Network Switch Set-up Guides

Cisco

CBS350 Series

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

Revision: A0 - Sep 2021

Contents

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 Cisco network switch the factory default details are:

IP Address: 192.168.1.254

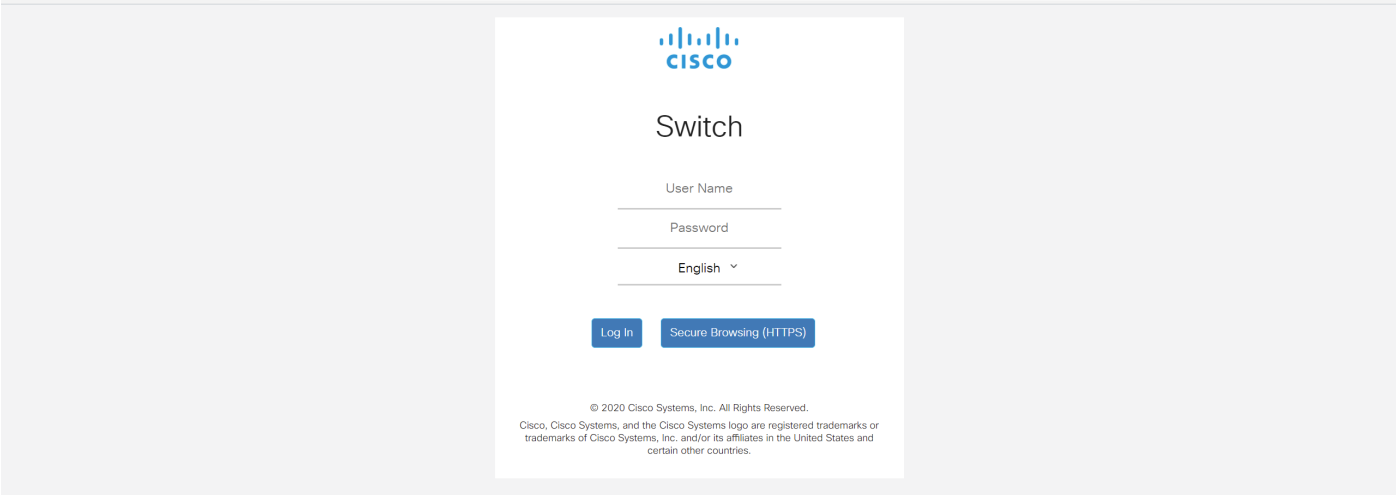
User: cisco

Password: cisco

In order to connect to the network switch your computer will need to be physically connected to the Cisco switch using a Ethernet network cable. **The computer must also be in the same IP range as the Cisco switch 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, 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

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 networks switch user manual.

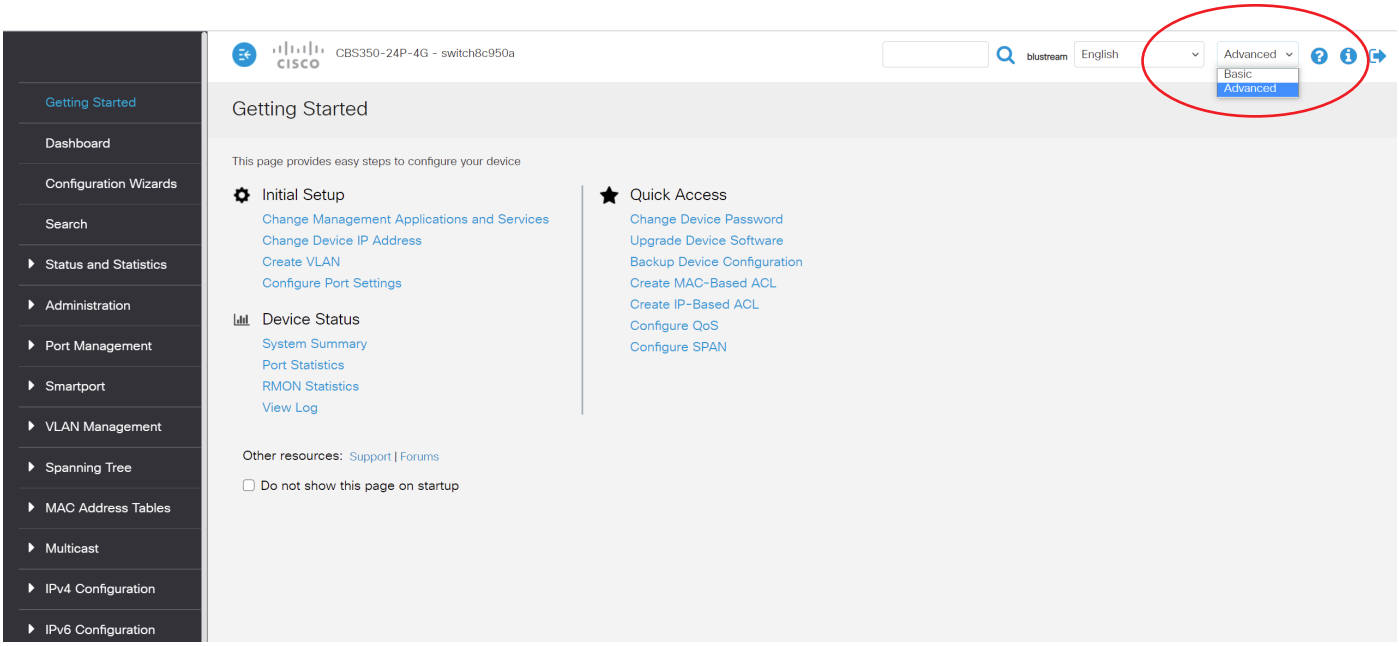


Activating Advanced Mode

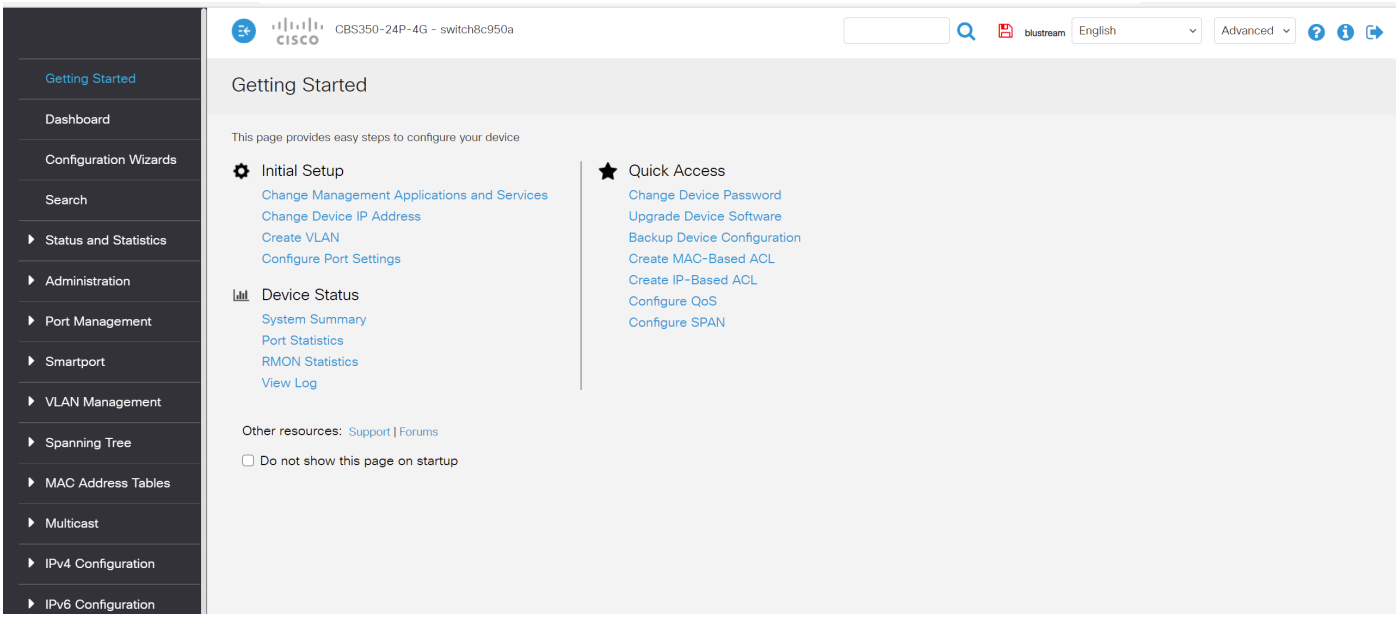
First you must change the Network switch GUI into Advanced mode to unlock additional settings.

Under the 'Display Mode' drop down that is set to 'Basic' by default

Select 'Advanced'



Once selected, the GUI will update and provide you with advanced features.
The background colour of the GUI will change to advise you that you are in Advanced mode.



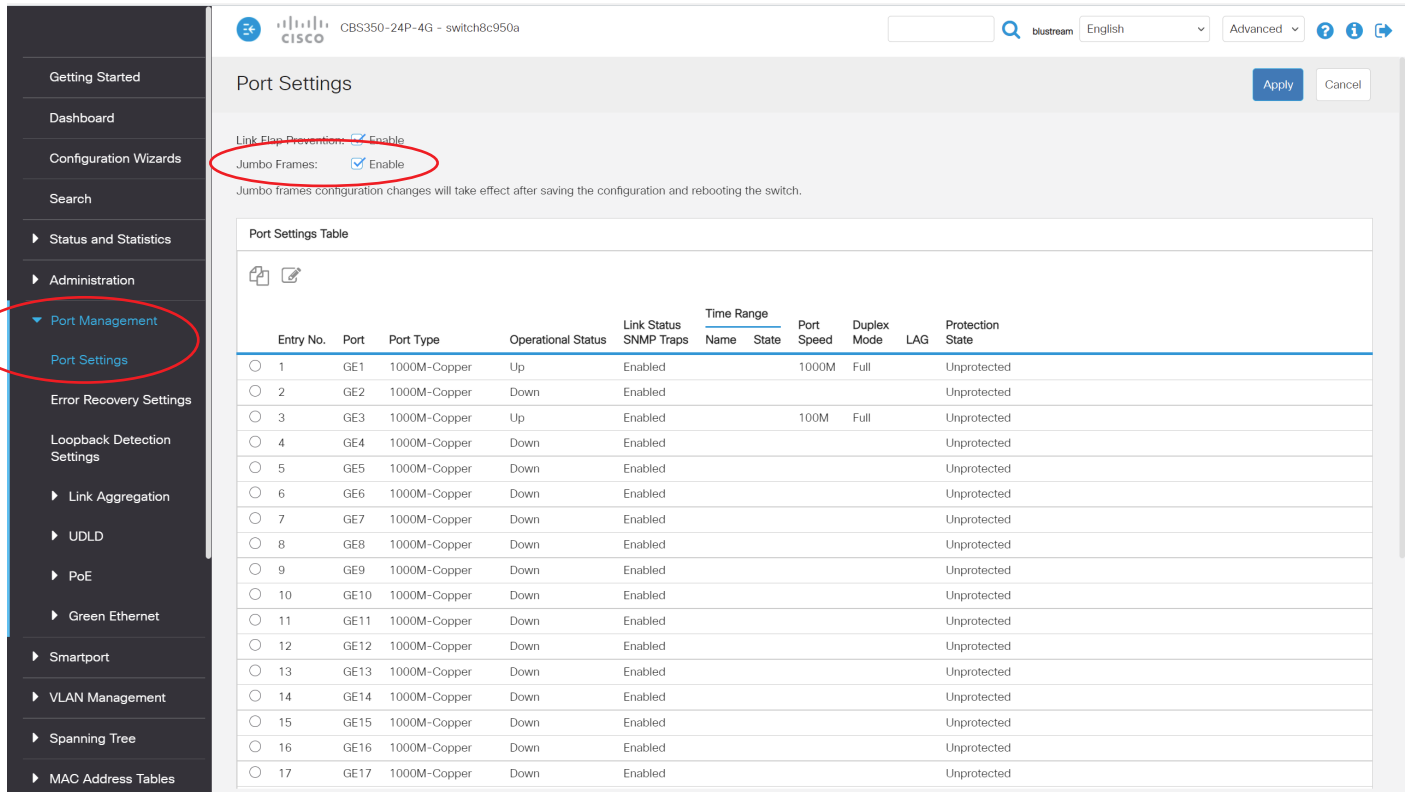
Jumbo Frames

To enable Jumbo Frames,

Within the 'Port Management' menu

Select 'Port Settings'

Tick the 'Enable' checkbox adjacent to Jumbo Frames



Click 'Apply' to update the setting

IGMP Snooping

To enable IGMP Snooping, there are several steps required to enable this feature:

- Bridge Multicast Filter Status
- IGMP Snooping Status
- IGMP Querier Status
- Immediate Leave
- IGMP Querier Election

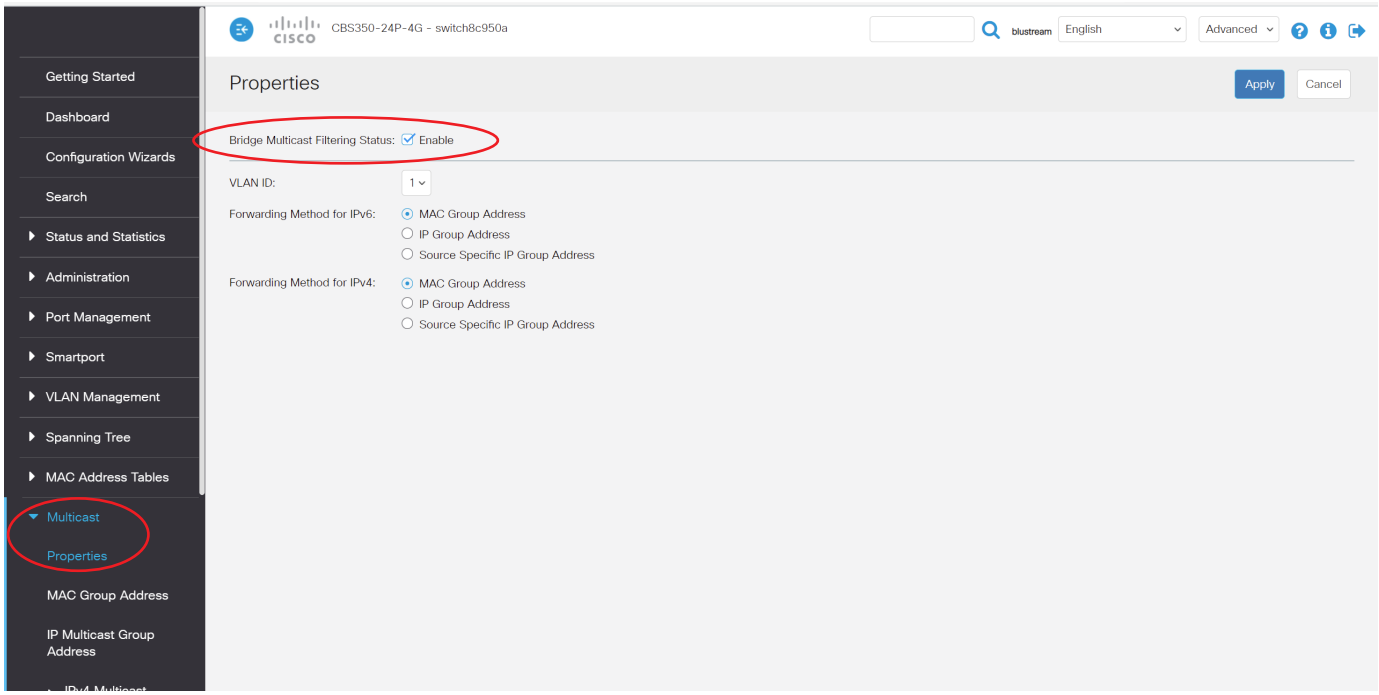
The following pages explain how to update the above settings.

IGMP Snooping - Bridge Multicast Filter Status

Within the 'Multicast' menu

Select 'Properties'

Tick the 'Enable' checkbox adjacent to 'Bridge Multicast Filtering Status'



Confirm other settings match those as shown in the above image

Click 'Apply' to update the setting

IGMP Snooping - IGMP Snooping Status

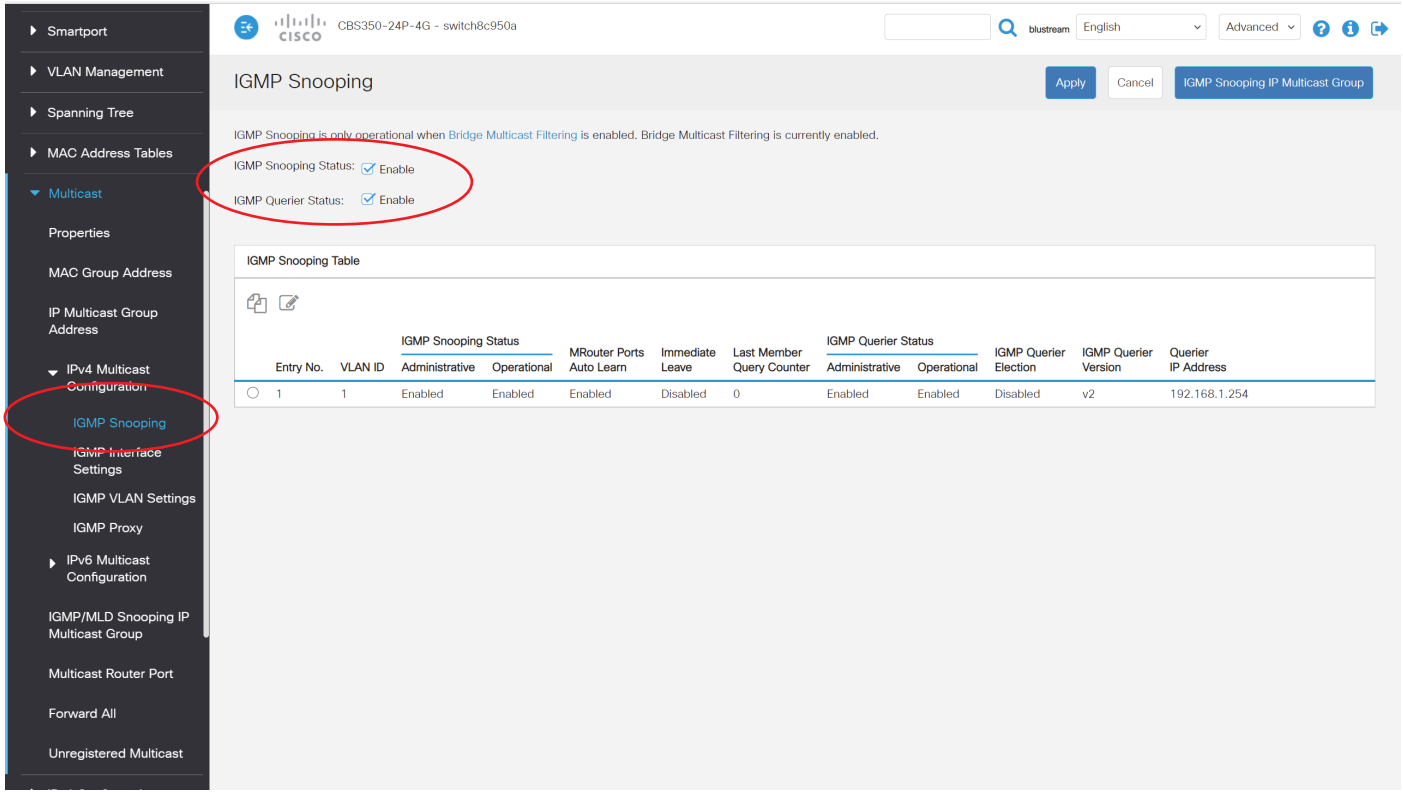
Within the 'Multicast' menu

Select 'IPv4 Multicast Configuration'

Select 'IGMP Snooping'

Tick the 'Enable' checkbox adjacent to IGMP Snooping Status

Tick the 'Enable' checkbox adjacent to IGMP Querier Status



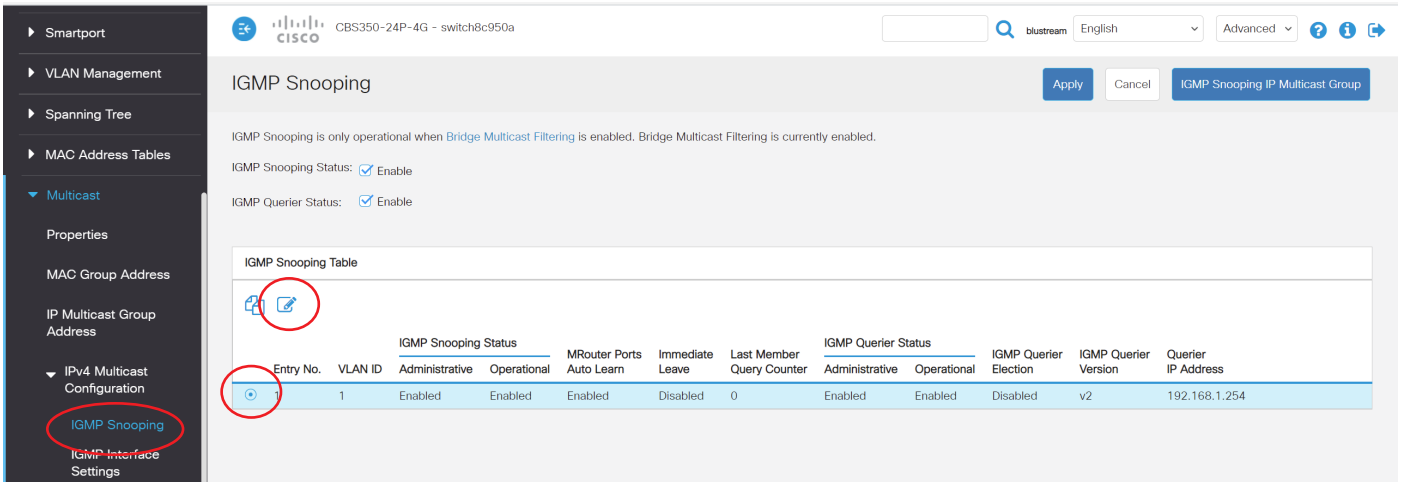
Confirm other settings match those as shown in the above image

Click 'Apply' to update the setting

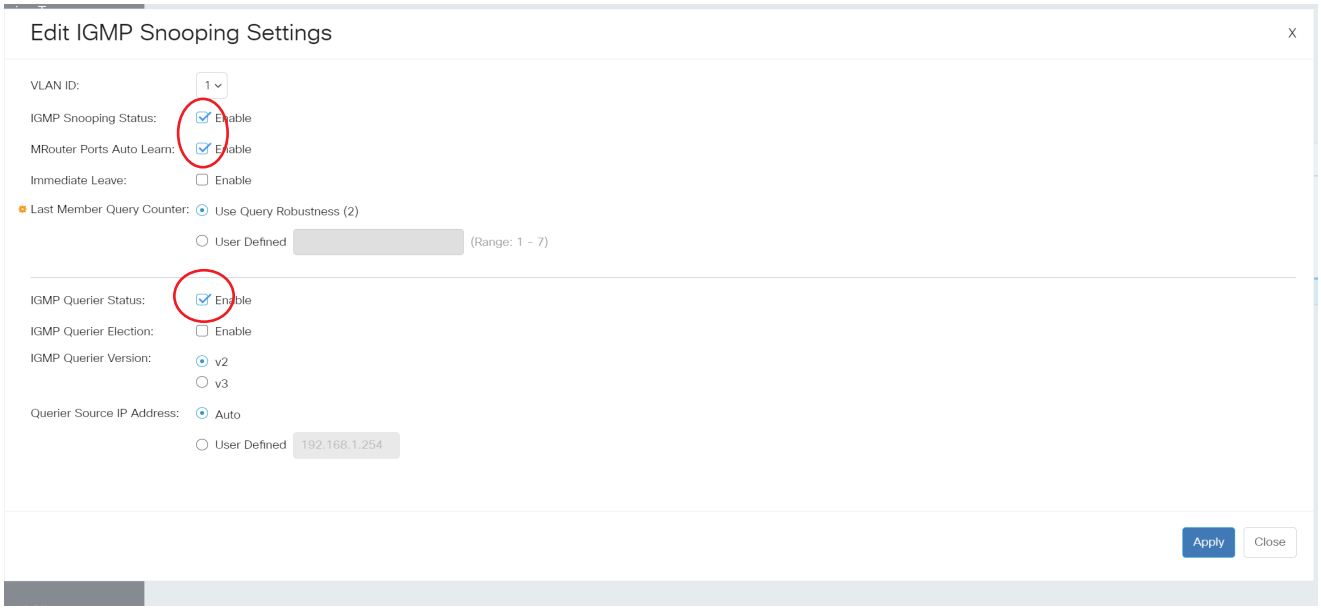
IGMP Snooping - IGMP Querier Status, Mrouter ports auto learn, Immediate leave & IGMP querier election

Within the same 'Multicast' / 'IPv4 Multicast Configuration' / 'IGMP Snooping' menu

Select Line 1 in the IGMP Snooping Table and click the 'Edit' button



The following pop-up window will appear:



Tick the 'Enable' checkbox adjacent to IGMP Snooping Status

Tick the 'Enable' checkbox adjacent to MRouter Ports Auto Learn

Tick the 'Enable' checkbox adjacent to IGMP Querier Status

Confirm other settings match those as shown in the above image

Click 'Apply' to update the setting, then 'Close'

Turning On/Off PoE

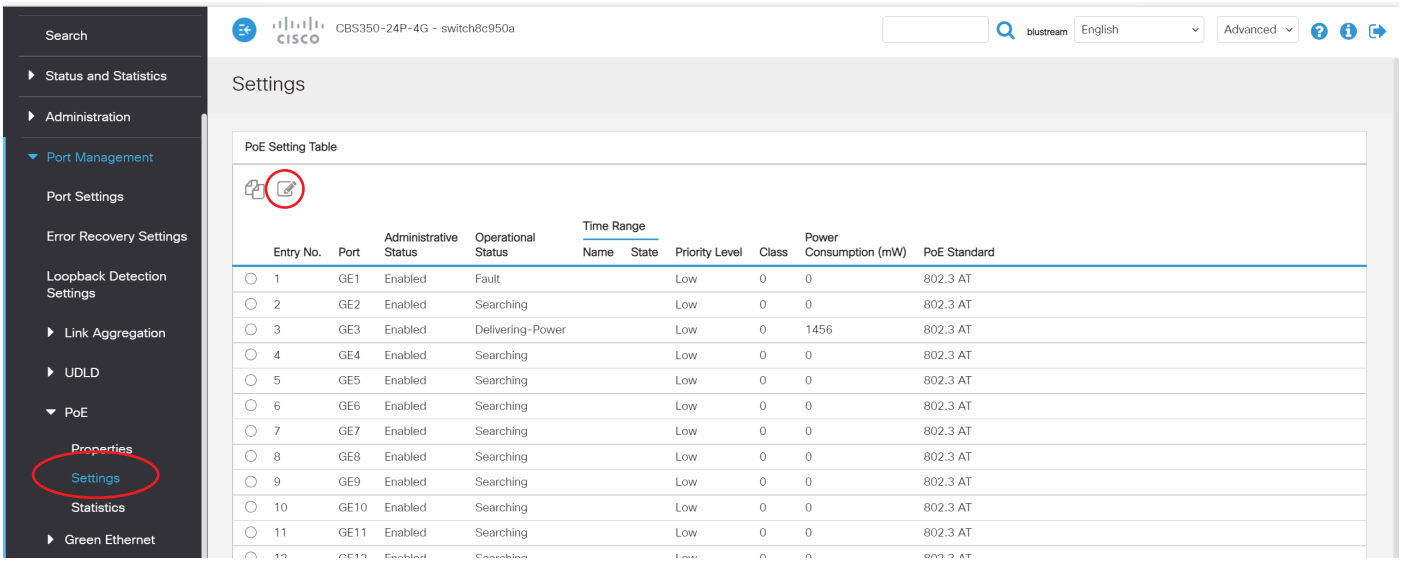
Not all Cisco CBS350 switches support PoE. Those network switches that do support PoE come with this as factory default to 'ON'. If you are unsure of the port setting please follow the below instructions.

Under 'Port Management' menu

Select 'PoE'

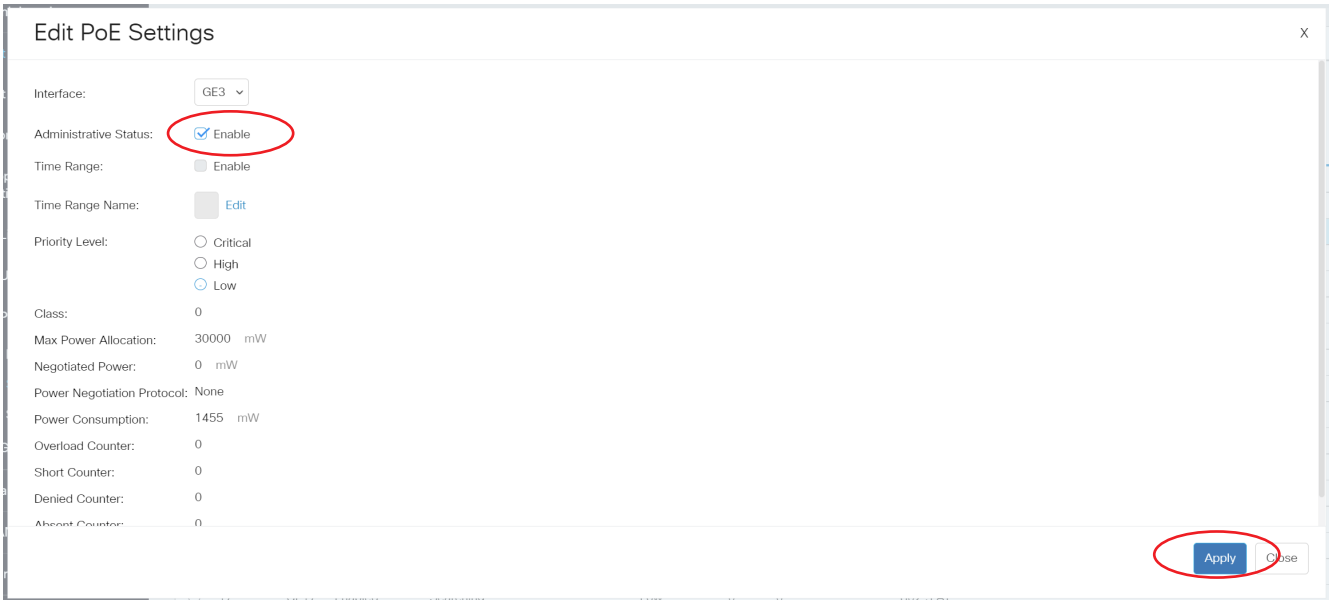
Select 'Settings'

The following table shows the settings for each RJ45 LAN port on the network switch. PoE Administrative Status should be set to 'Enabled' meaning the PoE feature is active. Default settings are for PoE to be active (Enabled) so changes shoudl not be required. If status is 'Disabled please follow below instructions.



Entry No.	Port	Administrative Status	Operational Status	Time Range Name	Time Range State	Priority Level	Class	Power Consumption (mW)	PoE Standard
1	GE1	Enabled	Fault			Low	0	0	802.3 AT
2	GE2	Enabled	Searching			Low	0	0	802.3 AT
3	GE3	Enabled	Delivering-Power			Low	0	1456	802.3 AT
4	GE4	Enabled	Searching			Low	0	0	802.3 AT
5	GE5	Enabled	Searching			Low	0	0	802.3 AT
6	GE6	Enabled	Searching			Low	0	0	802.3 AT
7	GE7	Enabled	Searching			Low	0	0	802.3 AT
8	GE8	Enabled	Searching			Low	0	0	802.3 AT
9	GE9	Enabled	Searching			Low	0	0	802.3 AT
10	GE10	Enabled	Searching			Low	0	0	802.3 AT
11	GE11	Enabled	Searching			Low	0	0	802.3 AT

To update the port settings select a port and click 'Edit' which will open the following window:



Tick the 'Enable' checkbox for each interface (switch LAN connection) you wish PoE to be active for.

Click 'Apply' to update the setting, then 'Close'

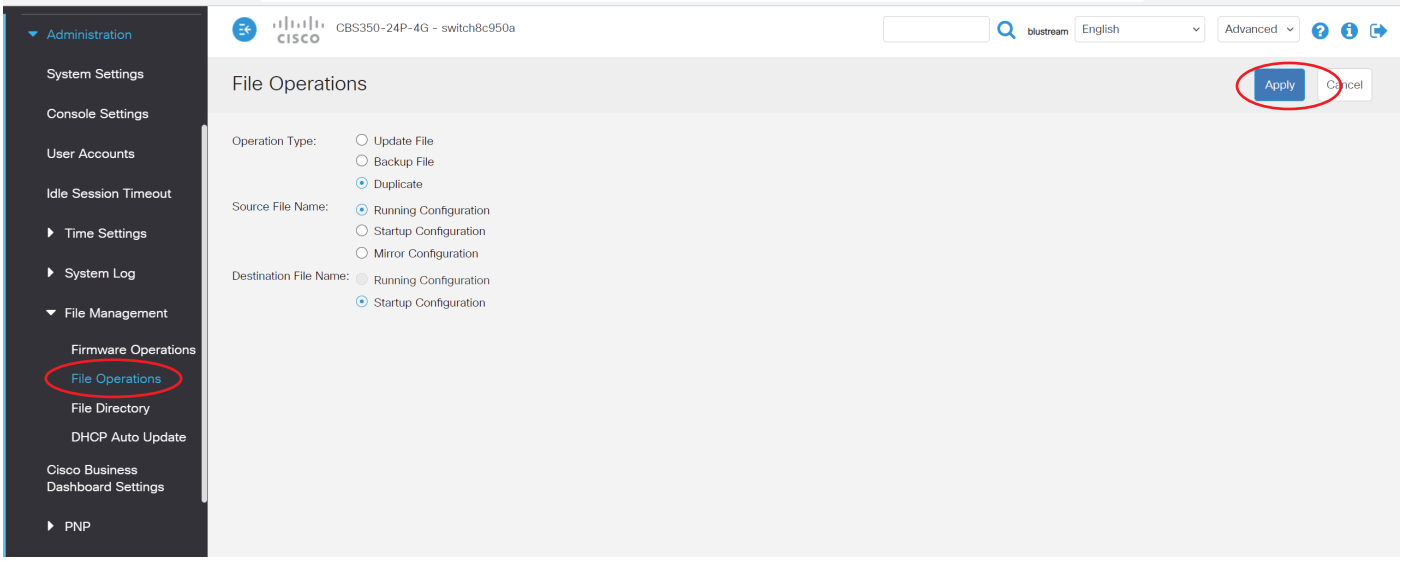
Apply and Save settings

All settings that have been previously updated will not be finalised until the configuration is saved and the switch is rebooted. To save the configuration:

Under 'Administration menu

Select 'File Management'

Select 'File Operations'



Click 'APPLY' to save the settings

Then you must reboot the switch for settings to be applied

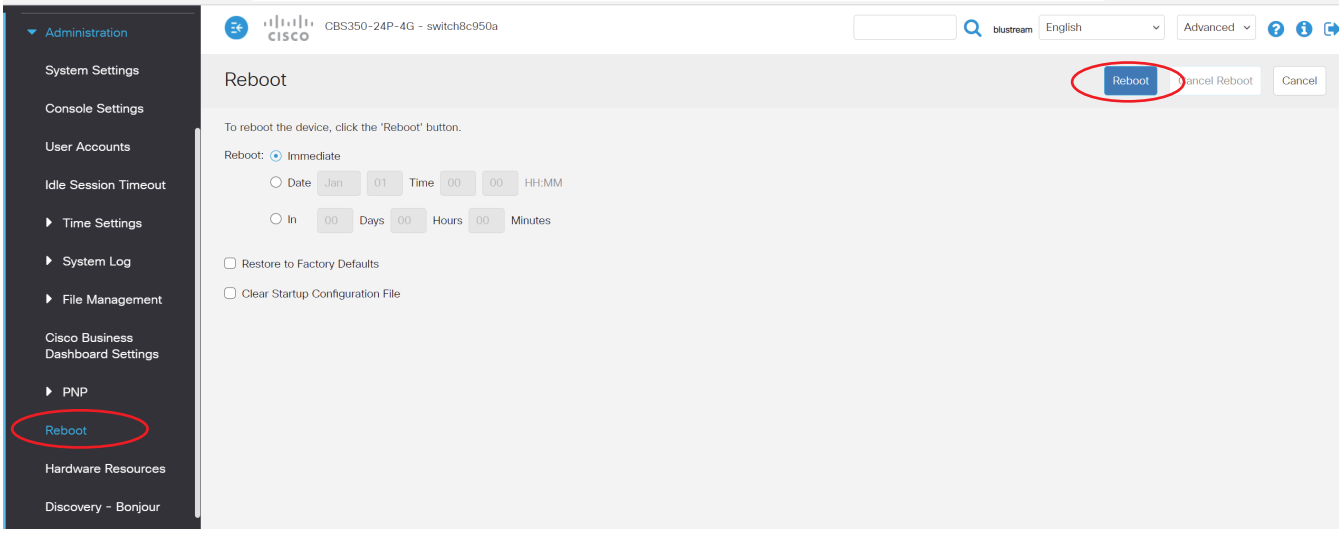
To reboot the switch:

Under 'Administration' menu

Select 'File Management'

Select 'Reboot'

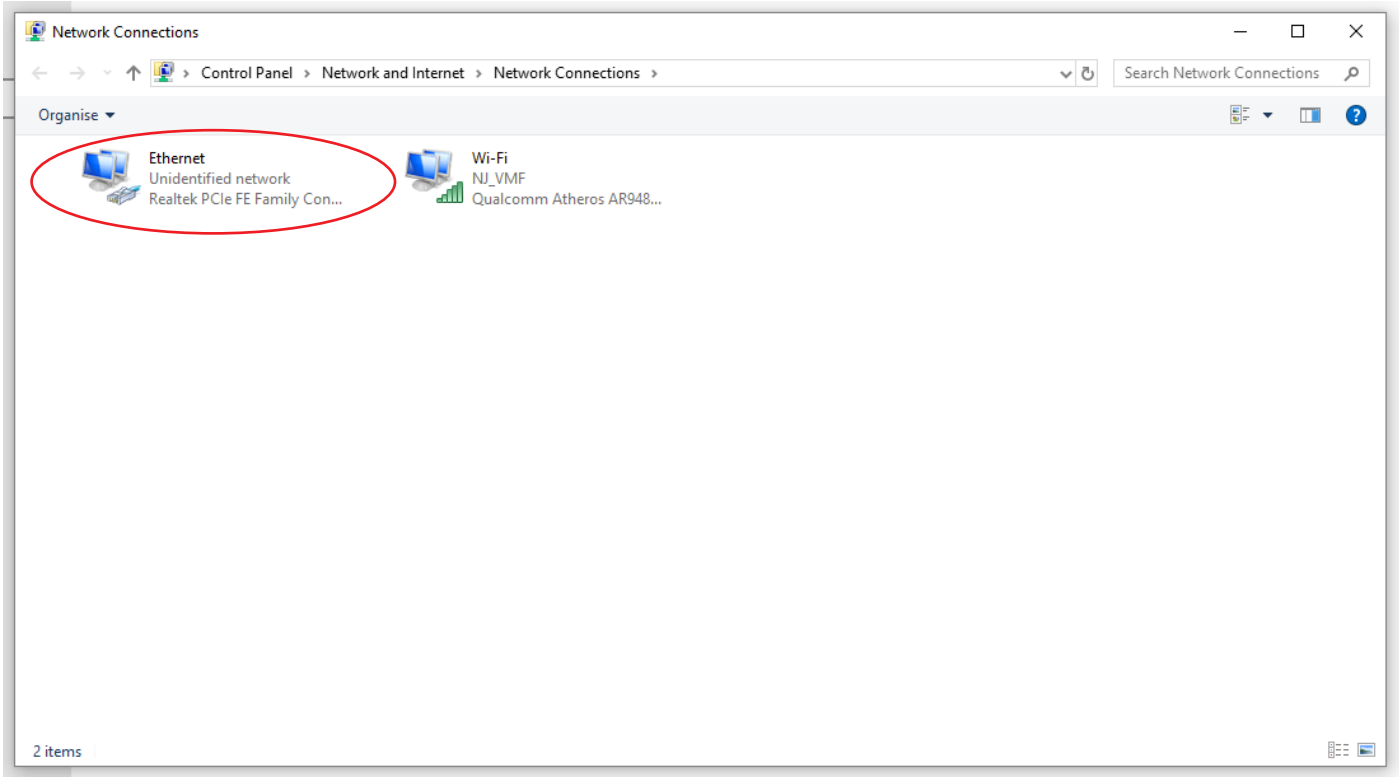
Click 'Reboot'



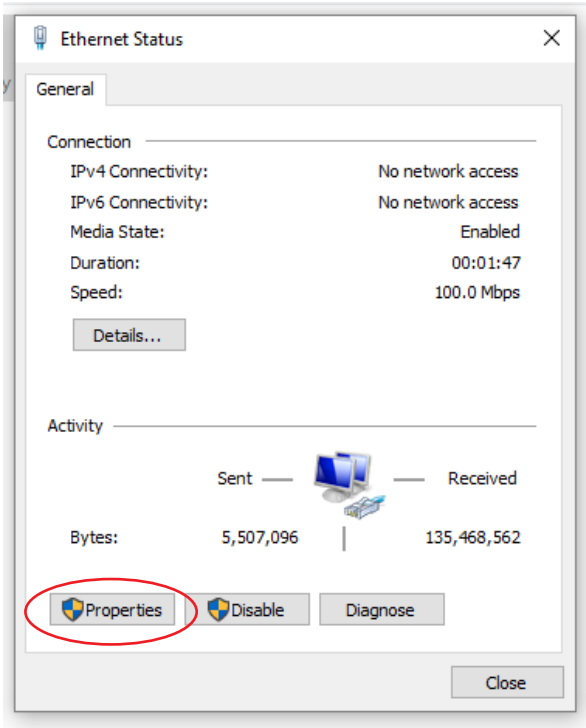
Please note: The switch will take several minutes to reboot but will then be ready to use with the Blustream Multicast HDMI products

Amending your IP Address in Windows

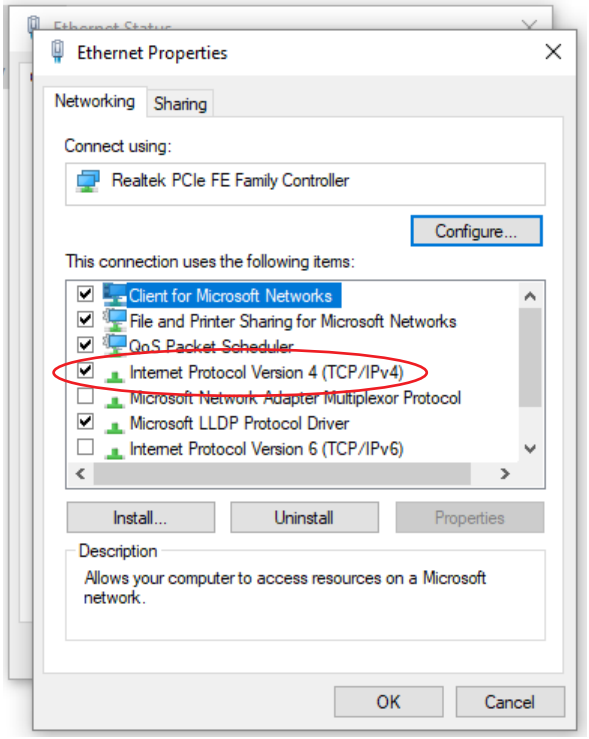
1. Connect the computer to the network switch using an Ethernet cable
2. Navigate to: **CONTROL PANEL / NETWORK & INTERNET / NETWORK CONNECTIONS**
3. Double click on the Ethernet conneciton as highlighted below:



4. In the pop-up windown that appears, click on: **PROPERTIES**



5. In the pop-up window that appears, double-click on: **INTERNET PROTOCOL VERSION 4 (TCP/IPv4)**

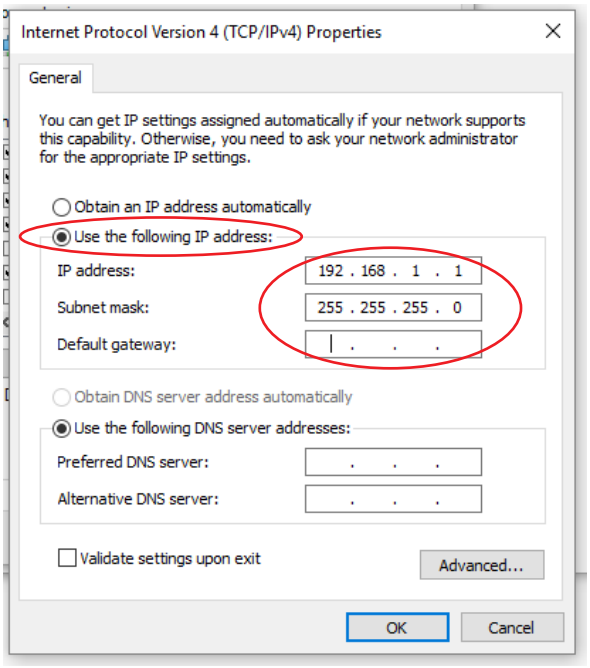


5. In the pop-up window that appears, double-click on the button marked: **USE THE FOLLOWING IP ADDRESS**
6. Enter the details as below:

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

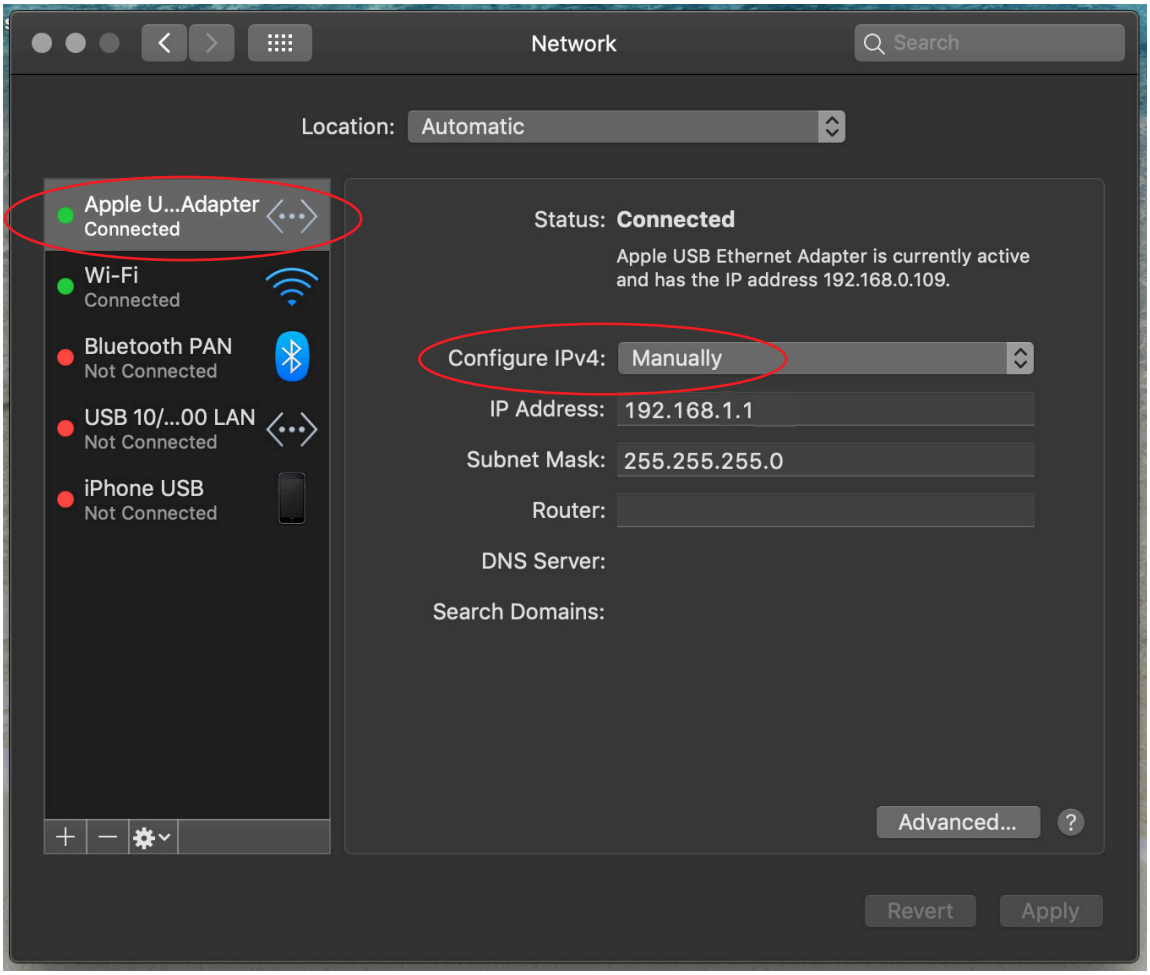
1. Connect the Mac to the network switch using an Ethernet cable
2. Click on the Network Connections icon in the toolbar at the top of the desktop
3. Navigate to: **OPEN NETWORK PREFERENCES**

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.

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