

Video over IP Network

NetGear M4300 8x8F | M4300 12x12F | M4300 24x24F | M4300 96X

Configuration Guide

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1 Overview

This document provides the necessary features/capabilities that any 10G switch needs to have to work correctly with the Savant Video over IP System. It also provides information on how to enable these features for the 10G switches that Savant has qualified.

2 Network Topology

Savant recommends that the 10G Switch is connected to the same switch that the Host is connected to. Unmanaged switches should not be connected to the 10G Switch that the Video over IP system is using. The image below is a basic network diagram. It does not imply all network connections.

- 10G connections to the PAV-VIMxS/VIMAPxS devices use SFP+ ports. Either fiber or Direct Attach Copper cables can be used.
- 10G connections to the PAV-VOMVP1x can use either SFP+ ports with fiber cabling or RJ-45 ports with CAT-6 or above cabling, depending on the cable length.

Diagram using PAV-VIM8S

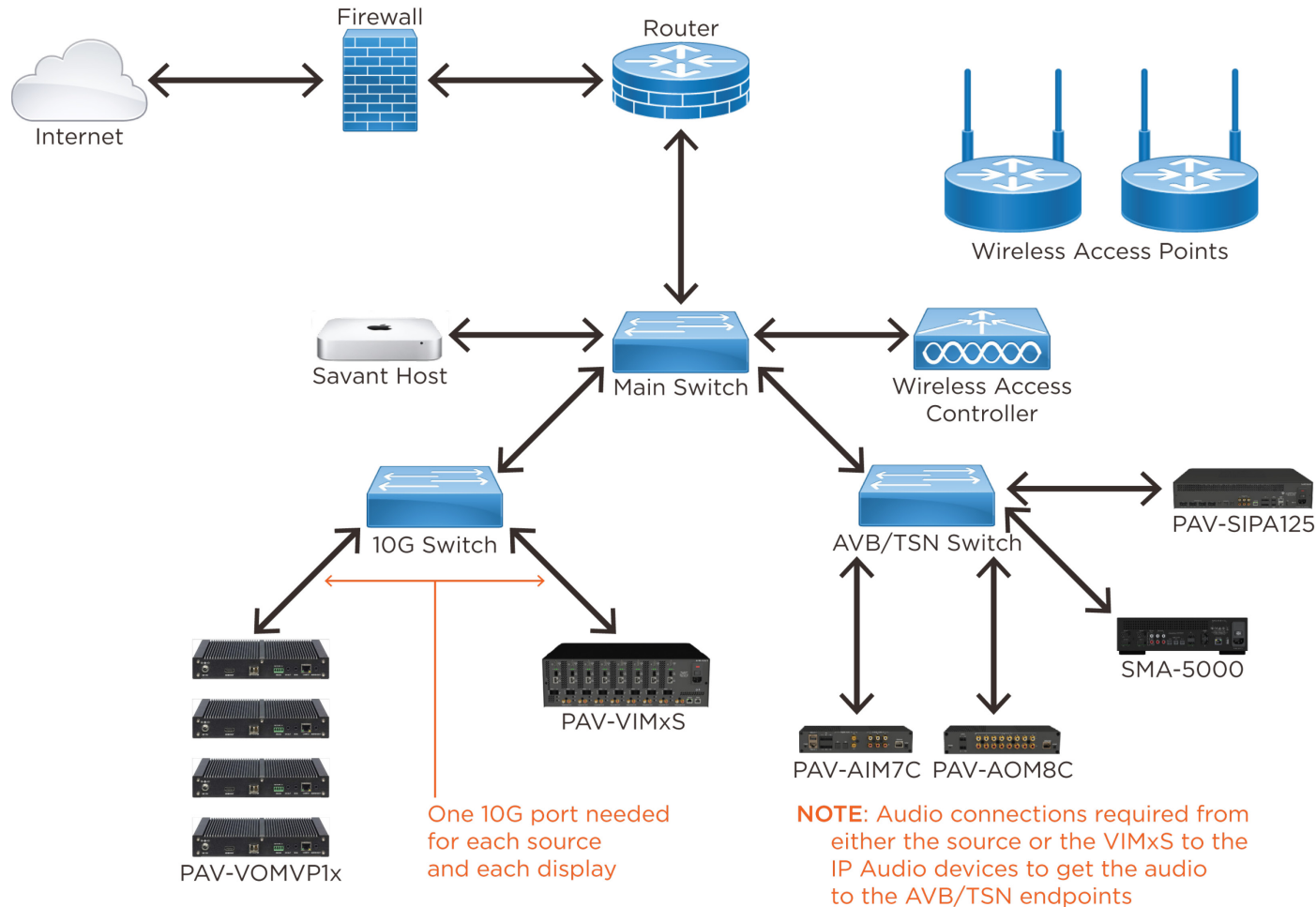
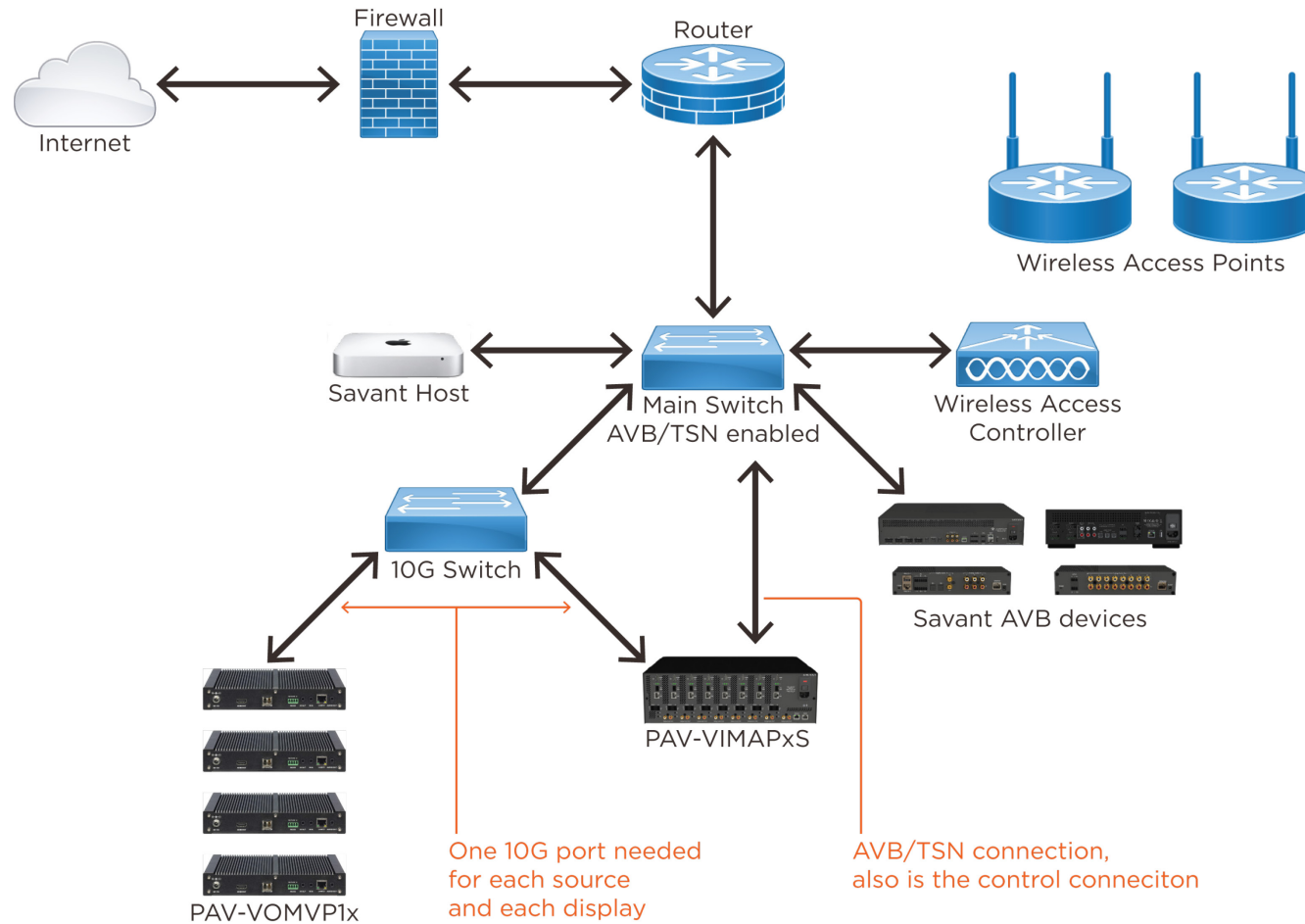


Diagram using PAV-VIMAP8S



3 Auto-Configure (Recommended Method)

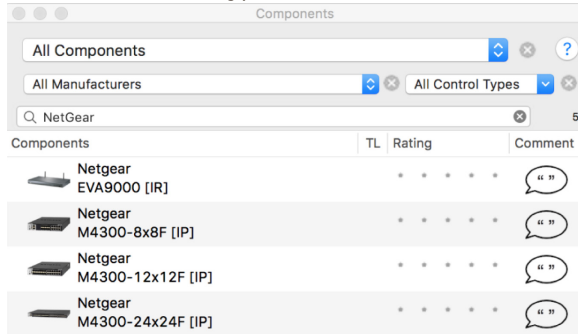
This process will allow the Host to check the configuration of the NetGear switch every time it is restarted and will send the configuration if the check fails. To use this feature it must be enabled in Blueprint in the active configuration.

⚠ IMPORTANT! DO NOT make the video connections until the Auto-Configure has run the first time. The only connections that should be made to the switch being configured are Power and a single network connection.

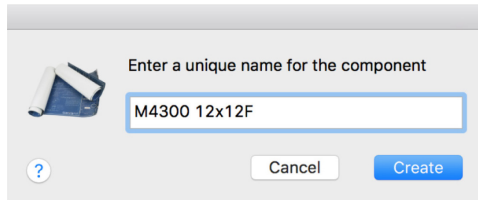
In an open configuration do the following:

NOTE: If the Switch is placed in the Layout window and has an IP Address assigned in Blueprint skip to step 10.

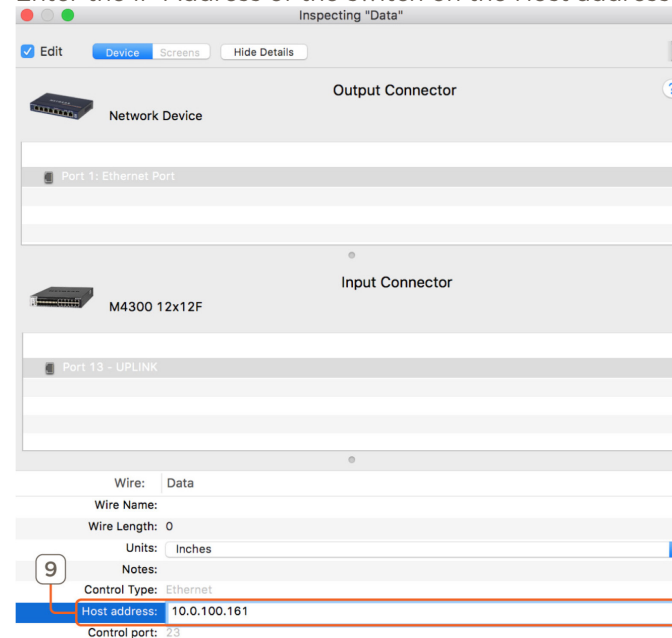
1. Click **Show Library**.
2. In the Search bar type NetGear.



3. Select the M4300 10G switch that is needed and drag it into a Shared Equipment zone.
4. Name the Device.



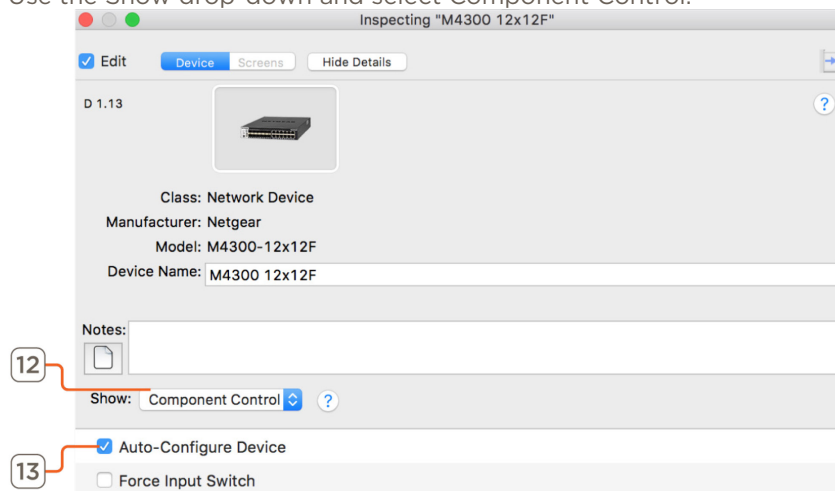
5. Place the M4300 10G switch in the Layout window.
6. Make Control Connection.
7. Select the Control Connection.
8. Open Inspector.
9. Enter the IP Address of the switch on the Host address field.



NOTES:

- This is needed for System Monitor information to populate.
- In the physical installation this control connection uses one of the RJ-45 10G connections. This is the switch's uplink port that is configured in the Savant Video over IP Network Configuration Guide.

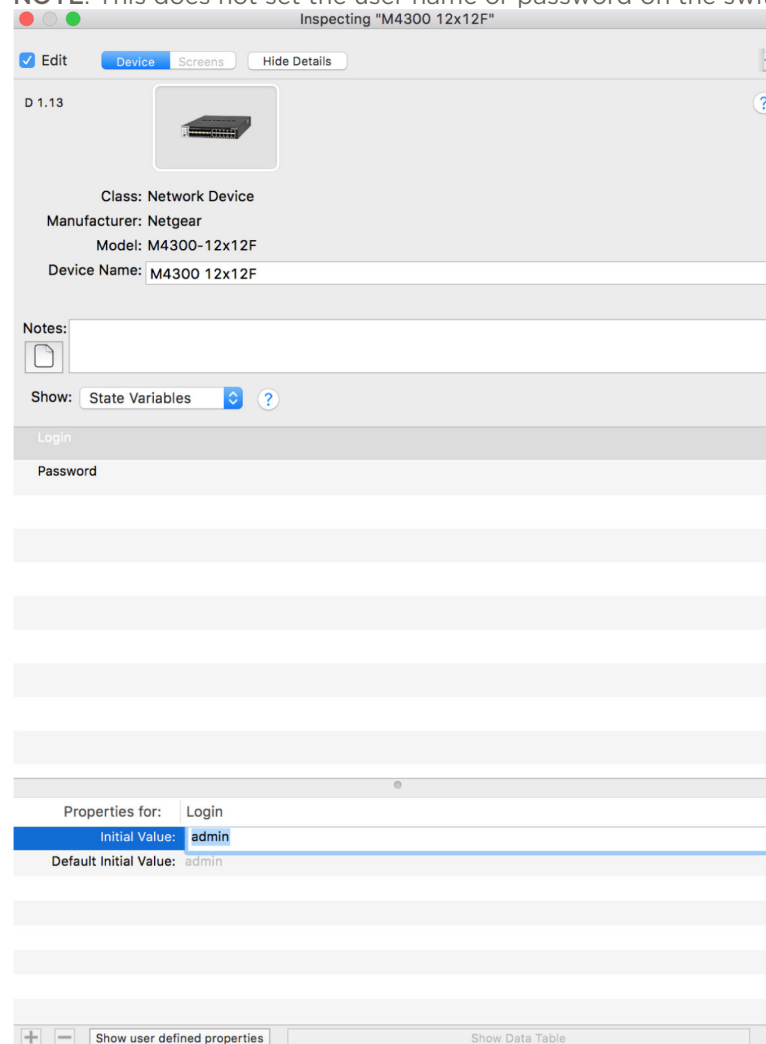
10. Select the M4300 10G switch.
11. Open Inspector.
12. Use the Show drop-down and select Component Control.



13. Select the Auto-Configure Device check-box.
14. Change the Show drop-down to State Variables.

15. The User Name and Password can be set if they have been changed in the switch.

NOTE: This does not set the user name or password on the switch.



IMPORTANT! This only for the local user. DO NOT CHANGE the Enable password.

4 Script Configure (Legacy)

These steps are to be done with the switch at its Factory default settings. DO NOT set a password on the switch before running this script.

⚠ IMPORTANT!

- This section is included as reference only. For information on the recommended method see the [3. Auto Configure \(Recommended Method\)](#) section above.
 - **DO NOT** make the video connections until the script is complete. The only connections that should be made to the switch being configured are Power and a single network connection. For the correct port, refer to step 7 below.
1. Download the Configuration scripts, use the Link below:
<http://cdn.software.s3.amazonaws.com/scripts/Netgear/ConfigScripts.zip>
 2. Using Finder navigate to the download location.
 3. Move the ConfigScript.zip to the Desktop of your SDE.
 4. Double click on the ConfigScripts.zip to unzip the folder
 5. Open the ConfigScripts folder
 6. Move the Script for the switch that is in use to the Desktop.
 7. Connect the upper left RJ-45 port on the Netgear switch to the main switch. See the port number based on the model in use below.
M4300-8X8F port 9
M4300-12X12F port 13
M4300-24X24F port 25
 8. Use a network scanning software to find the IP address of the switch
 9. Open Terminal on the SDE
 10. Type: `sh ~/Desktop/<NameOfScriptFile>.sh`
Example: `sh ~/Desktop/M4300-24X24F-Config.sh`
 11. Enter the IP Address of the Netgear switch.
Once enter is pressed the script will run and configure the switch. The images below show what will display in the terminal window (Left image shows the beginning of the script; Right image shows the end of the script).

```
Last login: Wed Jan 10 16:58:53 on ttys004
csmith-mbp:~ chris.smith$ sh ~/Desktop/ConfigScripts/M4300-24X24F-Config.sh
IMPORTANT! The only connections that should be made to the switch being
configured are power and a single main network uplink plugged into port 25.
DO NOT have any other copper or fiber connections made to this switch until the
configuration is complete.
This configuration tool assumes the default login for the network switch (user:
admin & no password)
Enter the IP address of the Netgear switch and press Enter:
10.0.1.9
Please wait while the switch is being configured. This can take up to 45
seconds...
Trying 10.0.1.9...
Connected to 10.0.1.9.
Escape character is '^J'.

User:admin
Password:
(M4300-24X24F) >
(M4300-24X24F) >enable

(M4300-24X24F) #clear config
```

```
(M4300-24X24F) (Config-router)#exit
(M4300-24X24F) (Config)#router ospf
(M4300-24X24F) (config-router)#exit
(M4300-24X24F) (Config)#ipv6 router ospf
(M4300-24X24F) (Config-rtr)#exit
(M4300-24X24F) (Config)#exit
(M4300-24X24F) #save

This operation may take a few minutes.
Management interfaces will not be available during this time.
Are you sure you want to save? (y/n) y

Config file 'startup-config' created successfully .

Configuration Saved!

(M4300-24X24F) #
(M4300-24X24F) #Connection closed by foreign host.
csmith-mbp:~ chris.smith$
```

5 Manual Configuration

This section gives the settings for the Savant qualified Netgear 10G ProSafe M4300 switches. Only the settings needed for the Audio Video over IP environment are described and no other setting are noted. These steps are to be done with the switch at its Factory default settings.

IMPORTANT!

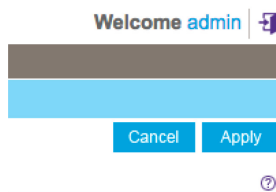
- This section is included as reference only. For information on the recommended method see the [3. Auto Configure \(Recommended Method\)](#) section above.
- **DO NOT** make the video connections until the configuration is complete. The only connections that should be made to the switch being configured are Power and a single network connection. For the correct port, refer to step 7 below.

5.1 VLAN Setup

1. Use a network scanning software to find the IP Address of the switch.
2. Connect to the Switch via a web browser. By entering the IP Address in the browsers address bar.
3. Enter the User ID and Password:
Default: admin
Password: (leave, blank there is no password by default)
4. Go to Switching > VLAN

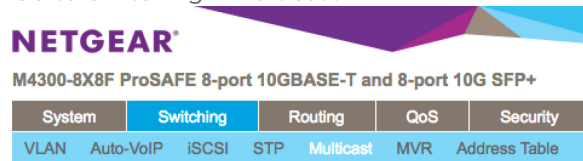


5. Add a VLAN.
6. Enter VLAN ID and VLAN Name. Below are Savant's recommendations.
VLAN ID: 1
VLAN Name: default
7. Click Apply in the upper right corner of the browser window.

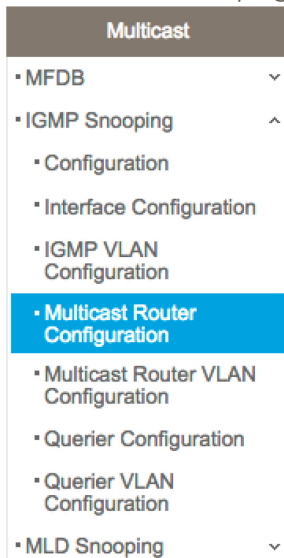


5.2 Multicast

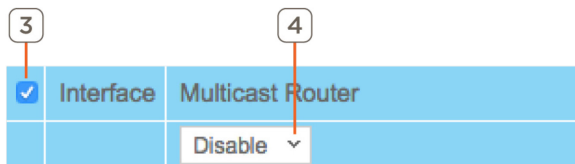
- Go to Switching > Multicast.



- Click on IGMP Snooping > Multicast Router Configuration.

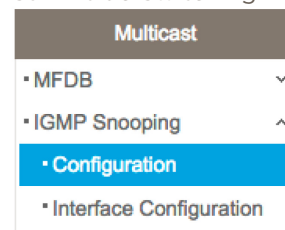


- Click the Check box to select all



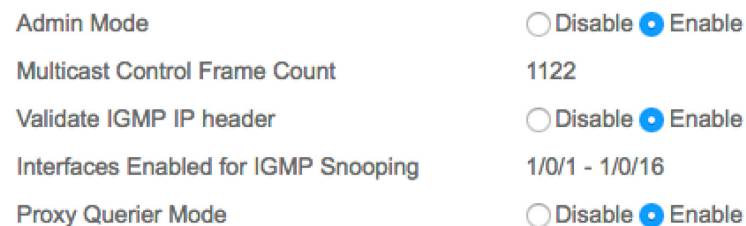
- Select Disable in Multicast Router.
- Click Apply in the upper right corner of the browser window.

- Still inside Switching > Multicast, go to IGMP Snooping > Configuration.

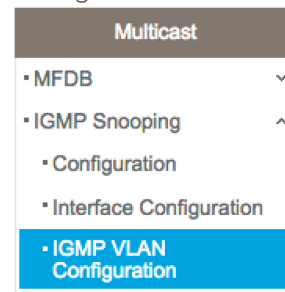


- Enable Admin Mode, Validate IGMP IP header, and Proxy Querier Mode.

IGMP Snooping Configuration



- Click Apply in the upper right corner of the browser window.
- Still inside Switching > Multicast, go to IGMP Snooping > IGMP VLAN Configuration.



10. Adjust to the setting in the table below.

System	Switching	Routing	QoS	Security	Monitoring	Maintenance	Help	Index
VLAN	Auto-VoIP	ISCSI	STP	Multicast	MVR	Address Table	Ports	LAG

Multicast		IGMP VLAN Configuration							
• MFDB	▼								
• IGMP Snooping	▲								
• Configuration									
• Interface Configuration									
• IGMP VLAN Configuration									

Category	Value
VLAN ID	1
Admin Mode	Enable
Fast Leave	Enable
Membership Interval	260
Maximum Response Time	10
Multicast Router Expiry Time	60
Report Suppression	Disable
Proxy Querier	Enable

- Click Apply in the upper right corner of the browser window.
- Still inside Switching > Multicast, go to IGMP Snooping > Interface Configuration.

Multicast	
• MFDB	▼
• IGMP Snooping	▲
• Configuration	
• Interface Configuration	
• IGMP VLAN Configuration	

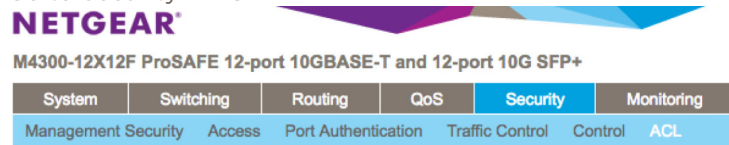
- Select all Ports

	Interface	Admin Mode	Membership Interval
		Enable ▼	
✓	1/0/1	Enable	260

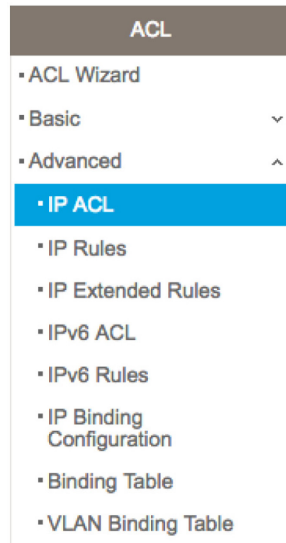
- Change Admin Mode to Enabled.
- Click Apply in the upper right corner of the browser window.

5.3 Access Control List (ACL) Creation

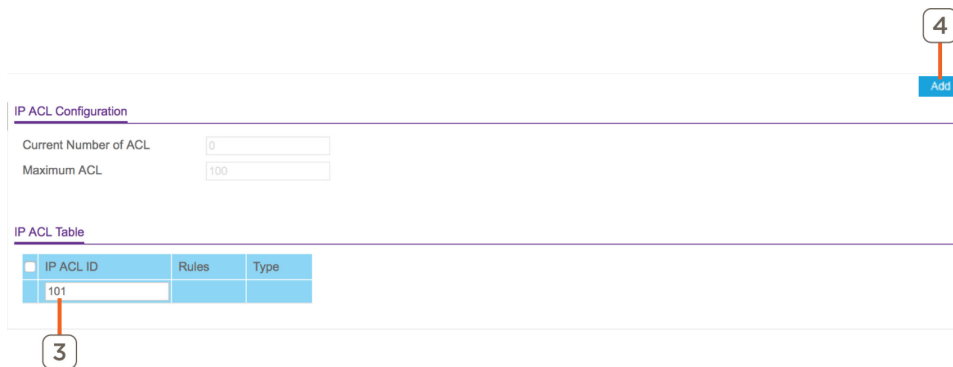
8. Go to Security > ACL



2. Click on Advance > IP ACL.



3. In the IP ACL ID field enter: 101.



4. Select **Add** in the top right corner.

5. Select the 101 Hyperlink that is now under “IP ACL ID”.

IP ACL Configuration	
Current Number of ACL	2
Maximum ACL	100

IP ACL ID	Rules	Type
101	0	Extended IP ACL

5

6. Select **Add** in the top right corner to start creating rules for ACL 101.

6
Add

IP Rules

ACL ID/Name 101

Extended ACL Rule Table

	Sequence Number	Action	Logging	Assign Queue ID	Mirror Interface	Redirect Interface	Match Every	Protocol Type	TCP Flag	Established	Source IP Address	Source IP Mask	Source L4 Port Action	Source L4 Port	Source L4 Start Port
No rules have been configured for this ACL.															

7. Enter the settings shown below.

[illegible]

Category	Value	
Sequence Number	10	
Action	Deny	
Match Every	False	
Protocol Type	IP	
Dst	224.0.0.0	0.255.255.255

Make no other changes

8. Select **Apply**.

- Select **Add** in the top right corner to start creating rules for ACL 101.

9

IP Rules

ACL ID/Name: 101

Extended ACL Rule Table

Sequence Number	Action	Logging	Assign Queue ID	Mirror Interface	Redirect Interface	Match Every	Protocol Type	TCP Flag	Established	Source IP Address	Source IP Mask	Source L4 Port Action	Source L4 Port	Source L4 Start Port
10	Deny					False	4 (IP)							

- Enter the settings shown below.

11

Extended ACL Rule Configuration(100-199)

ACL ID/Name: 101

Sequence Number: 20

Action: ☒ Permit
☐ Deny
☐ Disable
☐ Mirror
☐ Redirect

Logging: ☐ Enable

Interface:

Match Every: ☒ True

Egress Queue: (0-6)

Cancel Apply

Category	Value
Sequence Number	20
Action	Permit
Match Every	True

- Select **Apply**.
- Click **Advanced > IP Binding Configuration**.

ACL

- ACL Wizard
- Basic
- Advanced
 - IP ACL
 - IP Rules
 - IP Extended Rules
 - IPv6 ACL
 - IPv6 Rules
 - IP Binding Configuration
 - Binding Table
 - VLAN Binding Table

- Select ACL ID 101.

14. Change the Direction to outbound.

The screenshot shows the 'IP Binding Configuration' window. At the top right are 'Cancel' and 'Apply' buttons. The 'ACL ID' is set to '101'. The 'Direction' dropdown is set to 'Outbound'. The 'Sequence Number' is '0' with a range '(1 to 4294967295)'. Below this is a port selection grid for 'Unit 1' with 16 ports. Port 9 is selected. Annotations with orange lines point to: 13 (ACL ID), 14 (Direction), 15 (Port 9), and 16 (Apply button).

ACL ID	Direction	Sequence Number
101	Outbound	0 (1 to 4294967295)

Unit 1

Port	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Selected									✓							

15. Click the port that this rule is to be applied. Below is a list by model of the Savant recommended port.
- M4300-8X8F port 9
 - M4300-12X12F port 13
 - M4300-24X24F port 25
16. Select Apply in the top right corner.

5.4 Save Configuration

1. Go to Maintenance > Save Config.

NETGEAR®

M4300-8X8F ProSAFE 8-port 10GBASE-T and 8-port 10G SFP+

System	Switching	Routing	QoS	Security	Monitoring	Maintenance
Save Config	Reset	Export	Upgrade	File Management	Troubleshooting	

2. Click Save Configuration

The screenshot shows the Netgear web interface. On the left, a sidebar contains a 'Save Config' button. A red line with a circled '2' points to the 'Save Configuration' option in the sidebar. The main content area shows a 'Save Configuration' dialog with a checkbox. A red line with a circled '3' points to this checkbox. The dialog text reads: 'Saving all applied changes will cause all changes to configuration panels that were applied, but not saved, to be saved, thus retaining their new values across a system reboot.'

3. Click the Check-box
4. Click Apply in the upper right corner of the browser window.

Appendix A: 10G Switch Requirements

The following list is the settings that need to be configured on any Switch that is being used for the Audio/Video over IP system.



IMPORTANT!

Not all of these settings are on all network switches.

- 10G Managed Switch with SFP+ ports
- IGMP Snooping Enabled.
- Enable IGMP Snooping on all ports for the VLAN in use.
- IGMP Querier Enabled.
- Enable IGMP Querier on all ports for the VLAN in use.
- Filter/Drop Unregistered Multicast Traffic Enabled.
- Unregistered Multicast Flooding Disabled.
- FASTLEAVE enabled (Optional*).
- Enable FASTLEAVE on all ports for the VLAN in use (Optional*).

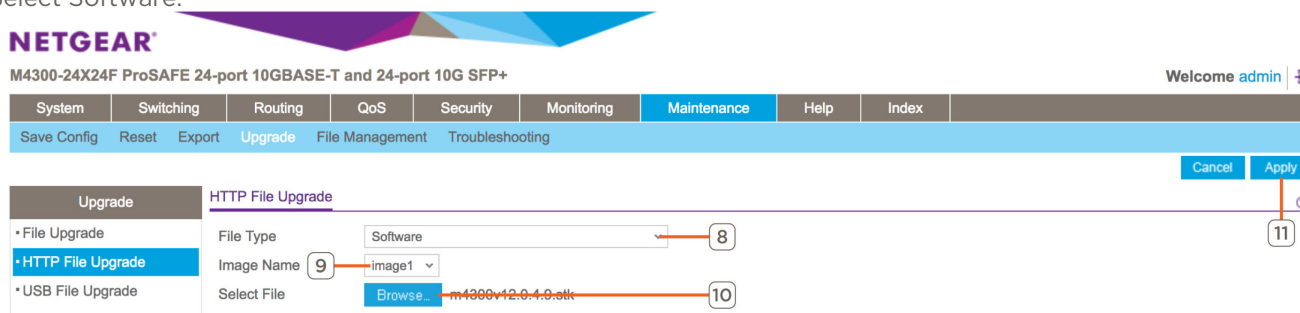
* FASTLEAVE will make changing services faster.

Appendix B: Static IP

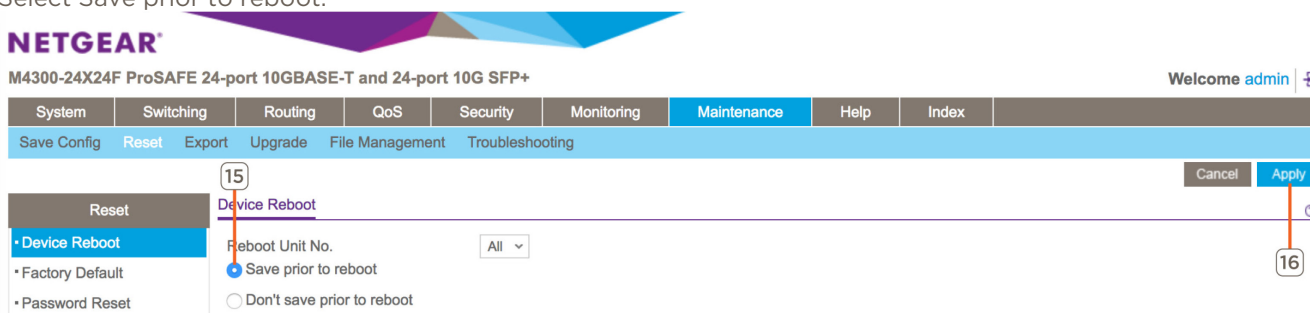
If the switch needs to have a Static IP Address set it needs to be done before the rest of the configuration is done. To set a Static IP Address for the Netgear M4300 switches see the manufactures documentation.

Appendix C: Switch Firmware

1. Download the NetGear firmware version 12.0.4.9 from the following location:
http://www.downloads.netgear.com/files/GDC/M4300/GSM_XSM4300_V12.0.4.9.zip
NOTE: The above firmware is the recommended build as of the da Vinci 8.8 release.
2. Un-compress the firmware .zip file.
3. Use a network scanning software to find the IP Address of the switch.
4. Connect to the Switch via a web browser. By entering the IP Address in the browsers address bar.
5. Enter the User ID and Password:
Default: admin
Password: (leave, blank there is no password by default)
6. Go to **Maintenance > Upgrade > HTTP File Upgrade**.
7. Select Software.



8. Select image1.
9. Click Browse... and navigate to the download location.
10. Click Open.
11. Click Apply.
This process will take a couple of minutes to complete.
12. Select image2.
13. Repeat steps 9 through 11.
14. Go to Maintenance > Reset > Device Reboot.
15. Select Save prior to reboot.



16. Click Apply.

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