

Netgear S-Line AVB Switch Integration Guide

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This document outlines the process for deploying Netgear S-Line Switches including physical installation, RacePoint Blueprint™ configuration, System Monitor info, and web-based user interface.

Products supported by this guide include:

- Netgear S-Line 8+2+2 Port AVB Switch with PoE 125W [SS42P-8XP2X2F]
- Netgear S-Line 8+2+2 Port AVB Switch with PoE 720W [SS42PP-8XP2X2F]
- Netgear S-Line 24+2+4 Port AVB Switch with PoE 300W [SS42P-24XP2X4F]
- Netgear S-Line 24+2+4 Port AVB Switch with PoE 1440W [SS42PP-24XP2X4F]
- Netgear S-Line 40+8 Port AVB Switch with PoE 480W [SS42P-40XP8F]
- Netgear S-Line 40+8 Port AVB Switch with PoE 2800W [SS42PP-40XP8F]

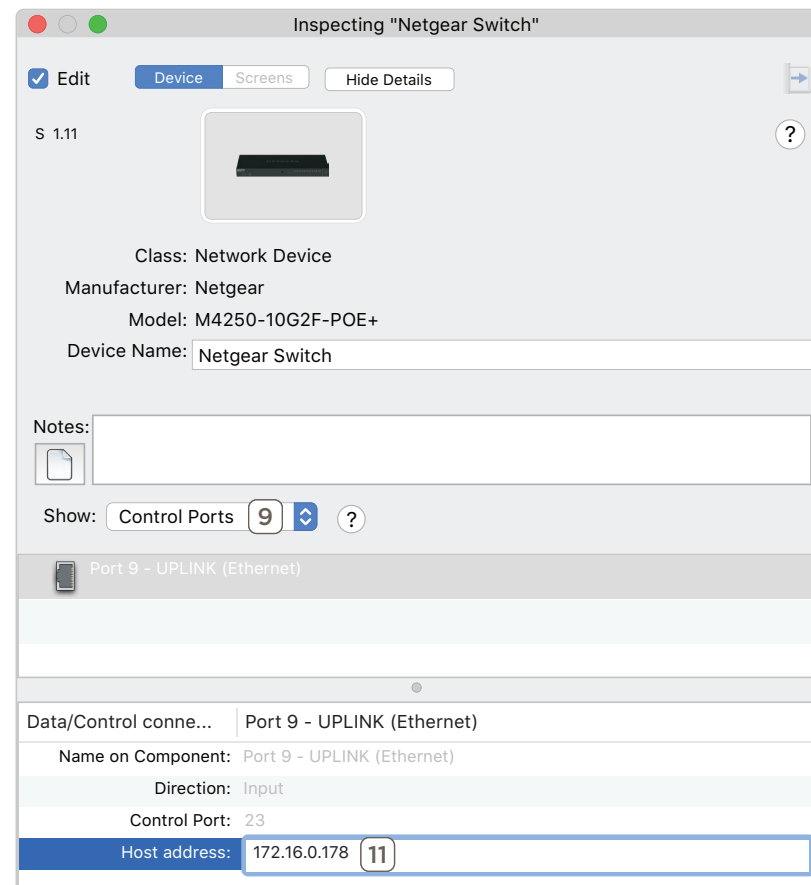
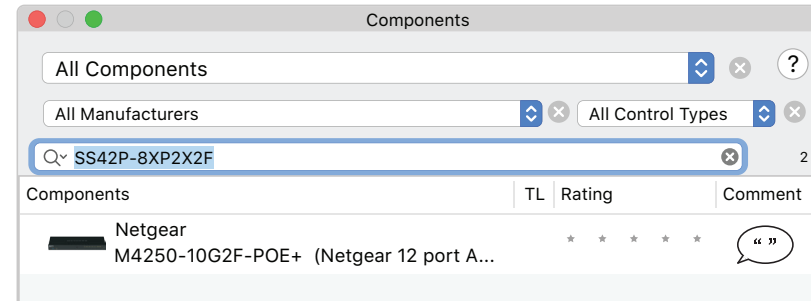
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1. Add Switch to Blueprint

From an open Blueprint configuration do the following:

1. Open profile library by clicking **Show Library**.
2. Search for the AVB switch SKU or Model number.
This example uses an SS42P-8XP2X2F.
3. Drag the switch into a Shared Equipment zone.
4. Name the device.
5. Place the AVB switch in the layout window.
6. Make a control connection.
NOTE: The Blueprint connection does not have to match the physical switch uplink connection.
7. Select the AVB switch.
8. Open the Inspector window.
(Press **Command + I**)
9. In the Show drop-down select **Control Ports**.
10. Select the Host address field.
11. Enter the IP Address for the switch in the Host address field.

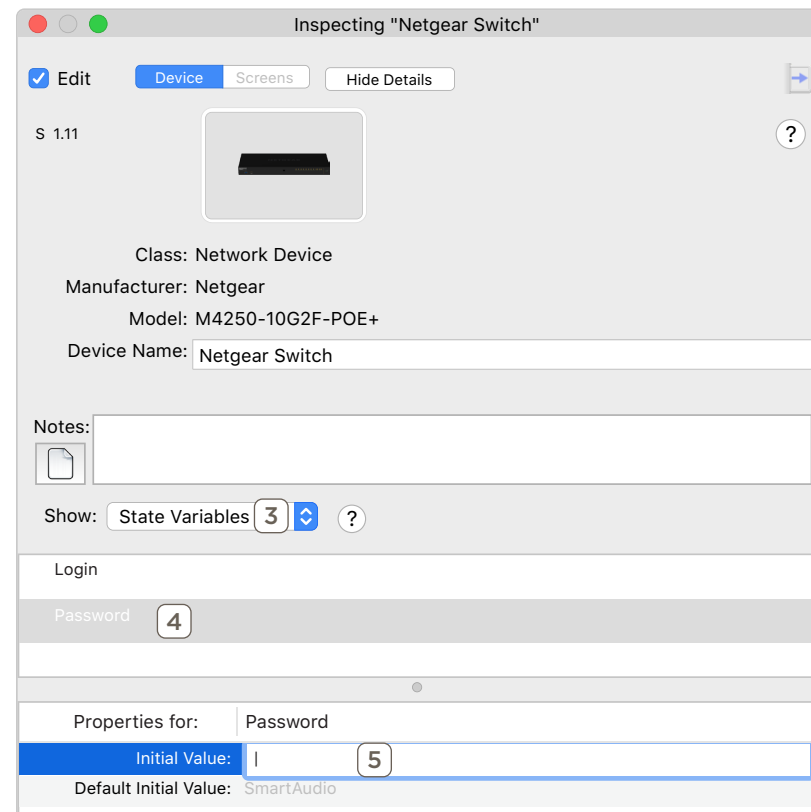


Change Switch Login Password in Blueprint

This section covers changing the defined login password for the switch in Blueprint. This process is only required when the login password has been changed in the Web-UI. This does not change the login password of the switch.

From an open Blueprint configuration do the following:

1. Select the AVB switch.
2. Open Inspector.
3. Click the **Show** dropdown and select **State Variables**.
4. Select the item to edit.
5. Enter the new value.



HELPFUL INFO:

The default values for these switches are listed below:

Password: SmartAudio

Login: admin

NOTE: This information is only valid if the switch was purchased from Savant.

2. System Monitor

This section shows examples of the data that is displayed within System Monitor.

AVB Info Tab

The **gPTP Propagation Delay Threshold** can be adjusted from this tab. Change the number in the data field and then click the Adjust Threshold button.

The screenshot displays the Netgear AVB Switch configuration interface. The top bar shows the system status as 'Online'. The left sidebar contains a navigation menu with categories: GENERAL (System Dashboard, Controller Info, Processes, Diagnostic Reports, System Licenses, Configuration Info, Host Claiming), CONTROL (System State, Service Events, Services, Component Status), A/V (Audio Controls, Video Controls, AV Connections, EDID Settings, Sonos Info, AVB Info, AVoIP Info, WISA Info, UPnP Discovery), and ENVIRONMENT (Entry, Savant Lighting). The main content area is titled 'Chassis' and shows 'Netgear AVB Switch M4250-10G2F-POE+'. It features three tabs: 'AV Settings', 'Port Information', and 'AVB Switch'. The 'AVB Switch' tab is active, showing 'Connected Device' information for 'SIPA1SM' (Slot 1, Mac Address: 001AAE000001, Devices Seen: 1, AVB Devices Seen: 1). Below this, the 'AVB Information' section displays various settings: gPTP Enabled (Enabled), gPTP Role (Master), 802.1AS Capable (Yes), Propagation Delay (327), Propagation Threshold (3000), MSRP Enabled (Enabled), Class A Bandwidth (0/9375000), Class B Bandwidth (1496000/9375000), Total Bandwidth (1496000/9375000), and MVRP Enabled (Enabled). A 'Disable AVB' button is visible. At the bottom, the 'gPTP Propagation Delay Threshold' is set to 3000 nanoseconds, with an 'Adjust Threshold' button. A list of logical I/Os is shown on the left, including Office Speakers, WISA Soundbar, Dining Speakers, and Network Uplink.

NOTES:

- This data is noted in nanoseconds. A nanosecond is one billionth of a second (0.000000001 seconds)
- The default delay threshold is 3000 nanoseconds.



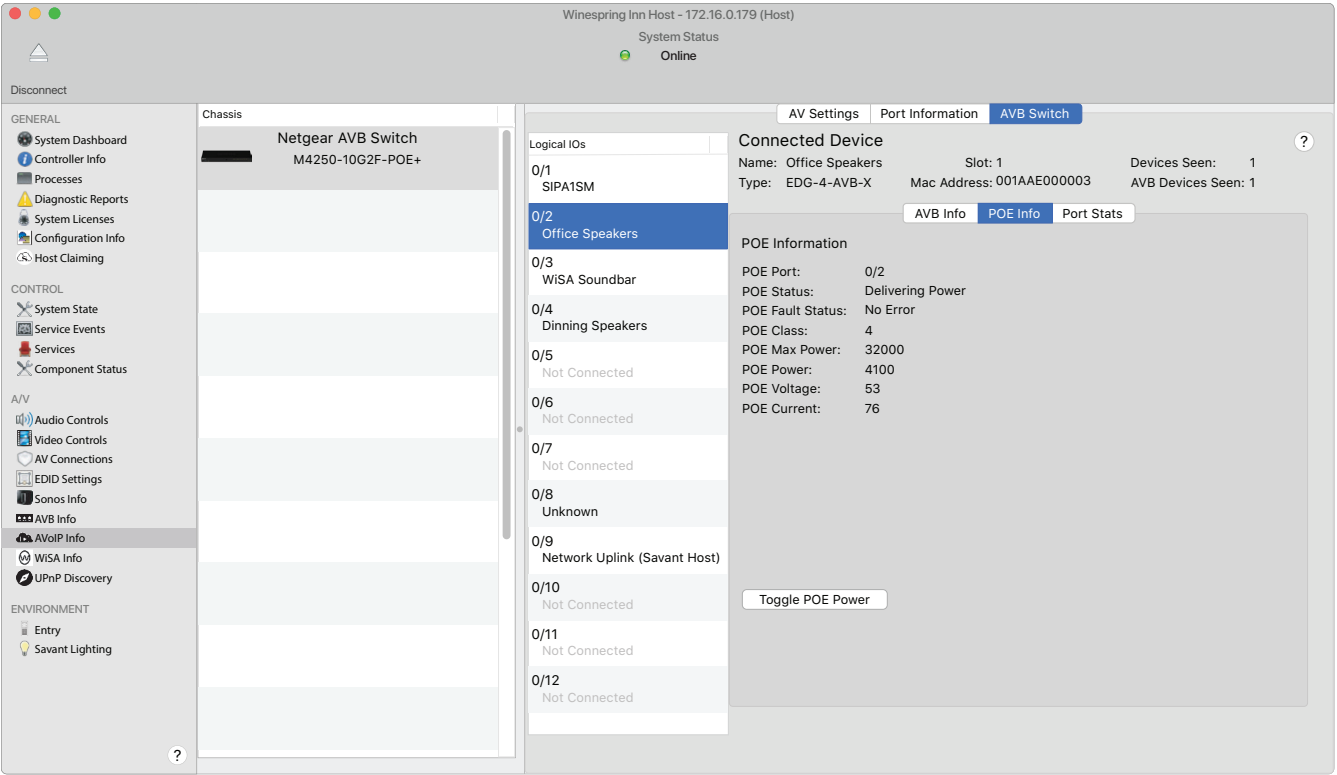
IMPORTANT! If a media converter is connected between the switch and an AVB chassis, the propagation delay may need to be raised to allow the AVB chassis to properly lock in the AVB network deployment.

Enable/Disable AVB

When a non-IP Audio device is connected to a port the **Disable AVB** button will be active. Savant recommends doing this on the uplink port that goes to the main network switch.

PoE Info Tab

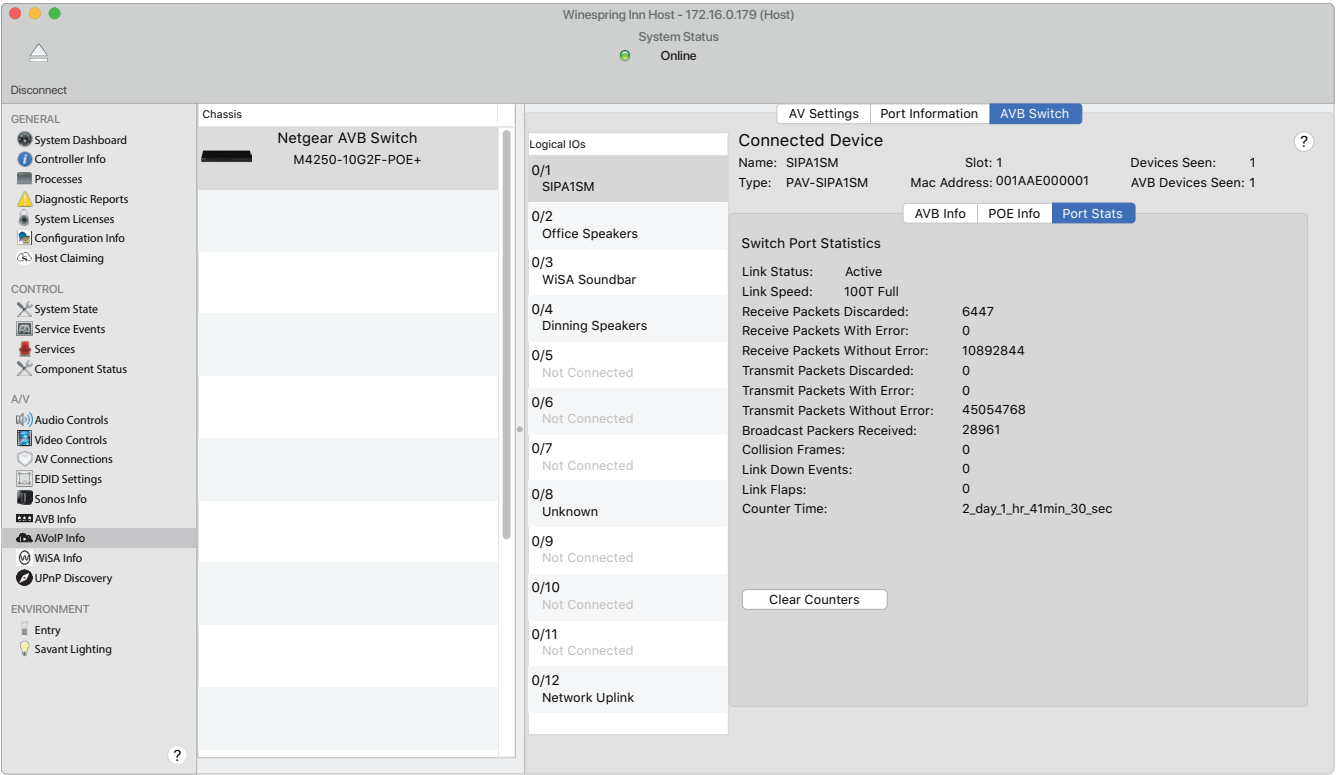
The **Toggle POE Power** button will toggle the POE power off then on for the selected port of the AVB Switch.



NOTE: The **Toggle POE Power** button will power cycle the connected device each time it is pressed.

Port Stats Tab

The **Clear Counters** button resets all the above states to zero (0).

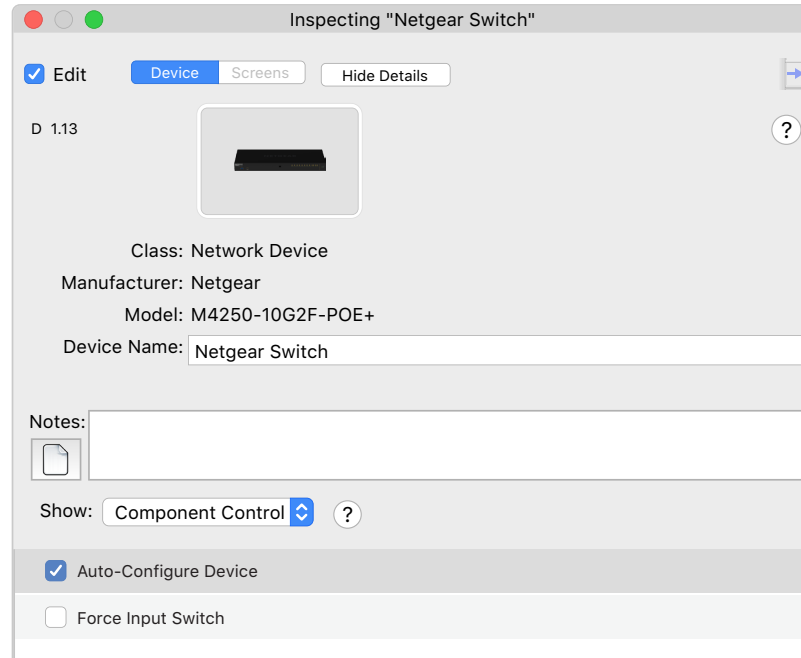


3. Best Practices

Savant recommends using the auto configuration setting when using Netgear S-Line AVB switches.

3.1. Auto-Configure

This setting is enabled by default, this can be found in the Inspector window in the active Blueprint configuration.



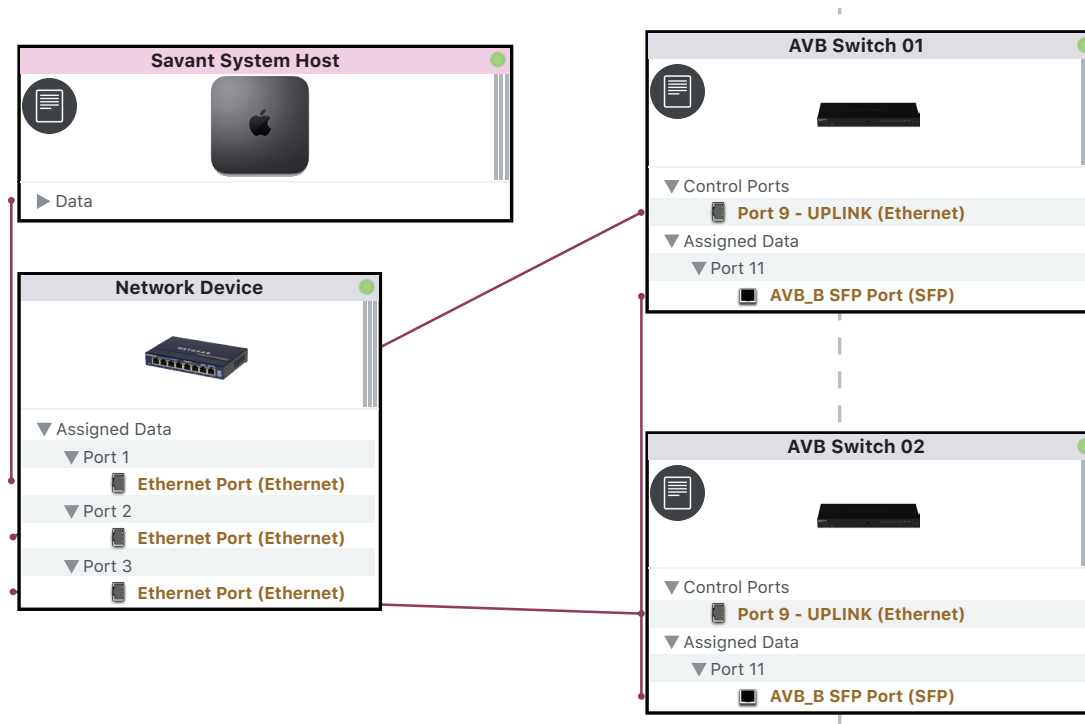
IMPORTANT! Auto-Configure must be unchecked if the switch is being manually configured.

3.2. Daisy Chain Switches

This section covers basic information for daisy chaining the Netgear S-Line AVB switches. Daisy chaining AVB switches is only recommended when using two supported AVB switches.

Blueprint

All the switches must be represented in Blueprint and connected in order for the AVB service paths to generate. Below is a example of two switches daisy chained.



IMPORTANT INFO!

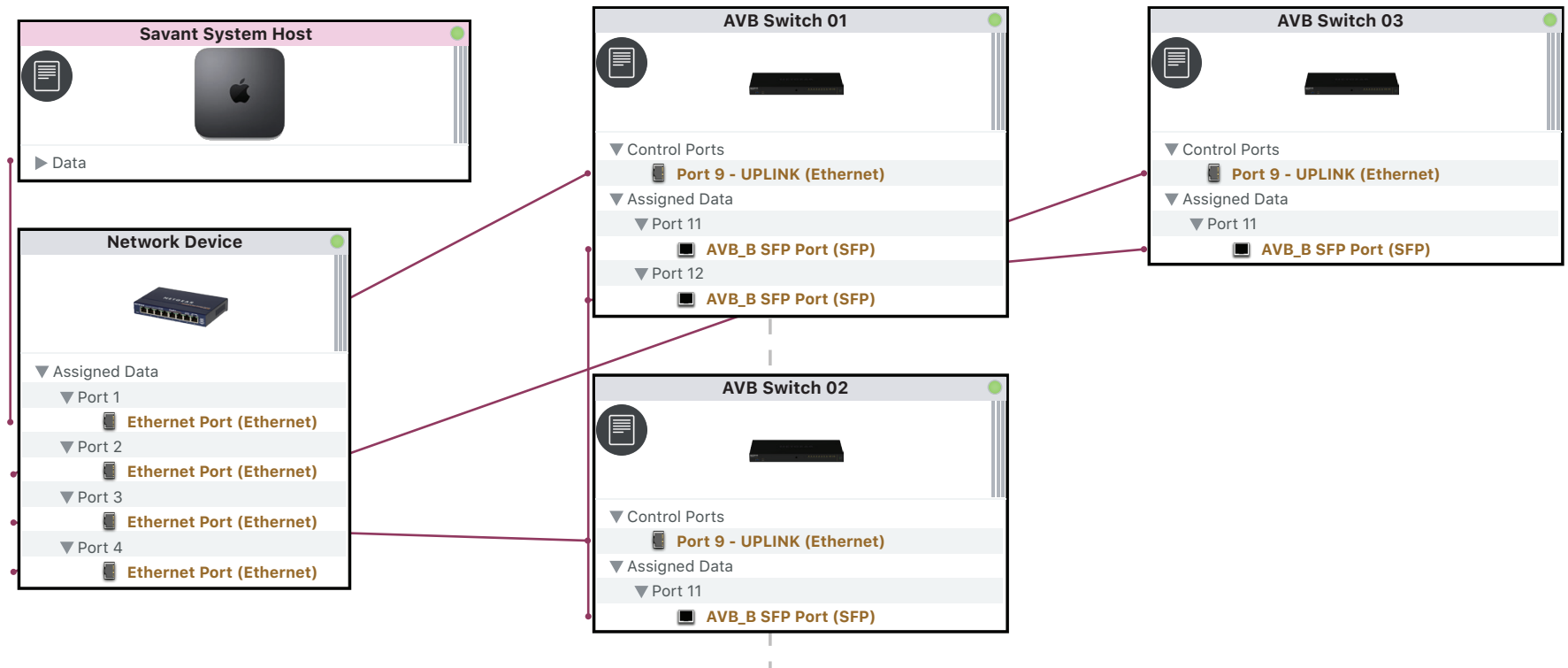
- Both switches have a control connection represented in Blueprint. **DO NOT** make a physical uplink connection to both switches. This Blueprint logical connection is required to both switches for proper service generation as well as to define the IP address of the switches for configuration and communication from the Host.
- The two switches have an AVB connection between them. This connection is required in Blueprint and physically in the deployment. This allows proper service generation across the switches and proper AVB communication between all devices.
- The physical connection between the switches allows the secondary switch to obtain an IP address on the local network as well as allow AVB traffic to pass between the two switches.

3.3. Star Topology

This section covers basic information of using star topology network design for the Netgear S-Line AVB switches. Star topology is the recommended method when using three or more AVB switches. **Star Topology** is an arrangement of devices on the network where all components are physically connected to a central switch.

Blueprint

All the switches must be represented in Blueprint and connected in order for the AVB service paths to generate. Below is a example of three switches in a star topology configuration.



IMPORTANT INFO!

- All three switches have a control connection represented in Blueprint. **DO NOT** make a physical uplink connection to more than one switch. This Blueprint logical connection is required to all AVB switches for proper service generation as well as to define the IP address of the switches for configuration and communication from the Host.
- The three switches have an AVB connections between them. This connection is required in Blueprint and physically in the deployment. This allows proper service generation across the switches and proper AVB communication between all devices.
- The physical connection between the switches will allow the secondary and tertiary switches to get an IP address on the local network as well as allow AVB traffic to pass between the three switches.

4. Factory Reset

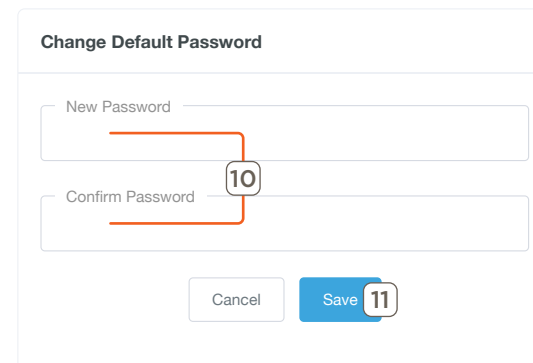
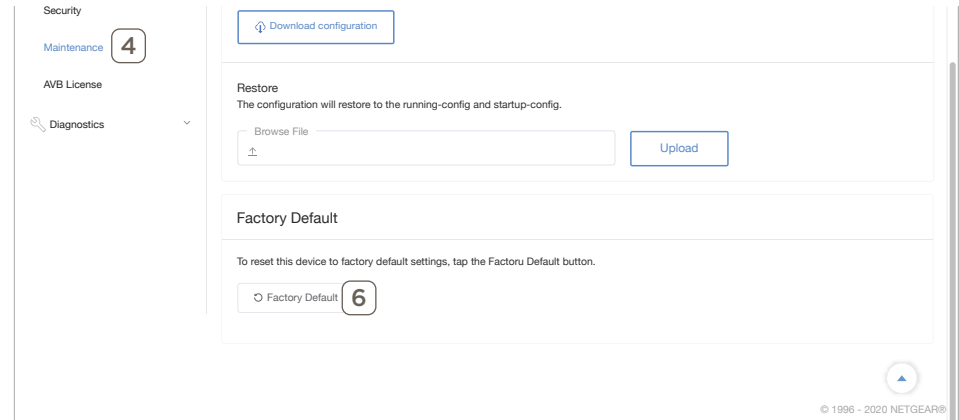
This section covers the steps to reset these switches back to factory defaults.

4.1. Web-UI Reset



HELPFUL INFO: Restoring a Netgear S-Line AVB switch to factory defaults will not remove the applied AVB license.

1. Open a web browser and navigate to the IP address of the Netgear S-Line AVB switch. (e.g., <http://10.0.0.100>)
2. Use the AV UI Login, enter the Login Name and Password.
Default Password: **SmartAudio**
Default Login Name: **admin**
3. Click **AV UI Login**.
4. Click Maintenance.
5. Scroll down to the Factory Default section.
6. Click Factory Default.
7. An IP address warning will appear. Read this warning and then click Confirm. Once the reset is complete the Web-UI will be logged out.
8. Enter the username **admin**, leave the password blank.
9. Click **AV UI Login**.
10. A new password must be set. Enter the desired password.
 **IMPORTANT NOTE!** For the System Monitor screens to populate this must match the password in Blueprint.
11. Click **Save**.



4.2. Manual Reset

A manual reset can be done with the physical reset button.



HELPFUL INFO: Restoring a Netgear S-Line AVB switch to factory defaults will not remove the applied AVB license.

1. Locate the physical reset button on the rear of the switch.
2. Press and hold the reset button for 20 seconds.
3. Open a web browser and navigate to the IP address of the Netgear S-Line AVB switch. (e.g., <http://10.0.0.100>)
4. Enter the username **admin**, leave the password blank.
5. Click **AV UI Login**.
6. A new password must be set. Enter the desired password.
 **IMPORTANT NOTE!** For the System Monitor screens to populate this must match the password in Blueprint.
7. Click **Save**.



IMPORTANT! The process described above is governed by the devices firmware it may change without Savant's knowledge. If this process does not work see Netgear's support website for more information.

Appendix A: Update Firmware

Savant-supported NetGear AVoIP Switches must run the latest available firmware from Netgear. Review the Netgear's Support page for the latest supported firmware.

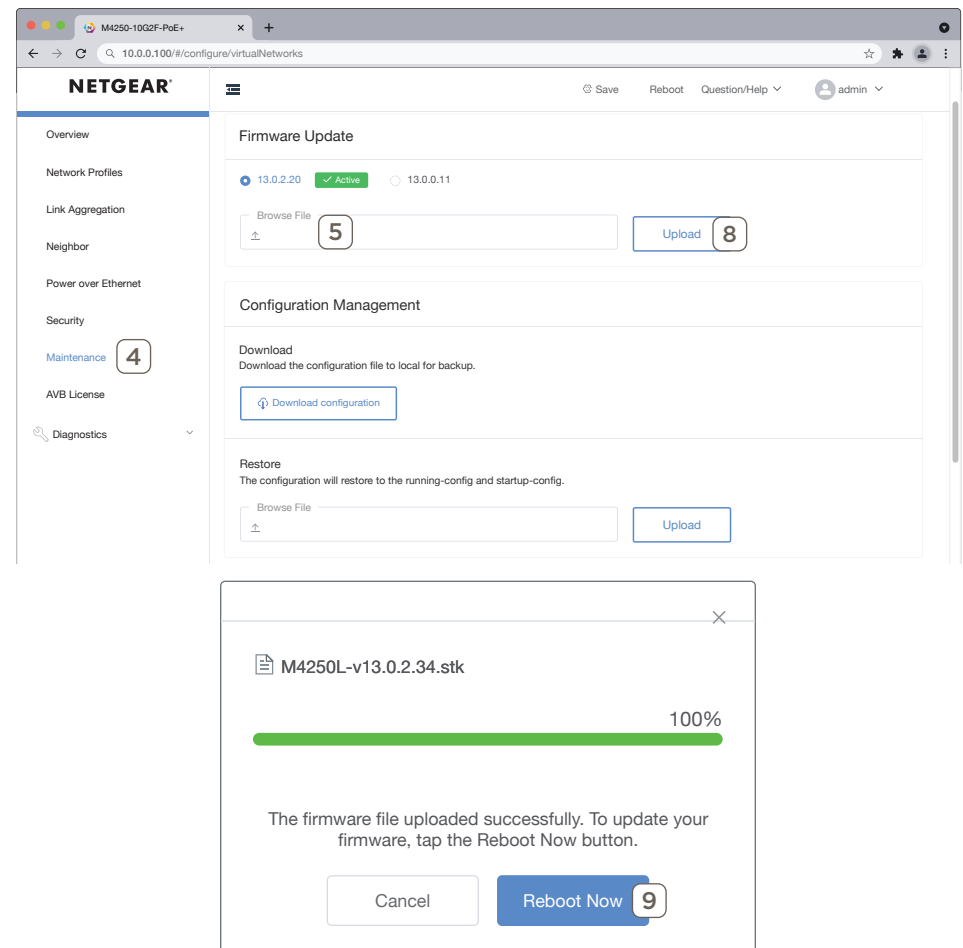
Download Firmware

1. Download the NetGear firmware directly from Netgear.
2. Un-compress the firmware .zip file.

⚠ IMPORTANT! Firmware for NETGEAR AVoIP switches are specific to the model of the device.

Upgrade Firmware

1. Open a web browser and navigate to the IP address of the Netgear S-Line AVB switch. (e.g., <http://10.0.0.100>)
2. Use the AV UI Login, enter the Login Name and Password.
Default Password: **SmartAudio**
Default Login Name: **admin**
3. Click **AV UI Login**.
4. Click **Maintenance**.
5. In the firmware update section click the browse file field.
6. Browse to the firmware package.
7. Click **Open**.
8. Click **Upload**.
9. Once the upload is finished, click **Reboot Now**.
Wait until the reboot finishes before doing any testing.

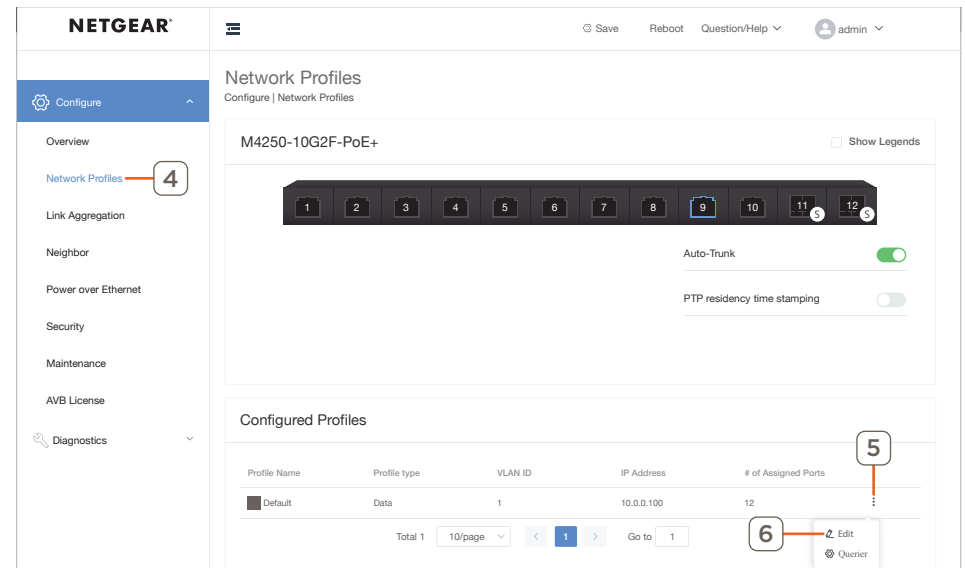
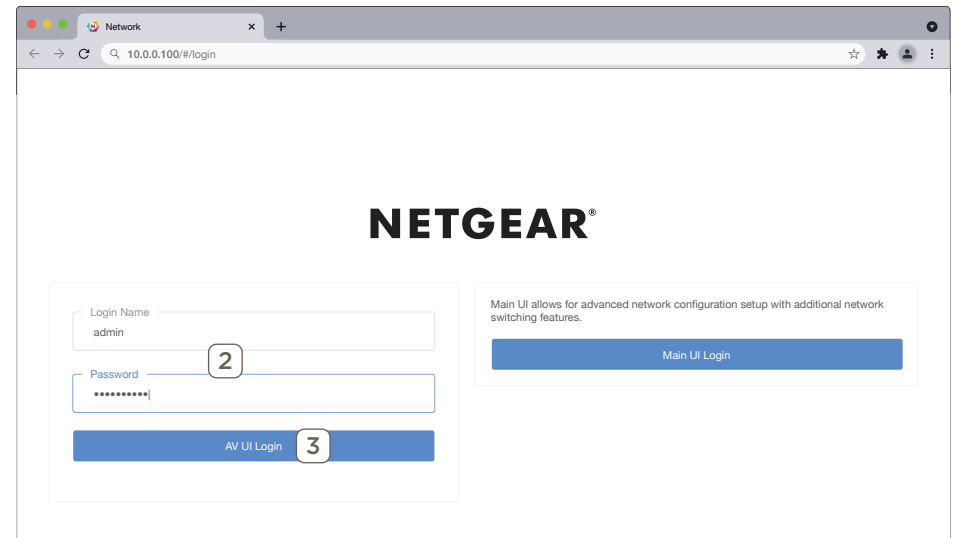


Appendix B: Web-UI (Manual Configuration)

This appendix is an overview of the settings for a Netgear S-Line AVB switch. Only the settings required for use as a Savant IP Audio AVB environment are detailed. Complete these steps with the switch at factory default settings.

To configure Netgear S-Line AVB switch via the Web-UI do the following:

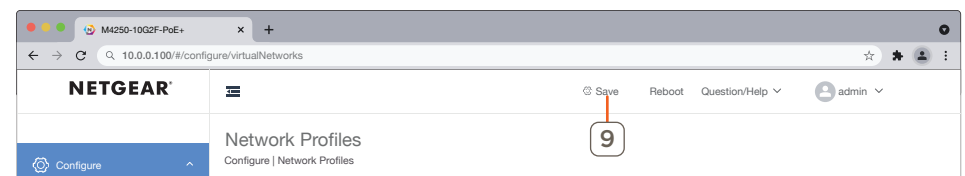
1. Open a web browser and navigate to the IP address of the Netgear S-Line AVB switch. (e.g., <http://10.0.0.100>)
2. Use the AV UI Login, enter the Login Name and Password.
Default Password: **SmartAudio**
Default Login Name: **admin**
3. Click **AV UI Login**.
4. Click **Network Profiles**.
5. Select the ellipsis at the end of the Default VLAN row.
6. Click **Edit**.



7. Check that all ports are tagged, they should all have a green check mark, on the switches visual representation.
8. Click the Profile Template and select **Audio Video AVB**.
9. Click **Apply** at the bottom of the window.
10. Click **Save** in the icon banner.
This will save the changes and reboot the switch.



TIP! After these steps have been followed individual ports can have the AVB protocol disabled from System Monitor. This is show above in [Section 2](#).



Appendix C: Command Line Interface (CLI)

This appendix shows how to configure a Netgear S-Line AVB switch via the CLI. These examples will use a web-browser to access the switch.

Terminal

Terminal is a native apple application however the telnet command has been removed from the default install of terminal. Telnet is needed to connect to the switch. A third party CLI application can be used in the place of the web based terminal session. The only difference is to telnet to the switches IP address, then the rest of the steps are the same.

Show Running-Config

To connect Netgear S-Line AVB switch via the Web-based terminal do the following:

1. Open a web browser and navigate to the IP address of the Netgear S-Line AVB switch using the port number **8081**
Example: `http://10.0.0.100:8081`
2. Enter user name and password.
Default User Name: **admin**
Default Password: **SmartAudio**
3. Enter **enable**.
4. Enter **show running-config**.
5. Review displayed information.
6. Press **m** to view more.
7. Repeat steps 5 and 6 until the entire configuration has been reviewed.

```
M4250 Web Terminal x +
1 10.0.0.100:8081
Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is 'off'.
2 User:admin
Password:*****
3 (switch)>enable
4 (switch)#show running-config
!Current Configuration:
!
!System Description "M4250-10G2F-PoE+ 10x1G PoE+ 125W and 2xSFP Managed Switch, 13.0.2.34,"
!System Software Version "13.0.2.34"
!System Up Time "14 days 4 hrs 31 mins 16 secs"
!Additional Packages QOS,Multicast,IPv6,IPv6 Management,Routing
!Current SNTP Synchronized Time: Feb 9 18:32:52 2022 UTC
!
5 hostname "switch"
vlan database
vlan routing 1 1
exit
ip http port 49151
configure
no mvrp include factory-default-vlan
mvrp
username "admin" password $6$ajdDWzc.kTbJTYW/$D23I7tppqu9to5Hp.qV1Hbdfpwv0js8IPmkHm.JP9g0/
line console
6 exit
--More-- or (q)uit
```

Example Show Running-Config Text

This section is included for reference only; settings displayed in screenshots may not match directly with individual active systems.

```
M4250 Web Terminal
10.0.0.100:8081

Trying 127.0.0.1...
Connected to 127.0.0.1.
Escape character is 'off'.

User:admin
Password:*****
(switch)>enable

(switch)#show running-config

!Current Configuration:
!
!System Description "M4250-10G2F-PoE+ 10x1G PoE+ 125W and 2xSFP Managed Switch, 13.0.2.34, 1.0.0.7"
!System Software Version "13.0.2.34"
!System Up Time "14 days 4 hrs 31 mins 16 secs"
!Additional Packages QOS,Multicast,IPv6,IPv6 Management,Routing
!Current SNTP Synchronized Time: Feb 9 18:32:52 2022 UTC
!
vlan database
vlan routing 1 1
exit

ip http port 49151
configure
no mvrp include factory-default-vlan
mvrp
username "admin" password $6$aJDWzc.kTbJTYW/$D23I7tppqu9to5Hp.qV1Hbdfpwv0js8IPmkHm.JP9g0/JrWtcHSVI6W5qfV.ZLgckpqH.2H1AF

line console
exit

line telnet
exit

line ssh
exit

snmp-server user "admin" DefaultWrite auth-sha512-key f27320cbe3c25946ab3f655f5e7914bb9fdcf112d9fdcf112d9daaa336a8d62
no switchport mode auto
classofservice trust dot1p
dot1as
mmrp
msrp

interface 0/1
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/2
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/3
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/4
mtu 1500
dot1as
mvrp
mmrp
msrp
exit
```

```
interface 0/5
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/6
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/7
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/8
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/9
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/10
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/11
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface 0/12
mtu 1500
dot1as
mvrp
mmrp
msrp
exit

interface vlan 1
routing
ip address dhcp
exit

router rip
exit

exit

(switch)#
```

Manual Configuration

This section show only the steps/settings required to setup the switch for use with a Savant IP Audio deployment.

To connect Netgear S-Line AVB switch via the Web-based terminal do the following:

1. Open a web browser and navigate to the IP address of the Netgear S-Line AVB switch using the port number **8081**
Example: `http://10.0.0.100:8081`
2. Enter user name and password.
Default User Name: **admin**
Default Password: **SmartAudio**
3. Enter **enable**.
4. Enter **configure**.
5. Enter **no mvrp include factory-default-vlan**.
6. Enter **mvrp**.
7. Enter **dot1as**.
8. Enter **mmrp**.
9. Enter **msrp**.
10. Enter **classofservice trust dot1p**.
11. Enter **no switchport mode auto**.
12. Enter **interface 0/1-0/12**.
This command must be adjusted for the max number of ports.
For a 48 port switch the command will be **interface 0/1-0/48**.
13. Enter **msrp**.
14. Enter **mmrp**.
15. Enter **mvrp**.
16. Enter **dot1as**.
17. Enter **mtu 1500**.
18. Enter **exit**.
19. Enter **exit**.
20. Enter **save**.
21. Read the prompt and enter **y**.

```
User:admin
Password:*****
(switch)>enable

(switch)#configure

(switch)(Config)#no mvrp include factory-default-vlan

(switch)(Config)#mvrp

(switch)(Config)#dot1as

(switch)(Config)#mmrp

(switch)(Config)#msrp

(switch)(Config)#classofservice trust dot1p

(switch)(Config)#no switchport mode auto

(switch)(Config)#interface 0/1-0/12

(switch)(Interface 0/1-0/12)#msrp

(switch)(Interface 0/1-0/12)#mmrp

(switch)(Interface 0/1-0/12)#mvrp

(switch)(Interface 0/1-0/12)#dot1as

(switch)(Interface 0/1-0/12)#mtu 1500

(switch)(Interface 0/1-0/12)#exit

(switch)(Config)#exit

(switch)#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!

(switch)#
```

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