

MEDIA OVER IP SYSTEM
B-900-MOIP-4K-CTRL
B-900-MOIP-4K-TX
B-900-MOIP-4K-RX

BINARY

BINARY MOIP SETUP GUIDE FOR THE PAKEDGE S3L-24P NETWORK SWITCH



INTRODUCTION

This guide helps you configure IGMP and multicast on a Pagedge S3L-24P switch for use with your Binary MoIP system. The first part of the document describes the steps required, while the second part explains the different settings required in a multi-switch topology. The S3L-24P does not support switch “stacking” for configuration management, so configuration is required on each switch individually.

IMPORTANT: As you plan your MoIP installation, be aware of the potential bandwidth use from the network topology. The SFP+ Uplinks on the S3L-24P support 10Gbps each, so be aware of the number of transmitter bandwidth utilization and where each video stream can potentially travel through the network.

CONFIGURING THE S3L-24P

Step 1: Add the Dedicated VLAN (optional)

- **If you wish to run the MoIP system on its own VLAN**, follow these steps to create a VLAN with IP Interface on the S3L-24P. You must create the dedicated VLAN first before the interface can be modified. For this example, we create and use VLAN 10. More details on creating and managing VLANs can be found in the companion document “S3 Series Switches - Creating VLANs” available at Control4.com.
- **If you intend to only use VLAN 1**, skip to **Step 2** and replace any mention of VLAN 10 with VLAN 1 for your configuration.

Log in to your switch. The default login for the S3L-24P is at the IP address 192.168.1.205, username *pagedge* password *pagedges*—though hopefully you changed this password at install.

Navigate to **Configure > L2 Switching > 802.11Q VLAN**

In the **VLAN ID List** field, type “10”, then click **Add**.

VLAN ID	VLAN NAME	TAGGED MEMBER PORTS	UNTAGGED MEMBER PORTS	DYNAMIC MEMBER PORTS	VLAN TYPE
1	default	--	eth1/1-1/28	--	--

Now add all ports that you intend to use for media devices so they operate on VLAN 10.

Navigate to **Configure > L2 Switching > VLAN > Port-Based VLAN**

PORT	VLAN MODE	INGRESS CHECKING	ACCEPTABLE FRAME TYPE	
eth1/1	Hybrid	Enabled	Admit All	Detail / Edit
eth1/2	Hybrid	Enabled	Admit All	Detail / Edit

Next, for each port on VLAN 10, click the **Edit** link at the right end of each row.

In the edit dialog, set the **VLAN Mode** field to **Access**. In the **VLAN ID (1-4094)** field, enter **10**.



Next, the S3L-24P requires you to create an IP interface for the VLAN where IGMP Snooping can be configured.

Navigate to **Administration > Management > Network Interface > Network Property**.

In the **Interface** field, type “vlan10”, then click **Add**.



INTERFACE	IP ADDRESS	IPv6 ADDRESS	MAC ADDRESS	STATUS
vlan1	192.168.1.205/24	unassigned	90-a7-c1-80-2e-21	up

Step 2: Configure Network Interfaces

Next, click on the **IPv4** tab on the left side and type “vlan10” in the interface field.

Click the drop-down menu for **Primary IP Address** and select **Set**. Then select the **Static** radio button that appears.

In the **Primary IP/Mask Length** field that appears, assign an IP address for the switch to use on VLAN 10. Use 192.168.10.205/24 (the /24 at the end represents a 255.255.255.0 subnet mask).

Click **Apply**.



You'll see the assigned IP populate in the list, as shown below.

Now, in the Interface column of the list, click the link for "vlan10" under the Interface column.

The screenshot shows the IPv4 configuration page. On the left, there is a sidebar with 'Network Property' and 'IPv4' selected. The main area shows configuration for 'vlan1' with fields for 'Interface', 'ARP Timeout', and 'Primary IP Address'. Below this is a table with 2 entries:

INTERFACE	PRIMARY IP ADDRESS	STATIC	DHCP	MAC ADDRESS	ARP TIMEOUT (SECONDS)	IP MTU (BYTES)	STATUS	PROTOCOL
vlan1	192.168.1.205/24	running		90-a7-c1-65-f0-c1	14400	1500	up	up
vlan10	192.168.10.205/24	running		90-a7-c1-65-f0-c2	14400	1500	up	up

With current MoIP firmware (as of 09 Dec 19), the TX and RX units use self-assigned IP addresses. To interact with the S3L, the switch needs to see those IP addresses.

To enable, look for the **Secondary IP Address / Mask Length** field, enter "169.0.0.1/8", then click **Add**.

The screenshot shows the 'Secondary IP Address Settings' page for 'vlan10'. It has fields for 'Interface', 'Primary IP Address', and 'Secondary IP Address/Mask Length'. The 'Secondary IP Address/Mask Length' field contains '169.0.0.1/8'. There are 'Back' and 'Add' buttons.

After clicking Add, you see the screen below. If you are using multiple switches for your MoIP system, increment the IP value by one for each additional switch, 169.0.0.2/8, 169.0.0.3/8, etc.

The screenshot shows the 'Secondary IP Address Settings' page after adding a secondary IP. The 'Secondary IP Address/Mask Length' field now contains '10.90.90.90/8'. Below the configuration fields is a table with 1 entry:

	SECONDARY IP ADDRESS
<input type="checkbox"/>	169.0.0.1/8

Step 3: Enable and Configure IGMP Snooping

Navigate to **Configure > Application > IGMP > IGMP Settings**.

In the **VLAN ID (1-4094)** field, type "10" to indicate the VLAN you are configuring.

Set **Status** to **Enabled**.

Set **Version** to **V2**.

Click **Apply** on the right-hand side.

IGMP Settings
VLAN ID (1-4094)
Status Enabled Disabled
Access Group Enabled Disabled
Last Member Query Interval (1000-25000 msec)
Query Interval (1-31744 sec)
Query Max Response Time (1-25 sec)
Robustness Variable (1-7)
Version V1 V2 V3

At the bottom of the page, in the list of IGMP entries, find the entry for VLAN 10.

Ensure the **Version** is set to **V2**.

Click the **Detail** link at the far right to ensure the **IGMP State** is enabled

Total Entries: 1

INTERFACE	ACCESS GROUP	VERSION	QUERY INTERVAL(SEC)	QUERY MAX RESPONSE TIME	LAST MEMBER QUERY INTERVAL	ROBUSTNESS VARIABLE	
VLAN10		V2	125	10	1000	2	Detail

Navigate to **Configure > Application > IGMP Snooping**.

In the **VLAN ID (1-4094)** field, type "10" to configure the VLAN 10.

Enable **IGMP Snooping Querier**.

Enable **Status**.

Disable **Report Suppression**.

Enable **Immediate Leave**.

Click **Apply** at the right-hand side.

Global Setting
Static Group Settings
Group Information
Mrouter
Mrouter Information

IGMP Snooping Proxy Enabled Disabled [Apply](#)

VLAN ID (1-4094)
IGMP Snooping Querier Enabled Disabled
Suppress time (0-300 sec)

Status Enabled Disabled
Report Suppression Enabled Disabled
Immediate Leave Enabled Disabled [Apply](#)

Total Entries: 0 [Delete](#)

<input type="checkbox"/>	VLAN ID	STATUS	IGMP SNOOPING QUERIER	REPORT SUPPRESSION	SUPPRESS TIME	IMMEDIATE LEAVE
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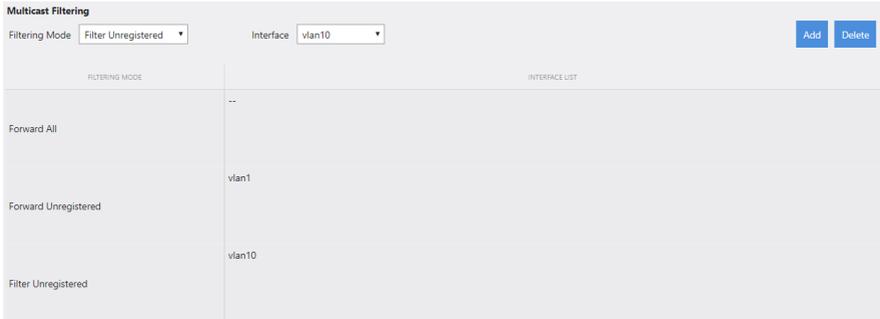
Step 4: Filter Unregistered Multicast

Navigate to **Configure > L2 Switching > Multicast Filtering**.

Set **Filtering Mode** to **Filter Unregistered**.

Set **Interface** to **vlan10**.

Click **Add**.



FILTERING MODE	INTERFACE LIST
Forward All	--
Forward Unregistered	vlan1
Filter Unregistered	vlan10

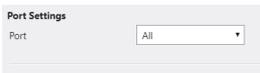
This prevents unregistered multicast traffic from being forwarded throughout the VLAN.

Note: If you add another device to the MoIP VLAN, multicast communication for this device may be disrupted (possibly including discovery protocols). This is because the settings help the MoIP system to operate at optimal levels. We recommend you leave all other devices off the MoIP VLAN.

Step 5: Enable Jumbo Frames

Navigate to **Administration > Management > Port > Port Settings**.

Make sure the **Ports** field is set to **All**.



Port Settings
Port: All

Find the **Maximum Receive Frame Size** field.

Set this field to **9216**, then click **Apply**.



Maximum Receive Frame Size (1536-9216 bytes) 9216 Apply

Verify the settings have been applied to all ports by scrolling to the bottom of the page. You'll see a list of ports with a Maximum Receive Frame Size column for each.

PORT	STATE	SPEED	DUPLEX	FLOW CONTROL	MAXIMUM RECEIVE FRAME SIZE
eth1/1	Enabled	AUTO	AUTO	None	9216
eth1/2	Enabled	AUTO	AUTO	None	9216
eth1/3	Enabled	AUTO	AUTO	None	9216
eth1/4	Enabled	AUTO	AUTO	None	9216
eth1/5	Enabled	AUTO	AUTO	None	9216

Step 6: Save!

You must save the configuration! If you do not save the configuration after applying these settings, the settings clear once the switch is powered down.

Navigate to **Maintenance > Save**.

Click the **Save** button, then click **OK**.

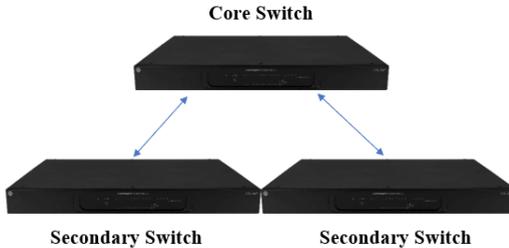
Save

Press the button to save the system settings to NV-RAM.

Save

ARE THERE MULTIPLE SWITCHES IN THE NVX NETWORK?

The recommended switch topology is to have a Core switch, with Secondary switches connected below it.



With multiple S3/S3Ls that have NVX devices connected, configure each switch as above. However, you must make a minor (but important) change to the IGMP Snooping configuration depending on where the switch is in the topology.

On the Core Switch

Navigate to **Configure > Application > IGMP Snooping**.

Set **IGMP Snooping Querier** to **Enabled**.

Set **Immediate Leave** to **Disabled**.

Global Setting	
Static Group Settings	IGMP Snooping Proxy <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled Apply
Group Information	VLAN ID (1-4094) <input type="text" value="10"/> Status <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled
Mrouter	IGMP Snooping Querier <input checked="" type="radio"/> Enabled <input type="radio"/> Disabled Report Suppression <input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
Mrouter Information	Suppress time (0-300 sec) <input type="text" value="10"/> Immediate Leave <input type="radio"/> Enabled <input checked="" type="radio"/> Disabled Apply

On the Secondary Switches

Navigate to **Configure > Application > IGMP Snooping**.

Set **IGMP Snooping Querier** to **Disabled**.

Set **Immediate Leave** to **Enabled**.

Global Setting	Global Setting				Apply
Static Group Settings	IGMP Snooping Proxy	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled			
Group Information	VLAN ID (1-4094)	<input type="text" value="10"/>	Status	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	
Mrouter	IGMP Snooping Querier	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled		Report Suppression	<input type="radio"/> Enabled <input checked="" type="radio"/> Disabled
Mrouter Information	Suppress time (0-300 sec)	<input type="text" value="10"/>	Immediate Leave	<input checked="" type="radio"/> Enabled <input type="radio"/> Disabled	Apply

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