

MEDIA OVER IP SYSTEM
All B-900-MOIP-4K Units

BINARY

BINARY MOIP SETUP GUIDE FOR MULTIPLE PAKEDGE MS SERIES SWITCHES



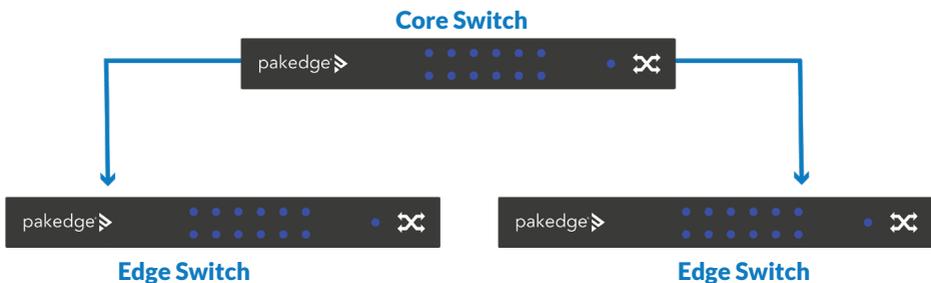
FC CE

INTRODUCTION

This document covers the basic configuration for setting up a MoIP system with multiple MS Series switches. While this configuration should guide you in most situations, there are many variables which could necessitate modifying this setup. Use this as a general guide to start your design and configuration. Further help may be required from tech support.

In a multiple switch topology, one switch acts as the Core switch for a MoIP system. This isn't necessarily the core switch for the whole network, but this switch should have all other MoIP switches connected directly to it and nowhere else.

When placing MoIP transmitters throughout a network, pay close attention to the maximum amount of bandwidth being used along different paths between transmitters and receivers. Pagedge MS switches provide 10GBps SFP+ uplinks, allowing for up to 20 MoIP streams to pass between each interconnected switch.



VLAN SETUP

In large networks it can be beneficial to configure the MoIP system to be part of its own VLAN. This isolates MoIP traffic so it does not interfere with other systems on the network.

The following steps can be taken to configure a VLAN for MoIP. In the IGMP configuration that follows, the VLAN created here should be used. If no added VLANs are being used the IGMP configuration steps are the same, except for the VLAN used being your LAN.

1. Navigate to **Interfaces > VLAN**
2. Under the first section Database, click the **Option** icon, then click **Add** to create new VLANs on the switch. Click **Apply** at the top of the page, when finished.

The screenshot shows a 'Add VLAN' dialog box with a close button (X) in the top right corner. It contains two input fields: 'VLAN ID or Range' with the value '10' and 'Name' with the value 'MoIP'. At the bottom, there are two buttons: 'Cancel' (grey) and 'Add' (blue).

3. Next, navigate to [Interfaces](#) > [VLAN](#) > [Switchport Configuration](#). MS Switches support two Switchport options for VLAN tagging:
 - a. **Access** - A single VLAN ID can be assigned to a port and all incoming traffic on that port is placed into that VLAN. The default for all ports on the switch is Access mode, with the VLAN set to 1.
 - b. **Trunk** - A single VLAN ID is set as the Untagged "Native VLAN." Meaning any untagged, incoming traffic is assigned to that VLAN and any traffic outgoing for that VLAN is not tagged.
A trunk port can be set to allow any number of VLANs as tagged traffic, so that traffic must be incoming or leaving on one of the specified VLANs.
4. All ports connected to MoIP devices should be set with your MoIP VLAN on **Access**.

Edit Switchport Configuration ⊗

Switchport Configuration Selected: 1

Switchport Mode

Trunk

Trunk Native VLAN (Untagged)

1

Allow Trunk VLANs (Tagged)

1,10

Priority

0

5. Ports connected to your router, switch, and access points should be set to **Trunk**.

Edit Switchport Configuration ⊗

Switchport Configuration Selected: 1

Switchport Mode

Trunk

Trunk Native VLAN (Untagged)

1

Allow Trunk VLANs (Tagged)

1,10

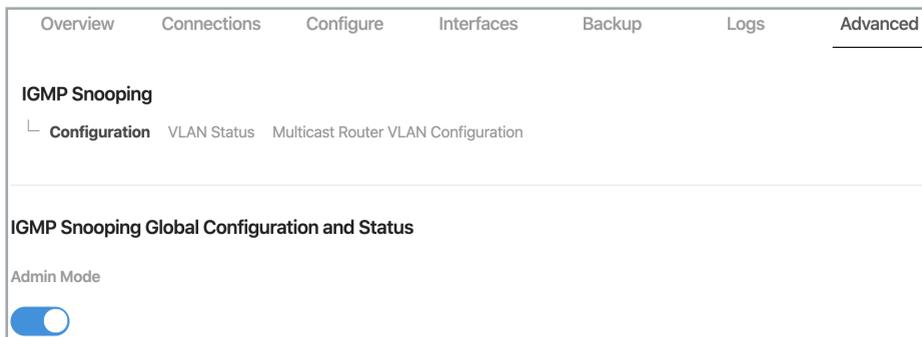
Priority

0

CORE SWITCH CONFIGURATION

1. Switches running MoIP must have their MTU set to be greater than 8000 bytes. The default configuration of MS switches is already set to the maximum of 9198. Double check this under [Interfaces](#) > [Port](#) > [Port Summary](#) and by editing any port to view its details.
2. Navigate to [Advanced](#) > [IGMP Snooping](#) > [Configuration](#).

3. Set **IGMP Snooping Global Configuration Status Admin Mode** to **Enable**.



4. Navigate to **Advanced > IGMP Snooping > VLAN Status**.

5. Click the **Option** button, then select **Add**.

6. Select the **VLAN ID** of the MoIP VLAN you created.

The dialog box is titled 'Add IGMP Snooping VLAN Status' and contains the following fields and controls:

- VLAN ID:** A dropdown menu with '10' selected.
- Fast Leave Admin Mode:** A toggle switch that is currently turned off.
- Group Membership Interval (Seconds):** A text input field containing '260'.
- Max Response Time (Seconds):** A text input field containing '10'.
- Multicast Router Expiration Time (Seconds):** A text input field containing '0'.
- Report Suppression Mode:** A toggle switch that is currently turned off.

At the bottom of the dialog, there are two buttons: a grey 'Cancel' button and a blue 'Add' button.

Note: Do not enable **Fast Leave** on the Core switch. This could cause MoIP receivers on Edge switches to lose connection with a transmitter stream, if another receiver on the same Edge switch changes to a different transmitter stream.

- Navigate to **Advanced > IGMP Snooping Querier > Configuration** and click the **Admin Mode** toggle to make the Core switch the IGMP Snooping Querier. Leave **IP Address** at 0.0.0.0.
IMPORTANT: Only enable IGMP Snooping Querier on the Core switch.
- Under **IGMP Version**, select **IGMP V2**.

Overview Connections Configure Interfaces Backup Logs **Advanced**

IGMP Snooping Querier

Configuration VLAN Configuration VLAN Status

IGMP Snooping Querier Configuration

Admin Mode

IP Address

0.0.0.0

IGMP Version

IGMP v1 IGMP v2 IGMP v3

- Under **IGMP Snooping Querier**, go to **VLAN Configuration** and click the **Option** button, then **Add**. Select the **VLAN ID** for the VLAN which is running IGMP Snooping.

Add IGMP Snooping Querier VLAN ⊗

Configuration

VLAN ID

10

Querier Election Participation

Querier VLAN IP Address

0.0.0.0

Cancel Add

Querier Election Participation does not need to be enabled if you are manually setting the Core switch in the network as the querier, and you're leaving querier disabled on the edge switches. Leave Querier VLAN IP Address at 0.0.0.0

- The MoIP VLAN must also have **Unregistered Multicast Behavior** set to drop. To do so, navigate to **Advanced > Unregistered Multicast Behavior** and click the **Unregistered Multicast Drop** toggle.

Unregistered Multicast Behavior

Configuration Exception Details Interface Configuration

Unregistered Multicast Behavior Configuration

Unregistered Multicast Drop

Control Frames Exception Lists

Filter By

Exception List Name Action

EXC_Test123

EDGE SWITCH CONFIGURATION

All Edge switches must connect back to a central Core switch, in a MoIP topology. Be aware of the bandwidth requirements of the MoIP devices throughout your network and the limitations based on your available uplink bandwidth.

- Switches running MoIP must have their MTU set to be greater than 8000 bytes. The default configuration of MS switches is already set to the maximum of 9198. Double check this under **Interfaces > Port > Port Summary** and by editing any port to view its details.
- Navigate to **Advanced > IGMP Snooping > Configuration**.
- Click the **Admin Mode** toggle, under **IGMP Snooping Global Configuration Status**.

Overview Connections Configure Interfaces Backup Logs Advanced

IGMP Snooping

Configuration VLAN Status Multicast Router VLAN Configuration

IGMP Snooping Global Configuration and Status

Admin Mode

- Navigate to **Advanced > IGMP Snooping > VLAN Status**.
- Click the **Option** button, then select **Add**.

6. Select the **VLAN ID** of the MoIP VLAN.
7. Because this is an Edge switch we must enable **Fast Leave**. Click the **Fast Leave Admin Mode** toggle.
Fast leave improves video switching times and bandwidth utilization.

Add IGMP Snooping VLAN Status ✕

VLAN ID

10

Fast Leave Admin Mode

Group Membership Interval (Seconds)

260

Max Response Time (Seconds)

10

Multicast Router Expiration Time (Seconds)

0

Report Suppression Mode

Cancel
Add

Overview								Connections	Configure	Interfaces	Backup	Logs	Advanced
IGMP Snooping								Configuration		VLAN Status		Multicast Router VLAN Configuration	
IGMP Snooping VLAN Status								Filter By <input type="text"/>				OPTIONS	
VLAN ID	Admin Mode	Fast Leave Admin Mode	Group Membership Interval (Seconds)	Max Response Time (Seconds)	Multicast Router Expiration Time (Seconds)	Report Suppression Mode	Action						
10	<input checked="" type="checkbox"/>	Enabled	260	10	0	Disabled	⋮						

IMPORTANT: *IGMP Snooping Querier should not be enabled in Edge switches.* If you choose to enable it, great care must be given to ensure the correct switch is acting as the querier, and it is important to calculate bandwidth for changing flows. Whichever switch is elected as the querier forwards all MoIP traffic to that switch. This is normal operation for multicast and IGMP.

8. The MoIP VLAN must also have **Unregistered Multicast Behavior** set to drop. To do so, navigate to **Advanced > Unregistered Multicast Behavior** and click the **Unregistered Multicast Drop** toggle.

Unregistered Multicast Behavior

Configuration Exception Details Interface Configuration

Unregistered Multicast Behavior Configuration

Unregistered Multicast Drop

Control Frames Exception Lists

Filter By

Exception List Name Action

EXC_Test123	<input type="button" value="..."/>
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OPTIONS

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