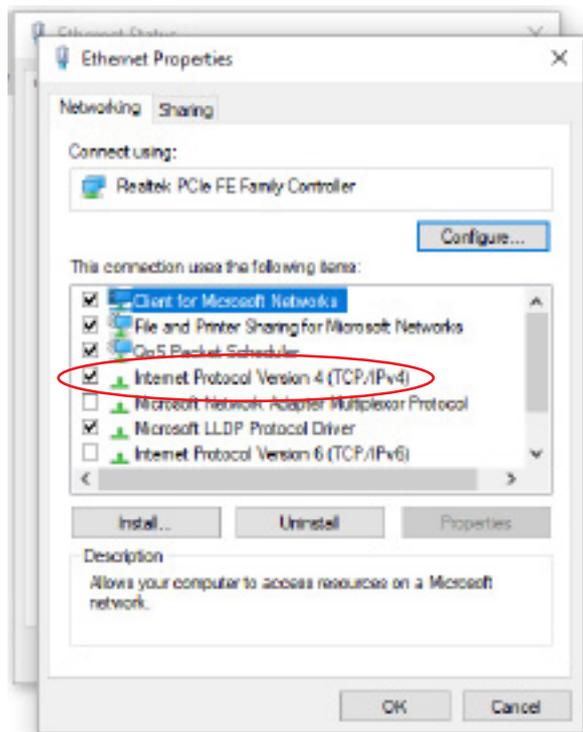

5. In the pop-up window that appears, double-click on the button marked: **USE THE FOLLOWING IP ADDRESS**

6. Enter the details as below:

      IP Address: **192.168.1.1**

      Subnet mask: **255.255.255.0**

   Default gateway: *Leave this field blank*
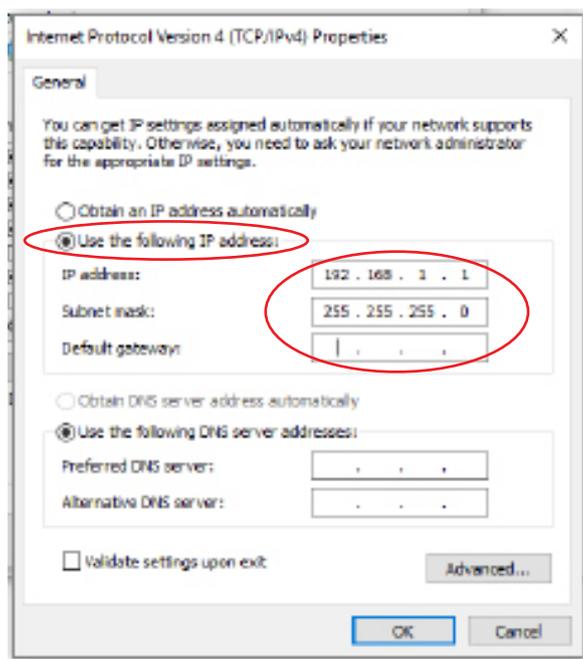
7. Click: **OK / OK / CLOSE**

Your Windows PC will now be working in the IP range as set above and you will now be able to communicate with the equipment working within the same IP range.

Amending your IP Address in Mac OS

1. Connect the Mac to the network switch using an Ethernet cable
2. Click on the Network Connections icon in the toolbar at the top of the desktop
3. Navigate to: **OPEN NETWORK PREFERENCES**
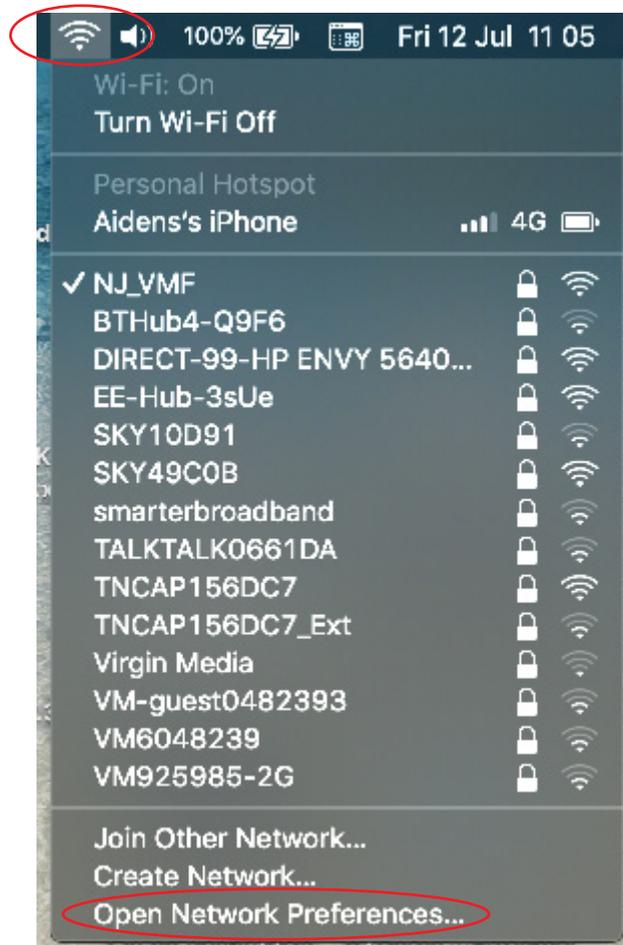
4. Find the active Ethernet connection to the network switch on the left-hand menu tree

5. Use the drop-down box marked: **CONFIGURE IPv4** and set to: **MANUALLY**

6. Enter the details as below:

IP Address: **192.168.1.1**

Subnet mask: **255.255.255.0**

Router: *Leave this field blank*
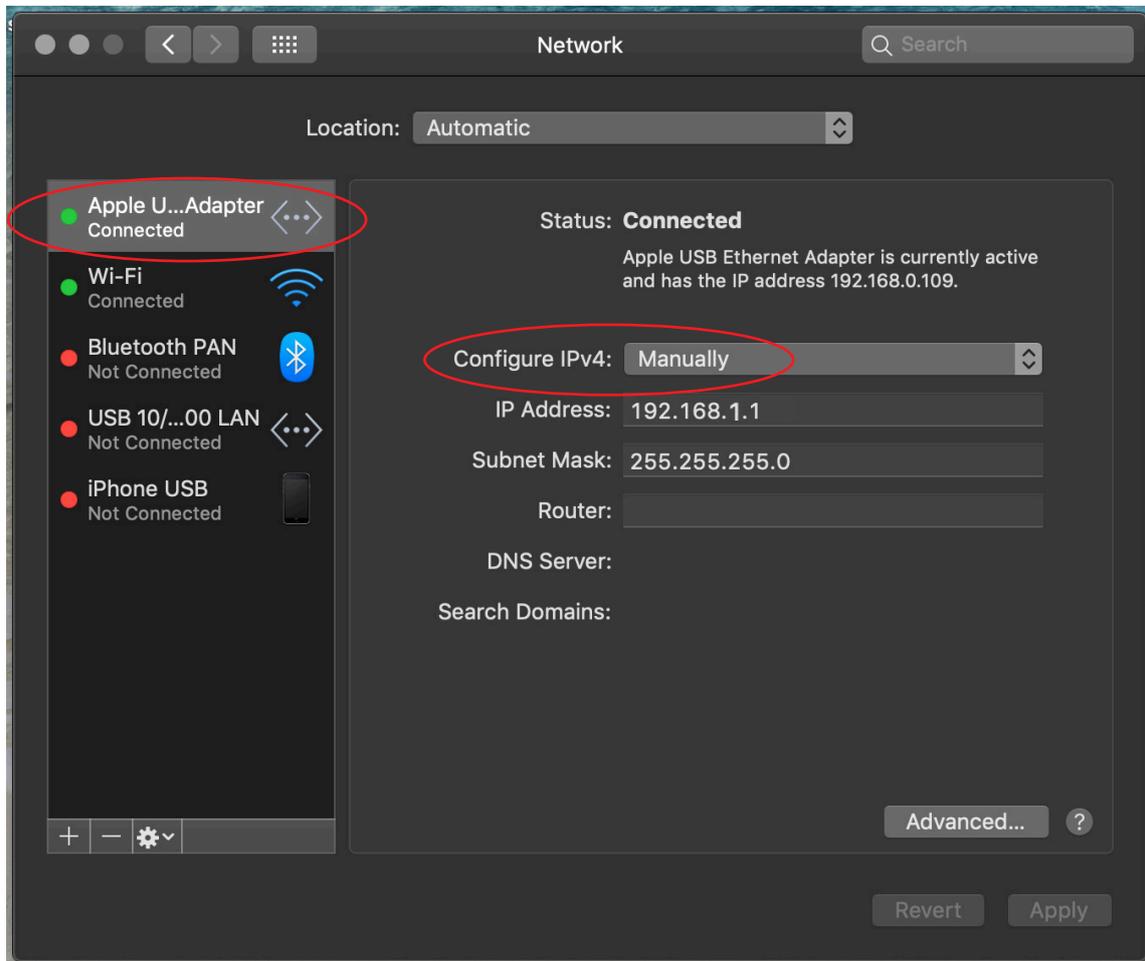
7. Click: **APPLY** at the bottom of the page and close.

Your Mac will now be working in the IP range as set above and you will now be able to communicate with the equipment working within the same IP range.

BLUSTREAM