

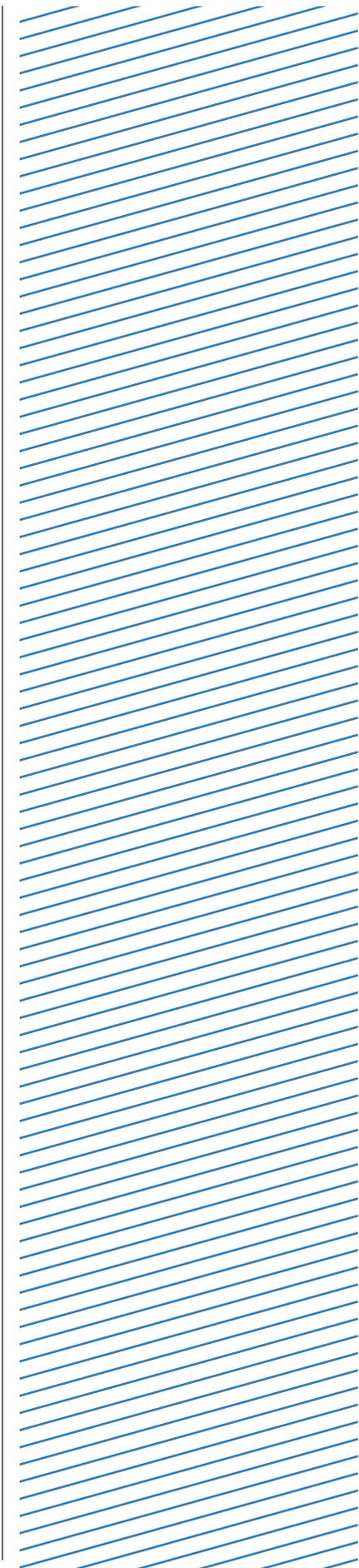


Network Switch Set-up Guides

Cisco

SG300 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 disabled 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 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.

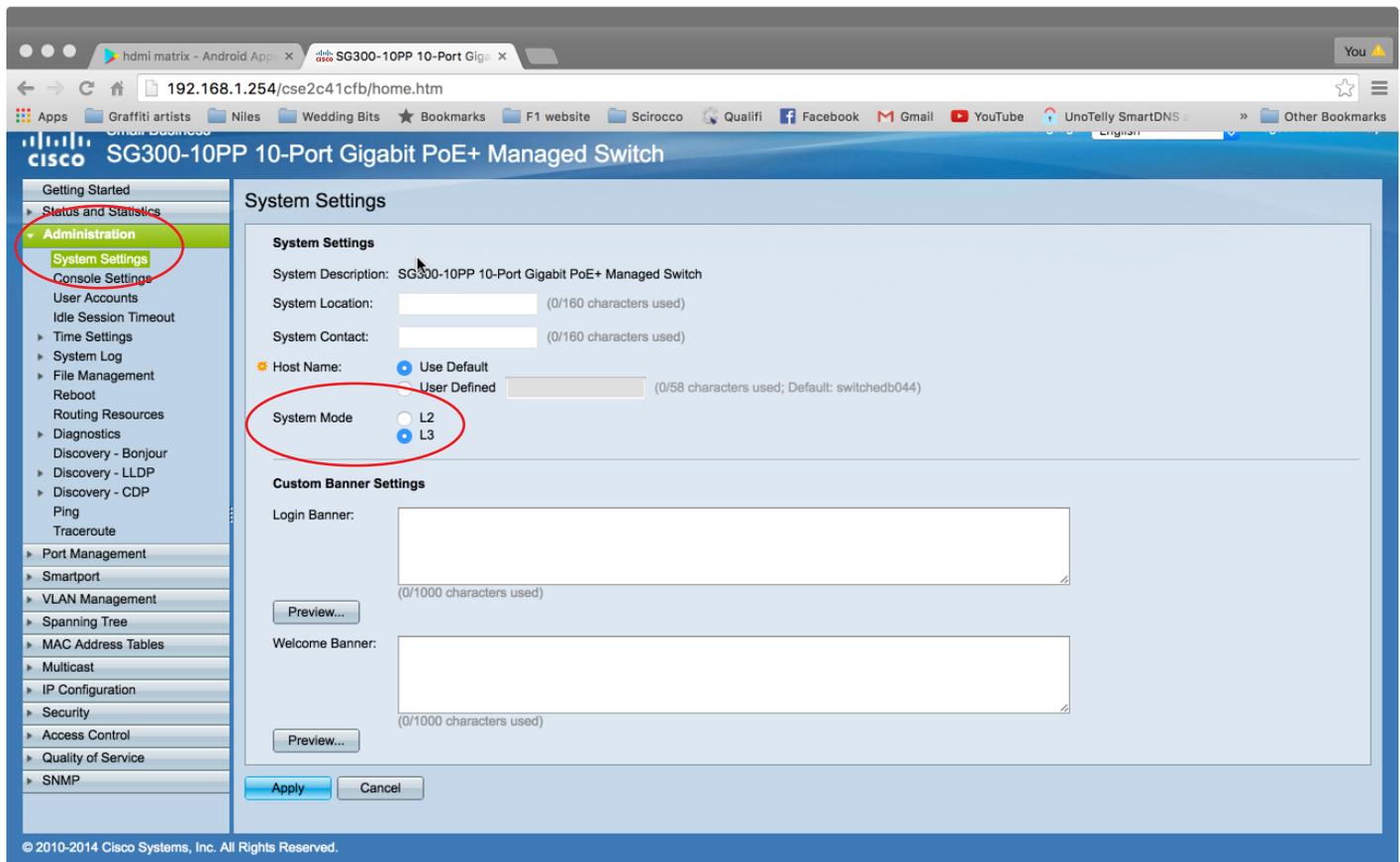
Activating Layer 3 mode

The first setting you MUST update is to turn the network switch to Layer 3 mode. This must be completed before all other setting changes are made as this will default the factory settings when Layer 3 is activated.

Under 'Administration' menu

Select 'System settings'

Tick 'L3' (Layer 3) checkbox adjacent to System Mode



The screenshot shows the Cisco SG300-10PP 10-Port Gigabit PoE+ Managed Switch web interface. The browser address bar shows the URL 192.168.1.254/cse2c41cfb/home.htm. The left sidebar menu is expanded to 'Administration', and 'System Settings' is selected. The main content area shows the 'System Settings' page. Under the 'System Mode' section, the 'L3' radio button is selected, and the 'L2' radio button is unselected. The 'Apply' button is visible at the bottom of the page.

Click 'Apply' to update the setting. A warning message will appear to make sure that you mean to factory reset the switch. Click 'OK' to proceed.

Please note: The switch will reboot which will take 3-4 minutes. After this is complete you will have to re-enter new password details

Jumbo Frames

To enable Jumbo Frames,

Under 'Port Management' menu

Select 'Port Settings'

Tick the 'Enable' checkbox adjacent to Jumbo Frames

Small Business
SG300-10PP 10-Port Gigabit PoE+ Managed Switch

Getting Started
 Status and Statistics
 Administration
Port Management
 Port Settings
 Error Recovery Settings
 Loopback Detection Settings
 Link Aggregation
 UDLD
 PoE
 Green Ethernet
 Smartport
 VLAN Management
 Spanning Tree
 MAC Address Tables
 Multicast
 IP Configuration
 Security
 Access Control
 Quality of Service
 SNMP

Port Settings

Jumbo Frames: Enable

Jumbo frames configuration changes will take effect after saving the configuration and rebooting the switch.

Apply Cancel

Port Setting Table

	Entry No.	Port	Description	Port Type	Operational Status	Link Status	Time Range		Port Speed	Duplex Mode	LAG	Protection State
							Name	State				
<input type="radio"/>	1	GE1		1000M-Copper	Up	Enabled			100M	Full		Unprotected
<input type="radio"/>	2	GE2		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	3	GE3		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	4	GE4		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	5	GE5		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	6	GE6		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	7	GE7		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	8	GE8		1000M-Copper	Down	Enabled						Unprotected
<input type="radio"/>	9	GE9		1000M-ComboC	Down	Enabled						Unprotected
<input type="radio"/>	10	GE10		1000M-ComboC	Down	Enabled						Unprotected

Copy Settings... Edit...

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
- MRouter Ports Auto Learn
- Immediate Leave
- IGMP Querier Election

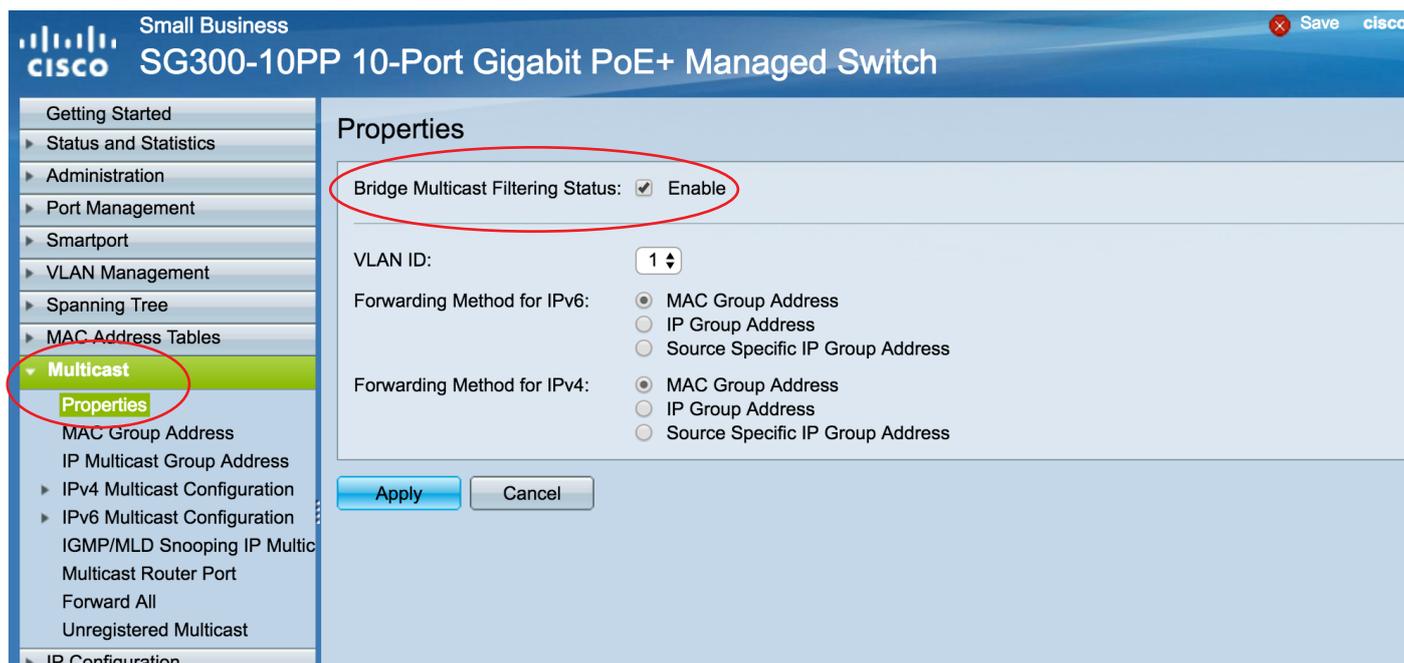
The following pages explain how to update the above settings.

IGMP Snooping - Bridge Multicast Filter Status

Under 'Multicast' menu

Select 'Properties'

Tick 'Enabled' checkbox adjacent to 'Bridge Multicast Filter Status'



Confirm other settings match those as shown in the above image

Click 'Apply' to update the setting

IGMP Snooping - IGMP Snooping Status

Under '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 Query Status

The screenshot displays the configuration interface for a Cisco SG300-10PP switch. The left sidebar shows the navigation menu with 'Multicast' and 'IGMP Snooping' highlighted. The main content area is titled 'IGMP Snooping' and contains the following configuration options:

- IGMP Snooping Status: Enable
- IGMP Querier Status: Enable

Below these options are 'Apply', 'Cancel', and 'IGMP Snooping IP Multicast Group' buttons. The 'IGMP Snooping Table' is also visible, showing a single entry for VLAN 1 with 'IGMP Snooping Operational Status' set to 'Disabled'.

Entry No.	VLAN ID	IGMP Snooping Operational Status	MRouter Ports Auto Learn	Immediate Leave	Last Member Query Counter	IGMP Querier Status	IGMP Querier Election	IGMP Querier Version	Querier IP Address
1	1	Disabled	Enabled	Disabled	2	Disabled	Enabled	v2	

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

Under 'Multicast' menu

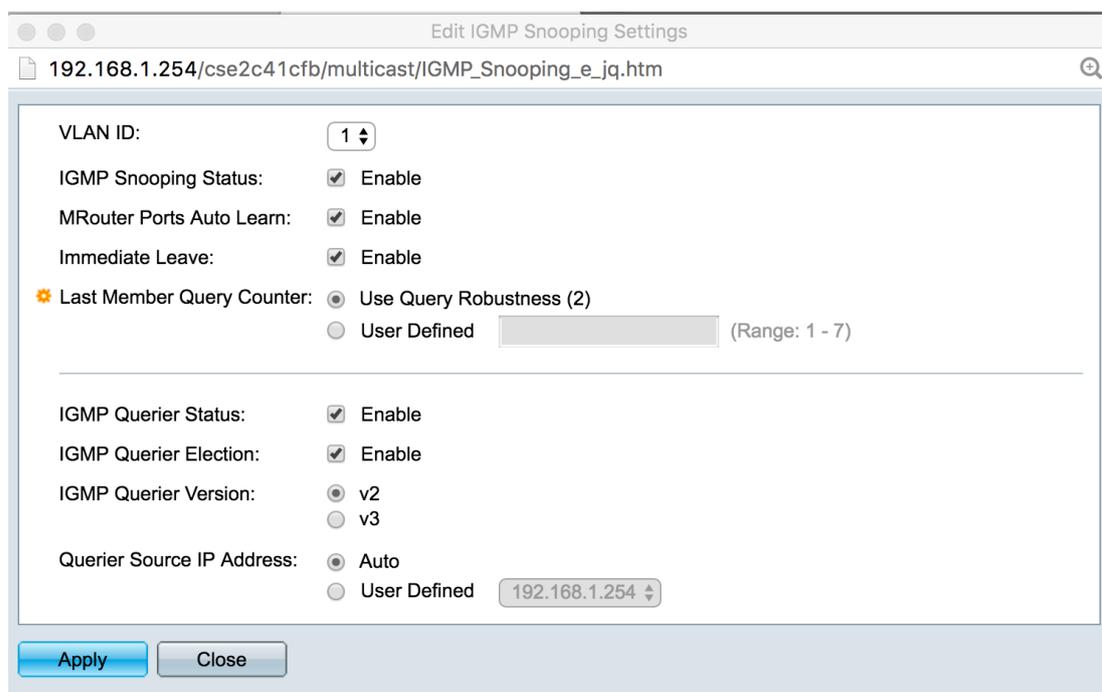
Select 'IPv4 Multicast Configuration'

Select 'IGMP Snooping'

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



The following pop-up window will appear



- Tick 'Enabled' checkbox adjacent to 'IGMP Snooping Status'
- Tick 'Enabled' checkbox adjacent to 'MRouter Ports Auto Learn'
- Tick 'Enabled' checkbox adjacent to 'Immediate Leave'
- Tick 'Enabled' checkbox adjacent to 'IGMP Querier Status'
- Tick 'Enabled' checkbox adjacent to 'IGMP Querier Election'

Confirm other settings match those as shown in the above image

Click 'Apply' to update the setting

Turning On/Off PoE

Not all Cisco SG300 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 should not be required. If status is 'Disabled' please follow below instructions.

PoE Setting Table										
Entry No.	Port	PoE Administrative Status		Time Range		Power Priority Level	Administrative Power Allocation (mW)	Max Power Allocation (mW)	Power Consumption (mW)	Class
		Status		Name	State					
<input type="radio"/>	1	GE1	Enabled			Low	30000	31500	0	4
<input type="radio"/>	2	GE2	Enabled			Low	30000	31500	0	4
<input type="radio"/>	3	GE3	Enabled			Low	30000	31500	0	4
<input type="radio"/>	4	GE4	Enabled			Low	30000	31500	0	4
<input type="radio"/>	5	GE5	Enabled			Low	30000	31500	0	4
<input type="radio"/>	6	GE6	Enabled			Low	30000	31500	0	4
<input type="radio"/>	7	GE7	Enabled			Low	30000	31500	0	4
<input type="radio"/>	8	GE8	Enabled			Low	30000	31500	0	4

To update the port settings click 'EDIT' which will open the following window:

Interface: GE1

PoE Administrative Status: Enable

Time Range: Enable

Time Range Name: [Edit](#)

Power Priority Level: Critical High Low

Administrative Power Allocation: 30000 mW (Range: 0 - 30000, Default: 30000)

Max Power Allocation: 31500 mW

Power Consumption: 0 mW

Class: 4

Overload Counter: 0

Short Counter: 0

Denied Counter: 0

Absent Counter: 0

Invalid Signature Counter: 89

[Apply](#) [Close](#)

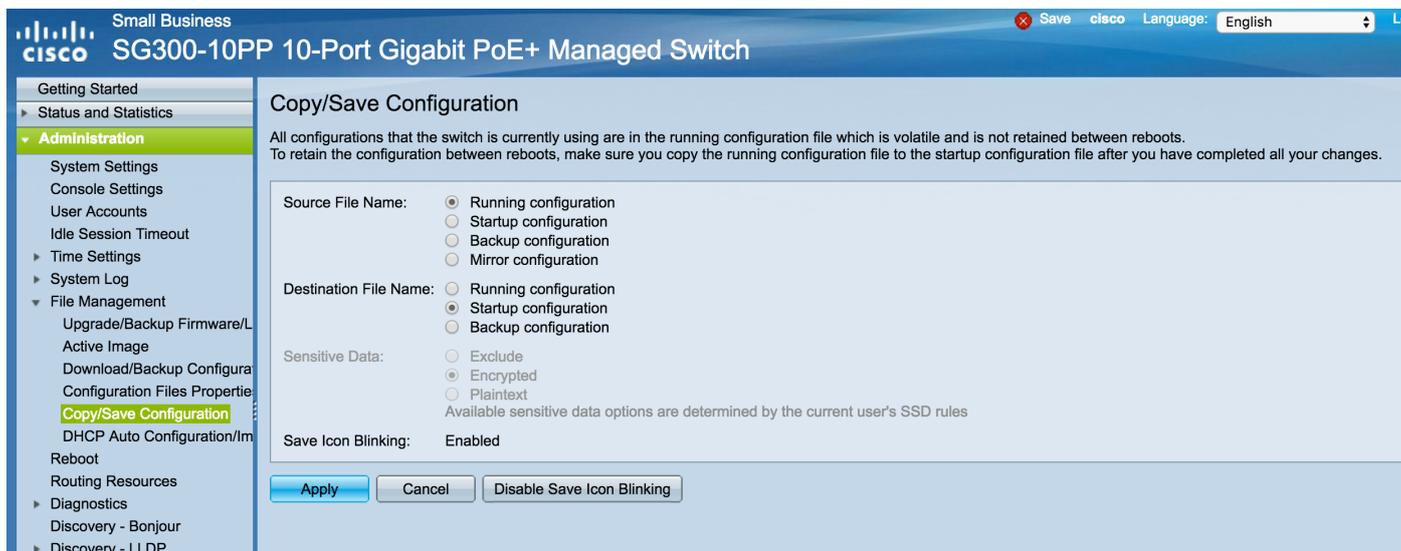
Tick 'Enabled' checkbox for each interface (switch LAN connection) you wish PoE to be active.

Click 'Apply' to update the setting

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 'Copy/Save Configuration'

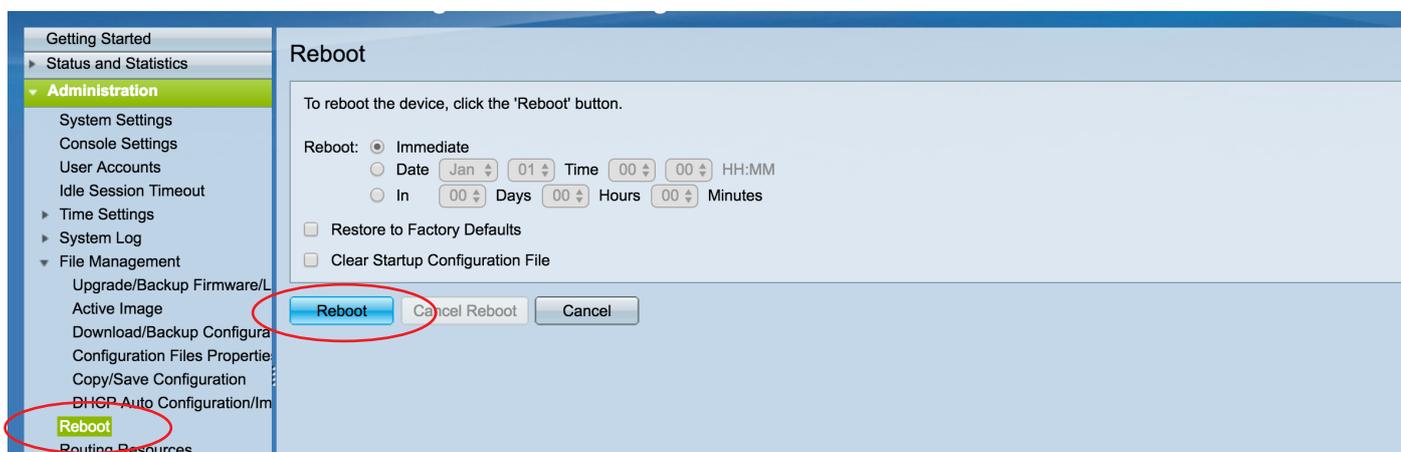


Click 'Apply' to save the settings

Then you must reboot the switch for settings to be applied

To reboot the switch:

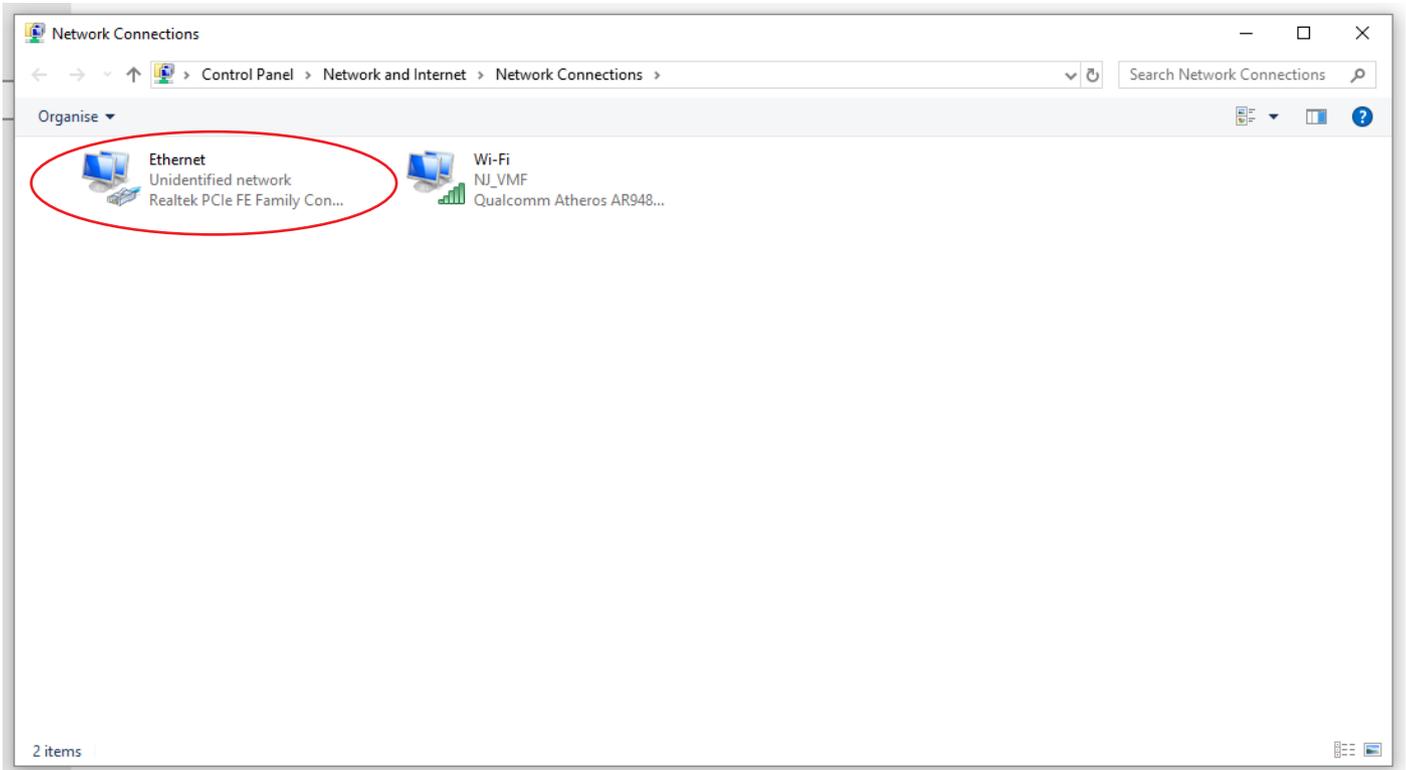
- Under 'Administration' menu
- Select 'File Management'
- Select 'Reboot'
- Click the 'Reboot' button



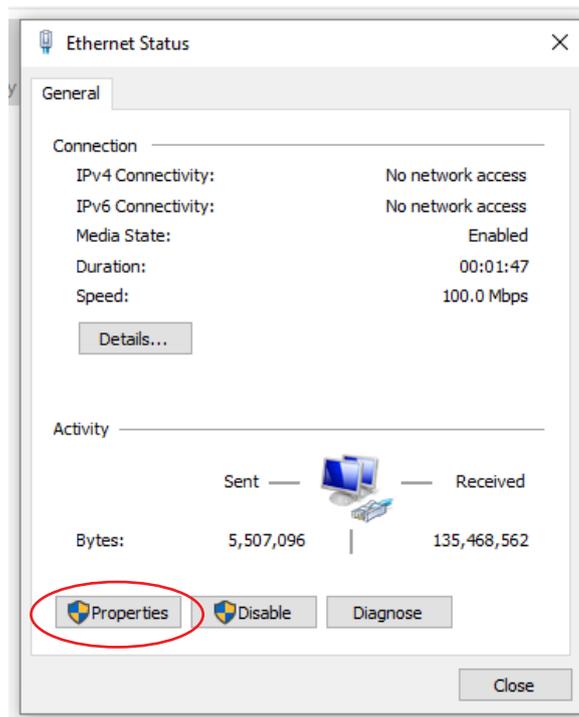
Please note: The switch will take several minutes to reboot but will then be ready to use with the Blustream Multicast HDMI products

Amending your IP Address in Windows

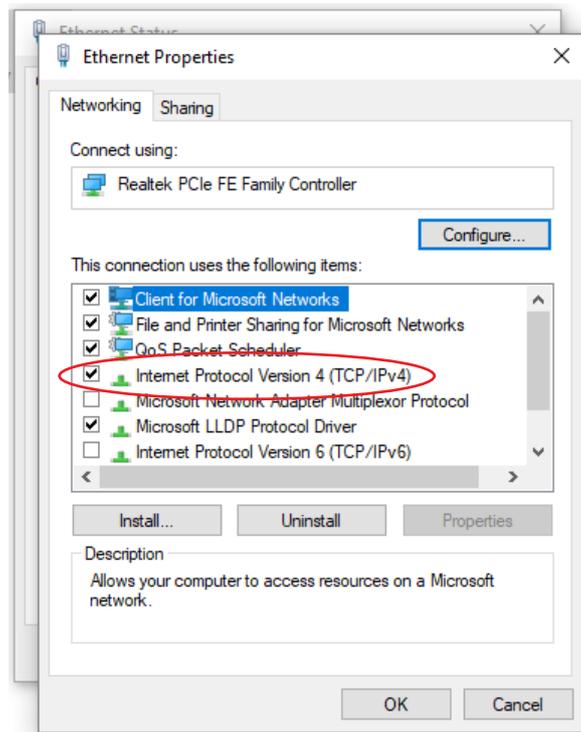
1. Connect the computer to the network switch using an Ethernet cable
2. Navigate to: **CONTROL PANEL / NETWORK & INTERNET / NETWORK CONNECTIONS**
3. Double click on the Ethernet connection as highlighted below:



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)**



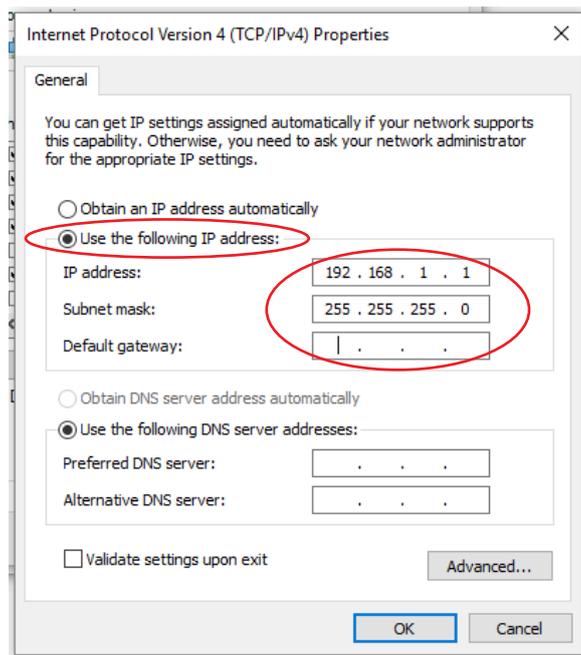
5. In the pop-up window that appears, double-click on the button marked: **USE THE FOLLOWING IP ADDRESS**

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**

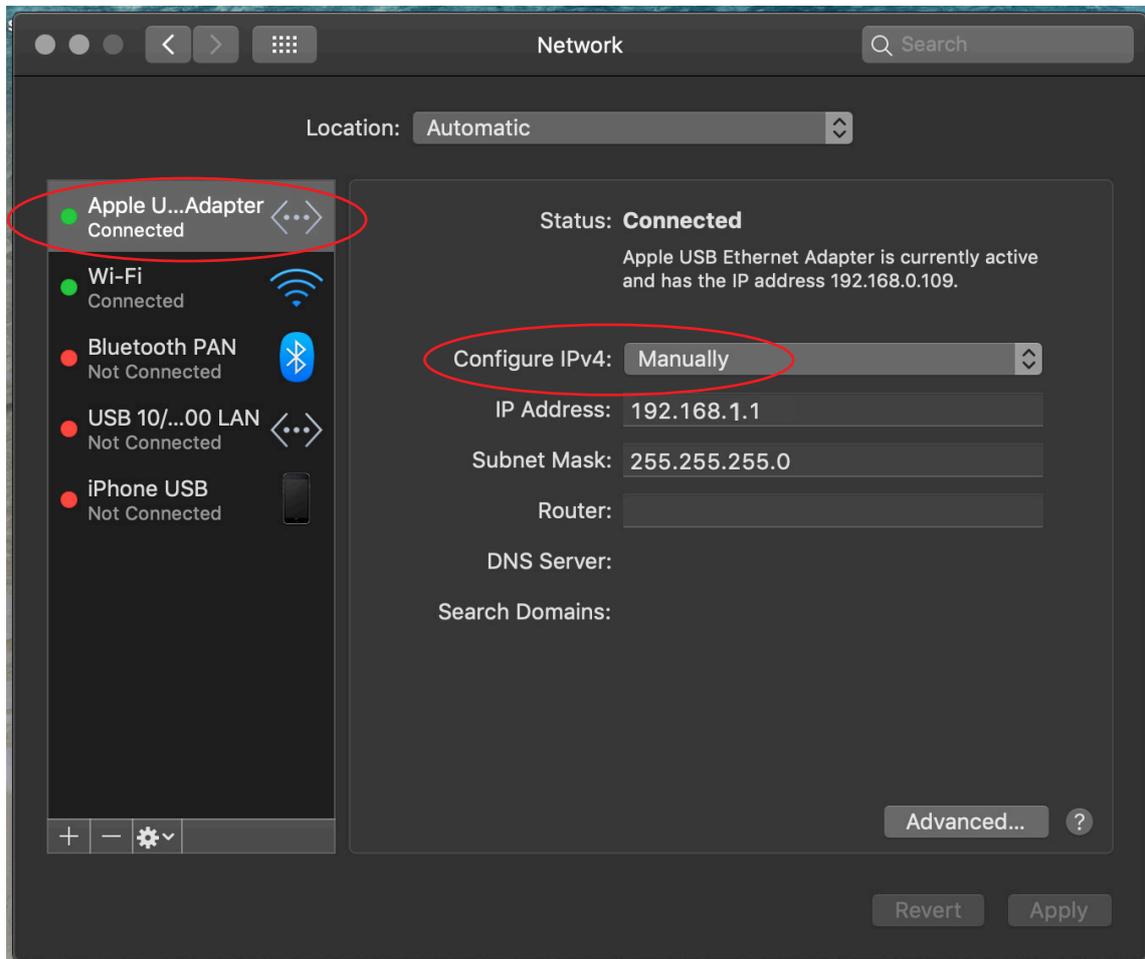


- Find the active Ethernet connection to the network switch on the left-hand menu tree
- Use the drop-down box marked: **CONFIGURE IPv4** and set to: **MANUALLY**
- Enter the details as below:

IP Address: **192.168.1.1**

Subnet mask: **255.255.255.0**

Router: *Leave this field blank*



- 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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