



Network Switch Set-up Guides

ZyXEL

GS1920 Series

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

Contents

Introduction	03
Switch Feature Requirements	03
Switch Feature Requirements	03
Connecting To The Web GUI Interface	04
IGMP Snooping	05 & 06
PoE	07
Changing Your Computer IP Address	08-10

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 switch Web GUI Interface

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

IP Address: 192.168.1.1
 User: admin
 Password: 1234

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

Please 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 network switch user manual.

The screenshot displays the ZyXEL GS1920 Web GUI interface. At the top, there is a navigation bar with the title 'ZYXEL GS1920' and several utility icons: Refresh, Save, Status, Logout, Help, and Nebula. On the left side, there is a blue sidebar menu with options: Menu, Basic Setting, Advanced Application, IP Application, and Management. The main content area is divided into several sections:

- Status**: A table of device information including Device Type (GS1920-24HP), System Name (GS1920), Boot Version (V1.00), System Location, Firmware Version (V4.50), System Time (01/01/2016 16:57:31), Hardware Version (V2.0), System Up Time (000 days, 16 hours, 57 mins, 34 secs), MAC Address (bc:99:11:ca:ae:9d), Login Timeout (3), Serial Number (S182L48008430), Registration MAC Address (bc:99:11:ca:ae:9d), Hybrid Mode (Standalone), Cloud Control Status (Disconnected), and PoE Usage (22.2/375.0 W (5%)).
- IP Address Information**: A table showing IPv4 Address (192.168.1.1), Subnet Mask (255.255.255.0), Default Gateway (0.0.0.0), and links for IP Setup, IPv6 Global Unicast Address, and IPv6 Link-Local Address.
- Device Status and Quick Configuration**: A table of configuration options such as STP, Port Mirroring, Storm Control, IGMP Snooping, SNMP Status, 802.1X Status, DHCP Relay, and IPSG, each with a current status and a link to the configuration page.
- Quick Links**: A grid of links for various system functions like Port Status, PoE Status, Link Aggregation Status, MAC Table, Diagnostic, System Log, Remote Access Control, Tech Support, VLAN Setup, and Service Access Control.

IGMP Snooping

Within the 'Advanced Application' menu

Select 'Multicast' in the sub-menu on the left hand side of the screen

Select 'IPv4 Multicast Status' at the top fo the screen

Check the box for: 'IGMP Snooping: Active', and 'IGMP Snooping: Querier' at the top

Ensure the rest of the settings are as per the screen shot below:

IGMP Snooping		IPv4 Multicast Status	IGMP Snooping VLAN
IGMP Snooping	Active	<input checked="" type="checkbox"/>	
	Querier	<input checked="" type="checkbox"/>	
	Host Timeout	<input type="text" value="260"/>	
	802.1p Priority	<input type="text" value="No-Change"/>	
IGMP Filtering	Active	<input type="checkbox"/>	
Unknown Multicast Frame	<input checked="" type="radio"/> Flooding	<input type="radio"/> Drop	
Reserved Multicast Group	<input checked="" type="radio"/> Flooding	<input type="radio"/> Drop	



Click 'Save' to update the setting.

Please note: It is important to 'Save' at each point a configuration change is made to the switch. Navigating away from a page before saving will result in the setting not being applied.

IGMP Snooping - Immediate Leave

ZyXEL switches give the ability for Immediate Leave and/or Fast Leave. For the Blustream Multicast system to perform at it's optimum, 'Immediate Leave' is required.

Check the 'All' button directly under the 'Immed. Leave' header to highlight all ports:

The screenshot shows the ZyXEL GS1920 web GUI. On the left is a blue navigation menu with categories: Menu, Basic Setting, Advanced Application, IP Application, Management, VLAN, Static MAC Forwarding, Static Multicast Forwarding, Filtering, Spanning Tree Protocol, Bandwidth Control, Broadcast Storm Control, Mirroring, Link Aggregation, Port Authentication, Port Security, Time Range, Classifier, Policy Rule, Queuing Method, Multicast, and AAA. The main content area is titled 'ZYXEL GS1920' and includes 'Refresh', 'Save', and 'Status' buttons. Below this is the 'IGMP Snooping' configuration section with tabs for 'IPv4 Multicast Status', 'IGMP Snooping VLAN', and 'IGMP Filtering Profile'. The 'IGMP Snooping' section has fields for 'Active' (checked), 'Querier' (checked), 'Host Timeout' (260), and '802.1p Priority' (No-Change). The 'IGMP Filtering' section has 'Active' (unchecked) and options for 'Unknown Multicast Frame' and 'Reserved Multicast Group' (both set to 'Flooding'). Below this is a table of port configurations:

Port	Immed. Leave	Normal Leave	Fast Leave	Group Limited	Max Group Num.	Throttling	IGMP Filtering Profile	IGMP Querier Mode
*	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="checkbox"/>		Deny	Default	Auto
1	<input checked="" type="radio"/>	<input type="radio"/> 4000	<input type="radio"/> 200	<input type="checkbox"/>	0	Deny	Default	Auto
2	<input checked="" type="radio"/>	<input type="radio"/> 4000	<input type="radio"/> 200	<input type="checkbox"/>	0	Deny	Default	Auto
3	<input checked="" type="radio"/>	<input type="radio"/> 4000	<input type="radio"/> 200	<input type="checkbox"/>	0	Deny	Default	Auto
4	<input checked="" type="radio"/>	<input type="radio"/> 4000	<input type="radio"/> 200	<input type="checkbox"/>	0	Deny	Default	Auto
5	<input checked="" type="radio"/>	<input type="radio"/> 4000	<input type="radio"/> 200	<input type="checkbox"/>	0	Deny	Default	Auto



Confirm other settings match those as shown in the above image
 Click 'Save' in the top right hand corner of the web-GUI to update the setting

PoE

Within 'Basic Setting' menu

Select 'PoE Set-Up'

Select 'PoE Mode: Consumption'

Click 'Apply' at the bottom of the screen

ZYXEL GS1920 Refresh Save

Menu

- Basic Setting
- Advanced Application
- IP Application
- Management
- System Info
- General Setup
- Switch Setup
- IP Setup
- Port Setup
- PoE Setup
- Interface Setup
- IPv6
- DNS
- Cloud Management

PoE Setup PoE Status

PoE Mode: Classification Consumption

Pre-Allocate: Active

Dual Detection: Active

Power Up Sequence Delay: Active

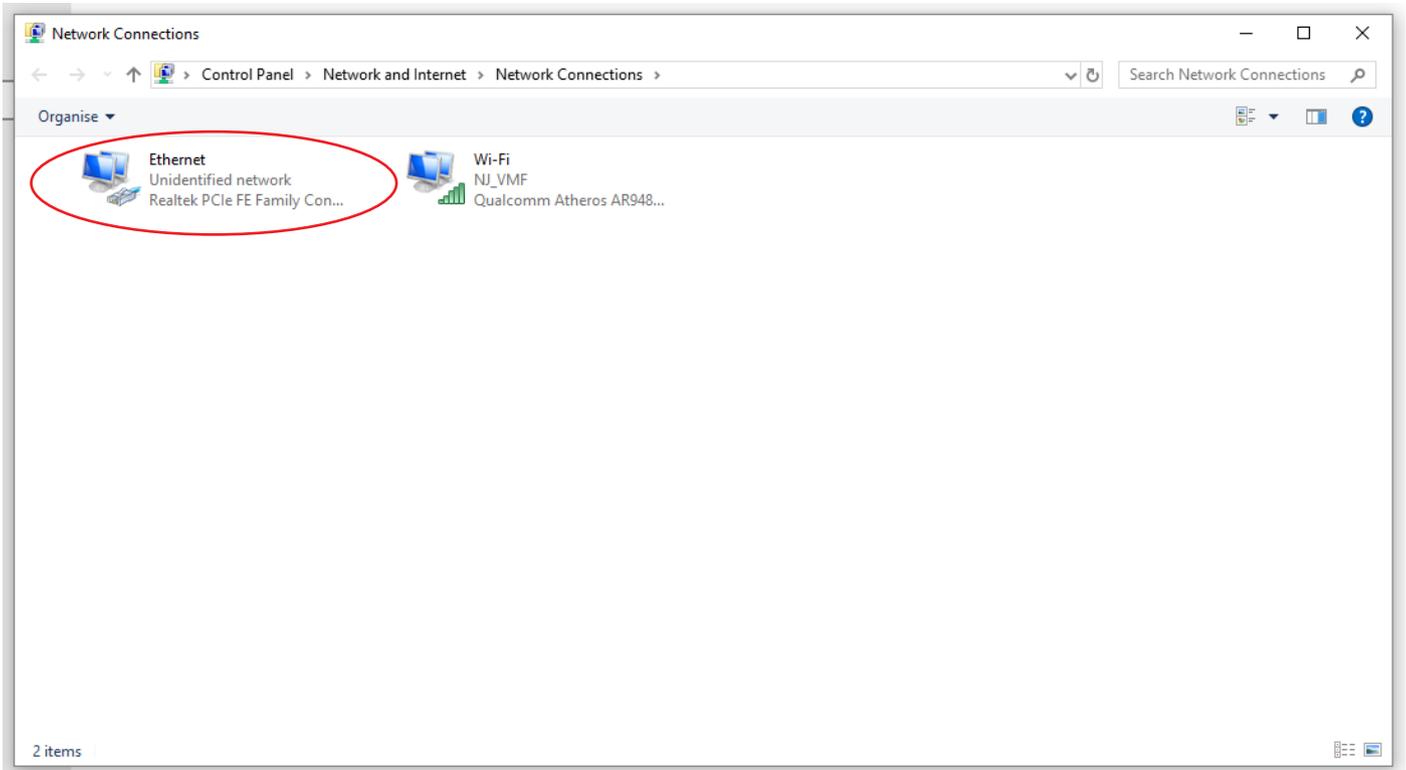
Port	PD	PD Priority	Power-Up	Max Power (mW)	Wide Range Detection	Time Range
*	<input type="checkbox"/>	Critical	802.3af		<input type="checkbox"/>	
1	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
2	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
3	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
4	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
5	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
6	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
7	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
8	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
9	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
10	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
11	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
12	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
13	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
14	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
15	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
16	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
17	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
18	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	
19	<input checked="" type="checkbox"/>	Critical	802.3at		<input type="checkbox"/>	

Click 'Save' in the top right hand corner of the web GUI.

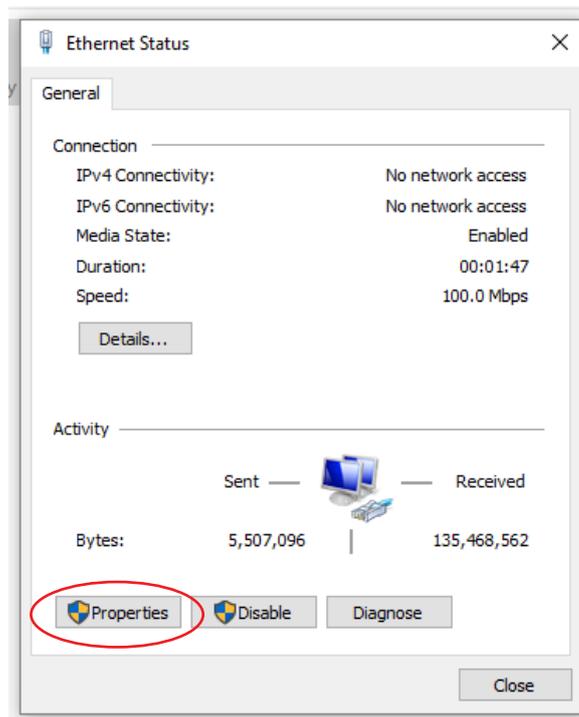
We would recommend re-booting the switch before connecting any Multicast units.

Amending your IP Address in Windows

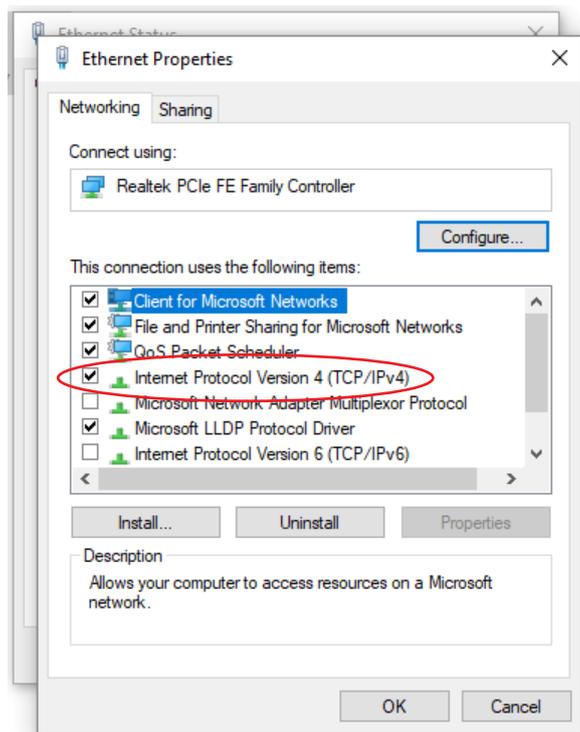
1. Connect the computer to the network switch using an Ethernet cable
2. Navigate to: **CONTROL PANEL / NETWORK & INTERNET / NETWORK CONNECTIONS**
3. Double click on the Ethernet connection as highlighted below:



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)**



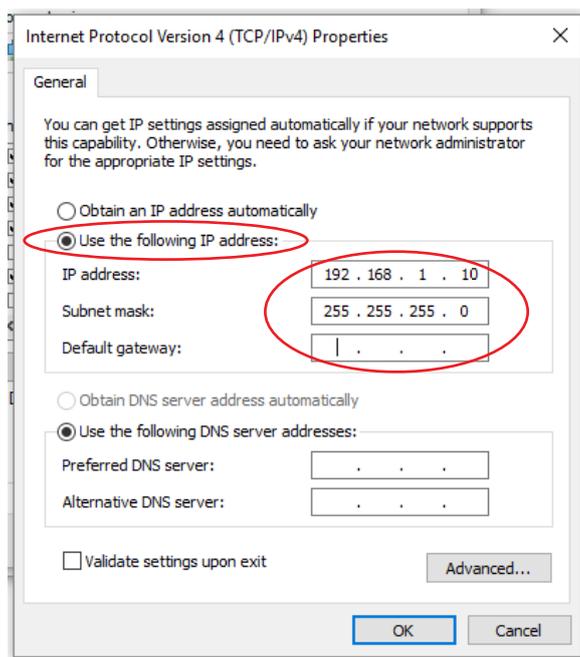
5. In the pop-up window that appears, double-click on the button marked: **USE THE FOLLOWING IP ADDRESS**

6. Enter the details as below:

IP Address: **192.168.1.10**

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**

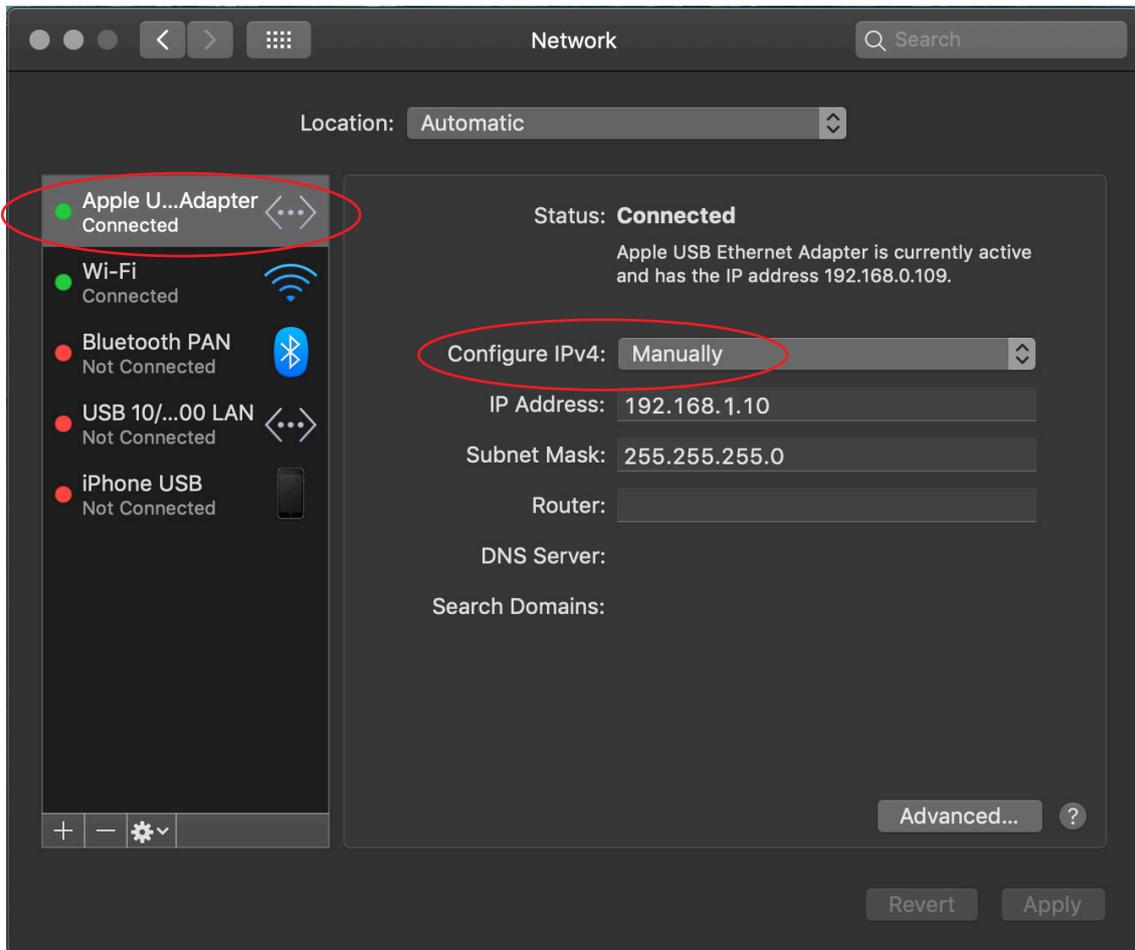


- Find the active Ethernet connection to the network switch on the left-hand menu tree
- Use the drop-down box marked: **CONFIGURE IPv4** and set to: **MANUALLY**
- Enter the details as below:

IP Address: **192.168.1.10**

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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