Switch Configuration Example **for Q-SYS™ Platform**
Cisco SG300 Series

Important Note

This switch configuration example is intended to serve as a network setup guideline for systems using Q-LAN audio and video within your Q-SYS system and should be used alongside the **Q-SYS Q-LAN Networking Overview** tech note for deeper setup insight. Keep in mind that QSC is unable to provide live network configuration support for third-party switch configuration. To learn more about network switch qualification services and the plug-and-play Q-SYS NS Series preconfigured network switches, visit **http://www.qsc.com/switches**.
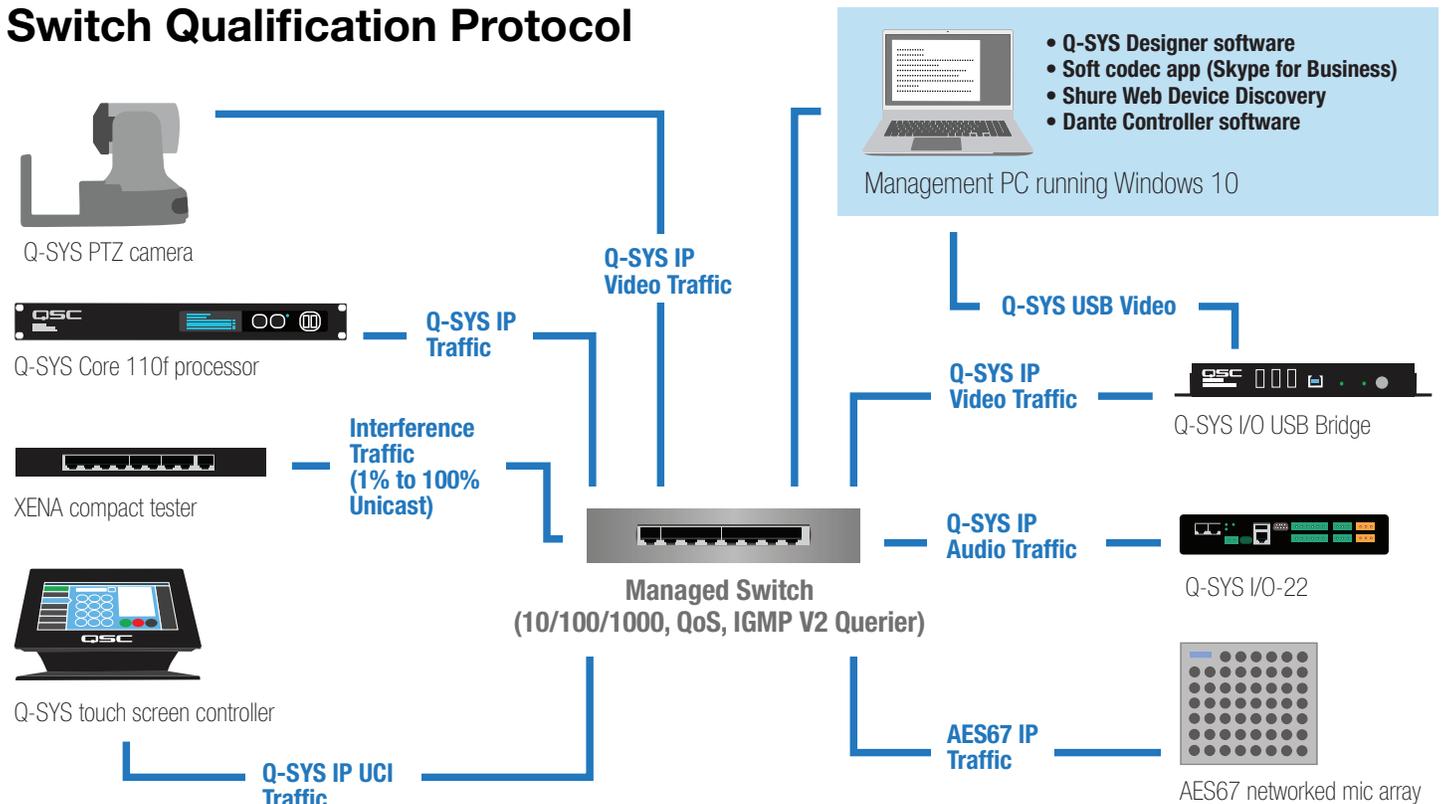
> This document applies to these Cisco switches:
> **Small Business 300 Series Managed Switches**
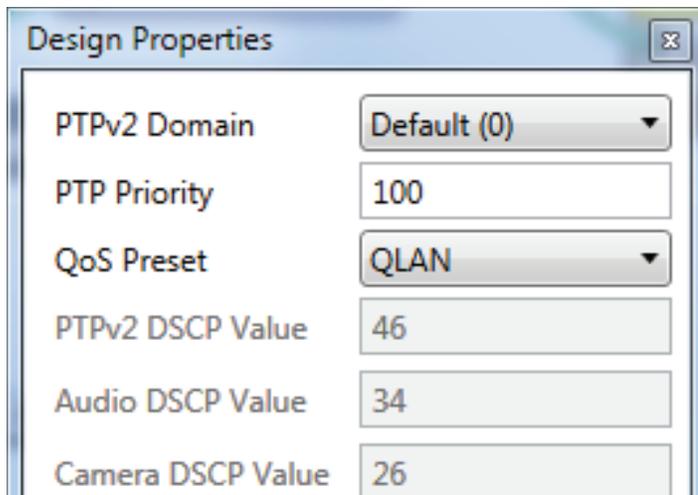
Introduction

As of release 5.3.x, Q-SYS Designer Software now supports AES67-standard interoperability. The AES67 standard does not prescribe a method of discovery for devices so manufacturers are free to implement one or more discovery services for their devices. In this configuration document, the process uses Bonjour as the discovery method for AES67 devices.

Q-SYS Designer Software now also offers a selection of Differential Services Code Point (DSCP) setting presets to optimize Quality of Service (QoS) for different types of deployment. DSCP codes are a six-bit value placed in the IP header of data packet, and they instruct a network switch to handle various types of data with defined levels of priority that ensure proper QoS.

Switch Qualification Protocol

- Q-SYS PTZ camera
- Q-SYS Core 110f processor
- XENA compact tester
- Q-SYS touch screen controller

Q-SYS IP Traffic

Interference Traffic (1% to 100% Unicast)

Q-SYS IP Video Traffic

Managed Switch (10/100/1000, QoS, IGMP V2 Querier)

Q-SYS IP UCI Traffic

- • Q-SYS Designer software
- • Soft codec app (Skype for Business)
- • Shure Web Device Discovery
- • Dante Controller software

Management PC running Windows 10

Q-SYS USB Video

Q-SYS IP Video Traffic

Q-SYS I/O USB Bridge

Q-SYS IP Audio Traffic

Q-SYS I/O-22

AES67 IP Traffic

AES67 networked mic array

Selecting QoS presets in a Q-SYS design file

Design Properties

PTPv2 Domain	Default (0)
PTP Priority	100
QoS Preset	QLAN
PTPv2 DSCP Value	46
Audio DSCP Value	34
Camera DSCP Value	26

1. In Q-SYS Designer Software, open the design. Make sure it is disconnected from the Core processor (press **F7** or select **File > Disconnect**).

2. Select **File > Design Properties**.

3. Select the appropriate QoS preset. (See the specification table below.)

Specifications

Preset	Q-LAN	Audinate	Manual
Use for:	• Q-LAN-only network	• DANTE-only network	• If custom DSCP settings are necessary
	• Q-LAN + AES67* network	• DANTE + Q-LAN network	
		• DANTE + Q-LAN + AES67* network	
QoS class assigned:	PTPv2: 46	PTPv2: 56	PTPv2: 56
	Audio: 34	Audio: 46	Audio: 46
	Camera: 26	Camera: 26	Camera: 26

4. Leave the PTPv2 Domain and PTP Priority settings at default. Click **OK**.

5. To save the settings, press **F5** or select **File > Save to Core & Run**.

* NOTE: AES67 devices may use DSCP values 46 or 56 for PTPv2. Use Wireshark or a similar tool to do a PCAP capture and inspect the the UDP Port 319 packets to identify the DSCP value being used. Adjust the Q-SYS DSCP settings in the switch configuration as needed.

Configuring the network switch for Q-SYS

1. Connect a computer to the switch via their network connectors. Make sure the switch's IP address is within the subnet mask of the computer's network interface controller (NIC).

2. Open a web browser and enter the IP address of the switch into the address bar (the factory default is **192.168.1.65**).
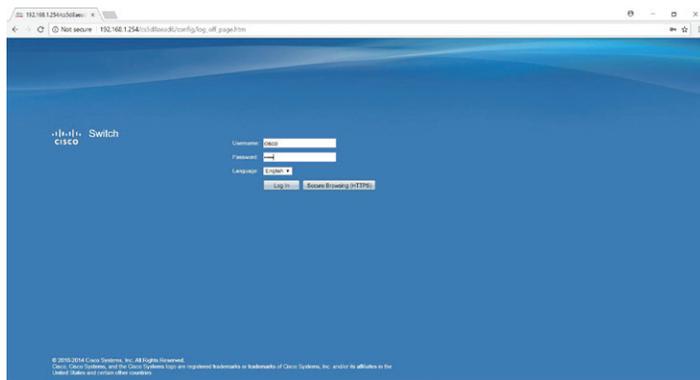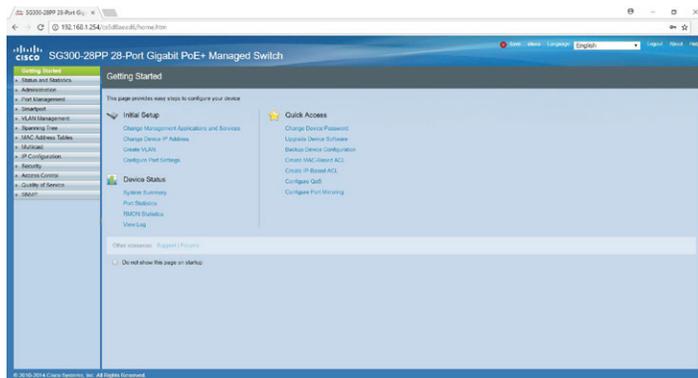

3. The switch web UI will request a username and password. The default for both is `cisco`. Click **Log in**.
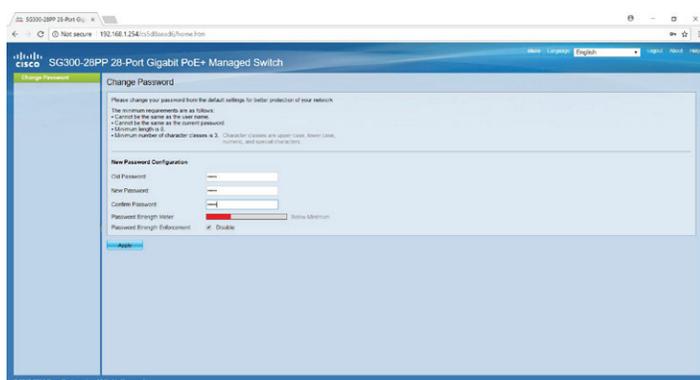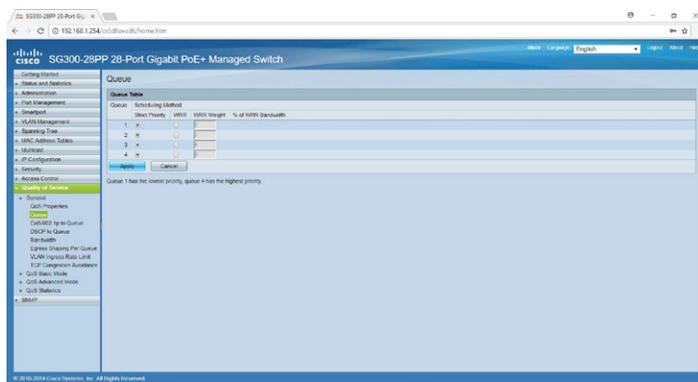

4. On the first login, the switch will ask you to change the password. Enter the old password and the new one. Then enter the new password once more to confirm. Click **Apply**.
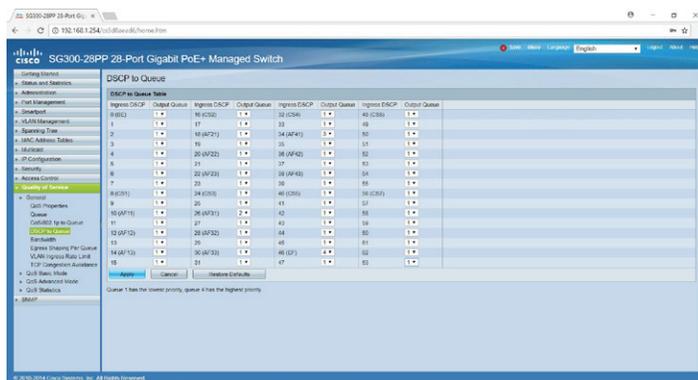
5. On the **Getting Started** page, select **Quality of Service**.

6. Go to **Quality of Service > General > Queue**.

7. Set all four queues to **Strict Priority**. Click **Apply**.

8. Go to **Quality of Service > General > DSCP to Queue**.

9. On this page you will set PTPv2 to the highest priority queue, audio to the second highest, and video to the third highest.
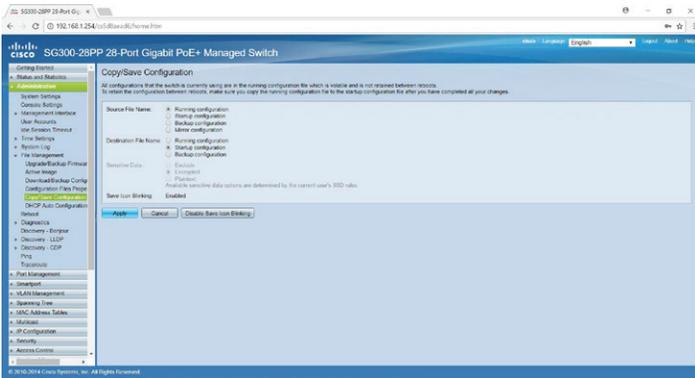
For a Q-LAN network:

Data	DSCP value	Output queue
PTPv2	46 (EF)	4 (highest priority)
Audio	34 (AF41)	3 (second highest)
Video	26 (AF31)	2 (third highest)

For an Audinate/Dante network:

Data	DSCP value	Output queue
PTPv2	56 (CS7)	4 (highest priority)
Audio	46 (EF)	3 (second highest)
Video	26 (AF31)	2 (third highest)

10. Go to **Administration > File Management > Copy/Save Configuration**.

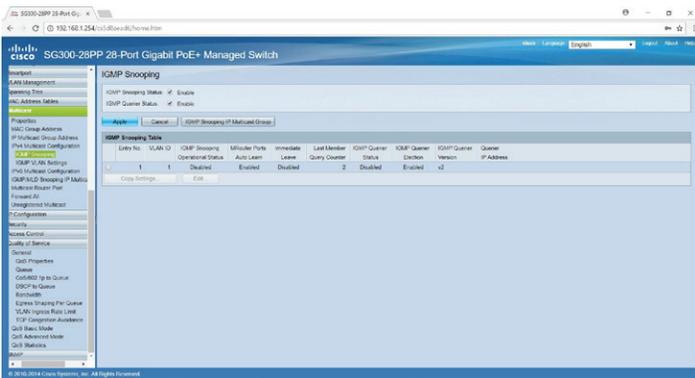11. At **Source File Name** select **Running configuration**.

12. At **Destination File Name** select **Startup configuration**. Click **Apply**.
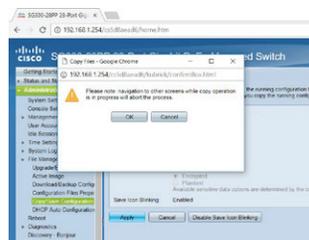
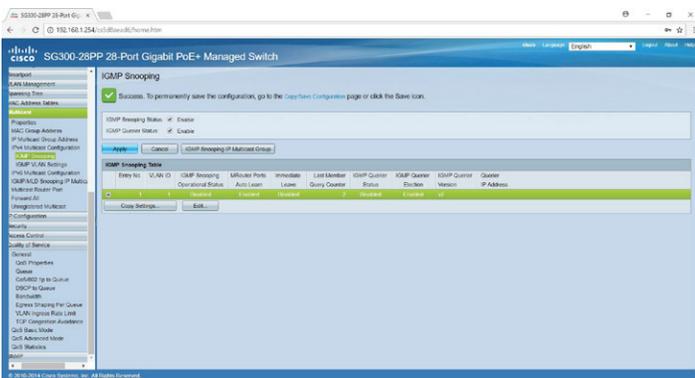13. The browser will ask you to confirm copying the files. Click **OK** to proceed.
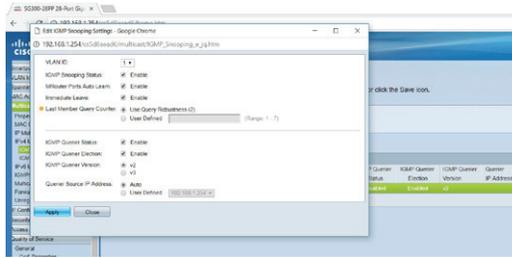

14. Click **Done**.

15. Go to **Multicast > IPv4 Multicast Configuration > IGMP Snooping**.

16. Enable both **IGMP Snooping Status** and **IGMP Querier Status**. Click **Apply**.

17. Select VLAN 1 in the IGMP Snooping Table and click **Edit**.

18. The **Edit IGMP Settings** window will open.

    At **IGMP Snooping Status:**, **MRouter Ports Auto Learn:**, and **Immediate Leave:** select **Enable**.

19. At **Last Member Query Counter:** select **Use Query Robustness (2)**.

20. At **IGMP Querier Status:** and **IGMP Querier Election:** select **Enable**.

21. At **IGMP Querier Version:** select **v2**.

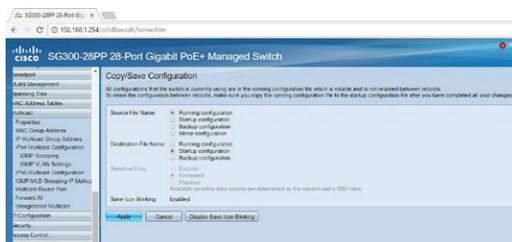22. At **Querier Source IP Address:** select **Auto**. Click **Apply**.
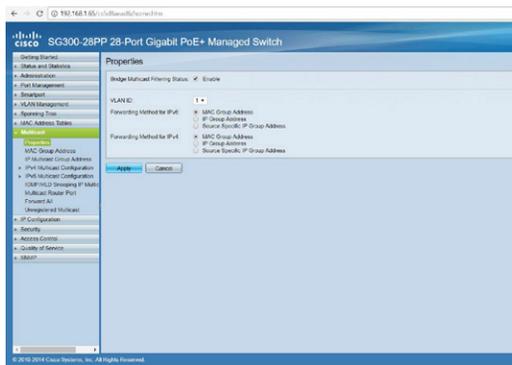
23. After the web UI informs you that the application is successful, click **Close** and go to **Multicast > Properties**.

24. At **Bridge Multicast Filtering Status:** select **Enable**. Click **Apply**.

25. When the web UI informs you that applying the settings was successful, click the **Copy/Save Configuration** link.

26. In the **Copy/Save Configuration** page, at **Source File Name:** select **Running configuration** and at **Destination File Name:** select **Startup configuration**. Click **Apply**.
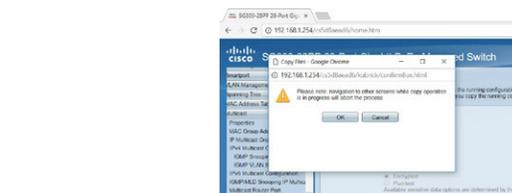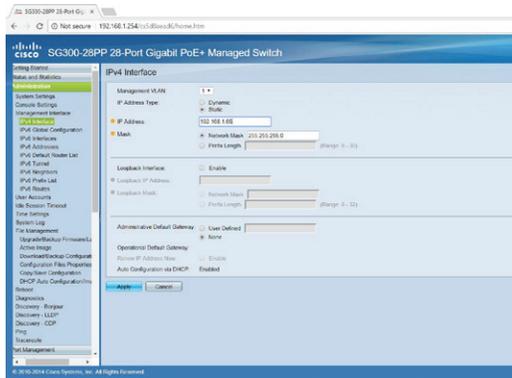

27. Click **OK**. Do not navigate to another screen until the computer is done copying and saving the files, which will take only a few seconds.

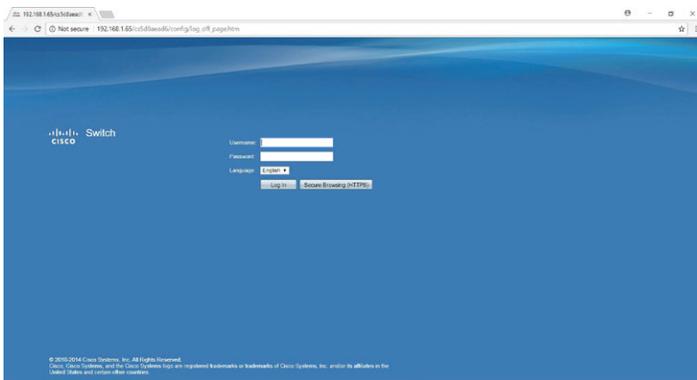28. When copying is finished, click **Done**.

29. Go to **Administration > Management Interface > IPv4 Interface**.

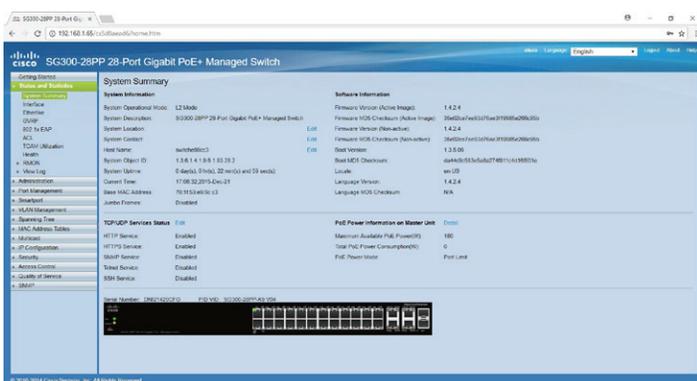   At **IP Address Type:** select **Static**.
    At **IP Address:** enter the IP address intended for the switch.
   At **Mask:** select **Network Mask** and enter the subnet mask.
    Click **Apply**.

30. Because the switch now has a new IP address, you must log into it again. You might have to change the IP address and subnet mask of the computer NIC to reach it.

31. Go to **Status and Statistics > System Summary**. Check the firmware version in the switch with the latest available on the Cisco web site. Update the firmware if necessary.
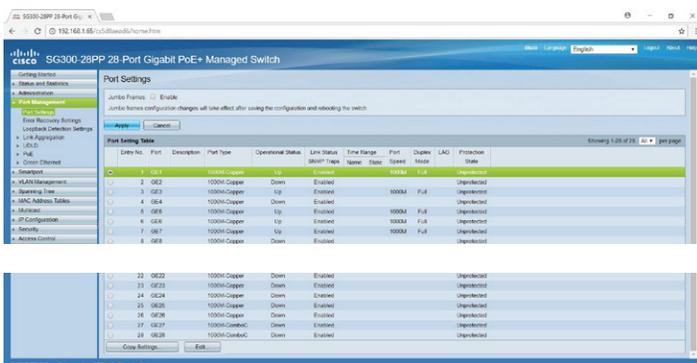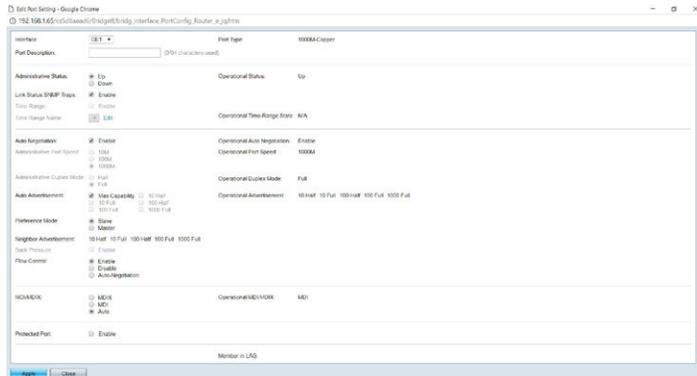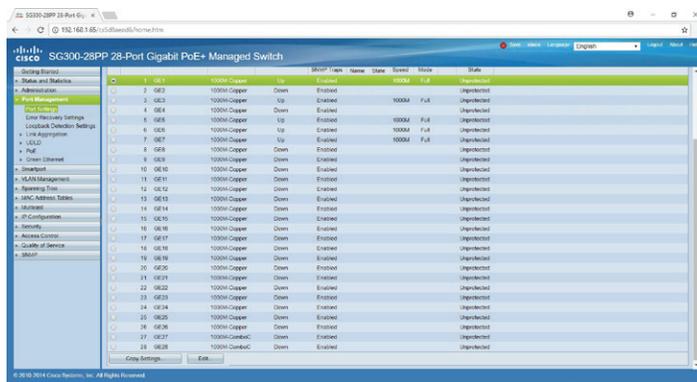

32. Go to **Port Management > Port Settings**.

33. Make sure **Jumbo Frames** are not enabled.

34. Select the first port you wish to configure. Scroll down and click **Edit**.
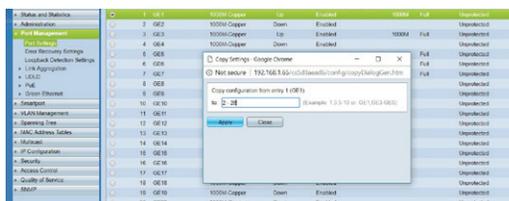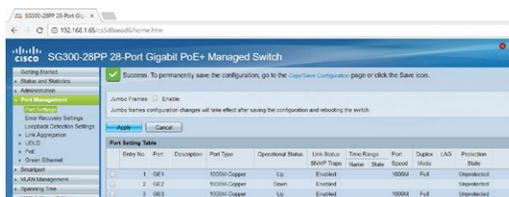
QSC

35. At **Flow Control:** select **Enable**. Click **Apply**.

36. Select the port that you configured. Click **Copy Settings...**

37. Designate which channels to copy the configuration to. For example, **2-12** or **2, 3, 7, 10-12, 16-28** and so on. Click **Apply**.

38. When the web UI informs you that applying the settings was successful, click the **Copy/Save Configuration** link.

39. As before, at **Source File Name:** select **Running configuration** and at **Destination File Name:** select **Startup configuration**. Click **Apply**.

40. Click OK and let the computer copy and save the files.

41. Click Done.

    The switch configuration is complete and it is ready to use.