Switch Configuration Example **for Q-SYS™ Platform**

Niveo NGSM/NGSME Series

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**.

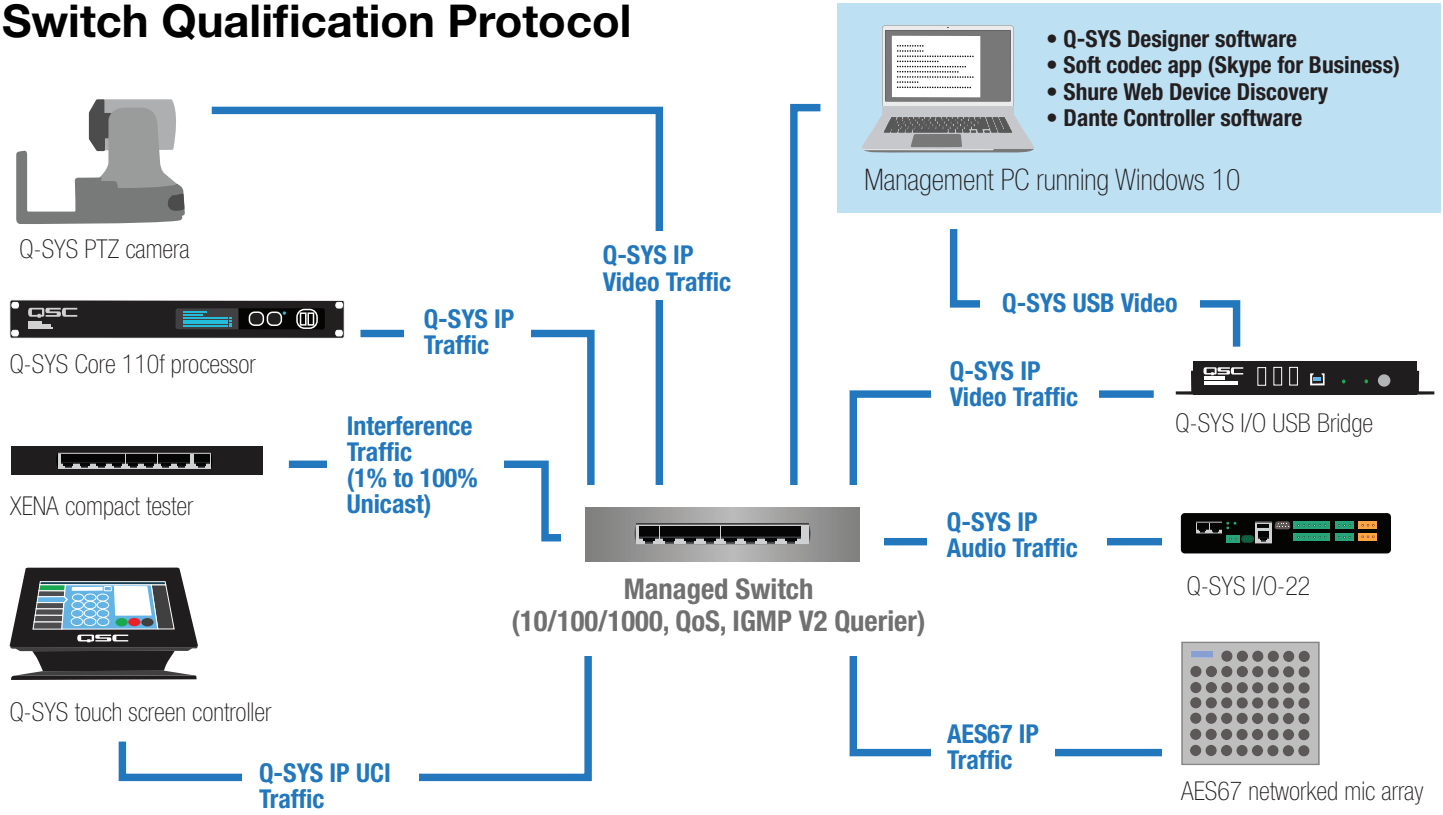
> This document applies to these NIVEO switches:
> **NGSM8T2 • NGSM16T2 • NGSM16T2-AV • NGSM24T2 • NGSM24T2-AV • NGSM24G4S • NGSM48T4 • NGSME8H • NGSME8H-AV • NGSME16T2H • NGSME16T2H-AV • NGSME24T2H • NGSME24T2H-AV • NGSME24G4S • NGSME48T2H • NGSME48T4H**

Introduction

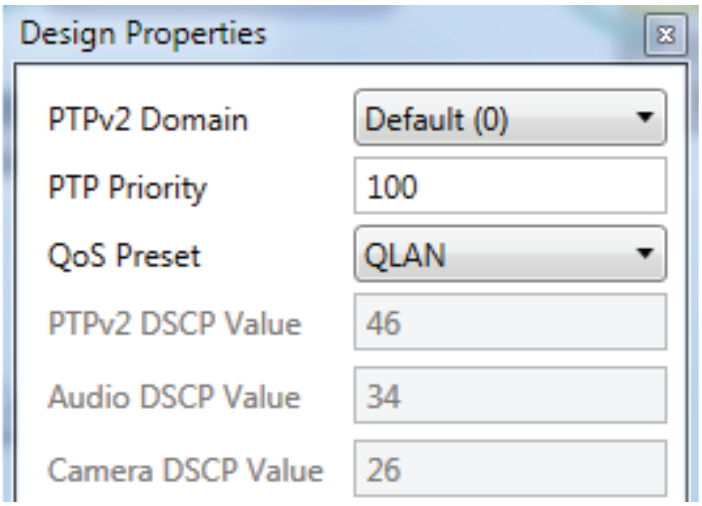
As of release 5.3.x, Q-SYS Designer software now supports AES67-standard interoperability. The AES67 standard does not prescribe a method of discovery for devices so manufacturers are free to implement one or more discovery services for their devices. In this configuration document, the process uses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



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**.

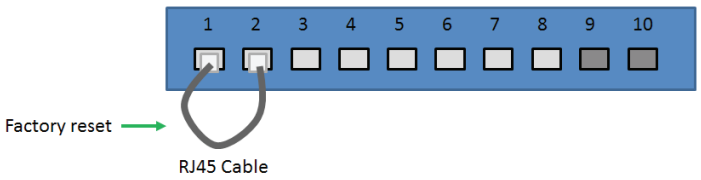
5. To save the settings, press **F5** or select **File > Save to Core & Run**.

Configuring the network switch for Q-SYS

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

Resetting the switch to factory defaults

It is good practice to start with the switch set to its factory defaults. If the switch is brand new it will already be set this way, but if it is not you should perform a simple, basic reset. Do not reset the switch while it is in a live network because it would cause outages in the network. In addition to the switch you will need only a regular network cable. Use the following procedure to reset the switch.



1. Start with the network switch off (i.e., with the power cable unconnected). Plug the cable into Port 1 and Port 2, to form a loop between them. Plug the switch's power cable in. As Port 2 receives the loopback packets from Port 1 (transmitted in the first minute after the switch turns on), the switch will reset itself and reboot.

2. Disconnect the looped network cable from the switch. The switch is now reset to factory default settings.

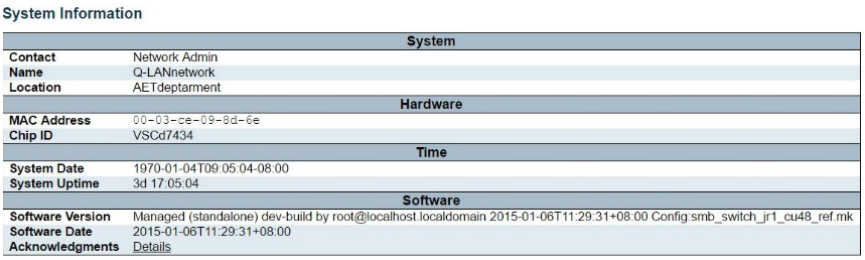
3. Alternatively, the switch can be reset using its Web GUI, under **Maintenance**.

Configuring the switch

1. With a network cable, connect the computer's network interface card (NIC) to a port on the switch.

2. Open a web browser and enter the switch's IP address, **192.168.2.1**, into the address bar. The switch's Web GUI will open.

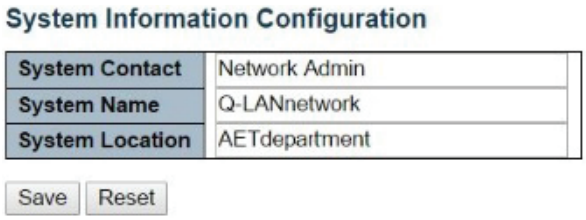
3. To log into the Web GUI, use the default user name **admin** with password **admin**.



System Information

System	
Contact	Network Admin
Name	Q-LANnetwork
Location	AETdeptarment
Hardware	
MAC Address	00-03-ce-09-8d-6e
Chip ID	VSCd7434
Time	
System Date	1970-01-04T09:05:04-08:00
System Uptime	3d 17:05:04
Software	
Software Version	Managed (standalone) dev-build by root@localhost.localdomain 2015-01-06T11:29:31+08:00 Config:smb_switch_jr1_cu48_ref.mk
Software Date	2015-01-06T11:29:31+08:00
Acknowledgments	Details

4. Go to **Monitor > System > Information**. Check the software date (in YYYY-MM-DD format) and version. The software date should be 2015-01-06 (corresponding to software version smb_switch_jr1_cu48_ref.mk) or later. Update the switch firmware if necessary; see the switch user documentation for the update procedure.

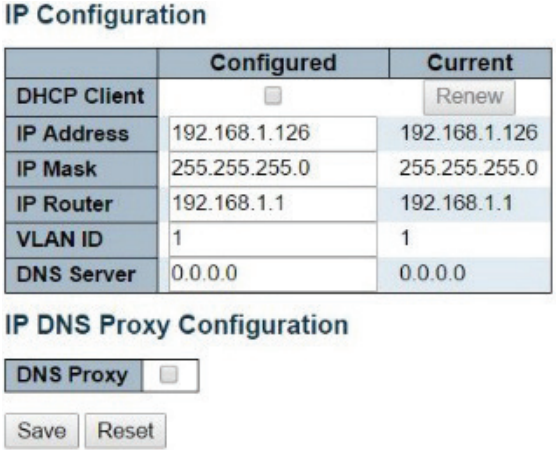


System Information Configuration

System Contact	Network Admin
System Name	Q-LANnetwork
System Location	AETdepartment

Save Reset

5. Go to **Configuration > System > Information**. Enter the pertinent system information in the three fields and click **Save**.



IP Configuration

	Configured	Current
DHCP Client	☐	Renew
IP Address	192.168.1.126	192.168.1.126
IP Mask	255.255.255.0	255.255.255.0
IP Router	192.168.1.1	192.168.1.1
VLAN ID	1	1
DNS Server	0.0.0.0	0.0.0.0

IP DNS Proxy Configuration

DNS Proxy	☐

Save Reset

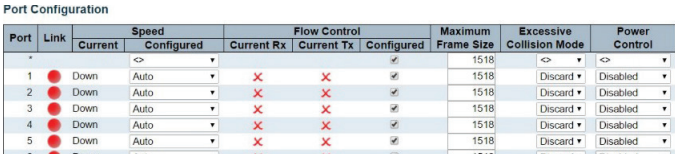
6. Go to **Configuration > System > IP**. In the **Configured** column, make sure the **DHCP Client** check box is cleared.

   Enter the switch's intended static IP address and IP mask (i.e., subnet mask).

   If the switch must be accessed from an address outside the subnet, enter the IP address of the gateway at **IP Router**.

   Enter the **VLAN ID** number (1 if it will be on a single-VLAN network), and the IP address of the DNS server (use **0.0.0.0** if the DNS address should be obtained via DHCP). Click **Save**.

   NOTE: When selecting IP addresses this switch and other devices on the network, make sure each address is unique and not shared with any other devices connected to the network. Follow guidelines published in RFC1918 for allocating node addresses on a private network.

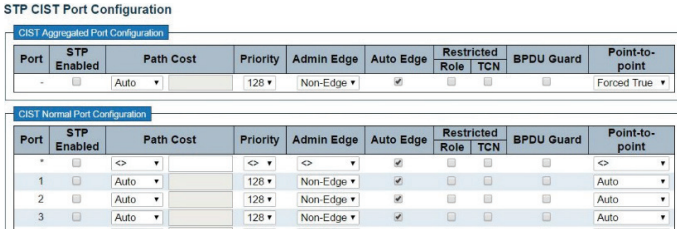


Port Configuration

Port	Link	Speed		Flow Control			Maximum Frame Size	Excessive Collision Mode	Power Control
		Current	Configured	Current Rx	Current Tx	Configured			
*			<>			☑	1518	<>	<>
1		Down	Auto	✗	✗	☑	1518	Discard	Disabled
2		Down	Auto	✗	✗	☑	1518	Discard	Disabled
3		Down	Auto	✗	✗	☑	1518	Discard	Disabled
4		Down	Auto	✗	✗	☑	1518	Discard	Disabled
5		Down	Auto	✗	✗	☑	1518	Discard	Disabled

7. Go to **Configuration > Ports**. In the row **Port *** (this is the wildcard for configuring all the ports on the switch simultaneously) of the **Port Configuration** table, select **Flow Control > Configured** and enter **1518** at **Maximum Frame Size**.

   This should automatically select **Configured** and enter **1518** at **Maximum Frame Size** on all the ports. Click **Save**.



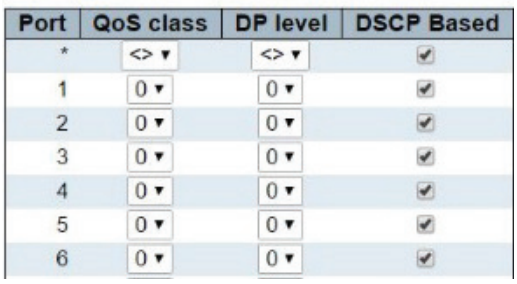
8. Go to **Configuration > Spanning Tree > CIST Ports**.

   In the **CIST Aggregated Port Configuration** table, clear the **STP Enabled** check box.

   in the **CIST Normal Port Configuration** table, clear the **STP Enabled** check box at **Port ***. The check box should automatically clear on all the ports in the table. Click **Save**.

9. Go to **Configuration > QoS > Port Classification**. At the **Port *** row in the **QoS Ingress Port Classification** table, select **DSCP Based**.

   This should automatically select **DSCP Based** on all the ports in the table. Click **Save**.

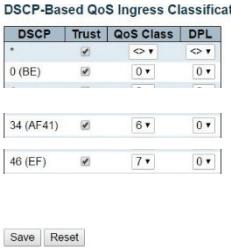


10. Go to **Configuration > QoS > DSCP-Based QoS**.

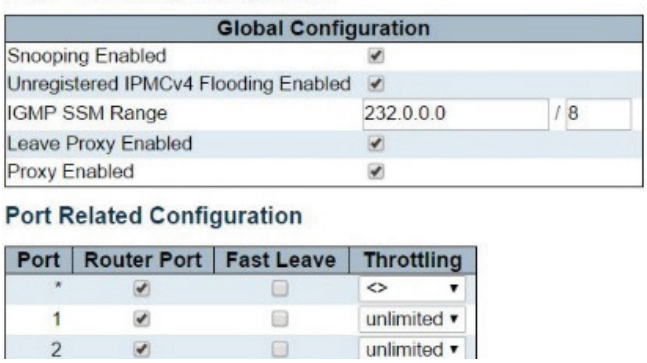
For a combined Audinate (Dante or AES67) + Q-SYS network:

At the **Port *** row of the **DSCP-Based QoS Ingress Classification** table, select **Trust**.
At DSCP **8 (CS1)**, select QoS Class **5**.
At DSCP **26 (AF31)**, select QoS Class **5**.
At DSCP **46 (EF)**, select QoS Class **6**.
At DSCP **56 (CS7)**, select QoS Class **7**.
All other QoS class values should be **0**.
Click **Save**.

For a Q-SYS-only network:



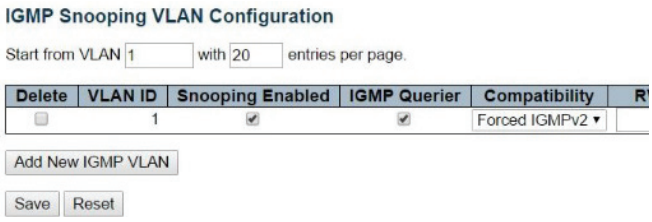
At the **Port *** row of the **DSCP-Based QoS Ingress Classification** table, select **Trust**.
At DSCP **34 (AF41)**, select QoS Class **6**.
At DSCP **46 (EF)**, select QoS Class **7**.
All other QoS class values should be **0**.
Click **Save**.

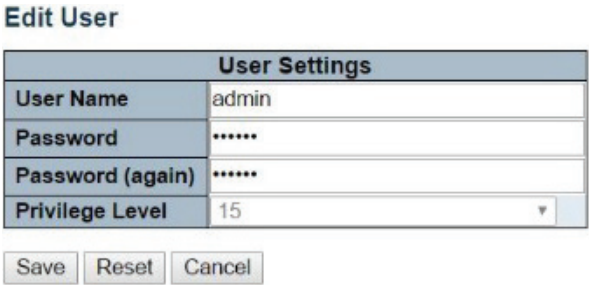


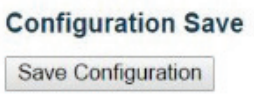
11. Go to **Configuration > IPMC > IGMP Snooping > Basic Configuration**.

    In the **IGMP Snooping Configuration** table, select **Snooping Enabled**. Also select **Unregistered IPMCv4 Flooding Enabled**, **Leave Proxy Enabled**, and **Proxy Enabled**.

    In the **Port *** row of the **Port Related Configuration** table, select **Router Port**. This should automatically select **Router Port** on all ports in the table. Click **Save**.







12. Go to **Configuration > IPMC > IGMP Snooping > VLAN Configuration**.

    Click **Add New IGMP VLAN**. A new row for VLAN 1 will appear in the **IGMP Snooping VLAN Configuration** table. For VLAN 1 select **Snooping Enabled** and **IGMP Querier**. At **Compatibility** select **Forced IGMPv2**. Click **Save**.

13. Setting admin security on the switch is optional but recommended.

    To do so, go to **Configuration > Security > Switch > Users**. Click the user name **admin**.

    In the **Edit User** table, enter the new password at **Password** and re-enter it at **Password (again)**. They must match. Click **Save**.

14. Because the password has changed you will need to log in to the Web UI again. Use the user name **admin** plus the new password. Click **Log In**.

15. The switch configuration is ready to be saved. Go to **Maintenance > Configuration > Save**. Click **Save Configuration**. The switch is now ready for use in the network.

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