

Switch Configuration for IP Surveillance

Application Notes

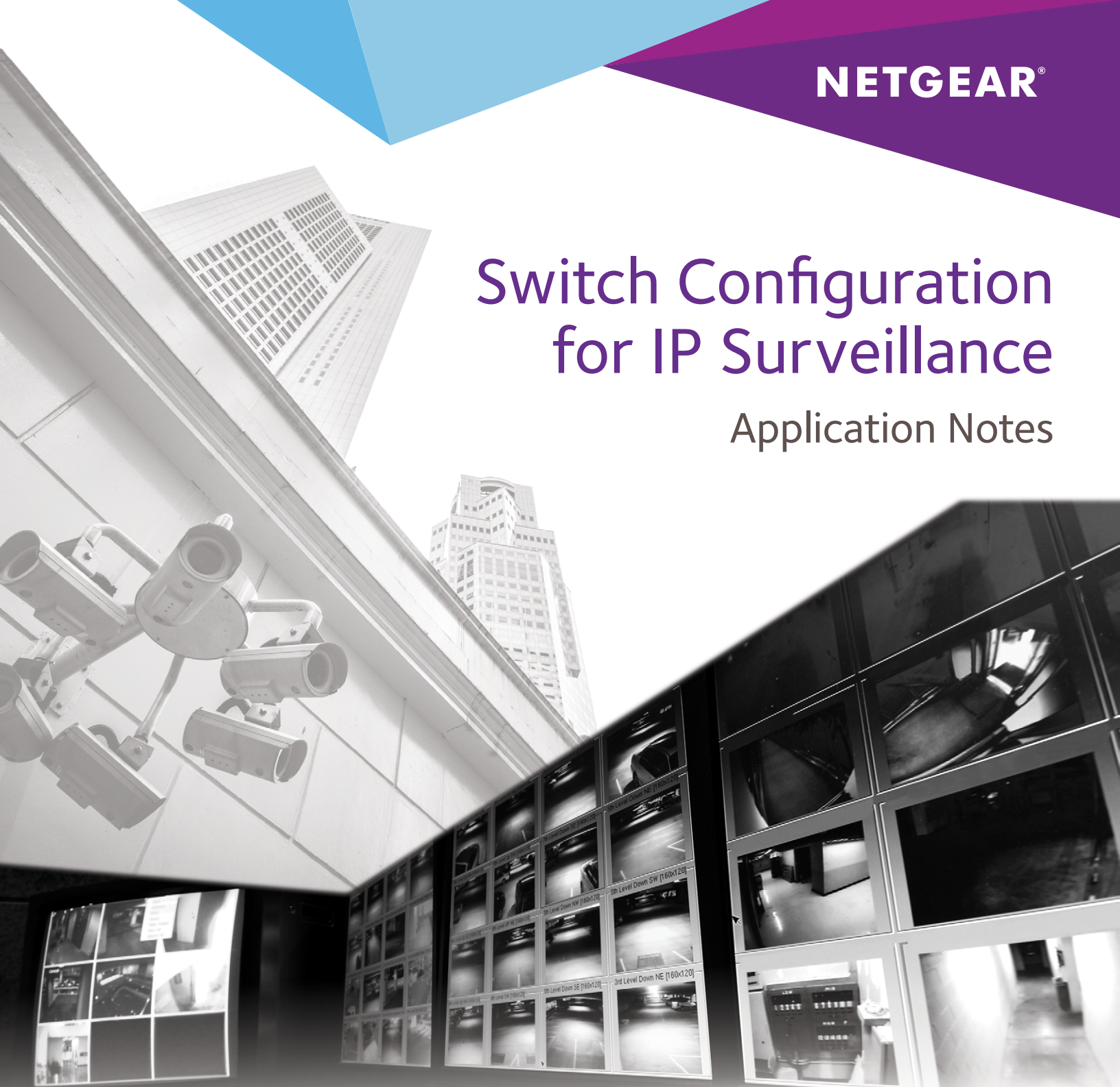


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CONCEPTS

Video surveillance based on digital IP technology is revolutionizing the physical security industry. The network is a crucial element in any surveillance installation because it enables all the other surveillance functions – transmitting video streams so they can be viewed and stored, and carrying power to the cameras themselves using Power over Ethernet (PoE).

An IP surveillance system always includes one or more of the following components:

- IP cameras
- Video servers to record, aggregate, process, and broadcast video streams
- Clients (monitoring stations), which are typically PCs equipped with dedicated surveillance software to enable real-time viewing and review of stored video
- Network Attached Storage (NAS) devices to store the video
- Switches with the appropriate feature set and bandwidth capacity to manage network traffic – required for the entire surveillance network to function properly
- CAT5E or better cabling, for adequate performance

Operation involves transmission (streaming) of video information from the cameras to a video server, where it is aggregated, processed, stored, and distributed to the monitoring stations and storage devices. Factors such as transmission modes and video compression modes can have a significant effect on bandwidth requirements, storage requirements and cost.

Transmission Modes

There are two basic transmission modes: unicast and multicast. Most cameras can be set to transmit in either mode.

Unicast mode is a direct, one-to-one means of transmitting a video stream, such as from a camera to a video server, or from a video server to a client. For example, if a video server needs to transmit to four clients, it must send the same transmission four times. In a system with dozens of camera streams and numerous clients, unicasting can easily overwhelm the bandwidth capacity of the network switches.

Multicast mode is a one-to-many mode where servers “publish” a video stream and clients “subscribe.” In multicast mode, video streams, identified by an IP address, are broadcast across the network, and any client on that network has the potential to access them. Access to any given stream is controlled by the Internet group management Protocol (IGMP). Under this protocol, clients are divided into groups based on which streams they are authorized to access. The following switch components are required to manage this process:

- An IGMP Querier that generates query messages to determine which clients belong to various groups
- An IGMP Snooper that listens to the various ports on the client hardware to determine which ports are interested in the stream – and then sends data only to those ports. In networks that have been upgraded to the IPv6 standard, the IGMP Querier is replaced by a multicast listener discovery (MLD) Querier and an MLD Snooper.

Most IP surveillance networks combine these unicast and multicast modes, using unicast to transmit from the cameras to the video server, and multicast to transmit to the clients.

Video Compression

All video data captured by the camera is compressed prior to transmission, and the mathematical algorithm used for this has important effects on both the end user and the network itself. The compression algorithm can affect image quality, latency, bandwidth requirements, and storage requirements. The most popular video compression standards (with dates of introduction) are MJPEG (mid-1990s), MPEG4 (1998), AND H.264 (2003). In addition, some major IP camera vendors use proprietary standards.

HOW TO USE THIS DOCUMENT

The *Networking Solutions for IP Surveillance Solution Guide* provides technical guidance and details about reference designs for installations with 20, 200 and 1000 cameras. Use the Solution Guide to plan your solution architecture and determine the needed equipment.

This Application Note is a companion document to the Solution Guide. After you have planned and have the equipment for your network, use this guide to configure your video surveillance solution. Example configurations are provided for 20-camera, 200-camera, and 1000-camera deployments.

REFERENCE CONFIGURATIONS AND ASSUMPTIONS

The following figures show reference configurations for 20-camera, 200-camera, and 1000-camera solutions.

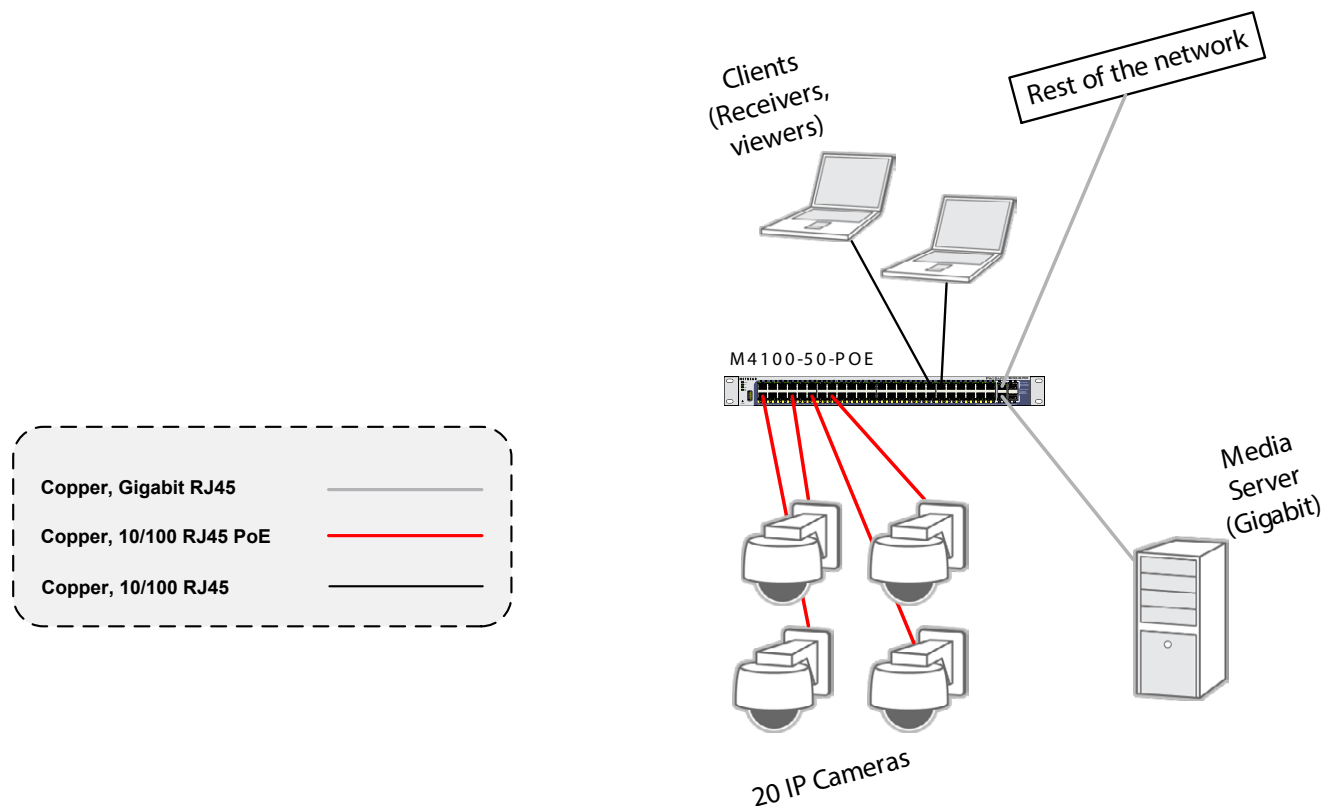


Figure 1. Sample Solution – 20 Cameras

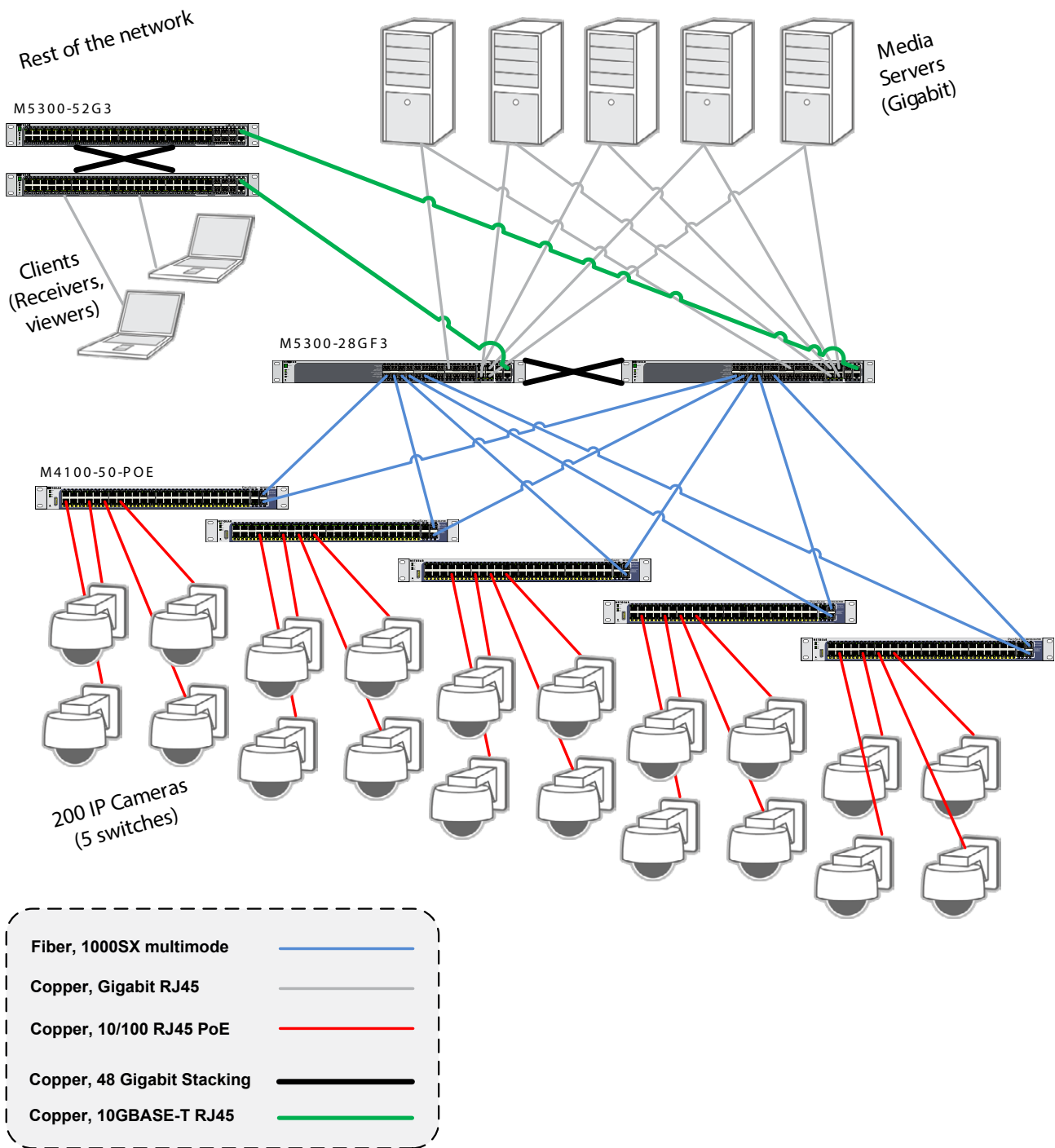
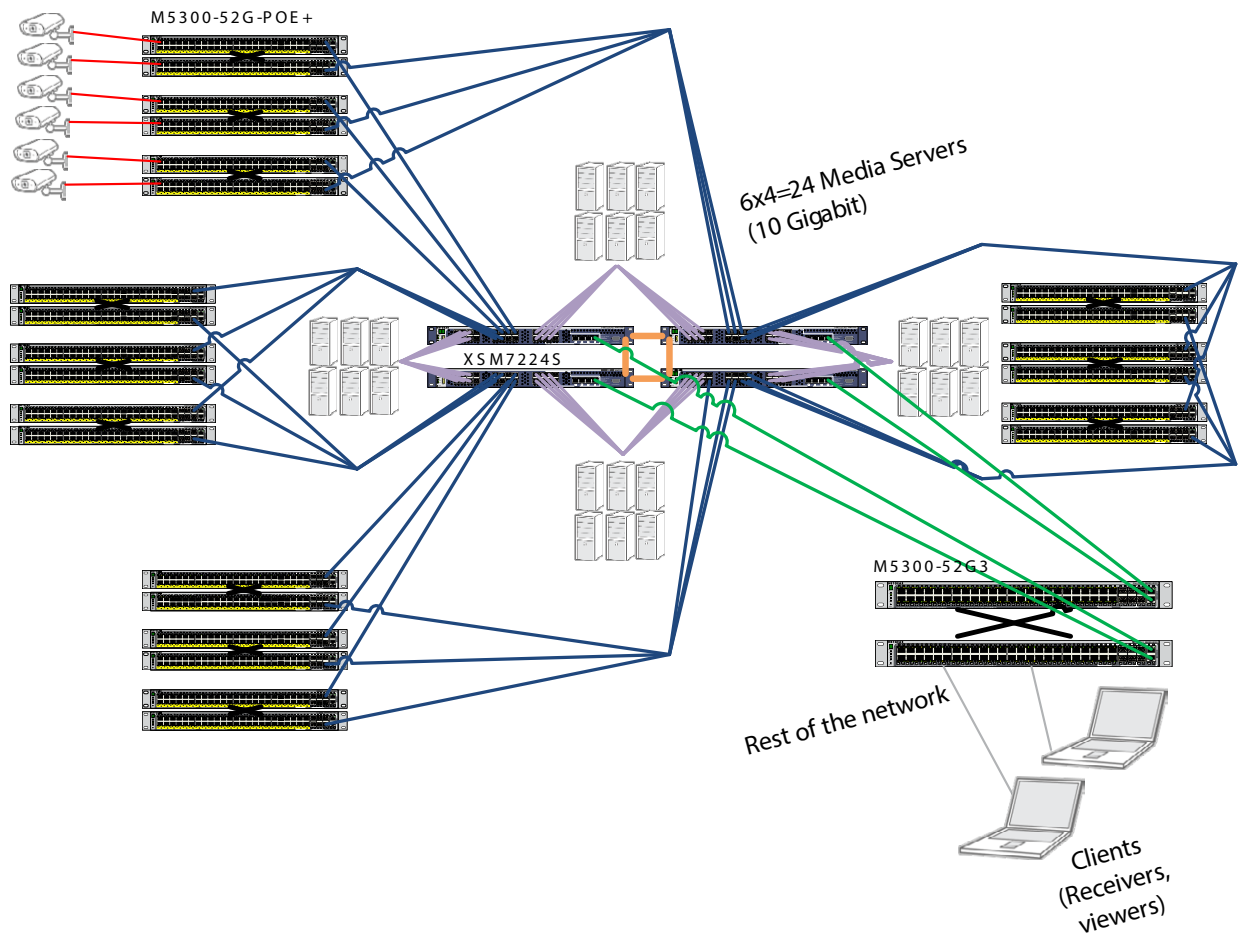


Figure 2. Sample Solution – 200 Cameras

48 cameras per switch
 24 switches
 $48 \times 24 = 1,152$ cameras



Fiber, 1000SX multimode	Blue line
Copper, Gigabit RJ45	Grey line
Copper, 10/100/1000 RJ45 PoE	Red line
Copper, 80 Gigabit Stacking	Orange line
Copper, 48 Gigabit Stacking	Black line
Copper, 10GBASE-T RJ45	Green line
Fiber, 10GBASE-LR single mode	Dark blue line
Fiber, 10GSFP+ CU DAC	Purple line

Figure 3. Sample Solution – 1000 Cameras

CONFIGURATION FOR THE 20-CAMERA SOLUTION

You can use the CLI or Web GUI for configuration.

Assumptions for the 20-Camera Solution

- A DHCP server has already been configured for the VLAN 100 subnet.
- You are able to configure VLAN interfaces if necessary (steps to configure the interfaces are not included).
- The video server is configured to broadcast UDP mulitcast packets @ 224.1.2.3 over port 2000.
- There is only one multicast source.
- The surveillance network is a dedicated, isolated network architecture with a single uplink to the the customer's enterprise network.
- Client protection will be managed by security measures local to the client viewing station.

Global Configuration Notes

- Be sure to save your configuration using the **write memory** CLI command. Alternatively, choose **Maintenance > Save Config** in the GUI. Select the box, and click **APPLY**.
- You can configure the default IGMP querier in the global configuration as the default for all VLANs

Sample Configuration Values

The following values are used in the sample configuration:

- Primary VLAN: 100
- Camera VLAN: 101
- Client VLAN: 102
- Querier IP address: 192.168.1.2
- Port in promiscuous mode: 48
- Camera ports: 1-20
- Client ports: 25-36

CLI Configuration Steps: 20-Camera Solution

These steps provide an example CLI configuration for the 20-camera solution. To use the Web GUI for configuration, see [Web GUI Configuration Steps: 20-Camera Solution](#) on page 10.

1. Create VLANs in the database for the single switch (Switch1), as shown in Figure 1. Private VLANs (PVLANS) are used as secondary VLANs to logically segment the different endpoints. Secondary VLANs inherit most network configuration settings from the associated primary VLAN.

```
(Switch1) #vlan database
(Switch1) (Vlan)#vlan 100
(Switch1) (Vlan)#vlan name 100 PrimaryVlan
(Switch1) (Vlan)#vlan 101
(Switch1) (Vlan)#vlan name 101 CameraVlan
(Switch1) (Vlan)#vlan 102
(Switch1) (Vlan)#vlan name 102 ClientVlan
(Switch1) (Vlan)#exit
```

2. After configuring the VLAN 100 subnet on its interface, set the private VLAN designation to each VLAN and associate the secondary VLANs to the primary VLAN.

```
(Switch1) #configure
(Switch1) (Config)#vlan 101
(Switch1) (Config) (Vlan 101)#private-vlan isolated
(Switch1) (Config) (Vlan 101)#exit
(Switch1) (Config)#vlan 102
(Switch1) (Config) (Vlan 102)#private-vlan community
(Switch1) (Config) (Vlan 102)#exit
(Switch1) (Config)#vlan 100
(Switch1) (Config) (Vlan 100)#private-vlan primary
(Switch1) (Config) (Vlan 100)#private-vlan association 101-102
(Switch1) (Config) (Vlan 100)#exit
```

3. Configure the querier for primary Vlan 100 and enable the fast-leave feature for clients subscribing to the multicast source content.

```
(Switch1) #vlan database
(Switch1) (Vlan)#set igmp 100
(Switch1) (Vlan)#set igmp querier 100 address 192.168.1.2
(Switch1) (Vlan)#set igmp fast-leave 100
(Switch1) (Vlan)#end
```


4. For IGMP snooping to work with VLANs, enable the capability globally.

```
(Switch1) #configure
(Switch1) (Config)#set igmp interfacemode
(Switch1) (Config)#end
```

5. Configure the video server port as a promiscuous port to allow all private VLANs to speak to it.

```
(Switch1) #configure
(Switch1) (Config)#interface 0/48
(Switch1) (Interface 0/48)#switchport mode private-vlan promiscuous
(Switch1) (Interface 0/48)#switchport private-vlan mapping 100 101-102
(Switch1) (Interface 0/48)#no shut
(Switch1) (Interface 0/48)#end
```

6. Configure camera ports on the isolated VLAN.

```
(Switch1) #configure
(Switch1) (Config)#interface 0/1-0/20
(Switch1) (Interface 0/1-0/20)#vlan participation exclude 1
(Switch1) (Interface 0/1-0/20)#vlan participation include 100-101
(Switch1) (Interface 0/1-0/20)#vlan pvid 101
(Switch1) (Interface 0/1-0/20)#no shut
(Switch1) (Interface 0/1-0/20)#end
```

7. Configure client ports on the community VLAN.

```
(Switch1) #configure
(Switch1) (Config)#interface 0/25-0/36
(Switch1) (Interface 0/25-0/36)#vlan participation exclude 1
(Switch1) (Interface 0/25-0/36)#vlan participation include 100,102
(Switch1) (Interface 0/25-0/36)#vlan pvid 102
(Switch1) (Interface 0/25-0/36)#no shut
(Switch1) (Interface 0/25-0/36)#end
```

Web GUI Configuration Steps: 20-Camera Solution

These steps provide an example Web GUI configuration for the 20-camera solution. To use the CLI for configuration, see CLI Configuration Steps: 20-Camera Solution on page 8.

1. Create VLANs in the database for the single switch (Switch1), as shown in Figure 1. Private VLANs (PVLNs) are used as secondary VLANs to logically segment the different endpoints. Secondary VLANs inherit most network configuration settings from the associated primary VLAN. In this scenario, VLAN 100 is the primary Vlan, VLAN 101 is the isolated VLAN for the cameras, and VLAN 102 is the community VLAN for clients.

Choose **Switching > VLAN > Advanced > VLAN Configuration**. Enter each VLAN ID and name, and click **ADD** to add the VLAN.

The screenshot shows the Netgear Web GUI for an M4100-50-POE switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The current page is VLAN Configuration, with sub-menus for VLAN, Auto-VoIP, STP, Multicast, MVR, Address Table, Ports, and LAG. The sidebar on the left shows a tree view of configuration options under Basic and Advanced, with VLAN Configuration selected. The main configuration area has three sections: Reset, Internal VLAN Configuration, and VLAN Configuration. The VLAN Configuration section contains a table with the following data:

VLAN ID	VLAN Name	VLAN Type	Make Static
<input checked="" type="checkbox"/>	102	ClientVlan	Disable
<input type="checkbox"/>	1	default	Disable
<input type="checkbox"/>	2	Auto VoIP	Disable
<input type="checkbox"/>	100	PrimaryVlan	Disable
<input type="checkbox"/>	101	CameraVlan	Disable

At the bottom of the page, there are buttons for ADD, DELETE, CANCEL, and APPLY.

2. Choose **Security > Traffic Control > Private VLAN > Private VLAN Type Configuration**. Assign the appropriate VLAN type to each VLAN ID. Click **APPLY** after each entry.

The screenshot displays the Netgear web management interface for an M4100-50-POE switch. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Security tab is active, and the breadcrumb trail shows Management Security > Access > Port Authentication > Traffic Control > Control > ACL. The main content area is titled "Private VLAN Type Configuration" and contains a table with the following data:

VLAN ID	Private VLAN Type
<input type="checkbox"/> 1	Unconfigured
<input type="checkbox"/> 2	Unconfigured
<input type="checkbox"/> 100	Primary
<input type="checkbox"/> 101	Isolated
<input type="checkbox"/> 102	Community

At the bottom right of the interface, there are "CANCEL" and "APPLY" buttons.

3. Choose **Security > Traffic Control > Private Vlan > Private Vlan Association Configuration**. Set VLAN 100 as the primary VLAN and 101-102 as the secondary VLANs. Click **APPLY**.

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M4100-50-POE
ProSafe 48-port FastEthernet L2+ Intelligent Edge PoE Managed Switch

System | Switching | Routing | QoS | **Security** | Monitoring | Maintenance | Help | Index

Management Security | Access | Port Authentication | **Traffic Control** | Control | ACL

> MAC Filter
 > Port Security
 > Protected Group
 > Protected Port
 > **Private Vlan**
 > Private Vlan Type Configuration
 > Private Vlan Association Configuration
 > Private Vlan Port Mode Configuration
 > Private Vlan Host Interface Configuration
 > Private Vlan Promiscuous Interface Configuration
 > Storm Control

Private VLAN Association Configuration

Private VLAN Association ⓘ

	Primary VLAN	Secondary VLAN(s)	Isolated VLAN	Community VLAN(s)
<input type="checkbox"/>	100	101-102	101	102

DELETE CANCEL APPLY

4. Choose **Switching > Multicast > IGMP Snooping > IGMP Vlan Configuration**. Enable Admin Mode and Fast-Leave Admin Mode on VLAN 100, and click **ADD**.

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Intelligent Edge PoE Managed Switch

System Switching Routing QoS Security Monitoring Maintenance Help Index

VLAN Auto-VoIP STP Multicast MVR Address Table Ports LAG

LOGOUT

MFDB
 IGMP Snooping
 Configuration
 Interface
 Configuration
 IGMP VLAN Configuration
 Multicast Router Configuration
 Multicast Router VLAN Configuration
 Querier Configuration
 Querier VLAN Configuration
 MLD Snooping

IGMP VLAN Configuration

IGMP VLAN Configuration

VLAN ID	Admin Mode	Fast Leave Admin Mode	Group Membership Interval	Maximum Response Time	Multicast Router Expiry Time	
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	
<input checked="" type="checkbox"/>	100	Enable	Enable	260	10	0

ADD DELETE CANCEL APPLY

5. Choose **Switching > Multicast > IGMP Snooping > Configuration**. Enable Admin Mode to enable IGMP snooping globally and verify that VLAN 100 is listed as under “VLAN IDs Enabled for IGMP Snooping.” Click **APPLY**.

The screenshot displays the Netgear web management interface for an M4100-50-POE switch. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Switching tab is active, and the Multicast sub-tab is selected. The left sidebar shows a tree view with 'IGMP Snooping' expanded to 'Configuration'. The main content area is titled 'IGMP Snooping Configuration' and contains two sections:

- IGMP Snooping Configuration**:
 - Admin Mode: Disable Enable
 - Multicast Control Frame Count: 0
 - Validate IGMP IP header: Disable Enable
 - Interfaces Enabled for IGMP Snooping: (empty list)
- VLAN IDs Enabled for IGMP Snooping**:
 - 100

At the bottom right of the interface, there are buttons for REFRESH, CANCEL, and APPLY.

- Choose **Switching > Multicast > IGMP Snooping > Querier VLAN Configuration**. Set the querier address of 192.168.1.2 for VLAN 100, and click **ADD**.

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VLAN Auto-VoIP STP Multicast MVR Address Table Ports LAG

MFDB
IGMP Snooping
Configuration
Interface Configuration
IGMP VLAN Configuration
Multicast Router Configuration
Multicast Router VLAN Configuration
Querier Configuration
Querier VLAN Configuration
MLD Snooping

IGMP Snooping Querier VLAN Configuration

IGMP Snooping Querier VLAN Configuration ⓘ

VLAN ID	Querier Election Participate Mode	Querier VLAN Address	Operational State	Operational Version	Last Querier Address	Last Querier Version	Operational Max Response Time
100		192.168.1.2					

ADD DELETE CANCEL APPLY

- Choose **Security > Traffic Control > Private Vlan > Private Vlan Promiscuous Interface Configuration**. Configure source port 0/48 as a promiscuous port with primary VLAN 100 and secondary VLAN 101-102. Click **APPLY**.

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System | Switching | Routing | QoS | **Security** | Monitoring | Maintenance | Help | Index

Management Security | Access | Port Authentication | **Traffic Control** | Control | ACL

> MAC Filter
 > Port Security
 > Private Group
 > Protected Port
 > Private Vlan
 > Private Vlan Type Configuration
 > Private Vlan Association Configuration
 > Private Vlan Port Mode Configuration
 > Private Vlan Host Interface Configuration
 > Private Vlan Promiscuous Interface Configuration
 > Storm Control

Private VLAN Promiscuous Interface Configuration

1 LAGS All Go To Interface GO

Interface	Promiscuous Primary VLAN (2 to 4093)	Promiscuous Secondary VLAN(s) Range[2-4093]	Operational VLAN(s)
<input checked="" type="checkbox"/> 0/48	100	101-102	
<input type="checkbox"/> 0/1	0		
<input type="checkbox"/> 0/2	0		
<input type="checkbox"/> 0/3	0		
<input type="checkbox"/> 0/4	0		
<input type="checkbox"/> 0/5	0		
<input type="checkbox"/> 0/6	0		
<input type="checkbox"/> 0/7	0		
<input type="checkbox"/> 0/8	0		
<input type="checkbox"/> 0/9	0		
<input type="checkbox"/> 0/10	0		
<input type="checkbox"/> 0/11	0		
<input type="checkbox"/> 0/12	0		
<input type="checkbox"/> 0/13	0		
<input type="checkbox"/> 0/14	0		
<input type="checkbox"/> 0/15	0		
<input type="checkbox"/> 0/16	0		
<input type="checkbox"/> 0/17	0		
<input type="checkbox"/> 0/18	0		
<input type="checkbox"/> 0/19	0		
<input type="checkbox"/> 0/20	0		
<input type="checkbox"/> 0/21	0		
<input type="checkbox"/> 0/22	0		
<input type="checkbox"/> 0/23	0		
<input type="checkbox"/> 0/24	0		
<input type="checkbox"/> 0/25	0		
<input type="checkbox"/> 0/26	0		
<input type="checkbox"/> 0/27	0		
<input type="checkbox"/> 0/28	0		
<input type="checkbox"/> 0/29	0		

DELETE CANCEL APPLY

- Choose **Switching > VLAN > Advanced > VLAN Membership**. For each of the VLANs, add the appropriate ports as untagged. Click **APPLY**.

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System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

VLAN | Auto-VoIP | STP | Multicast | MVR | Address Table | Ports | LAG

LOGOUT

VLAN Membership

VLAN Membership ⓘ

VLAN ID: 101 | Group Operation: Untag All

VLAN Name: CameraVlan | UNTAGGED PORT MEMBERS

VLAN Type: Static | TAGGED PORT MEMBERS

Unit 1

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U	U
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
	49	50																						

LAG

CANCEL APPLY

- Choose **Switching > VLAN > Advanced > Port PVID Configuration**. Assign the PVID to camera and client ports accordingly. Click **APPLY**.

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VLAN Auto-VoIP STP Multicast MVR Address Table Ports LAG

Basic
Advanced
VLAN Configuration
VLAN Membership
VLAN Status
Port PVID Configuration
MAC Based VLAN
Protocol Based VLAN Group Configuration
Protocol Based VLAN Group Membership
IP Subnet Based VLAN
Port DVLAN Configuration
Voice VLAN Configuration
GARP Switch Configuration
GARP Port Configuration

Port PVID Configuration

PVID Configuration

LAGS All Go To Interface GO

	Interface	Configured PVID	Current PVID	Acceptable Frame Types	Configured Ingress Filtering	Current Ingress Filtering	Port Priority
<input type="checkbox"/>		101					
<input checked="" type="checkbox"/>	0/1	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/2	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/3	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/4	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/5	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/6	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/7	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/8	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/9	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/10	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/11	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/12	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/13	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/14	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/15	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/16	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/17	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/18	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/19	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	0/20	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/21	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/22	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/23	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/24	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/25	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/26	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/27	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/28	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	0/29	1	1	Admit All	Disable	Disable	0

CANCEL APPLY

CONFIGURATION FOR THE 200-CAMERA SOLUTION

You can use the CLI or Web GUI for configuration. Refer to Figure 2.

Assumptions for the 200-Camera Solution

- A pre-existing DHCP server will be used to dynamically assign IPs to cameras and clients.
- Routing protocols and proper default routes are in place for existing and new subnets (in this case, 192.168.1.0/24 for VLAN 100 and 192.168.2.0/24 for VLAN 200).
- The video servers are configured to broadcast UDP multicast packets @ 224.1.2.3–224.1.2.7 over port 2000.
- There are only five multicast sources.
- Best practices are used to design and implement switch stacking and redundancy/failover.

Global Configuration Notes

- Be sure to save your configuration using the **write memory** CLI command. Alternatively, choose **Maintenance > Save Config** in the GUI. Select the box, and click **APPLY**.
- You can configure a maximum of 256 multicast sources with the MVR feature.

Sample Configuration Values

The following values are used in the sample configuration:

- Primary VLAN (private): 100
- Camera VLAN (private): 101
- Client VLAN: 200
- Querier IP address: 192.168.1.2
- MVR addresses: 224.1.2.3 – 224.1.2.7
- Camera switch uplink port: 49
- Camera ports: 1–40

CLI Configuration Steps: 200-Camera Solution

These steps provide an example CLI configuration for the 200-camera solution. For the Web GUI configuration, see Web GUI Configuration Steps: 200-Camera Solution on page 23.

1. Configure VLANs 100 and 101 as private VLANs, and configure VLAN 200 on all switches in the surveillance network.

```
(Switch1) #vlan database
(Switch1) (Vlan)#vlan 100
(Switch1) (Vlan)#vlan name 100 PrimaryVlan
(Switch1) (Vlan)#vlan 101
(Switch1) (Vlan)#vlan name 101 CameraVlan
(Switch1) (Vlan)#vlan 200
(Switch1) (Vlan)#vlan name 200 ClientVlan
(Switch1) (Vlan)#exit
(Switch1) #configure
(Switch1) (Config)#vlan 101
(Switch1) (Config) (Vlan 101)#private-vlan isolated
(Switch1) (Config) (Vlan 101)#exit
(Switch1) (Config)#vlan 100
(Switch1) (Config) (Vlan 100)#private-vlan primary
(Switch1) (Config) (Vlan 100)#private-vlan association 101
(Switch1) (Config) (Vlan 100)#exit
```

2. Configure the IGMP querier for primary VLAN 100 and enable the fast-leave feature for clients who subscribe to the multicast source content.

```
(Switch1) #vlan database
(Switch1) (Vlan)#set igmp 100
(Switch1) (Vlan)#set igmp querier 100 address 192.168.1.2
(Switch1) (Vlan)#set igmp fast-leave 100
(Switch1) (Vlan)#end
```

3. For IGMP snooping to work with VLANs, enable the capability globally.

```
(Switch1) #configure
(Switch1) (Config)#set igmp interfacemode
(Switch1) (Config)#end
```

4. Configure MVR over VLAN 100 and set the MVR address with a contiguous count of sources

```
(M5300-GF3-1) #configure
(M5300-GF3-1) (Config)#mvr
(M5300-GF3-1) (Config)#mvr vlan 100
(M5300-GF3-1) (Config)#mvr group 224.1.2.3 5
(M5300-GF3-1) (Config)#end
```


5. When configuring uplinks between the media server switches (M5300-28GF3) and the client switches (M5300-52G3), it is necessary to configure the uplink as an MVR source. The MVR source port automatically adds all globally configured MVR groups.

```
(M5300-28G3) #configure
(M5300-28G3) (Config)#interface 1/0/26
(M5300-28G3) (Interface 1/0/26)#vlan participation exclude 1
(M5300-28G3) (Interface 1/0/26)#vlan participation include 100
(M5300-28G3) (Interface 1/0/26)#mvr
(M5300-28G3) (Interface 1/0/26)#mvr type source
(M5300-28G3) (Interface 1/0/26)#vlan participation include 101,200
(M5300-28G3) (Interface 1/0/26)#vlan tagging 100-101,200
(M5300-28G3) (Interface 1/0/26)#exit
```

6. On the other side of the uplink, configure the port as an MVR receiver. Take special note how to add each multicast source as an MVR group on the receiver ports.

```
(M5300-GF3-1) #configure
(M5300-GF3-1) (Config)#interface 1/0/25
(M5300-GF3-1) (Interface 1/0/25)#vlan participation exclude 1
(M5300-GF3-1) (Interface 1/0/25)#vlan participation include 100
(M5300-GF3-1) (Interface 1/0/25)#mvr
(M5300-GF3-1) (Interface 1/0/25)#mvr type receiver
(M5300-GF3-1) (Interface 1/0/25)#mvr immediate
(M5300-GF3-1) (Interface 1/0/25)#mvr vlan 100 group 224.1.2.3
(M5300-GF3-1) (Interface 1/0/25)#mvr vlan 100 group 224.1.2.4
(M5300-GF3-1) (Interface 1/0/25)#mvr vlan 100 group 224.1.2.5
(M5300-GF3-1) (Interface 1/0/25)#mvr vlan 100 group 224.1.2.6
(M5300-GF3-1) (Interface 1/0/25)#mvr vlan 100 group 224.1.2.7
(M5300-GF3-1) (Interface 1/0/25)#vlan participation include 101,200
(M5300-GF3-1) (Interface 1/0/25)#vlan tagging 100-101,200
(M5300-GF3-1) (Interface 1/0/25)#exit
```

7. Configure the camera switch (M4100-50G-POE) uplinks. This configuration is simpler, as the uplinks do not include any MVR commands and the same configuration is used on the media server switch (M5300-28GF3) as well.

```
(M4100-POE-1) #configure
(M4100-POE-1) (Config)#interface 0/49
(M4100-POE-1) (Interface 0/49)#vlan participation exclude 1
(M4100-POE-1) (Interface 0/49)#vlan participation include 100-101
(M4100-POE-1) (Interface 0/49)#vlan tagging 100-101
(M4100-POE-1) (Interface 0/49)#exit
```

8. Configure each camera port on the camera switches.

```
(M4100-POE-1) #configure
(M4100-POE-1) (Config)#interface 0/1-0/40
(M4100-POE-1) (Interface 0/1-0/40)#switchport mode private-vlan host
(M4100-POE-1) (Interface 0/1-0/40)#switchport private-vlan host-association
100 101
(M4100-POE-1) (Interface 0/1-0/40)#exit
```

9. On the video server switches, configure ports as promiscuous MVR sources.

```
(M5300-GF3-1) (Config)#interface 1/0/24
(M5300-GF3-1) (Interface 1/0/24)#switchport mode private-vlan promiscuous
(M5300-GF3-1) (Interface 1/0/24)#switchport private-vlan mapping 100 101
(M5300-GF3-1) (Interface 1/0/24)#mvr
(M5300-GF3-1) (Interface 1/0/24)#mvr type source
(M5300-GF3-1) (Interface 1/0/24)#exit
```

10. On the client switches, configure the ports as MVR receivers. Multicast sources as MVR groups must be explicitly listed on the port to be able to subscribe to the stream.

```
(M5300-28G3) #configure
(M5300-28G3) (Config)#interface 1/0/1
(M5300-28G3) (Interface 1/0/1)#vlan pvid 200
(M5300-28G3) (Interface 1/0/1)#vlan participation exclude 1
(M5300-28G3) (Interface 1/0/1)#vlan participation include 200
(M5300-28G3) (Interface 1/0/1)#mvr
(M5300-28G3) (Interface 1/0/1)#mvr type receiver
(M5300-28G3) (Interface 1/0/1)#mvr vlan 100 group 224.1.2.3
(M5300-28G3) (Interface 1/0/1)#mvr vlan 100 group 224.1.2.4
(M5300-28G3) (Interface 1/0/1)#mvr vlan 100 group 224.1.2.5
(M5300-28G3) (Interface 1/0/1)#mvr vlan 100 group 224.1.2.6
(M5300-28G3) (Interface 1/0/1)#mvr vlan 100 group 224.1.2.7
(M5300-28G3) (Interface 1/0/1)#exit
```

Web GUI Configuration Steps: 200-Camera Solution

These steps provide an example Web GUI configuration for the 200-camera solution. To use the CLI for configuration, see CLI Configuration Steps: 200-Camera Solution on page 20.

1. VLAN 100 will be the primary VLAN, with secondary VLAN 101 for camera (isolated) and VLAN 200 for client (community). Choose **Switching > VLAN > Advanced > VLAN Configuration**. Enter each VLAN ID, its name, and click **ADD** to add the VLAN to the configuration.

The screenshot shows the Netgear Web GUI for an M5300-28GF3 switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The sidebar shows a tree view with Basic and Advanced sections. The main content area is titled 'VLAN Configuration' and contains the following sections:

- Reset**: A 'Reset Configuration' checkbox.
- Internal VLAN Configuration**: An 'Internal VLAN Allocation Base' field set to 4093 and an 'Internal VLAN Allocation Policy' dropdown set to Descending.
- VLAN Configuration**: A table with columns for VLAN ID, VLAN Name, VLAN Type, and Make Static.

VLAN ID	VLAN Name	VLAN Type	Make Static
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	Disable
<input type="checkbox"/>	1	default	Default
<input type="checkbox"/>	2	Auto VoIP	AUTO VoIP
<input type="checkbox"/>	10	mgmt	Static
<input type="checkbox"/>	100	PrimaryVlan	Static
<input type="checkbox"/>	101	CameraVlan	Static
<input type="checkbox"/>	200	ClientVlan	Static

2. Choose **Security > Traffic Control > Private VLAN > Private VLAN Type Configuration**. Assign the appropriate VLAN type to each VLAN ID. Click **APPLY** after each entry. By default, unconfigured VLANs are community VLANs.

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LOGOUT

Private VLAN Type Configuration

Private VLAN Type Configuration

VLAN ID	Private VLAN Type
<input type="checkbox"/>	
<input type="checkbox"/> 1	Unconfigured
<input type="checkbox"/> 2	Unconfigured
<input type="checkbox"/> 10	Unconfigured
<input type="checkbox"/> 100	Primary
<input type="checkbox"/> 101	Isolated
<input type="checkbox"/> 200	Unconfigured

CANCEL APPLY

3. Choose **Security > Traffic Control > Private Vlan > Private Vlan Association Configuration**. Set VLAN 100 as the primary VLAN and 101-102 as the secondary VLANs. Click **APPLY**.

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ProSafe 48-port FastEthernet L2+
Intelligent Edge PoE Managed Switch

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LOGOUT

Private VLAN Association Configuration

Private VLAN Association

	Primary VLAN	Secondary VLAN(s)	Isolated VLAN	Community VLAN(s)
<input type="checkbox"/>	100	101-102	101	102

DELETE CANCEL APPLY

4. Choose **Switching > Multicast > IGMP Snooping > IGMP Vlan Configuration**. Enable Admin Mode and Fast-Leave Admin Mode on VLAN 100, and click **ADD**.

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ProSafe 48-port FastEthernet L2+ Intelligent Edge PoE Managed Switch

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VLAN Auto-VoIP STP Multicast MVR Address Table Ports LAG

LOGOUT

MFDB
IGMP Snooping
 > Configuration
 > Interface
 > Configuration
 > IGMP VLAN Configuration
 > Multicast Router Configuration
 > Multicast Router VLAN Configuration
 > Querier Configuration
 > Querier VLAN Configuration
MLD Snooping

IGMP VLAN Configuration

IGMP VLAN Configuration ⓘ

	VLAN ID	Admin Mode	Fast Leave Admin Mode	Group Membership Interval	Maximum Response Time	Multicast Router Expiry Time
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="checkbox"/>	100	Enable	Enable	250	10	0

ADD DELETE CANCEL APPLY

5. Choose **Switching > Multicast > IGMP Snooping > Configuration**. Enable Admin Mode to enable IGMP snooping globally and verify that VLAN 100 is listed as under “VLAN IDs Enabled for IGMP Snooping.” Click **APPLY**.

The screenshot displays the Netgear web management interface for an M4100-50-POE switch. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Switching tab is active, and the Multicast menu is expanded to show IGMP Snooping Configuration. The left sidebar shows a tree view with categories like MFDB, IGMP Snooping, and MLD Snooping. The main content area is titled "IGMP Snooping Configuration" and contains two sections:

- IGMP Snooping Configuration**:
 - Admin Mode: Disable Enable
 - Multicast Control Frame Count: 0
 - Validate IGMP IP header: Disable Enable
 - Interfaces Enabled for IGMP Snooping: (empty list)
- VLAN IDs Enabled for IGMP Snooping**:
 - 100

At the bottom right of the interface, there are buttons for REFRESH, CANCEL, and APPLY.

- Choose **Switching > Multicast > IGMP Snooping > Querier VLAN Configuration**. Set the querier address of 192.168.1.254 for VLAN 100, and click **ADD**.

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VLAN | Auto-VoIP | iSCSI | STP | **Multicast** | MVR | Address Table | Ports | LAG

LOGOUT

> MFDB
 > **IGMP Snooping**
 > Configuration
 > Interface Configuration
 > IGMP VLAN Configuration
 > Multicast Router Configuration
 > Multicast Router VLAN Configuration
 > Querier Configuration
 > **Querier VLAN Configuration**
 > MLD Snooping

IGMP Snooping Querier VLAN Configuration

	VLAN ID	Querier Election Participate Mode	Querier VLAN Address	Operational State	Operational Version	Last Querier Address	Last Querier Version	Operational Max Response Time
<input type="checkbox"/>								
<input checked="" type="checkbox"/>	100	Disable	192.168.1.254	Disable	2			

ADD DELETE CANCEL APPLY

7. Choose **Switching > MVR > Advanced > MVR Configuration**. Enable MVR Running and set VLAN 100 as MVR Multicast VLAN. Click APPLY.

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> Basic
> **Advanced**
 > MVR Configuration
 > MVR Group Configuration
 > MVR Interface Configuration
 > MVR Group Membership
 > MVR Statistics

MVR Configuration

MVR Configuration

MVR Running Disable Enable

MVR Multicast VLAN (1 to 4094)

MVR Max Multicast Groups 256

MVR Current Multicast Groups

MVR Global query response time (1 to 100)

MVR Mode compatible dynamic

8. Choose **Switching > MVR > Advanced > MVR Group Configuration**. Enter the group IP addresses (multicast addresses) 224.1.2.3 – 224.1.2.7, and click ADD.

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> Basic
> **Advanced**
 > MVR Configuration
 > **MVR Group Configuration**
 > MVR Interface Configuration
 > MVR Group Membership
 > MVR Statistics

MVR Group Configuration

MVR Group Configuration

MVR Group IP	Status	Members	Count
<input type="text"/>			
<input type="checkbox"/> 224.1.2.3	ACTIVE	1/0/24(s), 1/0/25(s)	
<input type="checkbox"/> 224.1.2.4	ACTIVE	1/0/24(s), 1/0/25(s)	
<input type="checkbox"/> 224.1.2.5	ACTIVE	1/0/24(s), 1/0/25(s)	
<input type="checkbox"/> 224.1.2.6	ACTIVE	1/0/24(s), 1/0/25(s)	
<input type="checkbox"/> 224.1.2.7	ACTIVE	1/0/24(s), 1/0/25(s)	

ADD DELETE CANCEL

- Choose **Switching > MVR > Advanced > MVR Interface Configuration**. Configure source ports (all video server ports) and receiver ports (all client ports) with immediate leave on non-camera switches. Also remember that downstream uplink ports must be set as receiver ports and upstream uplink ports must be set as source ports.

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LOGOUT

MVR Interface Configuration

1 All Go To Interface GO

Interface	Admin Mode	Type	Immediate Leave	Status
<input type="checkbox"/> 1/0/1	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/2	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/3	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/4	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/5	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/6	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/7	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/8	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/9	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/10	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/11	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/12	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/13	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/14	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/15	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/16	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/17	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/18	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/19	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/20	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/21	Disable	none	Disable	ACTIVE/InVLAN
<input type="checkbox"/> 1/0/22	Disable	none	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/23	Enable	receiver	Enable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/24	Enable	source	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/25	Enable	receiver	Disable	ACTIVE/InVLAN
<input type="checkbox"/> 1/0/26	Enable	receiver	Disable	INACTIVE/InVLAN
<input type="checkbox"/> 1/0/27	Disable	none	Disable	INACTIVE/NotInVLAN
<input type="checkbox"/> 1/0/28	Disable	none	Disable	INACTIVE/NotInVLAN

1 All Go To Interface GO

REFRESH CANCEL APPLY

10. To configure video server and camera ports, choose **Security > Traffic Control > Private Vlan > Private Vlan Port Mode Configuration**. Select corresponding camera ports and select Host from the Port Vlan Mode drop-down menu. Click **APPLY** to commit changes. Use the appropriate options for any video server ports, and click **APPLY**.

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Port Security
Private Group
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Private Vlan Type Configuration
Private Vlan Association Configuration
Private Vlan Port Mode Configuration
Private Vlan Host Interface Configuration
Private Vlan Promiscuous Interface Configuration
Storm Control

Private Vlan Port Mode Configuration

LAGS All Go To Interface GO

Interface	Port Vlan Mode
<input type="checkbox"/> 1/0/1	Host
<input type="checkbox"/> 1/0/2	Host
<input type="checkbox"/> 1/0/3	Host
<input type="checkbox"/> 1/0/4	Host
<input type="checkbox"/> 1/0/5	Host
<input type="checkbox"/> 1/0/6	General
<input type="checkbox"/> 1/0/7	General
<input type="checkbox"/> 1/0/8	General
<input type="checkbox"/> 1/0/9	General
<input type="checkbox"/> 1/0/10	General
<input type="checkbox"/> 1/0/11	General
<input type="checkbox"/> 1/0/12	General
<input type="checkbox"/> 1/0/13	General
<input type="checkbox"/> 1/0/14	General
<input type="checkbox"/> 1/0/15	General
<input type="checkbox"/> 1/0/16	General
<input type="checkbox"/> 1/0/17	General
<input type="checkbox"/> 1/0/18	General
<input type="checkbox"/> 1/0/19	General
<input type="checkbox"/> 1/0/20	General
<input type="checkbox"/> 1/0/21	General
<input type="checkbox"/> 1/0/22	General
<input type="checkbox"/> 1/0/23	General
<input type="checkbox"/> 1/0/24	Promiscuous
<input type="checkbox"/> 1/0/25	General
<input type="checkbox"/> 1/0/26	General
<input type="checkbox"/> 1/0/27	General
<input type="checkbox"/> 1/0/28	General

LAGS All Go To Interface GO

CANCEL APPLY

- To associate VLANs with camera ports, choose **Security > Traffic Control > Private Vlan > Private Vlan Host Interface Configuration**. Select the camera interfaces and set Host Primary VLAN to 100 and Host Secondary VLAN to 101. Click **APPLY**.

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Private Vlan Host Interface Configuration
Private Vlan Promiscuous Interface Configuration
Storm Control

Private VLAN Host Interface Configuration

Private VLAN Host Interface Configuration

LAGS All Go To Interface GO

Interface	Host Primary VLAN (2 to 4093)	Host Secondary VLAN (2 to 4093)	Operational VLAN(s)
<input checked="" type="checkbox"/> 1/0/1	100	101	100-101
<input checked="" type="checkbox"/> 1/0/2	100	101	100-101
<input checked="" type="checkbox"/> 1/0/3	100	101	100-101
<input checked="" type="checkbox"/> 1/0/4	100	101	100-101
<input checked="" type="checkbox"/> 1/0/5	100	101	100-101
<input type="checkbox"/> 1/0/6	0	0	
<input type="checkbox"/> 1/0/7	0	0	
<input type="checkbox"/> 1/0/8	0	0	
<input type="checkbox"/> 1/0/9	0	0	
<input type="checkbox"/> 1/0/10	0	0	
<input type="checkbox"/> 1/0/11	0	0	
<input type="checkbox"/> 1/0/12	0	0	
<input type="checkbox"/> 1/0/13	0	0	
<input type="checkbox"/> 1/0/14	0	0	
<input type="checkbox"/> 1/0/15	0	0	
<input type="checkbox"/> 1/0/16	0	0	
<input type="checkbox"/> 1/0/17	0	0	
<input type="checkbox"/> 1/0/18	0	0	
<input type="checkbox"/> 1/0/19	0	0	
<input type="checkbox"/> 1/0/20	0	0	
<input type="checkbox"/> 1/0/21	0	0	
<input type="checkbox"/> 1/0/22	0	0	
<input type="checkbox"/> 1/0/23	0	0	
<input type="checkbox"/> 1/0/24	0	0	100-101
<input type="checkbox"/> 1/0/25	0	0	
<input type="checkbox"/> 1/0/26	0	0	
<input type="checkbox"/> 1/0/27			
<input type="checkbox"/> 1/0/28			

LAGS All Go To Interface GO

DELETE CANCEL APPLY

- To associate VLANs with video server ports, choose **Security > Traffic Control > Private Vlan > Private Vlan Promiscuous Interface Configuration**. Select the video server interfaces and set Promiscuous Primary VLAN to 100 and Promiscuous Secondary VLAN to 101. Click **APPLY**.

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> MAC Filter
 > Port Security
 > Private Group
 > Protected Port
 > Private Vlan
 > Private Vlan Type Configuration
 > Private Vlan Association Configuration
 > Private Vlan Port Mode Configuration
 > Private Vlan Host Interface Configuration
 > Private Vlan Promiscuous Interface Configuration
 > Storm Control

Private VLAN Promiscuous Interface Configuration

LAGS All Go To Interface GO

Interface	Promiscuous Primary VLAN (2 to 4093)	Promiscuous Secondary VLAN(s) Range[2-4093]	Operational VLAN(s)
<input type="checkbox"/> 1/0/1	0		100-101
<input type="checkbox"/> 1/0/2	0		100-101
<input type="checkbox"/> 1/0/3	0		100-101
<input type="checkbox"/> 1/0/4	0		100-101
<input type="checkbox"/> 1/0/5	0		100-101
<input type="checkbox"/> 1/0/6	0		
<input type="checkbox"/> 1/0/7	0		
<input type="checkbox"/> 1/0/8	0		
<input type="checkbox"/> 1/0/9	0		
<input type="checkbox"/> 1/0/10	0		
<input type="checkbox"/> 1/0/11	0		
<input type="checkbox"/> 1/0/12	0		
<input type="checkbox"/> 1/0/13	0		
<input type="checkbox"/> 1/0/14	0		
<input type="checkbox"/> 1/0/15	0		
<input type="checkbox"/> 1/0/16	0		
<input type="checkbox"/> 1/0/17	0		
<input type="checkbox"/> 1/0/18	0		
<input type="checkbox"/> 1/0/19	0		
<input type="checkbox"/> 1/0/20	0		
<input type="checkbox"/> 1/0/21	0		
<input type="checkbox"/> 1/0/22	0		
<input type="checkbox"/> 1/0/23	0		
<input type="checkbox"/> 1/0/24	100	101	100-101
<input type="checkbox"/> 1/0/25	0		
<input type="checkbox"/> 1/0/26	0		
<input type="checkbox"/> 1/0/27	0		
<input type="checkbox"/> 1/0/28	0		

LAGS All Go To Interface GO

DELETE CANCEL APPLY

13. Choose **Switching > VLAN > Advanced > VLAN Membership**. Select the VLAN ID to configure from the drop-down menu. Because all camera and video server ports are configured, it is necessary only to configure client ports and uplink ports. Expand the port list for each unit displayed. Select T (tagged) for VLANs 100, 101, and 200 on uplink ports. Select U (untagged) for VLAN 200 on client ports. For added security, you can select Remove All for Group Operation for the default VLAN 1 to help prevent unwanted traffic if the default VLAN is not also your management Vlan.

The screenshot displays the Netgear web interface for the M5300-28GF3 switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The current page is 'VLAN Membership' under the 'Switching' tab. The configuration form shows:

- VLAN ID:** 100
- VLAN Name:** PrimaryVlan
- VLAN Type:** Static
- Group Operation:** Untag All

Below the form is a table for 'Unit 1' showing port membership:

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
																					T			

At the bottom of the page, there are 'CANCEL' and 'APPLY' buttons.

- For client ports, choose **Switching > VLAN > Advanced > Port PVID Configuration**. Select the client ports and enter VLAN 200 as Configured PVID. Click **APPLY**.

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Port PVID Configuration

LAGS All

Go To Interface

Interface	Configured PVID	Current PVID	Acceptable Frame Types	Configured Ingress Filtering	Current Ingress Filtering	Port Priority
<input type="checkbox"/> 1/0/1	1	0	Admit All	Disable	Enable	0
<input type="checkbox"/> 1/0/2	1	0	Admit All	Disable	Enable	0
<input type="checkbox"/> 1/0/3	1	0	Admit All	Disable	Enable	0
<input type="checkbox"/> 1/0/4	1	0	Admit All	Disable	Enable	0
<input type="checkbox"/> 1/0/5	1	0	Admit All	Disable	Enable	0
<input type="checkbox"/> 1/0/6	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/7	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/8	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/9	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/10	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/11	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/12	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/13	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/14	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/15	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/16	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/17	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/18	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/19	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/20	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/21	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/22	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/23	200	200	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/24	100	0	Admit All	Disable	Enable	0
<input type="checkbox"/> 1/0/25	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/26	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/27	1	0	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/28	1	0	Admit All	Disable	Disable	0

CANCEL APPLY

- To give clients access to MVR streams, choose **Switching > MVR > MVR Group Membership**. For each group IP address, select the ports to allow to subscribe to the stream. Click **APPLY** after selecting ports for each IP address.

The screenshot shows the Netgear web interface for the M5300-28GF3 switch. The main navigation bar includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The current page is 'MVR Group Membership' under the 'MVR' section. The 'Group IP' is set to 224.1.2.4. A table below allows selecting ports for this group. The table has columns for ports 1 through 24, with a summary row for ports 25, 26, 27, and 28. All checkboxes in the table are checked.

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
25	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																				
26	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																				
27	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																				
28	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																				

At the bottom of the page, there are 'CANCEL' and 'APPLY' buttons.

CONFIGURATION FOR THE 1000-CAMERA SOLUTION

You can use the CLI or Web GUI for configuration. The configuration involves the following switches:

- XSM7224S
- M5300-52G3
- M5300-52G-POE+

Assumptions for the 1000-Camera Solution

- Layer 3 licenses have been installed on XSM7224S and M5300-52G-POE+ switches, as they are natively Layer 2 switches. No additional license is needed for the M5300-52G3 switches because they are native Layer 3 switches.
- An existing DHCP server will be used to dynamically assign IP addresses to cameras and clients.
- Video servers are configured to broadcast UDP multicast packets using 224.1.1.0/24 addresses.
- Best practices are used to design and implement switch stacking and redundancy/failover.

Global Configuration Notes

- Be sure to save your configuration using the **write memory** CLI command. Alternatively, choose **Maintenance > Save Config** in the GUI. Select the box, and click **APPLY**.
- Each router ID must be unique to each stack.
- For each M5300-52G-POE+ stack, the subnet and VLAN ID for the camera VLAN will be unique since Layer-2 spanning-tree protocol (STP) is not being used and will allow for easier network segmenting.
- While the OSPF area feature was set to a single area in this sample configuration, it is possible to create smaller network areas for access control granularity. Refer to the included documentation and support.netgear.com for more information.
- ACLs can be used to further limit network access, including multicast subnets. You can limit camera communication to only video servers, restrict multicast streams to certain users, or apply ACLs for other reason appropriate for your deployment. Refer to the included documentation and support.netgear.com for more information.

Sample Configuration Values

The following values are used in the sample configuration:

Switch – XSM7224S

- Video VLAN: 100
- Video VLAN subnet: 192.168.1.0/24
- Multicast sources: 224.1.2.0/24
- Video server interfaces: 1/0/1-1/0/24
- Uplink port IP addresses for M5300-52G-POE+ stacks: 172.160.x.1
- Uplink port IP addresses for M5300-52G3 stacks: 172.80.x.1

Switch – M5300-52G3

- Client VLAN: 200
- Client VLAN subnet: 192.168.4.0/24
- Client interfaces: 1/0/1-1/0/24
- Uplink port IP addresses for XSM7224S stack: 172.80.x.2
- Multicast source: 224.1.1.0/24

Switch – M5300-52G-POE+

- Camera VLAN: 101
- Camera VLAN subnet: 192.168.8.0/24
- Camera interfaces: 1/0/1-1/0/24
- Uplink port IP addresses for XSM7224S stack: 172.80.x.2

CLI Configuration Steps: 1000-Camera Solution

These steps provide an example CLI configuration for the 1000-camera solution. For the Web GUI configuration, see Web GUI Configuration Steps: 1000-Camera Solution on page 44.

Switch – XSM7224S

1. Configure the OSPF interface on the switch, Assign a unique router ID for the distributed networks to recognize this switch and elect to distribute any connected networks to the neighboring switches.

```
(XSM7224S) (Config) #router ospf
(XSM7224S) (Config-router) #router-id 0.0.0.1
(XSM7224S) (Config-router) #redistribute connected
(XSM7224S) (Config-router) #exit
```

2. Configure multicast settings. Start by enabling multicast routing, IGMP, and PIM sparse mode globally.

```
(XSM7224S) (Config) #ip igmp
(XSM7224S) (Config) #ip multicast
(XSM7224S) (Config) #ip pim sparse
(XSM7224S) (Config) #exit
```

3. Configure video VLAN 100 with subnet 192.168.1.0/24 and enable routing on it. Make sure to enable PIM and IGMP on the interface and configure the correct OSPF area.

```
(XSM7224S) #vlan database
(XSM7224S) (Vlan) #vlan 100
(XSM7224S) (Vlan) #vlan routing 100
(XSM7224S) (Vlan) #exit
(XSM7224S) #configure
(XSM7224S) (Config) #interface vlan 100
(XSM7224S) (Interface-vlan 100) #routing
(XSM7224S) (Interface-vlan 100) #ip address 192.168.1.1 255.255.255.0
(XSM7224S) (Interface-vlan 100) #ip pim
(XSM7224S) (Interface-vlan 100) #ip igmp
(XSM7224S) (Interface-vlan 100) #ip ospf area 0.0.0.0
(XSM7224S) (Interface-vlan 100) #exit
```

4. Configure VLAN 100 to be the default interface for multicast sources (224.1.2.0/24).

```
(XSM7224S) (Config) #ip pim rp-candidate interface vlan 100 224.1.2.0
255.255.255.0
(XSM7224S) (Config) #ip pim bsr-candidate interface vlan 100 30 3
```

5. Configure the video server ports and place them on VLAN 100. Use the port range function (interface 1/0/1-1/0/24) to configure a series of ports. Make sure to enable PIM and IGMP on the interfaces.

```
(XSM7224S) (Config) #interface 1/0/22
(XSM7224S) (Interface 1/0/22) #vlan participation exclude 1
(XSM7224S) (Interface 1/0/22) #vlan participation include 100
(XSM7224S) (Interface 1/0/22) #vlan pvid 100
(XSM7224S) (Interface 1/0/22) #ip pim
(XSM7224S) (Interface 1/0/22) #ip igmp
(XSM7224S) (Interface 1/0/22) #ip ospf area 0.0.0.0
(XSM7224S) (Interface 1/0/22) #exit
```

6. Configure the uplink ports to the M5300-52G-POE+ stacks using 172.160.x.1 addresses for the uplinks. For each uplink, increment the third segment of the IP address accordingly. For example, the first uplink has an IP address of 172.160.1.1, the second uplink has an IP address of 172.160.2.1, and so on.

```
(XSM7224S) (Config) #interface 1/0/24
(XSM7224S) (Interface 1/0/24) #routing
(XSM7224S) (Interface 1/0/24) #ip address 172.160.1.1 255.255.255.0
(XSM7224S) (Interface 1/0/24) #ip igmp
(XSM7224S) (Interface 1/0/24) #ip pim
(XSM7224S) (Interface 1/0/24) #ip ospf area 0.0.0.0
(XSM7224S) (Interface 1/0/24) #exit
```

7. Configure the uplink ports to the M5300-52G3 stacks using 172.80.x.1 addresses. For each uplink, increment the third segment of the IP address accordingly. For example, the first uplink has an IP address of 172.80.1.1, the second uplink has an IP address of 172.80.2.1, and so on.

```
(XSM7224S) (Config) #interface 1/0/1
(XSM7224S) (Interface 1/0/1) #routing
(XSM7224S) (Interface 1/0/1) #ip address 172.80.1.1 255.255.255.0
(XSM7224S) (Interface 1/0/1) #ip igmp
(XSM7224S) (Interface 1/0/1) #ip pim
(XSM7224S) (Interface 1/0/1) #ip ospf area 0.0.0.0
(XSM7224S) (Interface 1/0/1) #exit
```

Switch – M5300-52G3

1. Configure the OSPF interface on the switch. Assign a unique router ID for the distributed networks to recognize this switch and elect to distribute any connected networks to the neighboring switches.

```
(M5300-52G3) (Config) #router ospf
(M5300-52G3) (Config-router) #router-id 0.0.0.2
(M5300-52G3) (Config-router) #redistribute connected
(M5300-52G3) (Config-router) #exit
```

2. Enable multicast routing, IGMP, and PIM sparse mode globally.

```
(M5300-52G3) (Config) #ip igmp
(M5300-52G3) (Config) #ip multicast
(M5300-52G3) (Config) #ip pim sparse
(M5300-52G3) (Config) #exit
```

3. Configure client VLAN 200 with subnet 192.168.4.0/24. Enable PIM on the interface and configure the correct OSPF area.

```
(M5300-52G3) #vlan database
(M5300-52G3) (Vlan) #vlan 200
(M5300-52G3) (Vlan) #vlan routing 200
(M5300-52G3) (Vlan) #exit
(M5300-52G3) #configure
(M5300-52G3) (Config) #interface vlan 200
(M5300-52G3) (Interface-vlan 200) #routing
(M5300-52G3) (Interface-vlan 200) #ip address 192.168.4.1 255.255.255.0
(M5300-52G3) (Interface-vlan 200) #ip pim
(M5300-52G3) (Interface-vlan 200) #ip igmp
(M5300-52G3) (Interface-vlan 200) #ip ospf area 0.0.0.0
(M5300-52G3) (Interface-vlan 200) #exit
```

4. Configure client ports and place them on VLAN 200. Use the port range function (interface 1/0/1-1/0/24) to configure a series of ports. Make sure to enable PIM and IGMP on the ports.

```
(M5300-52G3) (Config) #interface 1/0/22
(M5300-52G3) (Interface 1/0/22) #vlan participation exclude 1
(M5300-52G3) (Interface 1/0/22) #vlan participation include 200
(M5300-52G3) (Interface 1/0/22) #vlan pvid 200
(M5300-52G3) (Interface 1/0/22) #ip pim
(M5300-52G3) (Interface 1/0/22) #ip igmp
(M5300-52G3) (Interface 1/0/22) #ip ospf area 0.0.0.0
(M5300-52G3) (Interface 1/0/22) #exit
```

- Configure the uplink port to XSM7224S stack using 172.80.x.2 addresses for the uplinks (the next available address in the subnet that was configured on the XSM7224S side of the link). For each uplink, increment the third segment of the IP address accordingly. For example, the first uplink has an IP address of 172.80.1.2, the second uplink has an IP address of 172.80.2.2, and so on.

```
(M5300-52G3) (Config) #interface 1/0/49
(M5300-52G3) (Interface 1/0/49) #routing
(M5300-52G3) (Interface 1/0/49) #ip address 172.80.1.2 255.255.255.0
(M5300-52G3) (Interface 1/0/49) #ip igmp
(M5300-52G3) (Interface 1/0/49) #ip pim
(M5300-52G3) (Interface 1/0/49) #ip ospf area 0.0.0.0
(M5300-52G3) (Interface 1/0/49) #exit
```

- Configure uplink port to be the default interface for multicast sources (224.1.1.0/24).

```
(M5300-52G3) (Config) #ip pim rp-candidate interface 1/0/49 224.1.1.0
255.255.255.0
```

Switch – M5300-52G-POE+

- Configure the OSPF interface on the switch. Assign a unique router ID for the distributed networks to recognize this switch and elect to distribute any connected networks to the neighboring switches.

```
(M5300-52G-POE) (Config) #router ospf
(M5300-52G-POE) (Config-router) #router-id 0.0.0.3
(M5300-52G-POE) (Config-router) #redistribute connected
(M5300-52G-POE) (Config-router) #exit
```

- Configure camera VLAN 101 with subnet 192.168.8.0/22 and enable routing on its interface. Make sure to configure the correct OSPF area. Remember that the camera VLAN ID and subnet are unique to each M5300-52G-POE+ stack.

```
(M5300-52G-POE) #vlan database
(M5300-52G-POE) (Vlan) #vlan 101
(M5300-52G-POE) (Vlan) #vlan routing 101
(M5300-52G-POE) (Vlan) #exit
(M5300-52G-POE) #configure
(M5300-52G-POE) (Config) #interface vlan 101
(M5300-52G-POE) (Interface-vlan 101) #routing
(M5300-52G-POE) (Interface-vlan 101) #ip address 192.168.8.0 255.255.252.0
(M5300-52G-POE) (Interface-vlan 101) #ip ospf area 0.0.0.0
(M5300-52G-POE) (Interface-vlan 101) #exit
```

3. Configure camera ports and place them on VLAN 101. Use the port range function (interface 1/0/1-1/0/24) to configure a series of ports.

```
(M5300-52G-POE) (Config) #interface 1/0/1
(M5300-52G-POE) (Interface 1/0/1) #vlan participation exclude 1
(M5300-52G-POE) (Interface 1/0/1) #vlan participation include 101
(M5300-52G-POE) (Interface 1/0/1) #vlan pvid 101
(M5300-52G-POE) (Interface 1/0/1) #ip ospf area 0.0.0.0
(M5300-52G-POE) (Interface 1/0/1) #exit
```

4. Configure the uplink port to the XSM7224S stack using 172.80.x.2 addresses for the uplinks (the next available address in the subnet that was configured on the XSM7224S side of link). For each uplink, increment the third segment of the IP address accordingly. For example, the first uplink has an IP address of 172.160.1.2, the second uplink has an IP address of 172.160.2.2, and so on.

```
(M5300-52G-POE) (Config) #interface 1/0/49
(M5300-52G-POE) (Interface 1/0/49) #routing
(M5300-52G-POE) (Interface 1/0/49) #ip address 172.160.1.2 255.255.255.0
(M5300-52G-POE) (Interface 1/0/49) #ip ospf area 0.0.0.0
(M5300-52G-POE) (Interface 1/0/49) #exit
```

Web GUI Configuration Steps: 1000-Camera Solution

These steps provide an example CLI configuration for the 1000-camera solution. For the Web GUI configuration, see CLI Configuration Steps: 1000-Camera Solution on page 39.

Switch – XSM7224S

1. Choose **Switching > VLAN > Advanced > VLAN Configuration**. Specify **100** for the video server VLAN ID, its name, and click **ADD** to add the VLAN to the configuration.

NETGEAR
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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

VLAN | STP | Multicast | Address Table | Ports | LAG | PFC

Basic
VLAN Configuration
Advanced

VLAN Configuration

Reset

Reset Configuration

Internal VLAN Configuration

Internal VLAN Allocation Base: 4093

Internal VLAN Allocation Policy: Ascending Descending

VLAN ID	VLAN Name	VLAN Type	Make Static
<input type="checkbox"/>	<input type="text"/>		Disable
<input type="checkbox"/>	1	default	Disable
<input type="checkbox"/>	200	ClientVlan	Static Disable

ADD DELETE CANCEL APPLY

2. Choose **Switching > VLAN > Advanced > Vlan Membership**. Select Vlan 100 from the VLAN ID drop-down menu. For all ports that will have video servers connected to them, untag the VLAN on the port by clicking associated box, and cycle through options until you get to U. Click **APPLY** after all ports have been configured on the VLAN.

The screenshot shows the Netgear web interface for the XSM7224S switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The current page is VLAN Membership for VLAN 100. The configuration area shows the following details:

- VLAN ID: 100
- VLAN Name: ServerVlan
- VLAN Type: Static
- Group Operation: Untag All

Below these details is a table for port membership:

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Unit 1																								
LAG																								U

The interface also includes a sidebar with configuration options and buttons for CANCEL and APPLY at the bottom right.

- Choose **Switching > VLAN > Advanced > Port PVID Configuration**. For all the ports configured for video servers, select the associated box and enter 100 for the Configured PVID. When finished, click **APPLY**.

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24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

VLAN | STP | Multicast | Address Table | Ports | LAG | PFC

LOGOUT

> Basic
> **Advanced**
 > VLAN
 > VLAN Configuration
 > VLAN Membership
 > VLAN Status
 > **Port PVID Configuration**
 > MAC Based VLAN
 > IP Subnet Based VLAN
 > Port DVLAN Configuration
 > Protocol Based VLAN Group Configuration
 > Protocol Based VLAN Group Membership
 > Voice VLAN Configuration
 > GARP Switch Configuration
 > GARP Port Configuration

Port PVID Configuration

PVID Configuration

LAGS All Go To Interface [] GO

	Interface	Configured PVID	Current PVID	Acceptable Frame Types	Configured Ingress Filtering	Current Ingress Filtering	Port Priority
<input type="checkbox"/>	1/0/1	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/2	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/3	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/4	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/5	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/6	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/7	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/8	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/9	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/10	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/11	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/12	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/13	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/14	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/15	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/16	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/17	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/18	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/19	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/20	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/21	1	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	1/0/22	100	100	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/23	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/24	1	1	Admit All	Disable	Disable	0

LAGS All Go To Interface [] GO

CANCEL APPLY

- Configure the VLAN 100 interface for the subnet (192.168.1.0/24) and enable VLAN routing. Choose **Routing > VLAN > VLAN Routing**. Select the VLAN ID and assign IP address 192.168.1.1 with subnet mask 255.255.255.0. Click **ADD**.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System Switching **Routing** QoS Security Monitoring Maintenance Help Index

Routing Table IP IPv6 **VLAN** ARP RIP OSPF OSPFv3 Router Discovery VRRP Multicast IPv6 Multicast

VLAN Routing Wizard
VLAN Routing

VLAN Routing Configuration

VLAN Routing Configuration

VLAN ID	Port	MAC Address	IP Address	Subnet Mask
100	0/4/1	00:8E:F2:59:67:36	192.168.1.1	255.255.255.0

ADD DELETE CANCEL

- Choose **Routing > IP > Basic > IP Configuration**. Enable Routing Mode and click **APPLY**.

The screenshot shows the Netgear web interface for device XSM7224S. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. Under the Routing menu, the path is Routing Table > IP > IPv6 > VLAN > ARP > RIP > OSPF > OSPFv3 > Router Discovery > VRRP > Multicast > IPv6 Multicast. The left sidebar shows a tree view with Basic, IP Configuration, Statistics, and Advanced. The main content area is titled 'IP Configuration' and contains the following settings:

- Default Time to Live: 64
- Routing Mode: Enable Disable
- ICMP Echo Replies: Enable Disable
- ICMP Redirects: Enable Disable
- ICMP Rate Limit Interval: 1000 (0 to 2147483647 ms)
- ICMP Rate Limit Burst Size: 100 (1 to 200)
- Maximum Next Hops: 4
- Maximum Routes: 6112
- Select to configure Global Default Gateway:
- Global Default Gateway: 0.0.0.0

- Choose **Routing > IP > Advanced > IP Interface Configuration**. Assign the IP address for each interface that will act as an uplink to each M5300-52G3 and M5300-52G-POE+ stack. For each M5300-52G3 uplink, use consecutive 172.80.x.1/24 subnets. For each M5300-52G-POE+ uplink, use consecutive 172.160.x.1/24 subnets. For each interface, set IP Address Configuration Method to Manual and enter the IP address and subnet mask. Enable Routing Mode and Admin Mode. Click **APPLY** after configuring each interface.

The screenshot shows the 'IP Interface Configuration' page in the Netgear web interface. The left sidebar shows a tree view with Basic, Advanced, IP Configuration, Statistics, IP Interface Configuration, and Secondary IP. The main content area is titled 'IP Interface Configuration' and displays a table for '1 VLANs All'.

Port	Description	VLAN ID	IP Address Configuration Method	IP Address	Subnet Mask	Routing Mode	Administrative Mode	Link Speed Data Rate	OSPF Admin Mode	Forwarding Direction
<input type="checkbox"/>	1/0/1		Manual	172.160.1.1	255.255.255.0	Enable	Enable	10G Full	Disable	Disab
<input type="checkbox"/>	1/0/2		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/3		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/4		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/5		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/6		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/7		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/8		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/9		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/10		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/11		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/12		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/13		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/14		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/15		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/16		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/17		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/18		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/19		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/20		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/21		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/22		None	0.0.0.0	0.0.0.0	Disable	Enable	Unknown	Disable	Disab
<input type="checkbox"/>	1/0/23		None	0.0.0.0	0.0.0.0	Disable	Enable	1000 Mbps	Disable	Disab
<input type="checkbox"/>	1/0/24		None	0.0.0.0	0.0.0.0	Disable	Enable	10G Full	Disable	Disab

At the bottom of the page, there are buttons for CANCEL, DELETE, APPLY, and REFRESH.

7. Choose **Routing > Multicast > Global Configuration**. Enable Admin Mode and click **APPLY**.

The screenshot shows the Netgear web interface for an XSM7224S switch. The navigation menu is set to **Routing > Multicast > Global Configuration**. The main content area displays the **Global Configuration** settings:

Global Configuration	
Admin Mode	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Protocol State	Operational
Table Maximum Entry Count	2048
Protocol	No Protocol Enabled
Table Entry Count	0

8. Choose **Routing > Multicast > IGMP > Global Configuration**. Enable Admin Mode and click **APPLY**.

The screenshot shows the Netgear web interface for an XSM7224S switch. The navigation menu is set to **Routing > Multicast > IGMP > Global Configuration**. The main content area displays the **IGMP Global Configuration** settings:

IGMP Global Configuration	
Admin Mode	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

At the bottom of the page, there are **CANCEL** and **APPLY** buttons.

- Choose **Routing > Multicast > IGMP > Routing Interface Configuration**. Click **All** above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Click **APPLY**.

The screenshot shows the Netgear web interface for the XSM7224S switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Routing menu is expanded to show Multicast > IGMP > Routing Interface Configuration. The main content area displays the 'IGMP Routing Interface Configuration' page with a table of interfaces. The table has a 'Go To Interface' search box and a 'GO' button. The table columns are: Interface, Admin Mode, Version, Robustness, Query Interval, Query Max Response Time, Startup Query Interval, Startup Query Count, Last Member Query Interval, and Last Member Query Count. All checkboxes in the first column are selected. At the bottom right, there are 'CANCEL' and 'APPLY' buttons.

Interface	Admin Mode	Version	Robustness	Query Interval	Query Max Response Time	Startup Query Interval	Startup Query Count	Last Member Query Interval	Last Member Query Count	
<input checked="" type="checkbox"/>										
<input checked="" type="checkbox"/>	1/0/1	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/2	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/3	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/4	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/5	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/6	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/7	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/8	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/9	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/10	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/11	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/12	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/13	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/14	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/15	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/16	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/17	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/18	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/19	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/20	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/21	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/22	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/23	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/24	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	vlan 100	Enable	V3	2	125	100	31	2	10	2

10. Choose **Routing > Multicast > PIM > Global Configuration**. Set PIM Protocol Type to PIM-SM for sparse mode and enable Admin Mode. Click **APPLY**.

NETGEAR
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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System Switching **Routing** QoS Security Monitoring Maintenance Help Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | OSPF | OSPFv3 | Router Discovery | VRRP | **Multicast** | IPv6 Multicast

LOGOUT

PIM Global Configuration

PIM Global Configuration

PIM Protocol Type PIM-DM PIM-SM

Admin Mode Disable Enable

Data Threshold Rate(Kbps) (0 to 2000)

Register Threshold Rate(Kbps) (0 to 2000)

CANCEL APPLY

11. Choose **Routing > Multicast > PIM > Candidate RP Configuration**. Select VLAN 100 as the PIM interface and assign 224.1.2.0/24 as the group address/mask. Adjust the multicast address range as needed. Click **ADD**.

The screenshot shows the Netgear web interface for a switch (XSM7224S). The navigation menu is at the top, with 'Routing' selected. The breadcrumb trail is 'Routing Table > IP > IPv6 > VLAN > ARP > RIP > OSPF > OSPF-3 > Router Discovery > VRRP > Multicast > IPv6 Multicast'. The main content area is titled 'PIM Candidate RP Configuration'. It has two sections: 'PIM Interface Selection' with a dropdown menu set to 'vlan 100', and 'PIM Candidate RP Configuration' which contains a table with two columns: 'Group Address' and 'Group Mask'. The table has one row with the values '224.1.2.0' and '255.255.255.0'. At the bottom right, there are buttons for 'ADD', 'DELETE', and 'CANCEL'.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System Switching **Routing** QoS Security Monitoring Maintenance Help Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | OSPF | OSPF-3 | Router Discovery | VRRP | **Multicast** | IPv6 Multicast

LOGOUT

PIM Candidate RP Configuration

PIM Interface Selection

Interface:

PIM Candidate RP Configuration

	Group Address	Group Mask
<input type="checkbox"/>	<input type="text"/>	<input type="text"/>
<input checked="" type="checkbox"/>	224.1.2.0	255.255.255.0

ADD DELETE CANCEL

- Choose **Routing > Multicast > PIM > BSR Candidate Configuration**. Select VLAN 100 as the interface, and set Hash Mask Length to 30 and Priority to 3. Click **APPLY**.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | OSPF | OSPFv3 | Router Discovery | VRRP | **Multicast** | IPv6 Multicast

LOGOUT

PIM BSR Candidate Configuration

PIM BSR Candidate Configuration

Interface:

Hash Mask Length: (0-32)

BSR Expiry Time (hh:mm:ss):

Priority: (0 to 255)

IP Address:

Next bootstrap Message(hh:mm:ss):

Next Candidate RP Advertisement(hh:mm:ss):

DELETE | REFRESH | APPLY

13. Choose **Routing > Multicast > PIM > Interface Configuration**. Click **All** above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Click **APPLY**.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System Switching **Routing** QoS Security Monitoring Maintenance Help Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | OSPF | OSPFv3 | Router Discovery | VRRP | **Multicast** | IPv6 Multicast

LOGOUT

PIM Interface Configuration

PIM Interface Configuration

1 VLANs All Go To Interface GO

<input type="checkbox"/>	Interface	Admin Mode	Protocol State	IP Address	Hello Interval(secs)	Join/Prune Interval(secs)	BSR Border	DR Priority	Designated Router	Neighbor Count
<input type="checkbox"/>	1/0/1	Enable	Operational	172.160.1.1	30	60	Disable	1	172.160.1.1	0
<input type="checkbox"/>	1/0/2	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/3	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/4	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/5	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/6	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/7	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/8	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/9	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/10	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/11	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/12	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/13	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/14	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/15	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/16	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/17	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/18	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/19	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/20	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/21	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/22	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/23	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/24	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		

1 VLANs All Go To Interface GO

CANCEL APPLY

14. Choose **Routing > OSPF > Basic > OSPF Configuration**. Select **Enable** and set the router ID to **0.0.0.1**. Click **APPLY**. Remember that the router ID must be unique to each stack in your LAN network.

The screenshot displays the Netgear web management interface for a device identified as XSM7224S (24-Port 10G SFP+ Ports Managed L2+ Stackable Switch). The navigation menu is set to 'Routing', with 'OSPF' selected. The 'OSPF Configuration' page is shown, featuring a left sidebar with 'Basic', 'OSPF Configuration', and 'Advanced' options. The main content area contains the 'OSPF Configuration' section with two fields: 'Admin Mode' (radio buttons for 'Disable' and 'Enable', with 'Enable' selected) and 'Router ID' (a text input field containing '0.0.0.1'). At the bottom right, there are 'CANCEL' and 'APPLY' buttons.

- Choose **Routing > OSPF > Advanced > Route Redistribution**. Select Connected and enable Redistribution Option. Click **APPLY**.

NETGEAR
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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | **OSPF** | OSPFv3 | Router Discovery | VRRP | Multicast | IPv6 Multicast

LOGOUT

Route Redistribution

OSPF Route Redistribution

Source	Redistribute Option	Metric	Metric Type	Tag	Subnets	Distribute List
<input type="checkbox"/> Connected	Enable	0	External Type 2	0	Disable	
<input type="checkbox"/> Static	Disable	0	External Type 2	0	Disable	
<input type="checkbox"/> RIP	Disable	0	External Type 2	0	Disable	

CANCEL APPLY

- Choose **Routing > OSPF > Advanced > Interface Configuration**. Click **All** above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Enable Admin Mode and click **APPLY**.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | **OSPF** | OSPFv3 | Router Discovery | VRRP | Multicast | IPv6 Multicast

LOGOUT

Interface Configuration

OSPF Interface Configuration

1 VLANs All

	Interface	IP Address	Subnet Mask	Area ID	Admin Mode	Router Priority	Retransmit Interval	Hello Interval	Dead Interval
<input checked="" type="checkbox"/>	1/0/1	172.160.1.1	255.255.255.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/2	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/3	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/4	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/5	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/6	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/7	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/8	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/9	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/10	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/11	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/12	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/13	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/14	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/15	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/16	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/17	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/18	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/19	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/20	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/21	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/22	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/23	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	1/0/24	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input checked="" type="checkbox"/>	vlan 100	192.168.1.1	255.255.255.0	0.0.0.0	Enable	1	5	10	40

1 VLANs All

CANCEL APPLY

Switch – M5300-52G3

1. Choose **Switching > VLAN > Basic > VLAN Configuration**. Specify 200 for the VLAN ID and click **ADD** to add the VLAN to the configuration.

NETGEAR
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M5300-28G3
ProSafe 24-port L3
Stackable GE Switch with L3 Routing

System Switching Routing QoS Security Monitoring Maintenance Help Index

VLAN Auto-VoIP iSCSI STP Multicast MYR Address Table Ports LAG

Basic
VLAN Configuration
Advanced

VLAN Configuration

Reset

Reset Configuration

Internal VLAN Configuration

Internal VLAN Allocation Base: 4093

Internal VLAN Allocation Policy: Ascending Descending

VLAN Configuration

VLAN ID	VLAN Name	VLAN Type	Make Static
1	default	Default	Disable
2	Auto VoIP	AUTO VoIP	Disable
200	ClientVlan	Static	Disable

ADD DELETE CANCEL APPLY

2. Choose **Switching > VLAN > Advanced > Vlan Membership**. Select Vlan 200 from the VLAN ID drop-down menu. For all ports that will have clients connected to them, untag the VLAN on the port by clicking associated box, and cycle through options until you get to U. Click **APPLY** after all ports have been configured on the VLAN.

The screenshot shows the Netgear web interface for configuring VLAN Membership on a switch. The page title is "VLAN Membership" and the device model is "M5300-28G3 ProSafe 24-port L3 Stackable GE Switch with L3 Routing". The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The "Switching" menu is expanded to show VLAN, Auto-VoIP, iSCSI, STP, Multicast, MVR, Address Table, Ports, and LAG. The "VLAN Membership" configuration page is displayed, showing the following settings:

- VLAN ID:** 200
- Group Operation:** Untag All
- VLAN Name:** Clientvlan
- VLAN Type:** Static

Below the settings, there are two tabs: "UNTAGGED PORT MEMBERS" and "TAGGED PORT MEMBERS". The "UNTAGGED PORT MEMBERS" tab is active, showing a table of ports and their membership status:

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24

The "LAG" section is also visible, showing a dropdown menu for "Unit 1". At the bottom of the page, there are "CANCEL" and "APPLY" buttons.

- Choose **Switching > VLAN > Advanced > Port PVID Configuration**. For all the ports configured for clients, select the associated box and enter 200 for the Configured PVID. When finished, click **APPLY**.

NETGEAR
Connect with Innovation

M5300-28G3
ProSafe 24-port L3
Stackable OE Switch with L3 Routing

System Switching Routing QoS Security Monitoring Maintenance Help Index

VLAN Auto-VoIP iSCSI STP Multicast MVR Address Table Ports LAG

LOGOUT

PVID Configuration

LAGS All Go To Interface GO

Interface	Configured PVID	Current PVID	Acceptable Frame Types	Configured Ingress Filtering	Current Ingress Filtering	Port Priority
<input checked="" type="checkbox"/> 1/0/1	200	200	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/2	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/3	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/4	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/5	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/6	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/7	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/8	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/9	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/10	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/11	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/12	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/13	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/14	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/15	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/16	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/17	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/18	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/19	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/20	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/21	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/22	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/23	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/24	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/25	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/26	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/27	1	0	Admit All	Disable	Disable	0
<input type="checkbox"/> 1/0/28	1	0	Admit All	Disable	Disable	0

LAGS All Go To Interface GO

CANCEL APPLY

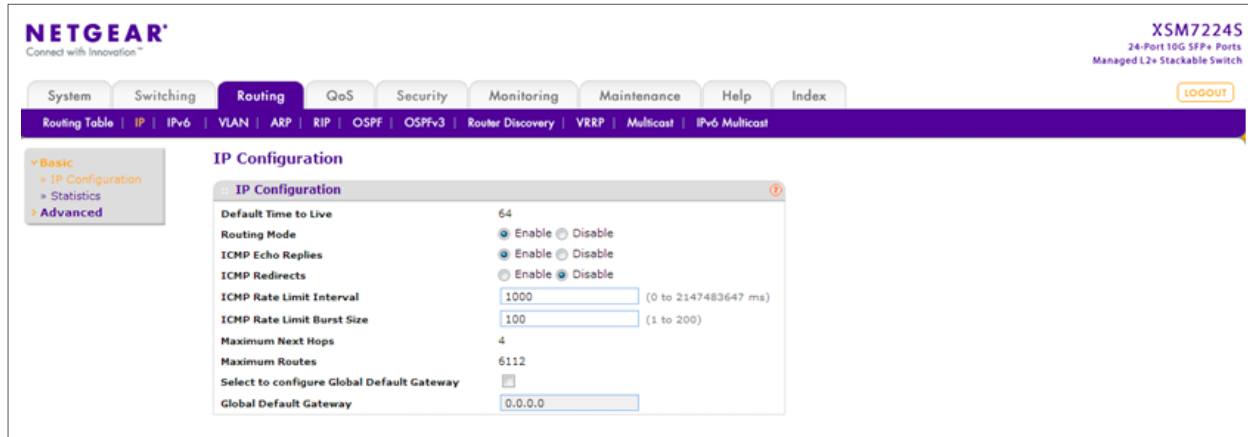
4. Configure the VLAN 200 interface for the subnet (192.168.4.0/24) and enable VLAN routing. Choose **Routing > VLAN > VLAN Routing**. Select the VLAN ID and assign IP address 192.168.4.1 with subnet mask 255.255.252.0. Click **ADD**.

The screenshot displays the Netgear web interface for an M5300-28G3 switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Routing section is expanded to show VLAN, ARP, RIP, OSPF, OSPFv3, Router Discovery, VRRP, Multicast, and IPv6 Multicast. The VLAN Routing Configuration page is active, showing a table with the following data:

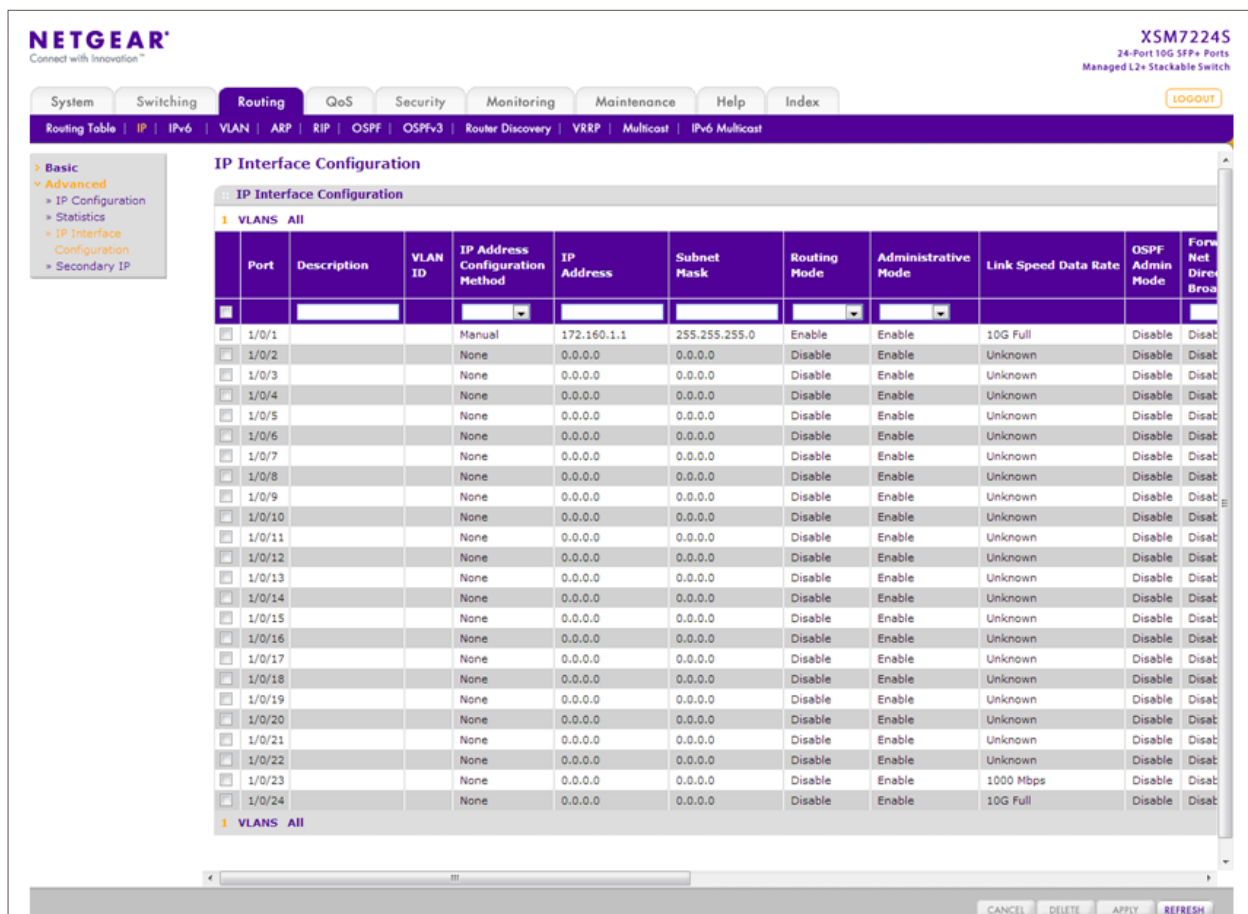
VLAN ID	Port	MAC Address	IP Address	Subnet Mask
200	0/4/1	10:0D:7F:4C:18:E0	192.168.4.1	255.255.252.0

At the bottom of the interface, there are buttons for ADD, DELETE, and CANCEL.

- Choose **Routing > IP > Basic > IP Configuration**. Enable Routing Mode and click **APPLY**.



- Choose **Routing > IP > Advanced > IP Interface Configuration**. Assign the IP address for each interface that will act as an uplink to the XSM7224S stack. For each uplink, use consecutive 172.80.x.1/24 subnets. For each interface, set the IP address configuration method to Manual and enter the IP address and subnet mask. Enable Routing Mode and Admin Mode. Click **APPLY** after configuring each interface.



7. Choose **Routing > Multicast > Global Configuration**. Enable Admin mode and click **APPLY**.

The screenshot shows the Netgear web interface for device M5300-28G3. The navigation menu is set to **Routing > Multicast > Global Configuration**. The main content area displays the **Global Configuration** settings:

Global Configuration	
Admin Mode	<input type="radio"/> Disable <input checked="" type="radio"/> Enable
Protocol State	Non-Operational
Table Maximum Entry Count	768
Protocol	No Protocol Enabled
Table Entry Count	0

The left sidebar shows a tree view with **Global Configuration** selected. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. A **LOGOUT** button is visible in the top right corner.

8. Choose **Routing > Multicast > IGMP > Global Configuration**. Enable Admin Mode, and click **APPLY**.

The screenshot shows the Netgear web interface for device XSM72245. The navigation menu is set to **Routing > Multicast > IGMP > Global Configuration**. The main content area displays the **IGMP Global Configuration** settings:

IGMP Global Configuration	
Admin Mode	<input type="radio"/> Disable <input checked="" type="radio"/> Enable

The left sidebar shows a tree view with **IGMP > Global Configuration** selected. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. A **LOGOUT** button is visible in the top right corner. At the bottom right of the page, there are **CANCEL** and **APPLY** buttons.

- Choose **Routing > Multicast > IGMP > Routing Interface Configuration**. Click All above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Enable Admin Mode and click **APPLY**.

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M5300-28G3
ProSafe 24-port L3
Stackable GE Switch with L3 Routing

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | OSPF | OSPFv3 | Router Discovery | VRRP | **Multicast** | IPv6 Multicast

LOGOUT

IGMP Routing Interface Configuration

1 VLANs All

Go To Interface GO

<input checked="" type="checkbox"/>	Interface	Admin Mode	Version	Robustness	Query Interval	Query Max Response Time	Startup Query Interval	Startup Query Count	Last Member Query Interval	Last Member Query Count
<input checked="" type="checkbox"/>	1/0/1	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/2	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/3	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/4	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/5	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/6	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/7	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/8	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/9	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/10	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/11	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/12	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/13	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/14	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/15	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/16	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/17	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/18	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/19	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/20	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/21	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/22	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/23	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/24	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/25	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/26	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/27	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	1/0/28	Enable	V3	2	125	100	31	2	10	2
<input checked="" type="checkbox"/>	vlan 200	Enable	V3	2	125	100	31	2	10	2

CANCEL APPLY

10. Choose **Routing > Multicast > PIM > Global Configuration**. Set the PIM protocol type to PIM-SM for sparse mode and enable Admin Mode. Click **APPLY**.

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M5300-28G3
ProSafe 24-port L3
Stackable GE Switch with L3 Routing

System Switching **Routing** QoS Security Monitoring Maintenance Help Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | OSPF | OSPFv3 | Router Discovery | VRRP | **Multicast** | IPv6 Multicast

LOGOUT

PIM Global Configuration

PIM Global Configuration

PIM Protocol Type PIM-DM PIM-SM

Admin Mode Disable Enable

CANCEL APPLY

11. Choose **Routing > Multicast > PIM > Candidate RP Configuration**. Select the uplink interface to the XSM7224S stack as the PIM interface and assign 224.1.2.0/24 as the group address/mask. Adjust the multicast address range as needed. Click **ADD**.

The screenshot shows the Netgear web interface for the XSM7224S switch. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Routing menu is expanded to show Multicast > PIM > Candidate RP Configuration. The sidebar on the left lists various configuration options, with PIM Candidate RP Configuration selected. The main content area displays the PIM Candidate RP Configuration page, which includes a PIM Interface Selection section with a dropdown menu set to 'vlan 100'. Below this is a PIM Candidate RP Configuration table with columns for Group Address and Group Mask. The table contains one entry: 224.1.2.0 and 255.255.255.0. At the bottom right of the page, there are buttons for ADD, DELETE, and CANCEL.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System Switching **Routing** QoS Security Monitoring Maintenance Help Index

Routing Table IP IPv6 VLAN ARP RIP OSPF OSPFv3 Router Discovery VRRP **Multicast** IPv6 Multicast

LOGOUT

PIM Candidate RP Configuration

PIM Interface Selection

Interface: vlan 100

PIM Candidate RP Configuration

	Group Address	Group Mask
<input type="checkbox"/>		
<input type="checkbox"/>	224.1.2.0	255.255.255.0

ADD DELETE CANCEL

- Choose **Routing > Multicast > PIM > Interface Configuration**. Click **All** above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Enable Admin Mode and click **APPLY**.

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M5300-28G3
ProSAFE 24-port L3
Stackable GE Switch with L3 Routing

System Switching **Routing** GoS Security Monitoring Maintenance Help Index

Routing Table IP IPv6 VLAN ARP RIP OSPF OSPFv3 Router Discovery VRRP **Multicast** IPv6 Multicast

Logout

PIM Interface Configuration

Go To Interface GO

<input type="checkbox"/>	Interface	Admin Mode	Protocol State	IP Address	Hello Interval(secs)	Join/Prune Interval(secs)	BSR Border	DR Priority	Designated Router	Neighbor Count
<input type="checkbox"/>	1/0/1	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/2	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/3	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/4	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/5	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/6	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/7	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/8	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/9	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/10	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/11	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/12	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/13	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/14	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/15	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/16	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/17	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/18	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/19	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/20	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/21	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/22	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/23	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/24	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/25	Enable	Non-Operational	172.80.1.2	30	60	Disable	1		
<input type="checkbox"/>	1/0/26	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/27	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	1/0/28	Enable	Non-Operational	0.0.0.0	30	60	Disable	1		
<input type="checkbox"/>	vlan 200	Enable	Non-Operational	192.168.4.1	30	60	Disable	1		

Go To Interface GO

CANCEL APPLY

13. Choose **Routing > OSPF > Basic > OSPF Configuration**. Select **Enable** and set the router ID to **0.0.0.2**. Click **APPLY**. Remember that the router ID must be unique to each stack in your LAN network.

The screenshot displays the Netgear M5300-28G3 web interface. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The 'Routing' tab is active, and the 'OSPF' sub-tab is selected. The 'OSPF Configuration' page is shown, with the 'Admin Mode' set to 'Enable' and the 'Router ID' set to '0.0.0.2'. The 'Basic' configuration section is expanded, showing the 'OSPF Configuration' sub-section. The 'Router ID' field is a text input box containing '0.0.0.2'. The 'Admin Mode' is a radio button selection with 'Enable' selected. The 'LOGOUT' button is visible in the top right corner. The 'CANCEL' and 'APPLY' buttons are visible at the bottom right of the page.

14. Choose **Routing > OSPF > Advanced > Route Redistribution**. Select **Connected**, and select **Enable** for **Redistribution Option**. Click **APPLY**.

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XSM7224S
24-Port 10G SFP+ Ports
Managed L2+ Stackable Switch

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | **OSPF** | OSPFv3 | Router Discovery | VRRP | Multicast | IPv6 Multicast

LOGOUT

Basic

- Advanced
 - OSPF
 - Configuration
 - Common Area Configuration
 - Stub Area Configuration
 - NSSA Area Configuration
 - Area Range Configuration
 - Interface Configuration
 - Interface Statistics
 - Neighbor Table
 - Link State Database
 - Virtual Link Configuration
 - Route Redistribution
 - NSF OSPF Summary

Route Redistribution

OSPF Route Redistribution

	Source	Redistribute Option	Metric	Metric Type	Tag	Subnets	Distribute List
<input type="checkbox"/>							
<input checked="" type="checkbox"/>	Connected	Enable	0	External Type 2	0	Disable	
<input checked="" type="checkbox"/>	Static	Disable	0	External Type 2	0	Disable	
<input checked="" type="checkbox"/>	RIP	Disable	0	External Type 2	0	Disable	

CANCEL APPLY

- Choose **Routing > OSPF > Advanced > Interface Configuration**. Click **All** above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Enable Admin Mode and click **APPLY**.

NETGEAR
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M5300-28G3
ProSafe 24-port L3
Stackable GE Switch with L3 Routing

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | VLAN | ARP | RIP | **OSPF** | OSPFv3 | Router Discovery | VRRP | Multicast | IPv6 Multicast

LOGOUT

Basic
Advanced
OSPF
Configuration
Common Area Configuration
Stub Area Configuration
NSSA Area Configuration
Area Range Configuration
Interface Configuration
Interface Statistics
Neighbor Table
Link State Database
Virtual Link Configuration
Route Redistribution
NSF OSPF Summary

OSPF Interface Configuration

1 VLANs All

	Interface	IP Address	Subnet Mask	Area ID	Admin Mode	Router Priority	Retransmit Interval	Hello Interval	Dead Interval
<input type="checkbox"/>									
<input type="checkbox"/>	1/0/1	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/2	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/3	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/4	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/5	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/6	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/7	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/8	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/9	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/10	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/11	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/12	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/13	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/14	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/15	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/16	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/17	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/18	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/19	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/20	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/21	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/22	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/23	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/24	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/25	172.80.1.2	255.255.255.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/26	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/27	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	1/0/28	0.0.0.0	0.0.0.0	0.0.0.0	Enable	1	5	10	40
<input type="checkbox"/>	vlan 200	192.168.4.1	255.255.252.0	0.0.0.0	Enable	1	5	10	40

CANCEL APPLY

Switch – M5300-52G-POE+

1. Choose **Switching > VLAN > Basic > VLAN Configuration**. Specify 101 for the camera VLAN ID and click **ADD** to add the VLAN to the configuration. Remember that the camera VLAN ID is unique to each M5300-52G-POE+ stack.

The screenshot shows the Netgear web interface for an M5300-28G-POE+ switch. The navigation menu is set to **Switching > VLAN > Basic > VLAN Configuration**. The main content area is titled "VLAN Configuration" and contains three sections:

- Reset**: A "Reset Configuration" checkbox.
- Internal VLAN Configuration**:
 - Internal VLAN Allocation Base: 4093
 - Internal VLAN Allocation Policy: Ascending (selected) / Descending
- VLAN Configuration**: A table listing existing VLANs.

VLAN ID	VLAN Name	VLAN Type	Make Static
<input checked="" type="checkbox"/>	101	CameraVlan	Disable
<input checked="" type="checkbox"/>	1	default	Disable
<input checked="" type="checkbox"/>	2	Auto VoIP	Disable
<input checked="" type="checkbox"/>	4093	Dynamic (IP VLAN)	Disable

At the bottom of the page, there are buttons for **ADD**, **DELETE**, **CANCEL**, and **APPLY**.

- Choose **Switching > VLAN > Advanced > Vlan Membership**. Select Vlan 101 from the VLAN ID drop-down menu. For all ports that will have cameras connected to them, untag the VLAN on the port by clicking associated box, and cycle through options until you get to U. Click **APPLY** after all ports have been configured on the VLAN. Remember that the camera VLAN subnet is unique to each M5300-52G-POE+ stack.

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M5300-28G-POE+
ProSafe 24-port L2 Stackable
GE PoE Switch with Static Routing

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

VLAN | Auto-VoIP | iSCSI | STP | Multicast | MVR | Address Table | Ports | LAG

LOGOUT

VLAN Membership

VLAN ID: 101 | Group Operation: Untag All

VLAN Name: CameraVlan | UNTAGGED PORT MEMBERS

VLAN Type: Static | TAGGED PORT MEMBERS

Unit	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
U																								
	25	26	27	28																				

LAG

CANCEL APPLY

- Choose **Switching > VLAN > Advanced > Port PVID Configuration**. For all the ports configured for cameras, select the associated box and enter 101 for the Configured PVID. Click **APPLY**.

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M5300-28G-POE+
ProSafe 24-port L2 Stackable
GE PoE Switch with Static Routing

System | **Switching** | Routing | QoS | Security | Monitoring | Maintenance | Help | Index

VLAN | Auto-VoIP | iSCSI | STP | Multicast | MVR | Address Table | Ports | LAG

Basic
Advanced
VLAN
Configuration
VLAN Membership
VLAN Status
Port PVID Configuration
MAC Based VLAN
Protocol Based VLAN Group Configuration
Protocol Based VLAN Group Membership
IP Subnet Based VLAN
Port DVLAN Configuration
Voice VLAN Configuration
GARP Switch Configuration
GARP Port Configuration

Port PVID Configuration

PVID Configuration

LAGS All

Go To Interface GO

	Interface	Configured PVID	Current PVID	Acceptable Frame Types	Configured Ingress Filtering	Current Ingress Filtering	Port Priority
<input type="checkbox"/>	1/0/1	101	1	Admit All	Disable	Disable	0
<input checked="" type="checkbox"/>	1/0/1	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/2	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/3	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/4	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/5	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/6	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/7	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/8	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/9	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/10	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/11	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/12	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/13	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/14	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/15	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/16	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/17	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/18	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/19	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/20	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/21	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/22	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/23	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/24	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/25	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/26	1	1	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/27	1	0	Admit All	Disable	Disable	0
<input type="checkbox"/>	1/0/28	1	0	Admit All	Disable	Disable	0

CANCEL APPLY

4. Configure the VLAN 101 interface for the subnet (192.168.8.0/24) and enable VLAN routing. Choose **Routing > VLAN > VLAN Routing**. Select the VLAN ID and assign IP address 192.168.8.1 with subnet mask 255.255.255.0. Click **ADD**.

NETGEAR
Connect with Innovation™

M5300-28G-POE+
Pro Switch 24-port L3 Stackable
GE PoE Switch with State Routing

System | Switching | **Routing** | QoS | Security | Monitoring | Maintenance | Help | Index

Routing Table | IP | IPv6 | **VLAN** | ARP | RIP | OSPF | OSPFv3 | Router Discovery | VRRP | Multicast | IPv6 Multicast

> VLAN Routing
Wizard
VLAN Routing

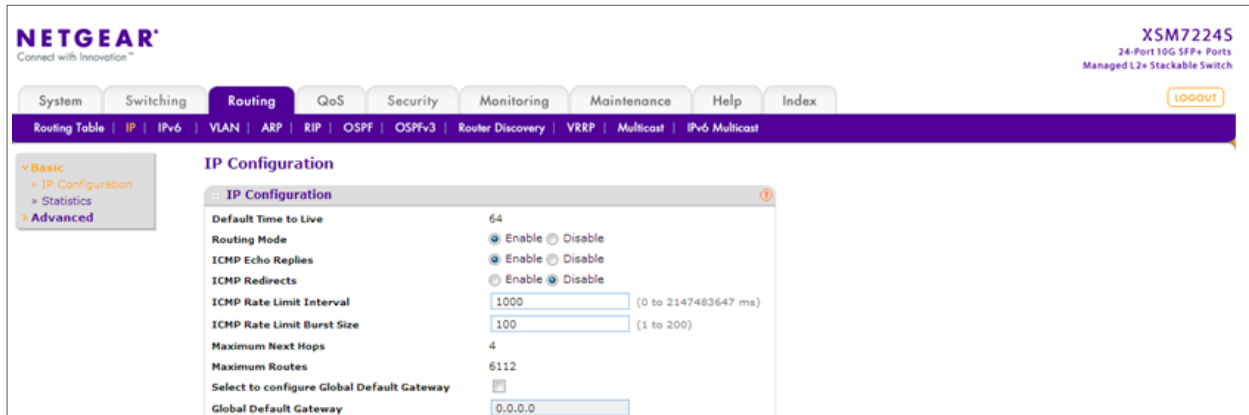
VLAN Routing Configuration

VLAN Routing Configuration

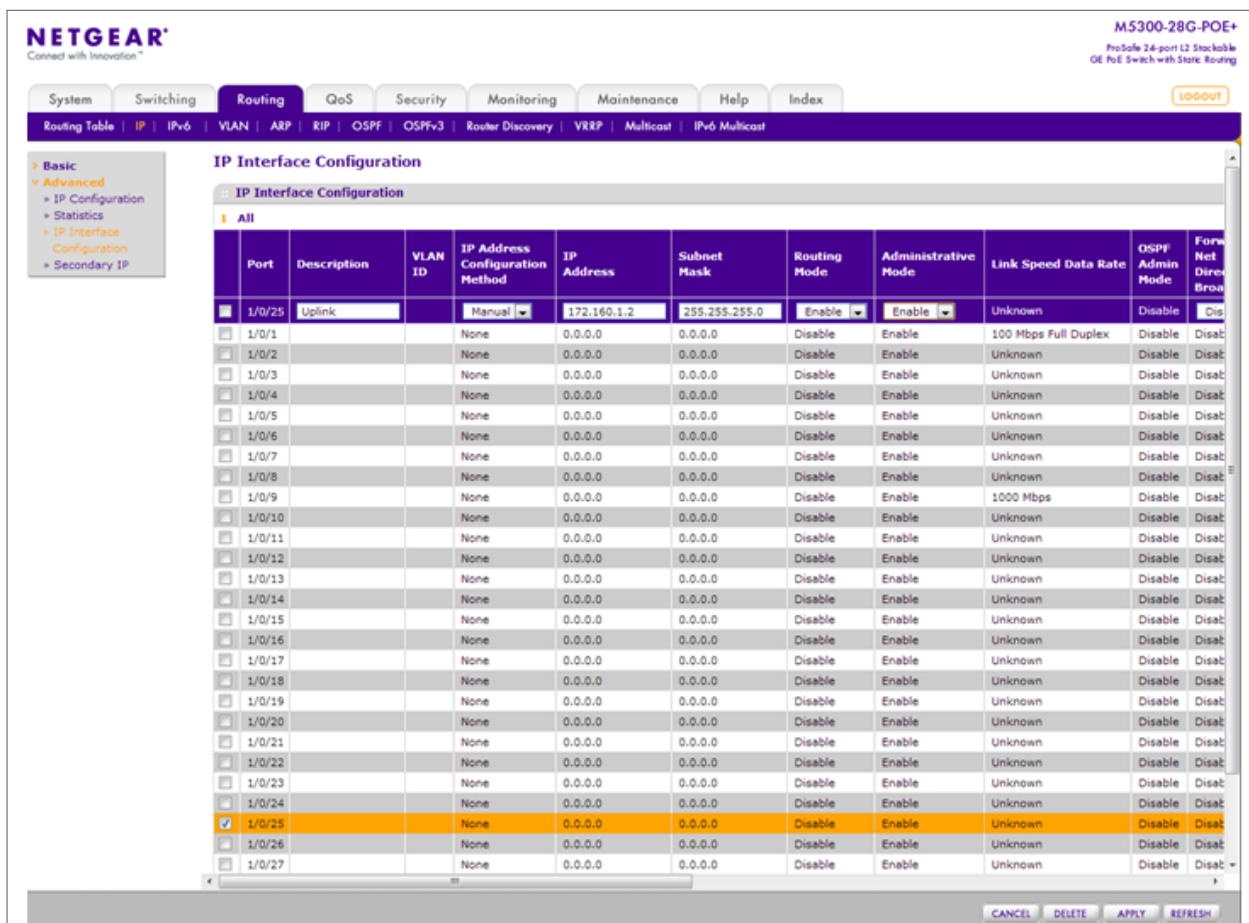
VLAN ID	Port	MAC Address	IP Address	Subnet Mask
101	Q/4/1	10:0D:7F:5F:65:E8	192.168.8.1	255.255.255.0

ADD DELETE CANCEL

- Choose **Routing > IP > Basic > IP Configuration**. Select Enable for Routing Mode to enable IP routing globally, and click **APPLY**.



- Choose **Routing > IP > Advanced > IP Interface Configuration**. Assign the IP address for each interface that will act as an uplink to the XSM7224S stack. For each uplink, use consecutive 172.160.x.1/24 subnets. For each interface, set the IP address configuration method to Manual and enter the IP address and subnet mask. Enable Routing Mode and Admin Mode. Click **APPLY** after configuring each interface.



7. Choose **Routing > OSPF > Basic > OSPF Configuration**. Select **Enable** and set the router ID to 0.0.0.3. Click **APPLY**. Remember that the router ID must be unique to each stack in your LAN network

The screenshot displays the Netgear web management interface for an M5300-28G-POE+ switch. The top navigation bar includes tabs for System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The 'Routing' tab is active, and the 'OSPF' sub-tab is selected. The main content area shows the 'OSPF Configuration' page with the following settings:

- Admin Mode:** Disable Enable
- Router ID:** 0.0.0.3

At the bottom right of the interface, there are 'CANCEL' and 'APPLY' buttons.

- Choose **Routing > OSPF > Advanced > Route Redistribution**. Select Connected and enable Redistribution Option. Click **APPLY**.

The screenshot shows the Netgear web interface for an M5300-28G-POE+ switch. The navigation menu is set to **Routing > OSPF > Advanced > Route Redistribution**. The main content area displays the **OSPF Route Redistribution** configuration table.

	Source	Redistribute Option	Metric	Metric Type	Tag	Subnets	Distribute List
<input type="checkbox"/>	Connected	Enable	0	External Type 2	0	Enable	
<input checked="" type="checkbox"/>	Connected	Disable	0	External Type 2	0	Disable	
<input type="checkbox"/>	Static	Disable	0	External Type 2	0	Disable	
<input type="checkbox"/>	RIP	Disable	0	External Type 2	0	Disable	

- Choose **Routing > OSPF > Advanced > Interface Configuration**. Click **All** above the column headings to list physical and VLAN interfaces. Select all entries by clicking the checkbox in the column header. Enable admin mode and click **APPLY**.

The screenshot shows the NETGEAR M5300-28G-POE+ web interface. The navigation menu includes System, Switching, Routing, QoS, Security, Monitoring, Maintenance, Help, and Index. The Routing menu is expanded to show OSPF, and the OSPF menu is further expanded to show Advanced > Interface Configuration. The main content area displays the OSPF Interface Configuration page with a table of interfaces. The table has the following columns: Interface, IP Address, Subnet Mask, Area ID, Admin Mode, Router Priority, Retransmit Interval, Hello Interval, and Dead Interval. The 'Admin Mode' column is highlighted in orange, and the 'vlan 101' entry is selected. The table contains 28 entries, with the first 27 being physical interfaces (1/0/1 to 1/0/27) and the last one being 'vlan 101'. The 'Admin Mode' for the first 27 entries is 'Disable', and for 'vlan 101' it is 'Enable'. The 'Router Priority' is 1 for all entries, and the 'Retransmit Interval' is 5 and 'Hello Interval' is 10 for all entries. The 'Dead Interval' is 40 for all entries.

Interface	IP Address	Subnet Mask	Area ID	Admin Mode	Router Priority	Retransmit Interval	Hello Interval	Dead Interval
1/0/1	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/2	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/3	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/4	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/5	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/6	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/7	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/8	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/9	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/10	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/11	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/12	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/13	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/14	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/15	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/16	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/17	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/18	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/19	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/20	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/21	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/22	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/23	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/24	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/25	172.80.1.2	255.255.255.0	0.0.0.0	Enable	1	5	10	40
1/0/26	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/27	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
1/0/28	0.0.0.0	0.0.0.0	0.0.0.0	Disable	1	5	10	40
vlan 101	192.168.8.1	255.255.255.0	0.0.0.0	Disable	1	5	10	40