

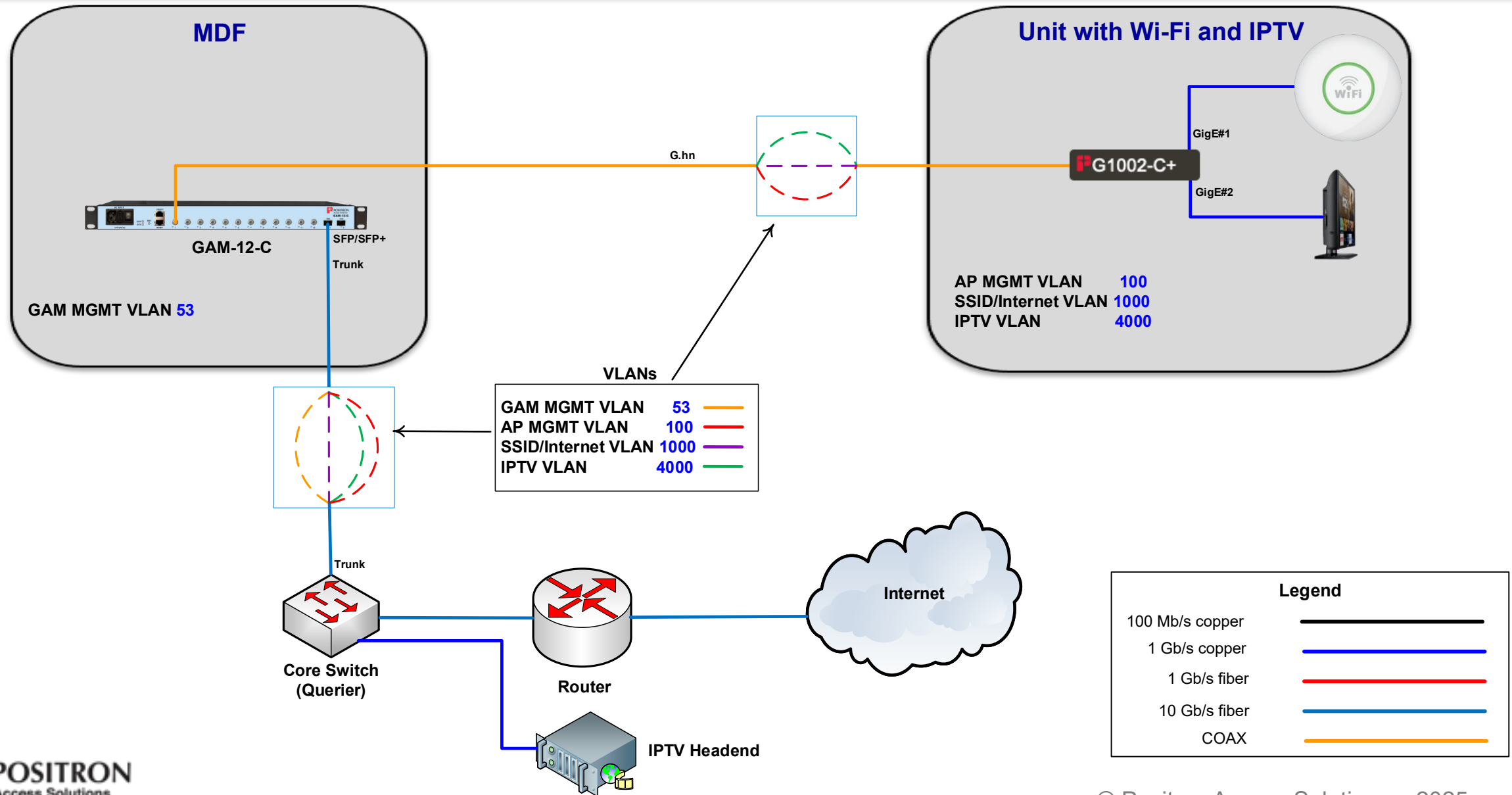


## IGMP Settings

- GAM-4-CX
- GAM-4-CRX
- GAM-12-C
- GAM-24-C
- GAM-4-MX
- GAM-8-MX
- GAM-8-MRX
- GAM-12-M
- GAM-24-M



# GAM – Standard Wi-Fi and IPTV Network Topology



# GAM – IGMP Standard Configuration

## Steps to configure IGMP snooping ( IP Multicast Snooping)

1. Create IGMP Interface VLAN
2. Activate IGMP snooping
3. Activate snooping on IPTV VLAN
4. Setting QoS Parameters
5. Monitor Snooping and Multicast Groups

# GAM – IGMP – Creating VLAN interface

Configuration→System→IP

**POSITRON**  
Access Solutions

GAM-12-C™ G.hn Access Multiplexer

**Configuration**

- System
  - Information
  - IP
  - NTP
  - Time
  - Time Zone
  - Log
  - Controller Announcement
- Aggregation
  - DDMI
  - DHCP
  - EPS
  - ERPS
  - G.hn
  - IPMC
  - IPMC Profile
  - Link OAM
  - LLDP
  - MAC Table
  - MEP
  - Mirroring
  - MVR
  - Performance Monitor
  - Ports (Ethernet)
  - PTP
  - QoS
  - Security
  - sFlow
  - Spanning Tree
  - Traffic Test
- Monitor
  - Diagnostics
  - Maintenance

**IP Configuration**

|              |                          |            |
|--------------|--------------------------|------------|
| Domain Name  | No Domain Name           |            |
| DNS Server 0 | Configured IPv4 or IPv6  | 172.1.53.1 |
| DNS Server 1 | No DNS server            |            |
| DNS Server 2 | No DNS server            |            |
| DNS Server 3 | No DNS server            |            |
| DNS Proxy    | <input type="checkbox"/> |            |

**IP Interfaces**

| Delete                   | VLAN | Enable DHCPv4            | DHCPv4 |             |     |       | Hostname | Fallback | Current Lease | IPv4 |              | IPv6        |         |             |
|--------------------------|------|--------------------------|--------|-------------|-----|-------|----------|----------|---------------|------|--------------|-------------|---------|-------------|
|                          |      |                          | Type   | Client ID   | MAC | ASCII |          |          |               | HEX  | Address      | Mask Length | Address | Mask Length |
| <input type="checkbox"/> | 1    | <input type="checkbox"/> | Auto   | Port G.hn-1 |     |       |          | 0        |               |      | 192.168.10.1 | 24          |         |             |
| <input type="checkbox"/> | 53   | <input type="checkbox"/> | Auto   | Port G.hn-1 |     |       |          | 0        |               |      | 172.1.53.3   | 24          |         |             |
| <input type="checkbox"/> | 4000 | <input type="checkbox"/> | Auto   | Port G.hn-1 |     |       |          | 0        |               |      |              |             |         |             |

Add Interface

**IP Routes**

| Delete                   | Network | Mask Length | Gateway    | Next Hop VLAN |
|--------------------------|---------|-------------|------------|---------------|
| <input type="checkbox"/> | 0.0.0.0 | 0           | 172.1.53.1 | 0             |

Add Route

Apply Reset

No DHCP or static IP required for IPTV VLAN

VLAN 53 In-band Management

VLAN 4000 IPTV

Default Gateway required for In-band management with static IP address only

# GAM – IGMP – Activating IGMP Snooping

Configuration→IPMC→IGMP Snooping→Basic Configuration

## IGMP Snooping Configuration

| Global Configuration                 |                                     |
|--------------------------------------|-------------------------------------|
| Snooping Enabled                     | <input checked="" type="checkbox"/> |
| Unregistered IPMCv4 Flooding Enabled | <input type="checkbox"/>            |
| IGMP SSM Range                       | 232.0.0.0 / 8                       |
| Leave Proxy Enabled                  | <input checked="" type="checkbox"/> |
| Proxy Enabled                        | <input type="checkbox"/>            |

Enable **Snooping**

By default, the GAM doesn't snoop, therefore all multicast packets will be broadcasted to all ports. it is important to uncheck Flooding flag

Enable **Leave Proxy**

# GAM – IGMP – Activating IGMP Snooping Cont.

Configuration→IPMC→IGMP Snooping→Basic Configuration

The screenshot displays the configuration interface for the POSITRON GAM-12-C™ G.hn Access Multiplexer. The left sidebar shows the navigation menu with 'Configuration' expanded and 'IPMC' selected. Under 'IPMC', 'IGMP Snooping' is expanded, and 'Basic Configuration' is highlighted. The main content area shows the 'IGMP Snooping Configuration' page. It includes a 'Global Configuration' section with checkboxes for 'Snooping Enabled' (checked), 'Unregistered IPMCv4 Flooding Enabled' (unchecked), 'IGMP SSM Range' (232.0.0.0 / 8), 'Leave Proxy Enabled' (checked), and 'Proxy Enabled' (unchecked). Below this is a 'Port Related Configuration' table. The table has columns for 'Port', 'Router Port', 'Fast Leave', and 'Throttling'. The 'Router Port' column has checkboxes for each port. The 'Fast Leave' column has checkboxes for each port. The 'Throttling' column has dropdown menus for each port. The 'Port' column lists ports from G.hn-1 to G.hn-12, 10G-1, 10G-2, and MGMT. The 'Router Port' checkbox for 10G-1 is checked. An arrow points from a text box to this checkbox. At the bottom of the configuration area, there are 'Apply' and 'Reset' buttons. An arrow points from a text box to the 'Apply' button.

**IGMP Snooping Configuration**

**Global Configuration**

|                                      |                                     |
|--------------------------------------|-------------------------------------|
| Snooping Enabled                     | <input checked="" type="checkbox"/> |
| Unregistered IPMCv4 Flooding Enabled | <input type="checkbox"/>            |
| IGMP SSM Range                       | 232.0.0.0 / 8                       |
| Leave Proxy Enabled                  | <input checked="" type="checkbox"/> |
| Proxy Enabled                        | <input type="checkbox"/>            |

**Port Related Configuration**

| Port    | Router Port                         | Fast Leave               | Throttling |
|---------|-------------------------------------|--------------------------|------------|
| *       | <input type="checkbox"/>            | <input type="checkbox"/> | <>         |
| G.hn-1  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-2  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-3  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-4  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-5  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-6  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-7  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-8  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-9  | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-10 | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-11 | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| G.hn-12 | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| 10G-1   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | unlimited  |
| 10G-2   | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |
| MGMT    | <input type="checkbox"/>            | <input type="checkbox"/> | unlimited  |


Specify which ports of the GAM act as router ports. A router port is a port that leads towards the Layer 3 multicast device or IGMP querier.

Apply Reset

Click on Apply button

# GAM – IGMP – Activating IGMP on IPTV VLAN

Configuration→IPMC→IGMP Snooping→VLAN Configuration

**POSITRON**  
Access Solutions

- Configuration
  - System
  - Aggregation
  - DDMI
  - DHCP
  - EPS
  - ERPS
  - G.hn
  - IPMC
    - IGMP Snooping
      - Basic Configuration
      - VLAN Configuration
      - Port Filtering Profile
    - MLD Snooping
  - IPMC Profile
  - Link OAM
  - LLDP
  - MAC Table
  - MEP
  - Mirroring
  - MVR
  - Performance Monitor
  - Ports (Ethernet)
  - PTP
  - QoS
  - Security
  - sFlow
  - Spanning Tree
  - Traffic Test
  - VLANs
- Monitor
- Diagnostics
- Maintenance

### GAM-12-C™ G.hn Access Multiplexer

Refresh | << | >>

#### IGMP Snooping VLAN Configuration

Start from VLAN  with  entries per page.

| VLAN ID | Snooping Enabled                    | Querier Election         | Querier Address | Compatibility | PRI | RV | QI (sec) | QRI (0.1 sec) | LLQI (0.1 sec) | URI (sec) |
|---------|-------------------------------------|--------------------------|-----------------|---------------|-----|----|----------|---------------|----------------|-----------|
| 1       | <input type="checkbox"/>            | <input type="checkbox"/> | 0.0.0.0         | IGMP-Auto     | 0   | 2  | 125      | 100           | 10             | 1         |
| 2       | <input type="checkbox"/>            | <input type="checkbox"/> | 0.0.0.0         | IGMP-Auto     | 0   | 2  | 125      | 100           | 10             | 1         |
| 53      | <input type="checkbox"/>            | <input type="checkbox"/> | 0.0.0.0         | IGMP-Auto     | 0   | 2  | 125      | 100           | 10             | 1         |
| 4000    | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 0.0.0.0         | IGMP-Auto     | 5   | 2  | 125      | 100           | 10             | 1         |

Set Priority 5 to IPTV VLAN

Enable Snooping on IPTV VLAN only


Click on Apply button

The GAM should not be the querier (this option shall be disabled) . Most of the time the querier is at the video source side



# GAM – IGMP – Settings QoS Parameters

Configuration → QoS → QoS Control List







Configuration

- System
- Aggregation
- DDMI
- DHCP
- EPS
- ERPS
- G.hn
- IPMC
- IPMC Profile
- Link OAM
- LLDP
- MAC Table
- MEP
- Mirroring
- MVR
- Performance Monitor
- Ports (Ethernet)
- PTP
- QoS
  - Tag Classification Map
  - Port Policing
  - Port Scheduler
  - Port Shaping
  - QoS Control List
  - Storm Policing
- Security
- sFlow
- Spanning Tree
- Traffic Test
- VLANs
- Monitor
- Diagnostics
- Maintenance

GAM-12-C™ G.hn Access Multiplexer

QoS Control List Configuration

| QCE | Port                  | DMAC | SMAC | Tag Type | VID | PCP | DEI | Frame Type | Action |         |         |     |     |         |   |
|-----|-----------------------|------|------|----------|-----|-----|-----|------------|--------|---------|---------|-----|-----|---------|---|
|     |                       |      |      |          |     |     |     |            | CoS    | DPL     | DSCP    | PCP | DEI | Policy  |   |
| 1   | 1-12,10G-1,10G-2,MGMT | Any  | Any  | Any      | 2   | Any | Any | Any        | 3      | Default | Default | 7   | 0   | Default |     |

Click here to set a new QoS Control Entry.

Add QCE to end of list



# GAM – IGMP – Settings QoS Parameters Cont.

Configuration→QoS→QoS Control List

The screenshot displays the configuration interface for the POSITRON GAM-12-C™ G.hn Access Multiplexer. The left sidebar shows the navigation menu with 'QoS' expanded and 'QoS Control List' selected. The main area is titled 'QCE Configuration' and contains three sections: 'Port Members', 'Key Parameters', and 'Action Parameters'.

**Port Members:** A table with 15 columns: G.hn-1, G.hn-2, G.hn-3, G.hn-4, G.hn-5, G.hn-6, G.hn-7, G.hn-8, G.hn-9, G.hn-10, G.hn-11, G.hn-12, 10G-1, 10G-2, and MGMT. Checkmarks are present in all columns except MGMT, which is unchecked. An annotation 'Uncheck MGMT Port' points to the MGMT checkbox.

**Key Parameters:** A table with the following fields: DMAC, SMAC, Tag, VID, PCP, DEI, Inner Tag, Inner VID, Inner PCP, Inner DEI, and Frame Type. The VID field is set to 'Specific' with a value of '4000'. An annotation 'Set VID option to Specific and type the IPTV VLAN ID on Value field' points to the VID dropdown and its value field.

**Action Parameters:** A table with the following fields: CoS, DPL, DSCP, PCP, DEI, and Policy. The CoS field is set to '2', PCP is set to '5', and DEI is set to '0'. Annotations 'Set CoS to 2', 'Set PCP to 5', and 'Set DEI to 0' point to their respective dropdowns.

At the bottom left, there are 'Apply', 'Reset', and 'Cancel' buttons. An annotation 'Click on Apply button' points to the 'Apply' button.

# GAM – IGMP – Monitoring Snooping and Multicast Groups

Monitor→IPMC→IGMP Snooping→Status

## IGMP Snooping Status

### Statistics

| VLAN ID | Querier Version | Host Version | Querier Status | Active Querier Address | Queries Transmitted | Queries Received | V1 Reports Received | V2 Reports Received | V3 Reports Received | V2 Leaves Received |
|---------|-----------------|--------------|----------------|------------------------|---------------------|------------------|---------------------|---------------------|---------------------|--------------------|
| 4000    | v2              | v2           | IDLE           | 192.168.200.10         | 7866                | 6369             | 0                   | 51619               | 9                   | 989                |

IGMP Querier

Monitor→IPMC→IGMP Snooping→Group Information

## IGMP Snooping Group Information

Start from VLAN  and group address  with  entries per page.

| VLAN ID | Groups          | Port Members |   |   |   |   |   |   |   |   |    |    |    |       |       |      | CPE |
|---------|-----------------|--------------|---|---|---|---|---|---|---|---|----|----|----|-------|-------|------|-----|
|         |                 | 1            | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 10G-1 | 10G-2 | MGMT |     |
| 4000    | 224.0.0.251     |              |   |   |   |   |   |   |   | ✓ |    |    |    | ✓     |       |      | +   |
| 4000    | 224.0.0.252     |              |   |   |   |   |   |   |   | ✓ |    |    |    | ✓     |       |      | +   |
| 4000    | 239.252.1.240   |              |   |   |   |   |   |   |   | ✓ |    |    |    |       |       |      | +   |
| 4000    | 239.255.1.240   |              |   |   |   |   |   |   |   | ✓ |    |    |    |       |       |      | +   |
| 4000    | 239.255.255.250 |              |   |   |   |   |   |   |   | ✓ |    |    |    |       |       |      | +   |

Multicast TV Channels