



Network Switch Set-up Guides

Ubiquiti

Pro & Pro Max Switch

when used in a 1Gb Blustream Video over IP system, in a single switch configuration system

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Introduction

The 1Gb Blustream Video over IP 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 video over IP 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 video over IP 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 video over IP 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 video over IP 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 video over IP system would be to have the customers business, or home network be kept independent of the Blustream video over IP 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 video over IP network are sharing a switch/es (not recommended). We would suggest creating a separate VLAN for the video over IP 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.

Managing the Switch and Firmware

The Ubiquiti Pro & Pro Max switches are managed through the UniFi Network server. In order to follow the steps in this guide to configure the switch for use with a Blustream video over IP system the switch should first be adopted into the UniFi Network server.

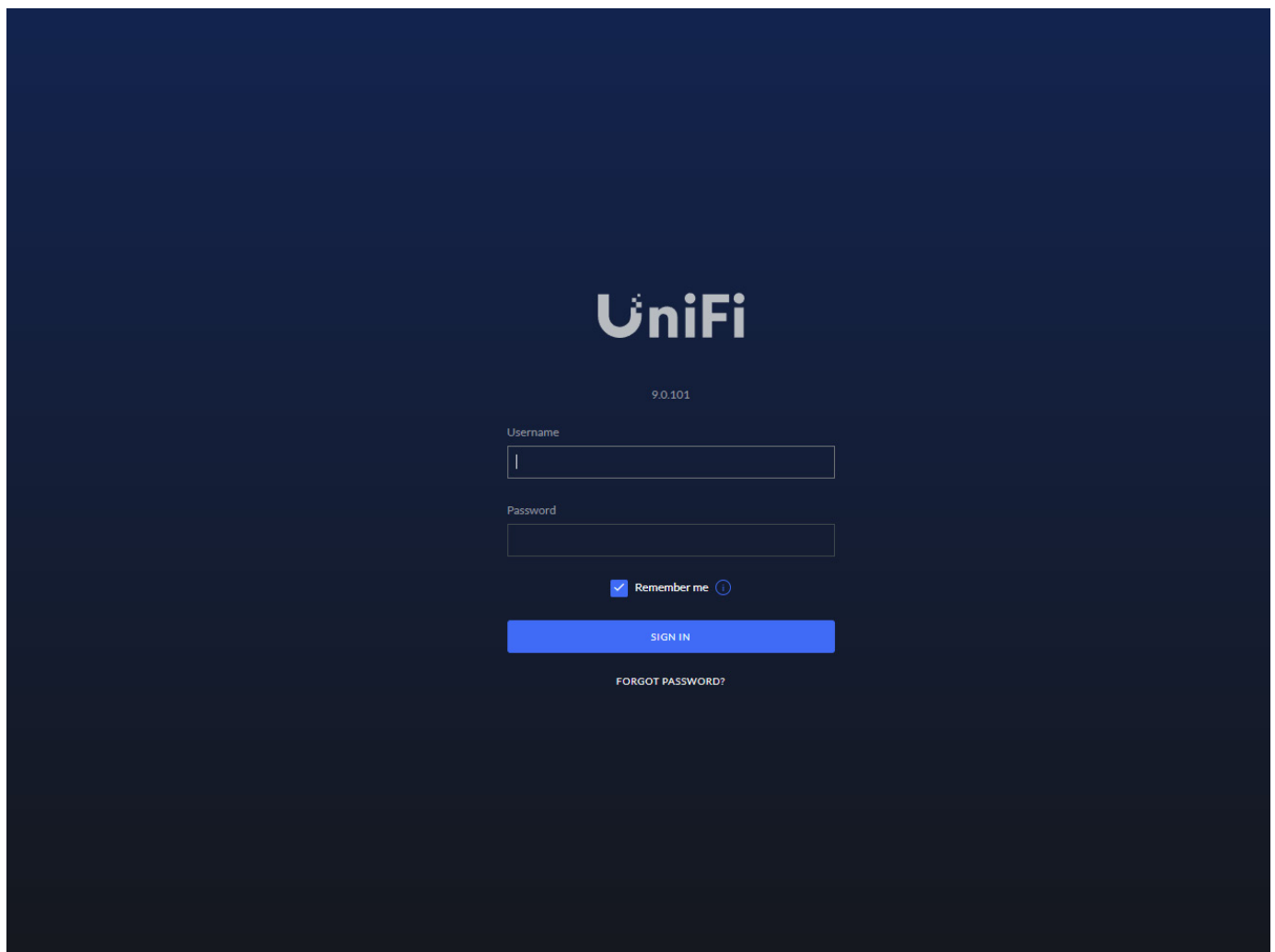
Some of the features required for a video over IP system are only available in newer versions of Ubiquiti firmware, this has been tested with the minimum firmware versions below:

UniFi Network Server, version 8.4.59 or later

UniFi Pro Switch, version 7.1.26 or later

UniFi Pro Max Switch, version 7.2.123 or later

If required please update the firmware to the minimum versions above through the UniFi Network Server settings.



Create a New VLAN and Enable IGMP Snooping

A new VLAN will need to be created for the video network, settings required to support a video over IP system will then need to be enabled on this VLAN. First, create the VLAN and enable IGMP Snooping:

Go to Settings > Networks > New Virtual Network

Enter a name for the VLAN, for example “VoIP”

Enter a VLAN ID, for example “100” (this can be any VLAN ID not already in use)

Enable IGMP snooping by selecting the tick box

Now click “Apply Changes”.

The screenshot shows the UniFi Network settings interface. On the left is a sidebar with navigation icons and a search bar. The main area is titled 'Network' and contains a warning message: 'IP addresses and DHCP must be configured on your third-party gateway. For a full-featured experience, consider using a UniFi OS Console that comes with integrated gateway functionality. Learn more'. Below the warning, the configuration fields are as follows:

- Name:** A text input field containing 'VoIP'.
- Router:** A dropdown menu set to 'Third-party Gateway'.
- VLAN ID:** A numeric input field set to '100'.
- IGMP Snooping:** A checkbox that is checked.
- DHCP Guarding:** An unchecked checkbox.

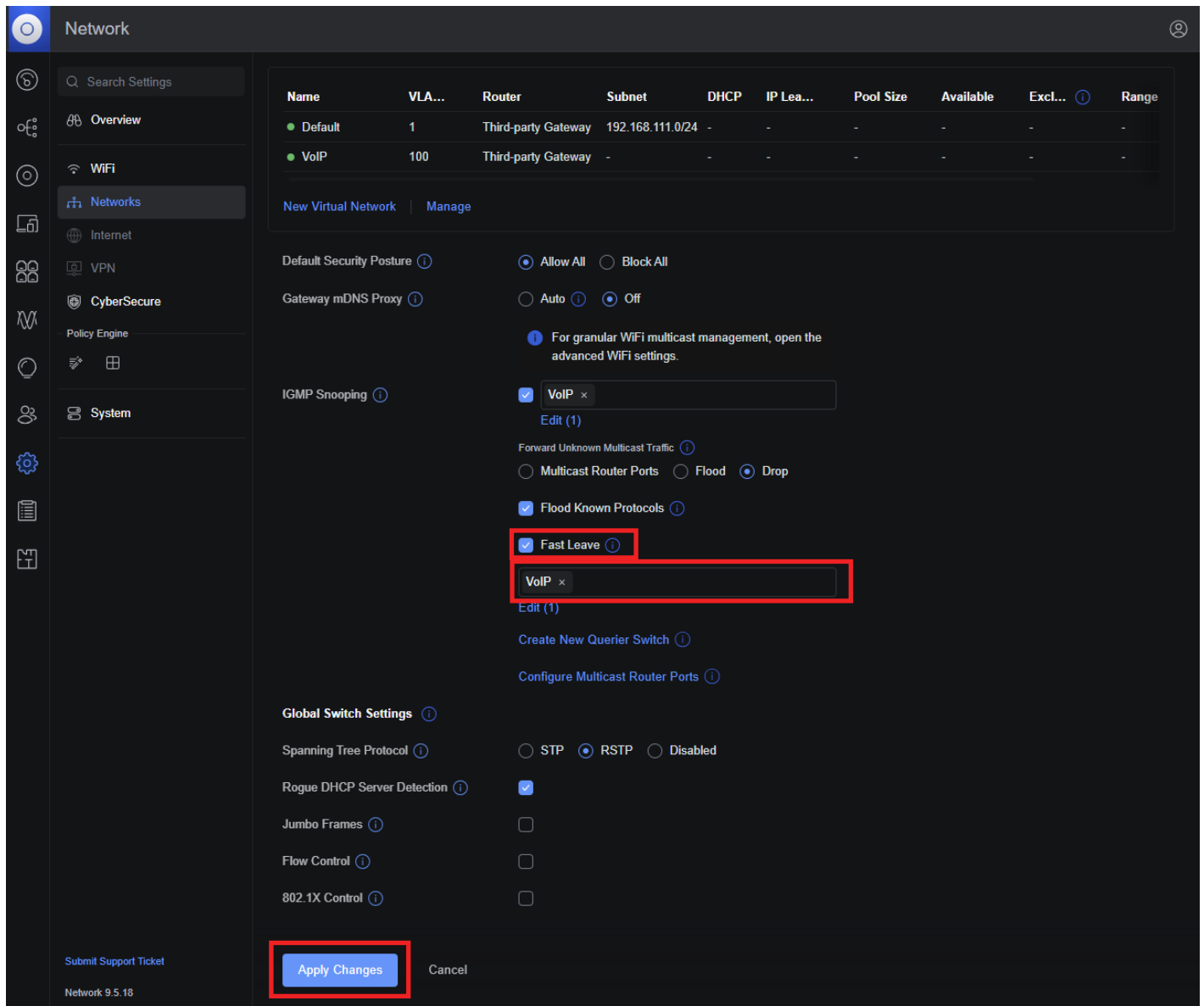
At the bottom of the form, there are two buttons: 'Apply Changes' and 'Cancel'.

Enable Fast Leave

To enable Fast Leave on the video VLAN:

Go to Settings > Networks > Multicast Settings

In this section, enable “Fast Leave” by checking the tick box, make sure the video VLAN is selected in the box below and click “Apply Changes”.



The screenshot shows the Ubiquiti Network Settings interface. The left sidebar contains navigation options: Overview, WiFi, Networks (selected), Internet, VPN, CyberSecure, Policy Engine, and System. The main content area is titled 'Network' and displays a table of virtual networks.

Name	VLA...	Router	Subnet	DHCP	IP Lea...	Pool Size	Available	Excl...	Range
Default	1	Third-party Gateway	192.168.111.0/24	-	-	-	-	-	-
VoIP	100	Third-party Gateway	-	-	-	-	-	-	-

Below the table, there are links for 'New Virtual Network' and 'Manage'. The 'IGMP Snooping' section is expanded, showing the following settings:

- Default Security Posture: ☒ Allow All ☐ Block All
- Gateway mDNS Proxy: ☐ Auto ☒ Off
- For granular WiFi multicast management, open the advanced WiFi settings.
- IGMP Snooping: ☒ VoIP x Edit (1)
- Forward Unknown Multicast Traffic: ☐ Multicast Router Ports ☐ Flood ☒ Drop
- ☒ Flood Known Protocols Edit (1)
- ☒ Fast Leave Edit (1)
- VoIP x Edit (1)
- Create New Querier Switch
- Configure Multicast Router Ports

The 'Global Switch Settings' section is also visible, with the following settings:

- Spanning Tree Protocol: ☐ STP ☒ RSTP ☐ Disabled
- Rogue DHCP Server Detection: ☒
- Jumbo Frames: ☐
- Flow Control: ☐
- 802.1X Control: ☐

At the bottom, there is a 'Submit Support Ticket' link and a 'Network 9.5.18' version indicator. The 'Apply Changes' button is highlighted with a red box.

Create New Querier Switch

A Querier Switch should be selected for the video network to ensure the correct switch is the IGMP querier for the video VLAN.

Go to Settings > Networks > Multicast Settings > “Create New Querier Switch”

Select the video VLAN that you created, select the video switch as the querier and “Auto” for the Querier Address. Then click Create.

The screenshot shows the Ubiquiti UniFi Network Manager interface. The left sidebar contains navigation options: Network, WiFi, Networks, Internet, VPN, Security, Routing, Profiles, and System. The main panel displays the 'Network' settings, including a table of virtual networks and the 'Multicast Settings' section. A modal dialog titled 'Create New Querier Switch' is open, prompting the user to 'Set a switch as the IGMP Querier for a specific network.' The dialog includes three fields: 'Network' (set to 'VoIP (100)'), 'Switch' (set to 'USW Pro 24 PoE'), and 'Querier Address' (set to 'Auto'). The 'Create' button is highlighted with a red box.

Name	VLAN ID	Router	Subnet	IP Leases
Default	1	Third-party Gateway	192.168.111.0/24	-
VoIP	100	Third-party Gateway	-	-

Multicast Settings

IoT Auto-Discovery ☐

mDNS ☐

Multicast Filtering ☒ VoIP x

IGMP Snooping ☒

Create New Querier Switch

Set a switch as the IGMP Querier for a specific network.

Network: VoIP (100)

Switch: USW Pro 24 PoE

Querier Address: ☒ Auto

Cancel Create

Jumbo Frames

To enable Jumbo Frames on the video switch:

Go to UniFi Devices > Select the video switch > Settings

Now check the tick box to enable Jumbo Frames and click “Apply Changes”.

The screenshot shows the UniFi Settings interface for a USW Pro 24 PoE switch. The interface is dark-themed and includes a top navigation bar with icons for settings, status, and a close button. The main content area is divided into sections: Name, IP Settings, Advanced, and Manage. In the Advanced section, the 'Jumbo Frames' checkbox is checked and highlighted with a red box. Other settings visible include 'Network Override' (unchecked), 'IP Configuration' (DHCP selected), 'Global Switch Settings' (unchecked), 'Flow Control' (unchecked), '802.1X Control' (unchecked), 'Spanning Tree Protocol' (RSTP selected), 'Priority' (28672), 'SNMP' (unchecked), 'Brightness' (80), 'Display Rotation' (None selected), and 'Night Mode' (10:00 PM to 08:00 AM). The 'Apply Changes' button at the bottom right is also highlighted with a red box.

USW Pro 24 PoE

Name
USW Pro 24 PoE

IP Settings

☐ Network Override

IP Configuration
☒ DHCP ☐ Static

Advanced

☐ Global Switch Settings

☒ Jumbo Frames ☐ Flow Control

☐ 802.1X Control

Spanning Tree Protocol
☐ STP ☒ RSTP ☐ Disabled

Priority
28672

☐ SNMP

Manage

Brightness 80

Display Rotation
 None 90° 180° 270°

Night Mode
Start Time 10:00 PM End Time 08:00 AM

Cancel Apply Changes

Assign Ports to the VLAN

Now the ports that the Blustream IP transmitters/receivers/ACM Video LAN are connected to need to be assigned to the new “VoIP” video VLAN that was created.

Go to Ports > select the video switch

Click the port you will be using for VoIP, change the “Native VLAN/Network” drop down to the newly created “VoIP” video VLAN

Select “Block All” for “Tagged VLAN Management”

Click Apply Changes and the switch/ports are now configured for use with a Blustream 1Gb video over IP system.

Please note: For management of the system via the ACM, the “Control LAN” port should be connected to the control network, the “Tagged VLAN Management” setting for the ACM Control LAN port should also be set to “Block All”, in addition to all ports on the “Video LAN” as described above.

The screenshot displays the 'Network' page of a Ubiquiti switch web interface. On the left sidebar, the 'Ports' tab is selected. The main area shows a table of 26 ports. Port 1 is highlighted with a red box. On the right, the 'Port Settings' modal is open for Port 1. In this modal, the 'Native VLAN / Network' dropdown is set to 'VoIP (100)' and the 'Tagged VLAN Management' radio button is set to 'Block All'. Both of these settings are highlighted with red boxes. At the bottom right of the modal, the 'Apply Changes' button is also highlighted with a red box. The table below shows the configuration for all 26 ports.

Port	Anomaly	Name	Connection	Operation	PoE Mode	Speed	Connected MAC	Connected IP
1	0	Port 1	34:d0:b8:28:36:32		PoE+	GbE	34:d0:b8:28:36:32	169.254.6.4
2	0	Port 2	34:d0:b8:28:45:32		PoE+	GbE	34:d0:b8:28:45:32	169.254.3.3
3	0	Port 3	34:d0:b8:28:0a:1e		PoE+	GbE	34:d0:b8:28:0a:1e	169.254.6.2
4	0	Port 4	T490 20:d3		PoE+	GbE	e8:6a:64:f8:20:d3	169.254.2.101
5	0	Port 5	34:d0:b8:22:47:7f		PoE+	GbE	34:d0:b8:22:47:7f	169.254.3.1
6	0	Port 6	34:d0:b8:22:39:50		PoE+	GbE	34:d0:b8:22:39:50	169.254.3.2
7	0	Port 7	00:1d:c1:86:35:dc		PoE+	GbE	00:1d:c1:86:35:dc	169.254.1.111
8	0	Port 8	NPA20DA-271c13 1c:13		PoE+	FE	34:d0:b8:27:1c:13	169.254.81.45
9	0	Port 9	34:d0:b8:27:2d:72		PoE++	FE	34:d0:b8:27:2d:72	169.254.8.171
10	0	Port 10	6c:df:fb:00:02:e1		PoE++	FE	6c:df:fb:00:02:e1	169.254.2.225
11	0	Port 11	34:d0:b8:28:3a:e1		PoE++	GbE	34:d0:b8:28:3a:e1	169.254.6.3
12	0	Port 12	00:10:f3:29:fb:7c		PoE++	Auto	00:10:f3:29:fb:7c	-
13	0	Port 13	-		PoE++	Auto	-	-
14	0	Port 14	-		PoE++	Auto	-	-
15	0	Port 15	-		PoE++	Auto	-	-
16	0	Port 16	T490 20:d3		PoE++	Auto	e8:6a:64:f8:20:d3	-
17	0	Port 17	-		PoE++	Auto	-	-
18	0	Port 18	-		PoE++	Auto	-	-
19	0	Port 19	-		PoE++	Auto	-	-
20	0	Port 20	-		PoE++	Auto	-	-
21	0	Port 21	-		PoE++	Auto	-	-
22	0	Port 22	-		PoE++	Auto	-	-
23	0	Port 23	-		PoE++	Auto	-	-
24	0	Port 24	-		PoE++	Auto	-	-
25	0	SFP+ 1	USW Pro 24 PoE		-	10 GbE	00:10:f3:29:fb:7c	192.168.111.112
26	0	SFP+ 2	-		-	Auto	-	-



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