Q-SYS™ QUICK START GUIDE

QSC

Q-SYS NS Series Gen 2 - Network Switches

The Q-SYS NS Series Gen 2 switches offer a plug-n-play solution for Q-SYS system installers intending to deploy a local, isolated AV network for media distribution. The NS Series Gen 2 switches ship pre-loaded with a QSC developed configuration tailored towards the real-time demands of Q-LAN™ Audio and Video as well as Dante and AES67 streams. The Q-SYS NS Series Gen 2 switches eliminate the need for time consuming network configuration and troubleshooting on site, thereby reducing labor costs, minimizing system commissioning time and reducing the need for network support specialists.

The Q-SYS NS Series Gen 2 switches include QSC developed AV&C (Audio, Video and Control) profiles that provide optimal QoS (Quality of Service) configuration for Q-LAN™ audio, Q-LAN™ video, Dante™ audio (standard and low latency modes), and AES67 audio streaming formats. The preloaded configurations for the NS Series Gen 2 switches provide DSCP (Differentiated Services Code Point) values appropriate for each AV&C profile in addition to advanced protocol detection and queue mapping to ensure that all time-critical media data described above is prioritized appropriately for on-time delivery.

In order to ensure optimal performance for real-time media in situations with large amounts of multicast traffic, the Q-SYS NS Series Gen 2 switches have preconfigured IGMP Querier and IGMP Snooping functions to facilitate multicast filtering and forwarding whenever necessary.

The Q-SYS NS Series Gen 2 products are economical, enterprise grade, access class, managed network switch products.

The Q-SYS NS Series Gen 2 switches are NETGEAR AV Line M4250 series OEM hardware products that are preconfigured for Q-SYS AV&C applications. The Q-SYS NS Series Gen 2 switch products are offered in 10-port and 26-port models. All Q-SYS NS Series Gen 2 models offer 1 GbE (1000 Mbps) operation on their primary copper ports. That is, for 10 or 26 of their ports, respectively. Additionally, all Q-SYS NS Series Gen 2 switches offer 1GbE and/or 10GbE uplinks via optional SFP (Small Form-factor Pluggable) modules. All Q-SYS NS Series Gen 2 switches are PSEs (Power Sourcing Equipment) and are compliant with IEEE 802.3af and IEEE 802.3at PoE and PoE+ (Power over Ethernet) standards, respectively. Additionally, PoE++ models can deliver up to 90 Watts of IEEE 802.3bt Power over Ethernet. 10-port models feature 8 powered ports while 26-port models feature 24 powered ports.

Every attempt has been made to ensure that the preinstalled switch configuration natively provides all prioritization and management functions required for a typical Q-SYS installation, including common 3rd party devices, meaning these switches are targeted as true plug-n-play applications. However, should the Q-SYS system installer need to adapt the switch configuration for any reason, the QSC-supplied configurations provide default IP addresses and administrative credentials that allow a network professional to access the Q-SYS NS Series Gen 2 switch products using a common web browser.

Recommended NS Series Gen 2 Network Deployments

The Q-SYS NS Series Gen 2 network switches provide a unique feature called IGMP Plus. This feature greatly simplifies system architectures by enabling the same well-known IGMP techniques across the entire AV over IP (AVoIP) network. This enhanced implementation for automatic multicast across a Layer 2 multicast network should require no user configuration when deployed in the recommended manners shown below using supported Q-SYS AVoIP protocols and technologies.

Example A: Completely Isolated Systems

In this scenario, individual Q-SYS systems within a facility are completely isolated islands with their own dedicated networks and no interaction with, or connection to, other systems or the facility's infrastructure and services.

This scenario will work completely turnkey with no adjustments to the switches required.
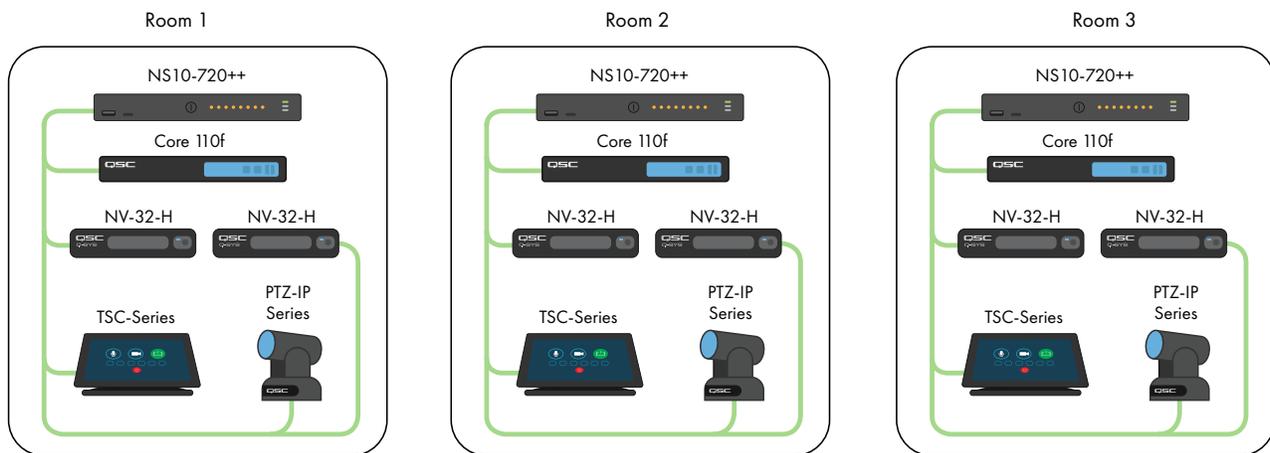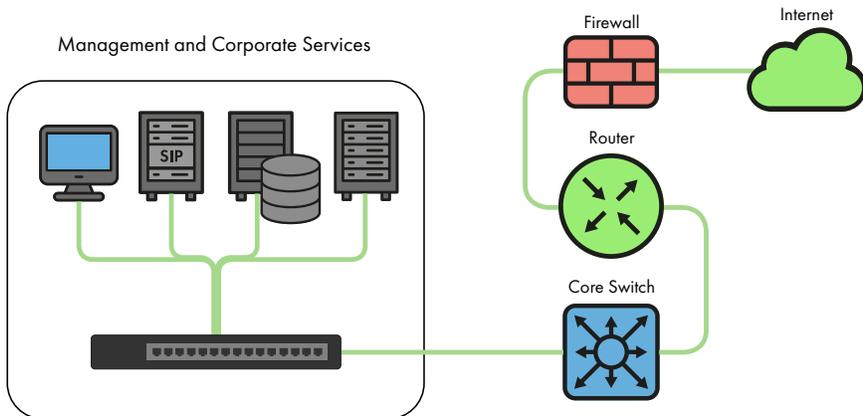
Example B: Completely Isolated Systems with Switch Management

In many facilities with existing infrastructure and/or IT staff on hand, they may desire a connection to the AV switches for basic monitoring or management. The Q-SYS NS Series Gen 2 switches feature an OOB (Out of Band) port that can be used for direct access to the switch's management functions without the need to connect to the AV network(s). This OOB port is configured for DHCP and will fall back to 192.168.0.239 if no DHCP service is available. Note: It may take up to 5 minutes for the OOB port to fall back to its default IP after initial power on or a reboot.
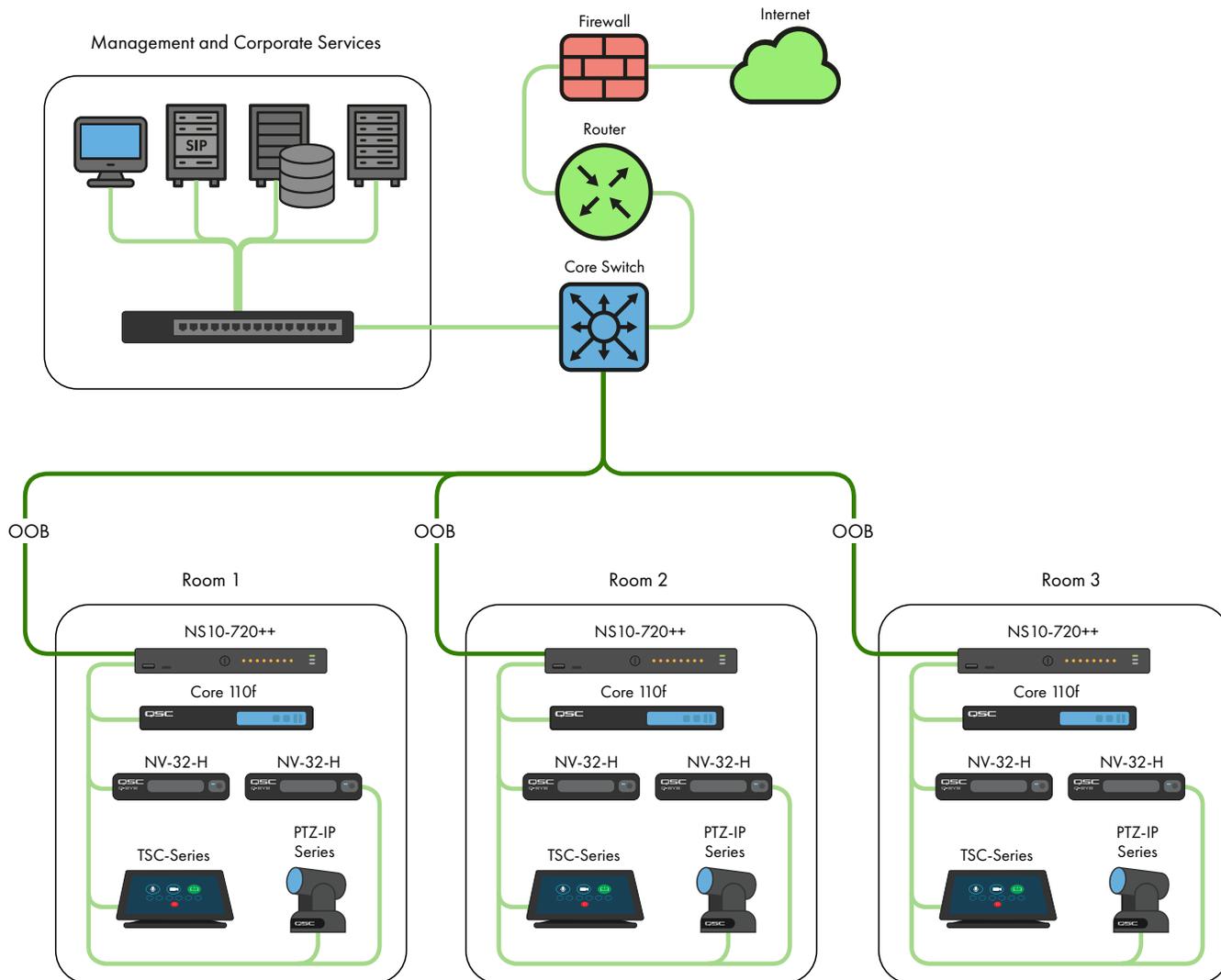
Example C: Centralized System Management, Access to Corporate Services and/or Internet

The following is the most common deployment scenario for Q-SYS Systems. In this scenario, the systems are still largely isolated with respect to real-time, multicast, and high-bandwidth AV traffic, but the Core's LAN B or AUX connections are used to provide centralized management, integration with corporate services such as VoIP, or provide the Cores access to the Internet for remote management and monitoring through Q-SYS Reflect Enterprise Manager. Refer to the Q-SYS Designer Help file for information on configuring the specific services present on a Core's LAN B or AUX connection.
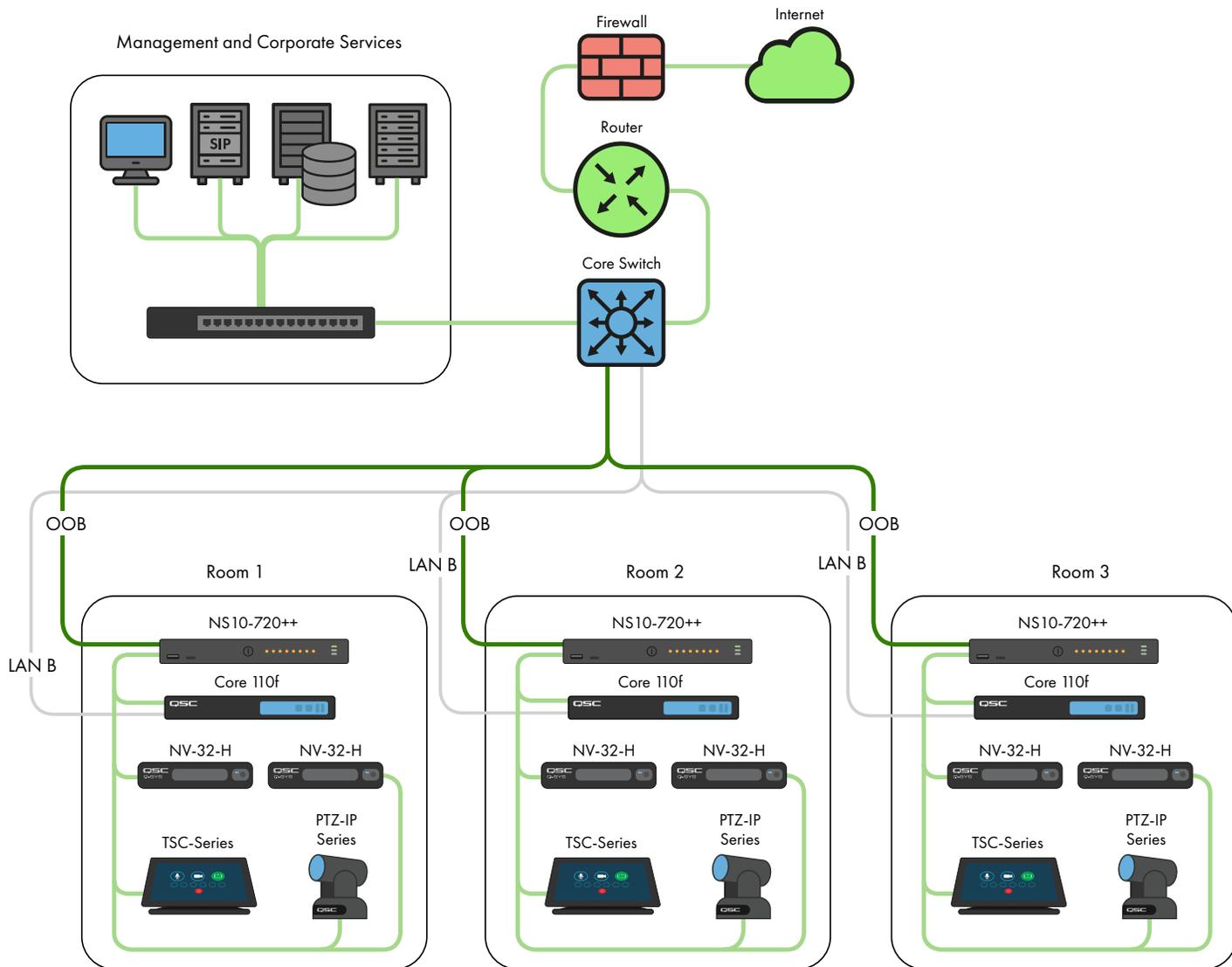
Example D: Integrating Q-SYS Systems

In some cases, it may be desirable to share content between systems or integrate a facility's centralized paging and background music distribution. As long as only Q-SYS NS Series Gen 2 switches are interconnected, attention is paid to the bandwidth utilization of ISLs (Inter-Switch Link), and care is taken to avoid IP address conflicts as documented further on, the unique QSC configurations and IGMP Plus features of the Q-SYS NS Series Gen 2 will allow a scenario as shown below.
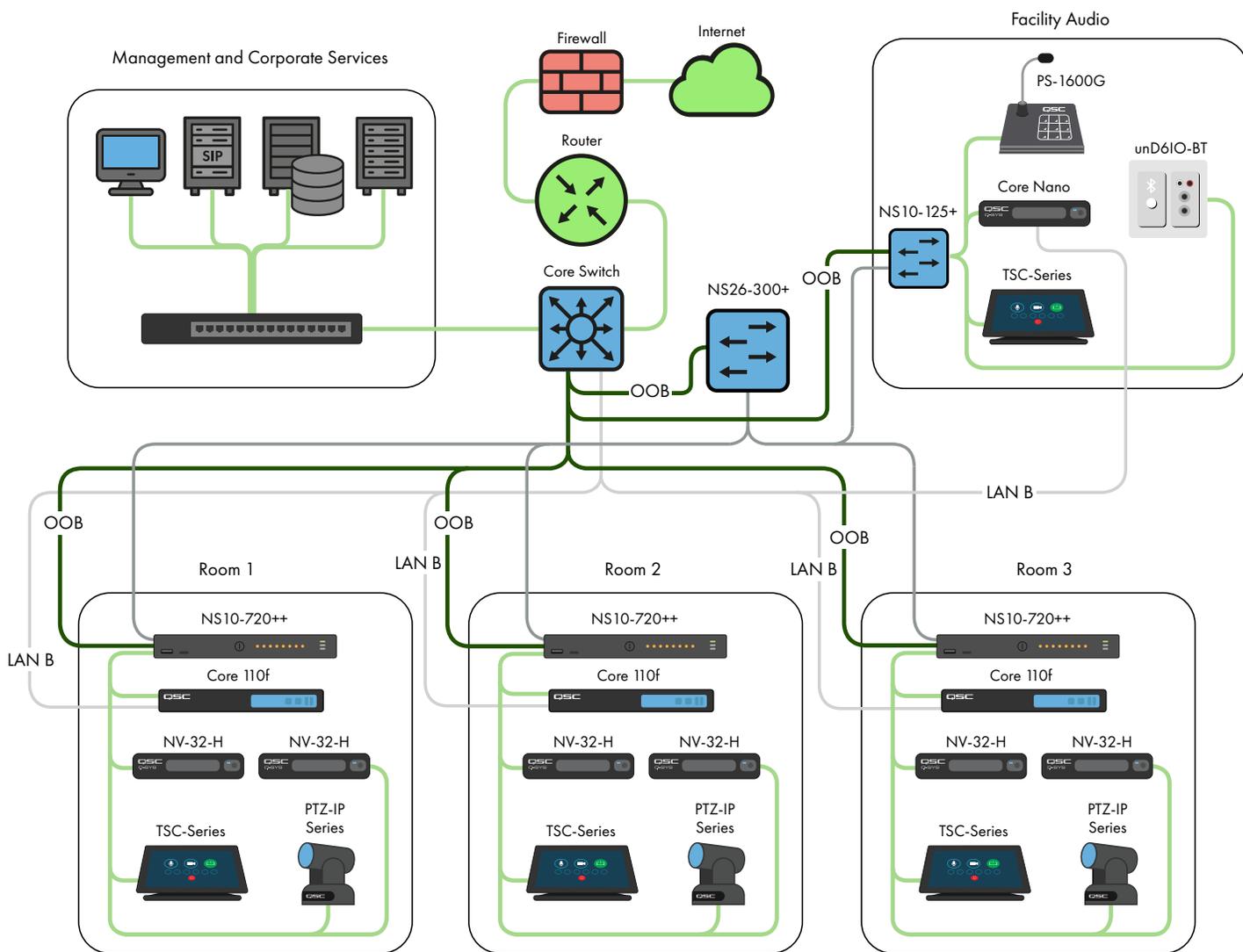
For applications beyond these scenarios, please consult a qualified AV&C network designer or engineer.

DHCP Server

The Q-SYS NS Series Gen 2 switches have a built-in DHCP server which has also been pre-configured by QSC, but is disabled by default.

In Examples A - C above, it may be desirable to enable the DHCP server when not using static addressing within the individual Q-SYS systems. This can make configuring, managing, and servicing the system much easier as any computer plugged into the system's switch should automatically receive an IP configuration within the scope of the system, thus be able discover and connect to it.

When the DHCP server in the Q-SYS NS Series Gen 2 switch is enabled, it will assign devices attached to the switch an IP in the range of 192.168.0.151 - 192.168.0.254.

Enabling the DHCP Server

WARNING! If you choose to enable the DHCP Server on an NS Series Gen 2 switch, DO NOT connect it to any other existing network infrastructure or to any other NS Series Gen 2 that also has its DHCP Server enabled!

1. Connect your PC to either one of the Gigabit copper ports or the OOB (Out of Band) port.

    a. If using a Gigabit copper port, configure your PC's Ethernet interface with a static IP address in the 192.168.0.x scope.

    b. If using the OOB port, it will default to 192.168.0.239 (when no DHCP server is present) which will also require configuring your PC's Ethernet interface with a static IP address in the 192.168.0.x scope.

    ⚠ **Note:** It may take up to 5 minutes for the OOB port to fall back to its default IP after initial power on or a reboot.

2. Open a web browser and type in the IP address of the switch.

3. Select "Main UI Login".

4. Use the default login credentials (if still applicable).

5. You will now see the System->Management->System Information screen.

6. Select System->Services from the top banner menu.

7. Select DHCP Server->DHCP Server Configuration from the left hand menu tree.

8. Check the "Enable" radio button under DHCP Server Configuration: Admin Mode.

9. Click the "Apply" button in the upper right.

10. Click the "SAVE" icon in the upper right.

If you wish to use the NS Series Gen 2 switches for DHCP addressing in a scenario similar to Example D, only enable the DHCP Server on a single NS Series Gen 2 switch, preferably the most central switch (the NS26-300+).

Default IP Configurations:

192.168.0.110, 255.255.255.0 : NS26-300+ (26-port PoE+)

192.168.0.111, 255.255.255.0 : NS26-1440++ (26-port PoE++)

192.168.0.120, 255.255.255.0 : NS10-125+ (10-port PoE+)

192.168.0.121, 255.255.255.0 : NS10-720++ (10-port PoE++)

Default Credentials:

Username: admin

Password: qscsystems

IMPORTANT

DO NOT load any firmware or configuration versions other than those approved by QSC. The firmware version qualified by QSC will not always be the most recent release found on the Netgear website for the M4250 product line.

It should be noted that QSC Support can only assist with support inquiries when the NS Series Network Switch is running the original, unedited switch configuration. QSC does not support applications beyond the supplied configurations, such as additional VLANs, other AV&C protocols etc. If necessary, a factory reset operation will return the Q-SYS NS Series to the QSC-provided default configuration.

Changing Default IP Configurations or Accommodating Multiple Same-model Switches

It may be necessary to change the default IP configuration on one or more Q-SYS NS Series switches to avoid conflicts or to fit your specific topology and network addressing schema. Use the following steps to verify and/or change a switch's IP configuration:

1. Isolate the switch. (Disconnect it from any existing network or other switches.)

    a. Connect your PC to either one of the Gigabit copper (numbered) ports or the OOB (Out of Band) port.

    b. If using a Gigabit copper port, configure your PC's Ethernet interface with a static IP address in the 192.168.0.x scope.

2. If using the OOB port, it will default to 192.168.0.239 (when no DHCP server is present) which will also require configuring your PC's Ethernet interface with a static IP address in the 192.168.0.x scope. Note: It may take up to 5 minutes for the OOB port to fall back to its default IP after initial power on or a reboot.

3. Open a web browser and type in the IP address of the switch.

4. Select "Main UI Login".

5. Use the default login credentials (if still applicable).

6. You will now see the System->Management->System Information screen.

7. Select Management Interfaces->IPv4 Management VLAN Configuration from the left hand menu tree.

8. Adjust the IP Address, Subnet Mask, and Gateway fields as necessary.

9. Click the "Apply" button in the upper right. If you've changed the IP Address, you will now lose connection to the switch and it will log you off as it changes its IP configuration, however your web browser may not show that anything has happened.

10. Type the new IP address of the switch into your web browser.

11. Select "Main UI Login".

12. Use the default login credentials (if still applicable).

13. Click the "SAVE" icon in the upper right.

Changing Default Credentials

It may be desirable to change the login credentials for increased security. To change password for the administrator account:

1. Connect your PC to either one of the Gigabit copper (numbered) ports or the OOB (Out of Band) port.

   a. If using a Gigabit copper port, configure your PC's Ethernet interface with a static IP address in the 192.168.0.x scope.

   b. If using the OOB port, it will default to 192.168.0.239 (when no DHCP server is present) which will also require configuring your PC's Ethernet interface with a static IP address in the 192.168.0.x scope. Note: It may take up to 5 minutes for the OOB port to fall back to its default IP after initial power on or a reboot.

2. Open a web browser and type in the IP address of the switch.

3. Select "Main UI Login".

4. Use the default login credentials (if still applicable).

5. You will now see the System->Management->System Information screen.

6. Select Security->Management Security from the top banner menu.

7. Select Local User->User Management from the left hand menu tree.

8. Check the "admin" account, change the "Edit Password" drop down from "Disabled" to "Enabled" and enter your new password into the "Password" and "Confirm Password" fields.

9. Click the "Apply" button in the upper right.

10. Click the "SAVE" icon in the upper right.

WARNING! If you lose or forget the administrator account credentials, the only course of recovery is a factory reset procedure as documented below!

Factory Reset

To restore the Q-SYS NS Series switches to their factory defaults, press and hold the reset switch on the rear for 5 to 10 seconds, then release. After the switch has fully rebooted, it will be as-shipped from QSC, including default IP configurations and default credentials as documented above.

For additional information regarding hardware specifications, product configuration or regulatory compliance, visit the Netgear website at: www.netgear.com/support.

For additional information regarding the Q-SYS NS Series network switches, Q-SYS Designer software, and other products or solutions, visit the QSC website at www.qsc.com.

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