



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.





Selecting QoS presets in a Q-SYS design file

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

- 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**.





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	Other measures (support) Frances				
2010-2014 Casca Systems, in 	e: Al Right Reserved.				

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.

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nning Tree	2	1.	18 (AF21)	1.*	34 (AF41)	3 *	50	1.			
C Address Tables	3	1.	19	1.*	35	1.*	51	1.			
ticast	4	1.	20 (AF22)	1.*	36 (AF42)	1.*	62	1.			
Configuration	5	1.	21	1.	37	1.	43	1.			
uty	6	3.*	22 (5/23)	1.*	38 (AF43)	1.	54	1.			
ess Control	7	1.	23	1.4	39	1.	55	1.			
ality of Service	B(C251)	1.	24 (053)	1.	40 (055)	1.	56 (CS7)	1*			
procesi	9	1.	25	1.4	41	1.*	57	1.			
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	12 (AF12)	1.	28 (AF32)	1.*	44	1.4	60	1.			
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25 Basic Mode	- anne	[Canvel]	Cleaning I	late da							
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oS Statistics	Queue 1 has the	lowest priority, qu	seve 4 has the hig	pest priority.							
IP											

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:

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

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)



OK Cancel



- 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.
- abit PoE+ I Leave Query Counter IOMP Querier IOMP Querier Querier Election Version IP Address Enabled v2 Status Disabled
- 15. Go to Multicast > IPv4 Multicast Configuration > IGMP Snooping.
- 16. Enable both IGMP Snooping Status and IGMP Querier Status. Click Apply.

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



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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.



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- 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.
- Select the first port you wish to configure. Scroll down and click Edit.





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VLAN Management		11	GE11	1000M-Copper	Down	Enabled			Unprotected			
Spanning Tree		12	OE12	1000M-Copper	Down	Enabled			Unprotected			
MAC Address Tables		13	OE13	1000M.Copper	Down	Enabled			Unprotected			
Muticent		14	GE14	1000M-Copper	Down	Enabled			Unprotected			
IP Configuration		15	GE15	1000M-Copper	Down	Enabled			Unprotected			
Security		10	OE10	1000M Copper	Down	Enabled			Unprotected			
Access Control		17	GE17	1000M-Copper	Down	Enabled			Unprotected			
Quality of Service		18	OE18	1000M-Copper	Down	Enabled			Unprotected			
SNMP		19	OE 19	1000M Copper	Down	Enabled			Unprotected			
		20	GE20	1000M-Copper	Down	Enabled			Unprotected			
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Getting Started	Copy/Save Configuration All configurations that the switch is currently using are in the surring configuration file which is volatile and is not retained between rebots.		
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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.





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41. Click Done.

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



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