Switch Configuration Example **for Q-SYS™ Platform**
Dell PowerConnect 2808

Important Note

This switch configuration example is intended to serve as a network setup guideline for systems using Q-LAN audio and video streaming 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**.
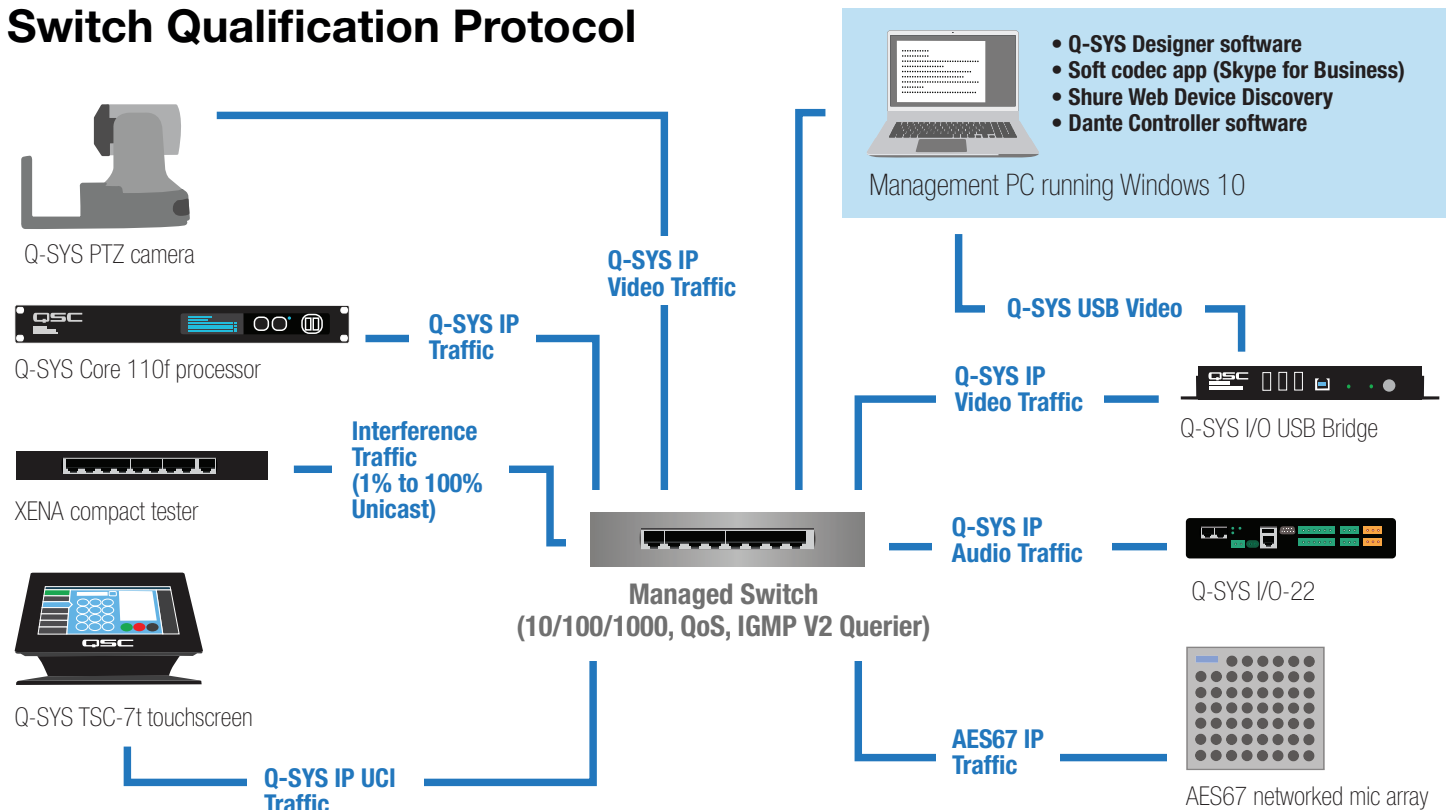
> This document applies to this Dell switch:
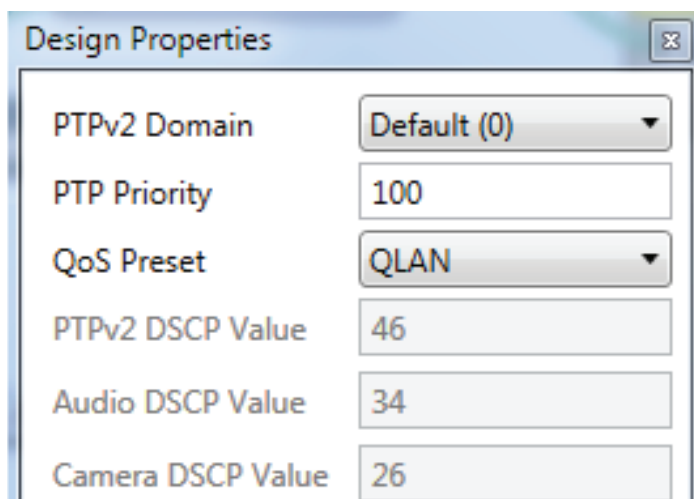> **Power Connect 2808**

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

Management PC running Windows 10

Q-SYS PTZ camera

Q-SYS Core 110f processor

Q-SYS IP Video Traffic

Q-SYS IP Traffic

Q-SYS USB Video

Q-SYS IP Video Traffic

Q-SYS I/O USB Bridge

Interference Traffic (1% to 100% Unicast)

XENA compact tester

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

Q-SYS IP Audio Traffic

Q-SYS I/O-22

Q-SYS TSC-7t touchscreen

Q-SYS IP UCI Traffic

AES67 IP Traffic

AES67 networked mic array

Selecting QoS presets in a Q-SYS design file

1. In Q-SYS Designer, 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 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 Audio: 34 Camera: 26	PTPv2: 56 Audio: 46 Camera: 26	PTPv2: 56 Audio: 46 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**.

Configuring the network switch for Q-SYS

The switch's default IP address and subnet are 192.168.2.1 255.255.255.0. Make sure your computer's NIC uses an IP address that is within that subnet domain.

NOTE: The Microsoft Edge browser for Windows 10 might cause some problems during switch configuration. Consider using Google Chrome or Firefox web browsers instead.

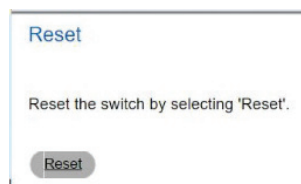1. Use a network cable to connect the computer to the switch.
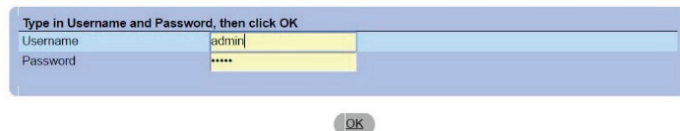
2. Type the switch's IP address into the address bar of your browser. Log into the switch (the default user name is **admin**, and the password also is **admin**). Click **OK**.
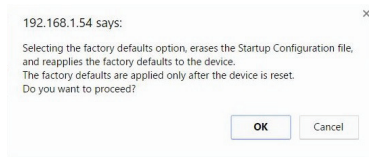
3. Go to **System > File Management > Restore**.

    Select **Restore Configuration Factory Defaults**, then click **Apply Changes**.

4. Next go to **System > General > Reset**. Click **Reset**.

When you are asked to confirm that you want to proceed, click **OK**.

QoS configuration

1. Log into the switch again. Go to **System**. Click **General**.

2. On the page titled **Versions**, check the software, boot, and hardware versions.

- The software version in the switch should be 1.0.0.45 or higher.

- The boot version should be 1.0.0.13 or higher.

- The hardware version should be 00.00.03.

    See the switch's user documentation for guidance on bringing any of these versions up to date.

3. Go to **System > IP Addressing > IP Interface Parameters**.

    At **DHCP**, select **Disable**.

    At **IP Address**, enter the switch's desired IP address.

    At **Subnet Mask**, enter the subnet mask.

    If the switch is to be accessible from outside the subnet, enter the address of the gateway at **Default Gateway**.

    Configure a separate static IP address for each switch used on the network. For best results, follow RFC1918 guidelines for allocating addresses in private networks.

4. Go to **System > Management Security > Local User Database**.

   Configure and confirm a new password for the switch.

   Click **Apply Changes**.

   NOTE: The Dell Power Connect switch does not have a reset button for restoring to factory default settings, including IP address and login information. Therefore, if you change the IP address of the switch and/or the password, make note of your changes and keep them in a secure location so in the future you can still log in and make changes when necessary.

5. Go to **Switch > Ports > Green Ethernet Configuration**.

   At both **Link Down Energy-Detect Mode** and **Link Short-Reach Energy-Detect Mode**, select **Off**. This disables the switch's energy-saving features.

   Click **Apply Changes**.

6. Go to **Switch > Multicast Support > Global Parameters**.

   At both **Bridge Multicast Filtering** and **IGMP Snooping Status**, select **Enable**.

   Click **Apply Changes**.

7. Go to **Switch > Multicast Support > IGMP Snooping**.

   Select the **VLAN ID**, which is **1**.

   At both **IGMP Snooping Status** and **Auto Learn** select **Enable**.

   If this is to be the only switch on the network or another switch will be configured as IGMP Querier, then select **Enable** at **IGMP Querier Status**.

   At **Querier IP Address**, enter the IP address of the switch that will be performing the role of querier, even if it is this same switch.

   Click **Apply Changes**.

CoS Settings

CoS Mode	Enable ▾
Trust Mode	DSCP ▾

Apply Changes

8. Go to **Quality of Service > CoS Global parameters > CoS Settings**.

   At **CoS Mode**, select **Enable**. And at **Trust Mode**, select **DSCP**.

   Click **Apply Changes**.

QoS Queue Settings

Queue	Strict Priority	WRR	Scheduling WRR Weights
1	●	○	
2	○	○	
3	●	○	
4	●	○	

Apply Changes

9. Go to **Quality of Service > CoS Global parameters > Queue Settings**.

   Set all four queues to **Strict Priority**.

   Click **Apply Changes**.

10. Finally, map the DSCP values to the respective queues. Go to **Quality of Service > CoS Global Parameters > DSCP to Queue Mapping**.

NOTE: On the Dell Power Connect 2808 switch, DSCP values 3, 11, 19, 27, 35, 43, 51, and 59 are locked and cannot be modified. This could cause QoS issues if other applications are marking network traffic with any of these values.

DSCP to Queue Mapping

DSCP In	Queue		DSCP In	Queue		DSCP In	Queue
0	1		21	1		42	1
1	1		22	1		43	3
2	1		23	1		44	1
3	1		24	1		45	1
4	1		25	1		46	3
5	1		26	2		47	1
6	1		27	2		48	1
7	1		28	1		49	1
8	2		29	1		50	1
9	1		30	1		51	4
10	1		31	1		52	1
11	1		32	1		53	1
12	1		33	1		54	1
13	1		34	1		55	1
14	1		35	3		56	4
15	1		36	1		57	1
16	1		37	1		58	1
17	1		38	1		59	4
18	1		39	1		60	1
19	2		40	1		61	1
20	1		41	1		62	1
						63	1

For a Q-LAN only network, set these values:

- At DSCP In value **26**, select Queue **2**.

- At DSCP In value **34**, select Queue **3**.

- At DSCP In value **46**, select Queue **4**.

- All other DSCP In values should be mapped to Queue **1**.

     Click **Apply Changes**.

DSCP to Queue Mapping

Print   Refresh

DSCP In	Queue	DSCP In	Queue	DSCP In	Queue
0	1 ▾	21	1 ▾	42	1 ▾
1	1 ▾	22	1 ▾	43	3 ▾
2	1 ▾	23	1 ▾	44	1 ▾
3	1 ▾	24	1 ▾	45	1 ▾
4	1 ▾	25	1 ▾	46	3 ▾
5	1 ▾	26	2 ▾	47	1 ▾
6	1 ▾	27	2 ▾	48	1 ▾
7	1 ▾	28	1 ▾	49	1 ▾
8	2 ▾	29	1 ▾	50	1 ▾
9	1 ▾	30	1 ▾	51	4 ▾
10	1 ▾	31	1 ▾	52	1 ▾
11	1 ▾	32	1 ▾	53	1 ▾
12	1 ▾	33	1 ▾	54	1 ▾
13	1 ▾	34	1 ▾	55	1 ▾
14	1 ▾	35	3 ▾	56	4 ▾
15	1 ▾	36	1 ▾	57	1 ▾
16	1 ▾	37	1 ▾	58	1 ▾
17	1 ▾	38	1 ▾	59	4 ▾
18	1 ▾	39	1 ▾	60	1 ▾
19	2 ▾	40	1 ▾	61	1 ▾
20	1 ▾	41	1 ▾	62	1 ▾
				63	1 ▾

For a network that includes Audinate/Dante and AES67, set these values:

- At DSCP In value **8**, select Queue **2**.
- At DSCP In value **26**, select Queue **2**.
- At DSCP In value **46**, select Queue **3**.
- At DSCP In value **56**, select Queue **4**.
- All other DSCP In values should be mapped to Queue **1**.
  Click **Apply Changes**.

DSCP to Queue Mapping

Print Refresh

DSCP In	Queue	DSCP In	Queue	DSCP In	Queue
0	1	21	1	42	1
1	1	22	1	43	3
2	1	23	1	44	1
3	1	24	1	45	1
4	1	25	1	46	3
5	1	26	2	47	1
6	1	27	2	48	1
7	1	28	1	49	1
8	2	29	1	50	1
9	1	30	1	51	4
10	1	31	1	52	1
11	1	32	1	53	1
12	1	33	1	54	1
13	1	34	1	55	1
14	1	35	3	56	4
15	1	36	1	57	1
16	1	37	1	58	1
17	1	38	1	59	4
18	1	39	1	60	1
19	2	40	1	61	1
20	1	41	1	62	1
				63	1

11. The switch is now configured and ready to use.

AET Application Engineering Team