NETWORKING BEST PRACTICES FOR MOIP

WHY ARE THERE MULTIPLE CONFIGURATIONS?

When installing MoIP devices on your network you must separate MoIP multicast traffic from the rest of the network in one of several ways. Below, we outline important terms, best practices, and configurations to guide your MoIP Setup for different scenarios you may encounter.

TERMS TO UNDERSTAND

- **Core Network Switch** - The backbone of your local area network. This switch connects directly to your router and all other switches connect to this switch.
- **Edge Network Switch** - A switch connected to your Core Network switch.
- **Core MoIP Switch** - This is where your MoIP network starts. Think of it as its own topology within the larger network, dedicated to MoIP. The Core MoIP switch will be the barrier between your MoIP traffic and the rest of the network.
- **Edge MoIP Switch** - A switch connected to your Core MoIP switch.
- **IGMP Snooping** - This switch function listens for Internet Group Management Protocol (IGMP) network traffic to create an internal list of what devices have requested which IP multicast transmissions to be forwarded to them.
- **IGMP Snooping Querier** - Periodically requests all client devices on the network to report in with the multicast groups they wish to be joined with, to make sure that the IGMP snooping groups are updated to prevent multicast traffic loss.
- **Multicast Routing** - The forwarding of multicast traffic between segments of a network. Primarily VLANs and the LAN.
- **Unregistered Multicast** - Multicast traffic sent across a network which has had no IGMP messages associated with it. A network switch can decide to continue flooding this traffic through the network or to drop this traffic until an IGMP message has been seen for that multicast group.
- **Fast Leave** - A network switch function that will cause a port receiving an IGMP leave message to remove the associated multicast group from the port without waiting for the normal leave timer.You network's mulitcast querier must be the primary MoIP switch. Not the router.

BEST PRACTICES

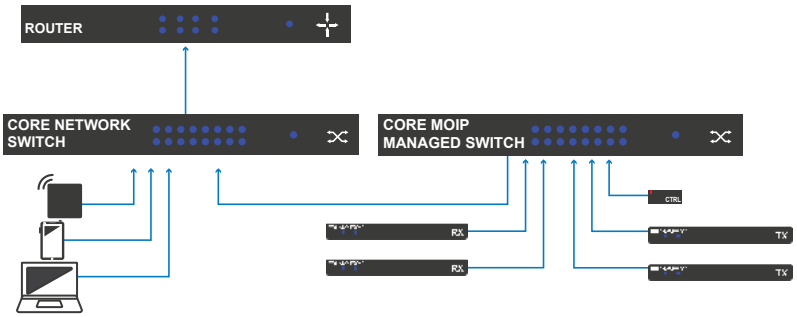
- Connect all MoIP devices to a single, managed switch when possible.
- Your video sources (Roku, AppleTV, etc.) are not required to be on the MoIP switch. Connect your video sources to the Core Network or Edge Network switches.
- If you must connect non-MoIP devices to a MoIP switch, use a MoIP **VLAN**.

- If you must use multiple switches, use managed switches with a **10Gbps uplink**.
  Note: Calculate the total possible bandwidth passing between switches to ensure you don't go over 10Gbps.
- Only enable **IGMP Snooping** on a switch with a MoIP device connected to it.
  Note: If you have other systems that require IGMP Snooping see their setup documentation.
- Your network's **IGMP Snooping Querier** must be the core MoIP switch. Not the router or any edge switch.
- Any MoIP switch running IGMP Snooping must have **Unregistered Multicast** set to **Drop**.
- **Fast Leave** must be configured. See your chosen configuration for specific setup instructions.
- Your router must not have **Multicast Routing** enabled. In the Pakedge RK-1 this is called **Zone Bonding**.

CONFIGURATIONS

Quick Configuration - Use a Dedicated MoIP Switch.

This option costs more, but saves you time during switch configuration. Connect your dedicated MoIP switch to the network's core switch and follow the best practices outlined above.



Note: If there are physical limitations that do not allow you to connect your Core MoIP switch to your Core Network switch you can connect the Core MoIP switch to an Edge Network switch, but we highly recommend keeping the Core MoIP switch connected to your Core Network switch when possible.

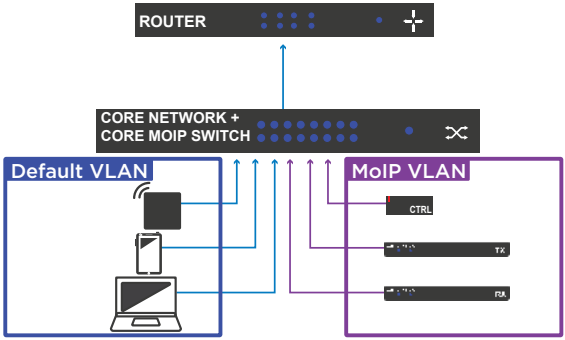
Your dedicated MoIP Switch must have the following features enabled:

- Turn on IGMP Snooping.
- Turn on IGMP Snooping Querier.
- Set Unregistered Multicast to Drop.
- Enable Fast Leave.

Important: If you have a need for IGMP Snooping on your Core Network switch, you'll need to create a MoIP VLAN to separate the IGMP traffic between your MOIP and non-MoIP network. See **Advanced Configuration** for more information.

Advanced Configuration - Sharing a managed switch with MoIP and non-MoIP devices.

This configuration will save you money, but you'll spend more time on configuration because VLANs must be used.



VLAN Configuration

The MoIP Controller, Transmitters, and Receivers must all be connected on the MoIP VLAN. However, only the MoIP controller receives an IP address on the MoIP VLAN. The Transmitters and Receivers are addressed by the MoIP controller and are only visible to the MoIP controller.

When configuring a MoIP VLAN, make sure your IGMP settings are only enabled for the MoIP VLAN and not the rest of the network.

- Configure Trunk ports between the router and switch to allow VLAN Traffic to flow to the MoIP switches. MoIP devices must be connected to MoIP VLAN Access Ports.
- When sharing a switch with Control4 and MoIP, the VLAN with Control4 devices must have IGMP Snooping disabled.

Click your switch model for more information on VLAN configuration:

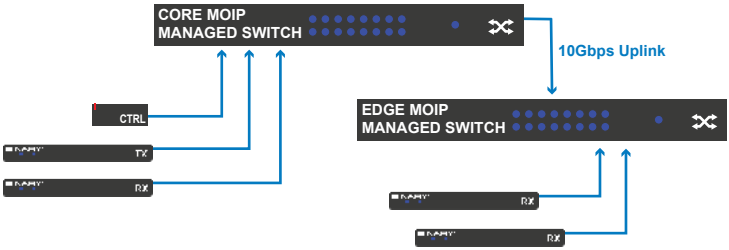
- Araknis 310 and 210 Series Switches
- Pakedge SX Series Switches
- Pakedge S3 Series Switches
- Pakedge MS Series Switches

After you've set up your MoIP VLAN, enable the following features for the MoIP VLAN only:

- IGMP Snooping.
- IGMP Snooping Querier.
- Set Unregistered Multicast to Drop.
- Enable Fast Leave.

Using Multiple MoIP Switches

Each switch must have IGMP Snooping turned on and Unregistered Multicast set to Drop, but only the Core MoIP Switch should have IGMP Querier enabled.



If you're sharing a switch between MoIP and non-MoIP devices, follow the VLAN rules outlined in the **Advanced Configuration** section.

Core MoIP Switch Setup

If you're using a dedicated switch for MoIP, connect it to your core network switch. If you're sharing the switch and have created a MoIP VLAN, the below settings must only be applied to the MoIP VLAN.

- Turn on IGMP Snooping.
- Turn on Multicast Querier.
- Set Unregistered Multicast to Drop.
- Disable Fast Leave.

Edge MoIP Switch Setup

If you're sharing the switch and have created a MoIP VLAN, the below settings must only be applied to the MoIP VLAN.

- Turn on IGMP Snooping.
- Disable IGMP Snooping Querier.
- Set Unregistered Multicast to Drop.
- Enable Fast Leave.

Click your switch make and model for our full setup guide:

- Araknis 310 and 210 Series
- Pakedge SX-24 Switch
- Pakedge S3L-24P Switch
- Pakedge MS Series - Single Switch Configuration
- Pakedge MS Series - Multiple Switch Configuration
- Cisco Stackable Switch Configuration