

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

BINARY

BINARY MOIP SETUP GUIDE FOR MULTIPLE PAKEDGE MS SERIES SWITCHES

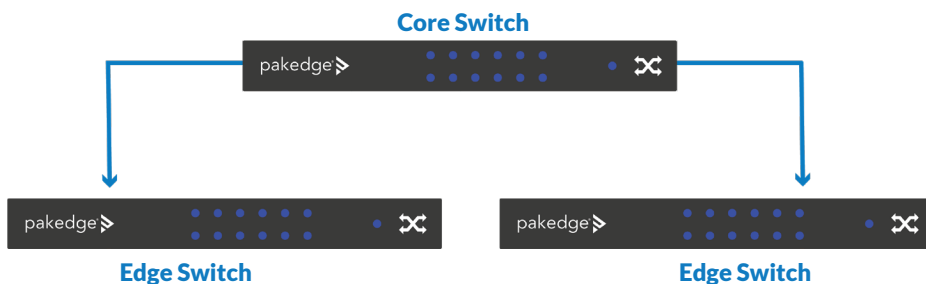


INTRODUCTION

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. Pakedge MS switches provide 10GBps SFP+ uplinks, allowing for up to 20 MoIP streams to pass between each interconnected switch.



VLAN SETUP

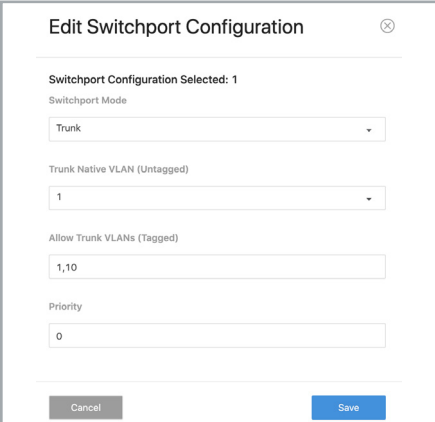
In large networks it can be beneficial to configure the MoIP system to be part of its own VLAN. This isolates MoIP traffic so it does not interfere with other systems on the network.

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 image shows a 'Add VLAN' configuration window. It has a title bar with a close button (X). The window 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' and 'Add'.

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)

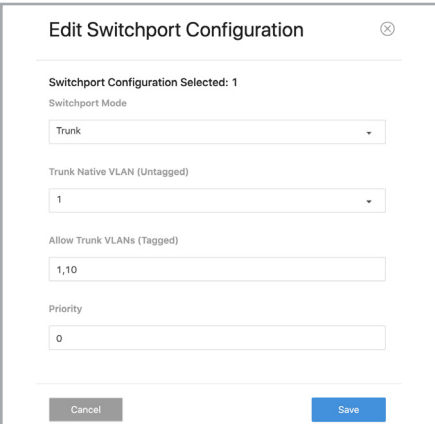
1,10

Priority

0

Cancel Save

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

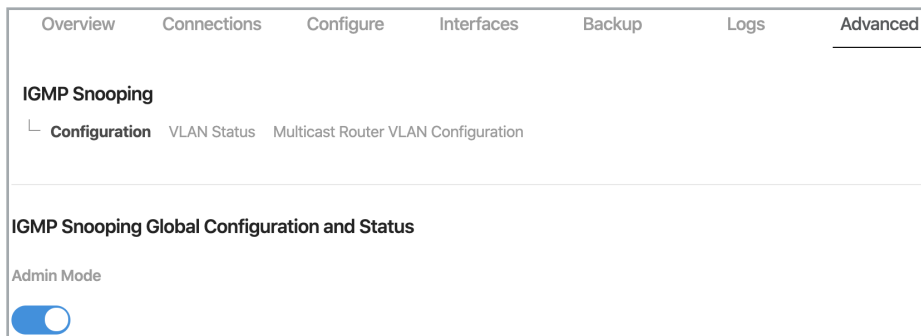
0

Cancel Save

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](#).

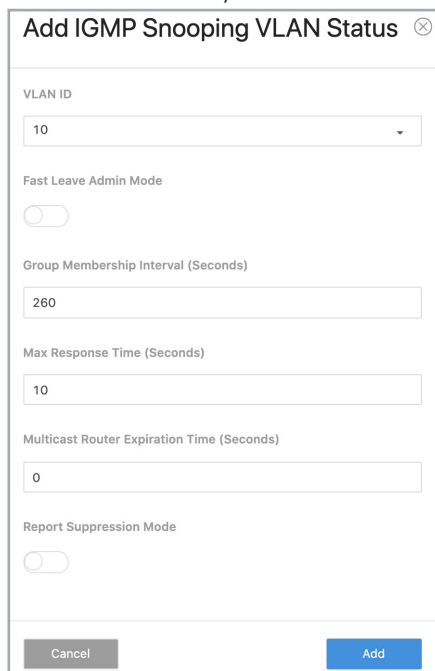
3. Set **IGMP Snooping Global Configuration Status Admin Mode** to **Enable**.



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.



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**.

The screenshot shows the 'IGMP Snooping Querier' configuration page. At the top, there are tabs: Overview, Connections, Configure, Interfaces, Backup, Logs, and Advanced (which is selected). Below the tabs, there's a sub-header 'IGMP Snooping Querier' with a dropdown menu showing 'Configuration', 'VLAN Configuration', and 'VLAN Status'. The main section is titled 'IGMP Snooping Querier Configuration'. It contains an 'Admin Mode' toggle switch that is turned on (blue). Below it is an 'IP Address' field with the value '0.0.0.0'. At the bottom, there's an 'IGMP Version' section with three radio buttons: 'IGMP v1' (unselected), 'IGMP v2' (selected), and 'IGMP v3' (unselected).

- 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

The screenshot shows a dialog box titled 'Add IGMP Snooping Querier VLAN Configuration'. It has a 'VLAN ID' dropdown menu with '10' selected. Below it is a 'Querier Election Participation' toggle switch that is turned off (grey). At the bottom, there's a 'Querier VLAN IP Address' field with the value '0.0.0.0'. At the very bottom of the dialog, there are two buttons: 'Cancel' and '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

10. 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

OPTIONS

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.

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. 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

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.
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						
VLAN ID	Admin Mode	Fast Leave Admin Mode	Group Membership Interval (Seconds)	Max Response Time (Seconds)	Multicast Router Expiration Time (Seconds)	Report Suppression Mode
10	<input checked="" type="checkbox"/>	Enabled	260	10	0	Disabled
						OPTIONS Action

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

OPTIONS

Exception List Name	Action
EXC_Test123	<div></div>

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