System Administrator Guide E7000 Series

Version 10.0





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Introducing the E7000 System

Nyquist E7000 is a TCP/IP-based intercom and paging solution that allows you to:

- Control facility bell schedules, announcements, and tones.
- Create and manage zones and queues.
- Manage station types, configuration, and Class of Service (CoS).
- Manage users, roles, and permissions.
- Create routines that can be manually started or that automatically start procedures, or sequences of actions, that the Nyquist system executes as a result of input triggers.
- Monitor check-in status of classrooms or other areas during an emergency event, such as a lockdown or evacuation.

Note: This guide describes the tasks, including configuration tasks, that you can perform if you are assigned an **Admin** role with proper permissions and if your station **Type** is an **Admin Web Interface**. If you are assigned a **User** role and your station's **Type** is **Web Interface**, refer to the *Non-Admin Web Interface* User Guide and to "Performing Tasks via the Dashboard" on page 366 of this guide. For information about roles, see "Managing Roles and Users" on page 241.

E7000 simplifies routine and emergency network communications and allows the linking of administrative and staff locations within a single building, among multiple buildings throughout a campus, or across the entire district.

The heart of the E7000 system is a robust, state-of-the-art System Controller (NQ-SYSCTRL) that comes preinstalled with the Nyquist application software. The System Controller features an easy-to-use web-based graphical user interface (GUI) accessible through almost any personal computer (PC), tablet, or mobile device from any location in the connected world.

Note: See "*Network Application Services*" on page 7 if you elect to *not* use the Nyquist System Controller (NQ-SYSCTRL).



Figure 1. Nyquist System Controller

The solution features a built-in streaming Internet radio service, *airable*, and optional custom-tailored music selections from *SoundMachine*, the premier music subscription service for business. Both services are perfect for a wide variety of background music applications. SoundMachine gives you the ability to use commercially licensed content, eliminating the need to curate your own music content.

Available feature-rich IP phones and purpose-built networked appliances provide convenient communication, control, and interoperability with third-party devices and systems such as access control, fire alarm, clock, and PBX systems.



Figure 2. Example of E7000 Network

The E7000 system supports the following hardware:

- Desktops, laptops, tablets, and mobile phones (Android, Apple, and Windows) that support the full Google Chrome or Microsoft Edge web browser—or an Apple iPhone or iPad device running iOS 14 forward using the Safari browser—to access the E7000 Admin Web user interface (UI) and the E7000 Web UI (User Dashboard)
- E7000-certified Voice-over-IP (VoIP) phones
- Nyquist appliances

For information about the Nyquist appliances that work with the E7000 system, visit:

https://www.bogen.com

For information about training resources for the E7000 and other Bogen products, visit:

https://www.bogen.com/training

Understanding System Requirements

The E7000 web-based UI requires a secure Hypertext Transfer Protocol Secure (HTTPS) network connection to the E7000. Users can log in to the E7000 using the Google Chrome or Microsoft Edge web browser from a computer or tablet running either the Windows 10 (or later) or Mac OS X 10.12.x (or later) operating system (OS), or using the Safari browser from an iPhone or iPad device running iOS 14 (or later). The UI can also be accessed via a Chrome or Edge browser-enabled Android-based tablet or mobile device. To access the server, type your server's IP address (for example, 10.10.20.12) in your browser's address bar.

Whitelisted Web Addresses

The E7000 requires access to specific Uniform Resource Locators (URLs), commonly referred to as web addresses. Access to many of these web addresses is required during installation; access to other web addresses, such as the address for the Network Time Server (NTS) are required during runtime. The Information Technology (IT) department for the site must whitelist the web addresses so that they can be easily accessed as needed.

E7000 access to these URLs can be checked via the **Check Internet Site Access** feature on the **System Parameters** page or by pressing the **Check Internet Site Access** button on the **Network Wizard** page during product activation.

The following table lists the URLs that must be whitelisted.

Table 1. Whitelisted Web Sites

Description
Required for E7000 License support
Required for downloads from Digium Phone Module for Asterisk (DPMA)
Required for sounds download
Required for PJSIP download
Required during Linux package installation
Required during Linux package installation
Required for STUN based IP address resolution
(This is used by the E7000 Web UI and should be enabled on the computer that runs the web UI.)
Serves unprocessed versions of files stored in the GitHub repositories.
The <i>airable</i> URL for Internet-based-radio Audio
Distributions

Table 1. Whitelisted Web Sites (Continued)

URL	Description	
http://api.sound-machine.com	The SoundMachine URL for Internet-based-radi	
https://api.sound-machine.com	Audio Distributions	
http://api.bogenedu.com/api/customers	Required for E7000 warranty support	
http://bogen-ssu.bogen.com/	Bogen System Software Update server. Required for automatic Nyquist server software and Nyquist firmware software update notifications and downloads.	
https://www.weather.gov/alerts	Required for displaying weather alerts.	
https://ipapi.co	Required for automatically finding county code for alerts.	
https://api.weather.gov	Required for obtaining alerts from the National Weather Service.	
http://openweathermap.org	Required for obtaining current weather condi-	
http://api.openweathermap.org	tions.	
ns1.google.com	Required for obtaining the Nyquist server's pub-	
resolver1.opendns.com	for automatically finding the county code for alerts.	
dl-ssl.google.com	Required for Nyquist installation and updates to download and install Google Chrome browser.	

URLs that are entered on the Nyquist **System Parameters** page are used during runtime and include the URLs for the NTS, the Session Traversal Utilities for Network Address Translation (NAT) (STUN) server, and the Traversal Using Relays around NAT (TURN) server.

The default URLs for the STUN and TURN servers are not set. The default URL for NTS is pool.ntp.org.

Nyquist System Server Requirements

The following are the minimum requirements for the E7000 if you elect not to use the Nyquist System Controller (NQ-SYSCTRL):

Table 2. Nyquist System Server Minimum Requirements		
OS	Debian Linux OS (AMD 64-bit version) release 12.7 or a higher minor revision of release 12.	
	<i>Note:</i> Refer to the most up to date Release Notes on the www.bogen.com web site for details about which Linux OS versions have been tested for use with the E7000.	
СРՍ	Quad-core Intel-based processor running at 3.0 GHz or higher	
Memory	8 GB	
	Error Correcting Code (ECC) RAM is recommended for increased perfor- mance and reliability.	
Disk Storage	One 250 GB disk drive	
	Some form of hardware-based Redundant Array of Independent Disks (RAID) is recommended for redundancy and high availability.	
	Consider using a larger drive if large amounts of audio (for example, voice mail, announcements, recordings, and music) are being stored on the system. Note that music, tones, and announcements created or stored as WAV files will be larger than if created or stored as MP3 files. Other factors that should be considered are:	
	How often will backups be performed?	
	 Will the system be backed up locally or remotely on a detachable drive, Storage Area Network (SAN)/Network Attached Storage (NAS), or Network File System (NFS)? 	
	 How many users will have voicemail ability? 	
	 How long will voicemail messages be stored? 	
	 Will voicemail messages be part of the local system backups? 	
Network Interface Card (NIC)	Minimum 1000 MB Ethernet port	
PCI Expansion Slots	One or more Peripheral Component Interconnect (PCI)/PCI Express (PCIe) slot if telephony network connectivity other than, or in addition to, SIP trunking is required; contact your Bogen Dealer for assistance in determining these telephony hardware needs.	
Telephony Interfaces	One or more PCI/PCIe type third-party telephony interface cards (for example, Foreign Exchange Office [FXO], Foreign Exchange Subscriber [FXS], etc.) if telephony network connectivity other than, or in addition to, SIP trunking is required; contact your Bogen Dealer for assistance in determining these telephony hardware needs.	

Network Application Services

Required application services will be installed automatically on the E7000 as part of the Nyquist software installation. All other network services must be already present or installed manually on the associated network. The following table lists the services and their locations:

Service	Description	Required	Location
Apache	Used as the web server to drive the E7000 web interface.	Mandatory	E7000
DHCP	Supplies dynamic IP addresses to the E7000 system server and associated devices. (DHCP is the acronym for Dynamic Host Configuration Protocol.) It also supplies the Trivial File Transfer Protocol (TFTP) server IP address or host name to devices on the network via option_66.	Optional	Network and/or E7000
DNS	Resolves host names to IP addresses. DNS is an acronym for Domain Name System, a hierarchical naming system for computers, servers, or other resources connected to either the Internet or to a private network.	Mandatory ^a	Network
ICE	Resolves IP addresses behind Network Address Transla- tion (NAT)/firewall.	Optional	E7000 Network
	 Interactive Connectivity Establishment 		
STUN	Session Traversal Utilities for NAT		
TURN	 Traversal Using Relays around NAT 		
LDAP	LDAP is used by the E7000 to import users into the Nyquist system.	Optional	Network
NTP	Network Time Protocol provides date/time synchronization for the E7000 and the associated devices (IP Phones, appliances).	Mandatory	Network
SNMP	Provides the E7000 Linux server statistics via Simple Net- work Management Protocol (SNMP) v1 through Port 161.	Optional	E7000
TFTP	TFTP is used by IP phone and E7000 device provisioning. A TFTP server runs on the E7000 on port 69 (the stan- dard TFTP port #).	Mandatory	E7000
	Device provisioning files are stored on the E7000 in directory: /srv/tftp.		
	This is the only directory exposed by the TFTP server.		

Table 3. Network Application Services

a. Required for Nyquist software upgrades, updating license keys, adding new feature license keys, using Internetbased features, e.g., Internet Radio service, weather alerts, weather conditions, Routines API, Routine Webhook-Post action.

Network Ports

The following table lists the network ports required by the Nyquist System Controller and the associated devices.

Service	Description	Port
Automatic Failover	Local ports used for Automatic Failover support. These only need to be available between the two servers.	5405,2224,3121
DHCP	Dynamic Host Configuration Protocol (Optional)	67, 68
DNS	Domain Name System (Optional)	53
HTTP	Hypertext Transfer Protocol Used for phone provisioning.	8088
HTTP	Provide access to Bogen product information.	80
HTTPS	Secure HTTP	8089
HTTPS	Secure HTTP (HTTP over TLS/SSL) Provides access to Bogen product information.	443
ΙΑΧ	Inter-Asterisk eXchange Used for inter-facility communications.	4569
LDAP	Lightweight Directory Access Protocol	389
LDAP over TLS	Lightweight Directory Access Protocol over Transport Layer Security	389 (configurable)
NTP	Network Time Protocol	123
ODBC	Open Database Connectivity Provides database connectivity.	3306
RLM	Reprise License Manager Provides Nyquist license activation via hostedactivation.com.	5053
RSYNC	Remote sync utility Used to synchronize files (Automatic Failover Only).	873
RTP	Real-time Transport Protocol Used for distribution of audio streams.	10000–20000 (configurable)
secure-mqtt	Nyquist control messages between Nyquist server and Nyquist appliances	8883
Server	Local port used for server management	5038
Management	DO NOT allow outside access to this port. During system controller installation, an IP filter rule is installed to block outside access to this port.	
SFTP	Provide access to Bogen product information.	22

Table 4. Network Ports Used by Nyquist

Service	Description	Port
SIP	Session Initiation Protocol (SIP) Transfer Control Protocol (TCP)/User Datagram Protocol (UDP) connections	5060, 5061
SIP over Web Services	SIP WS/WSS connections	8088
SNMP	Simple Network Management Protocol (Optional)	161
SRTP	Secure Real-time Transport Protocol	(same as RTP)
TFTP	TFTP connections	69

Table 4. Network Ports Used by Nyquist

Using the Web-Based User Interface

The web-based UI is an interactive dashboard that presents system information and parameters in an easy to read and use format. The view of the dashboard varies depending upon the permissions (i.e., role) assigned to the user (see *"Viewing Roles" on page 241*).

Client Requirements

The Nyquist web-based UI is accessed through a client, which can run on PCs, Macs, and Android tablets and mobile devices that support the full Google Chrome or Microsoft Edge web browser, as well as the Safari browser from an iPhone or iPad device running iOS 14 (or later). In addition to supporting Chrome, Edge, or Safari, the client must have a sound card and a microphone.

The Bogen Certification Authority (CA) digital certificate must be installed on the client. This certificate is created by, and downloaded from, the Nyquist E7000 server and enables your browser to recognize the Nyquist web application as a trusted site. For details on how to download and install the certificate to your client computers, see *"Bogen Digital Certification Authority" on page 553*.

Important: If one or more system updates have been installed since the last time the server's certificate was generated, or if you receive an HTTP error or redirection when downloading the certificate file (e.g., 302 Found), you may need to generate a new server certificate before proceeding (see "Generate Server Certificate" on page 75 for details).

Accessing the Dashboard

Caution Do not use third-party browser extensions with the Nyquist user interface as they may interfere with functionality. If you have browser extensions that you want to use for non-Nyquist browsing, you may want to consider creating a Nyquist-specific browser profile for which all extensions are unin-stalled or disabled. See your browser documentation for details regarding profiles.

To access your dashboard:

- 1 From your Chrome, Edge, or Safari browser, type the E7000 System Controller's IP address or DNS name into the address bar (for example, https://192.168.1.0) and press **Enter.**
- *Tip:* If you do not know the E7000's IP address but you have physical access to the Nyquist System Controller, see *"Finding Nyquist System Controller's IP Address" on page 363.*
- 2 On the Login page, type your username and password. (See *Figure 3*, *"Login Page"*.)
- 3 Select Login.
- **Caution** The use of a browser-based password manager that saves your credentials and autofills username and password fields can cause problems within the Nyquist web-based UI. There are numerous distinct passwords that are configured and used within the interface; automatically populating these fields incorrectly may prevent some features from operating correctly or result in unintentional changes to configured passwords. Unless autofill can be restricted to the Login page, it may be safest to disable or otherwise limit password management for the E7000 site.
- 4 If this user account is already logged in, on another machine or in another browser session, you will be prompted to logout the other session and continue. Selecting **No** will return you to the Login page.
- 5 Once logged in, if the current user account is still configured with Bogen's default password, a warning will be displayed reminding you to change the password. Select **OK** to continue.

Warning It is strongly recommended that you do *not* use the default password, as it is publicly available and, therefore, not secure.

во	GEN. E7000 NYQUIST
	Login
	Username
	Password
	•D Login

Figure 3. Login Page

Note: The Nyquist system does not support opening multiple sessions of the Nyquist Web UI. Logging into a second session will log off the first session (after user confirmation).

The dashboard that appears depends on whether your station is an **Admin Web Interface** or a non-administrator **Web Interface**.

If you are using the Admin Web Interface and have permissions for configuration tasks, your dashboard will be displayed as shown in *Figure 4, "E7000 Dashboard for Admin Web Interface," on page 11.*



Figure 4. E7000 Dashboard for Admin Web Interface

If you are logged in as a user and using the non-administrator **Web Interface** station **Type**, the dashboard will look like *Figure 5*, *"Non-Administrator Web Interface," on page 12*.

Note: This manual describes the tasks, including configuration tasks, that you can perform if you are assigned an **Admin** role with proper permissions and if your station **Type** is an **Admin Web Interface**. If you are assigned a user role and your station's **Type** is **Web Interface**, refer to the *Non-Admin Web Interface User Guide* and to "*Performing Tasks via the Dashboard*" on page 366 of this manual. For information about station types, see "Managing Stations, Zones, and Queues" on page 127. For information about roles, see "Managing Roles and Users" on page 241.



Figure 5. Non-Administrator Web Interface



Figure 6. Dashboard Areas

The left side, or navigation bar, of the dashboard (*Figure 6, "Dashboard Areas," on page 13*) lists the areas of the E7000 system that you can access. Accessibility to E7000 features and functionality is controlled by the user's assigned role.

The right header ribbon provides the facility name, server time in hours and minutes, the username for the account, the extension for the station, and the collapsed menu icon (aka "hamburger button"). The facility name and server time will not appear if the screen is reduced in size, such as when viewing from a phone or tablet.

Incoming Calls and Messages appear on the top right dashboard pane. The Maps Panel appears below the Messages Panel.

The majority of the dashboard is set up to allow you to perform communications activities, view this week's schedules, and perform audio distribution.

The navigation bar does not appear for users not authorized to make changes to the E7000 configuration. Instead, those users see only standard tasks, such as calling an extension. For details about tasks commonly performed by office staff, see:

- "Performing Tasks via the Dashboard" on page 366
- "Using the Maps Feature" on page 398

Tip: It may be helpful to distribute printouts of key sections of this manual to front office staff, such as *"Performing Tasks via the Dashboard" on page 366* and *"Using the Maps Feature" on page 398.*

At the top of the dashboard, messages appear that can provide information about your system (see *Figure 7, "Dashboard Messages," on page 14*), such as any stations or devices that were connected to your server but now are not appearing to be connected or responding. (See *"Dashboard Messages" on page 358*.)

If the dashboard message "System is running in demonstration mode" appears, all E7000 functions are enabled but the maximum station count is set to 6 and the maximum number of simultaneous calls is set to 2.



Figure 7. Dashboard Messages

If an I/O Controller rule's **Action** has been set to **Manual**, a dashboard button appears in the Output Control section of the dashboard that can be used to manually close or open specified output contact. (See "Viewing I/O Controller Configuration Rules" on page 143.)

On the lower part of the dashboard are options for Audio Distribution and an **Enable/Disable Audio** button that you can toggle to enable or disable audio.

For detailed information about performing tasks from the dashboard, see "Performing Tasks via the Dashboard" on page 366.

Making UI Selections

You can navigate and make UI selections by either using a mouse click or using touchscreen functionality. The UI provides buttons, which appear with a name and a graphic, and icons, which are graphics only.

Table 5. UI Icons

lcon	Description
+	Add icon: Add an item.
Ø	Edit icon: Edit an item.
	Delete icon: Delete an item.
i	Information icon: Provides additional information, such as viewing release notes for firmware (see "Viewing Release Notes for Firmware" on page 118).
Ľ	Link icon: Links to a web page that contains related information or functionality.
8	Help icon: View feature help for the displayed page.
Ξ	Hamburger icon: Display a menu of options.

Configuring the E7000

Before configuring your E7000, you must first perform the initial setup, which is documented in the *Nyquist System Controller Setup Guide*. The initial setup process includes network configuration, among other things, some of which can only be performed through wizards. For example, configuring whether the E7000 will use a static IP address or DHCP can only be configured in the Network Wizard (which can also be accessed at https://<server>/setup/network).

You must configure your system and the E7000 features to best suit your organizational needs. For example, you must determine if your E7000 server is being used for just your school or for a multi-school campus environment. An example of a multi-school campus environment is when a middle school and a high school are on the same campus.
Note: If the E7000 system server is used in a multi-school campus environment, All-Call and Emergency All-Call pages will be broadcast at all schools managed by that E7000 system server. If this is not the desired behavior, then each school on the campus should have its own E7000 system server. A single E7000 system server should not be used to manage multiple schools that are geographically separated because WLAN and power issues at one school could disrupt E7000 service at all locations.

The following table provides the suggested order for setting up your system and directs you to specific sections of the E7000 documentation for step-by-step instructions.

Table 6. E7000 Setup Tasks

Task	Reference
Configure the servers for Automatic Failover, if the appropriate license has been purchased.	See "Automatic Failover Configuration" on page 79.
Define the single standalone school or determine the number of schools in a multi-school campus environment to be managed by the E7000 system server.	Configure these via Schedules. (See "Adding a School" on page 257.)
Set the dialing length and other System Parameters to the desired values.	See "Setting System Parameters" on page 62.
Set the Class of Service (CoS) configurations.	See "Adding CoS Parameters for a Station" on page 95.
Determine the number of Admin Phones and Web Admin stations and configure these stations.	See "Adding a Station" on page 171.
Determine the number of Admin Groups, if any, that you need and create them.	See "Adding an Admin Group" on page 255.
If outside lines are being used, use the Discover Ports feature to configure outside lines and enable outside access for stations authorized to make or receive outside calls.	See "Discover Ports" on page 113 and "Editing Station Configuration Settings" on page 141.
If staff IP phones or the non-admin web user inter- face will be used, determine how many are planned and configure these stations.	See "Adding a Station" on page 171.
If needed, configure the roles for the Web Admin and non-admin web interface.	See "Adding a Role" on page 242.
If needed, configure the users for the Web Admin and non-admin web interface.	See "Adding a User" on page 247.
Use Nyquist DHCP Server for initial discovery of Nyquist appliances and VoIP phones.	See "DHCP Server" on page 44.

Table 6. E7000 Setup Tasks

Task	Reference
If using VoIP speakers, I/O Controllers, MMPAs, VoIP Intercom Modules, or Audio Power Amplifiers, con- figure the stations using E7000's Auto Discovery feature.	See "Adding a Station" on page 171.
If using an ASB, configure the device using E7000's Auto Discovery Feature.	See"Adding a Bridge Device" on page 224.
Configure page, time, and audio zones and assign stations to these zones.	<i>Note:</i> If you want bells to interrupt active pages, you must create separate page and time zones, and the time zones must be created first. Creating time zones first sets the priority of time zones over page zones. Stations can be in multiple zones.
	See "Adding a Zone" on page 202.
If using tones to announce an alarm or an event, such as a bell, define the tones that will be available for E7000.	See "Adding Tones" on page 328.
If using playlists with E7000, create playlists and download songs.	See "Adding Songs" on page 291 and "Creating a Playlist" on page 295.
Define the school start and end dates.	See "Reviewing and Editing a Schedule" on page 261.
Configure events for bell schedules, including bells, tones, and Scheduled Audio.	Note: If you want bells to play during active pages, you must create separate page and time zones, and the time zones must be created first. Creating time zones first sets the priority of time zones over page zones. Stations can be in multiple zones. See "Adding an Event" on page 265.
Schedule holidays.	See "Adding a Holiday" on page 271.
If a SIP trunk is being used, add the SIP trunk con- figuration to the E7000 and configure the station to use the SIP trunk for 911 calls.	See "Adding SIP Trunk Configuration Parame- ters" on page 100 and "Editing Station Config- uration Settings" on page 141.
If the E7000 system server will manage multiple facilities, add each facility to the E7000 system.	See "Adding a Facility" on page 122.

Getting Help

Help is available through the E7000 Admin Web UI and through Bogen's Technical Support. Technical Support is available between 9:00 a.m. and 5:00 p.m. Eastern Time Monday through Friday. Technical Support contact information is as follows:

Telephone:	1-800-999-2809
Technical Support:	<pre>www.bogen.com/contact-tech-support</pre>
Online training:	www.bogen.com/training

Online help is available for most pages of the Admin Web UI via each page's **Help** button, **2**.

Online help can also be accessed from the menu that appears in the upper right portion of the Admin Web UI's navigation pane. The menu contains the following options:

- **About**: Displays the version number and contact information for Bogen Communications LLC, links to the various license agreements, and links to the Bogen eLearning website.
- Help Topics: Provides help topics on using the E7000 system.
- Admin Manual: Accesses the PDF of this manual.
- Logout: Logs you out of the E7000 system.

Configuring Your System

The Admin Web UI allows you to configure most of your Nyquist system, set passwords for the system and various system features, and gracefully restart or power down the Nyquist server through **System Parameters** (*see "Setting System Parameters" on page 62*). System configuration also includes the following:

- Setting parameters for what actions can be done from a specific station (see "Using CoS Configuration" on page 91)
- Setting what permissions are assigned to a user (see "Managing Roles and Users" on page 241)
- Configuring facilities for a multi-site server (see "Configuring Facilities" on page 119)
- Setting up stations, zones, and queues (see "Managing Stations, Zones, and Queues" on page 127)
- Updating firmware for Nyquist devices and stations (see "Configuring Appliance Firmware" on page 114)
- Setting parameters for SIP trunks (see "Managing SIP Trunks" on page 95)
- Disabling an outside line (see "Editing Outside Lines" on page 111)

Understanding System Parameters

System parameters include key information that is unique to the system, including passwords, night ring characteristics, and telephony settings. (For more information on night ring behavior, see "Configuring Night Call Options" on page 21.)

Viewing System Parameters

Viewing system parameters can aid in troubleshooting. For example, if your calls are not being routed to the proper day or night Admin Station, you should check that the system parameters settings for **Day Start** and **Night Start** time are correct.

≣ System Parameters 🔽 🛛		
Parameter	Value	✓ Check Internet Site Access
Name	Main Facility	✓ Check Server Status
Day Start	8:00am	F Custom Configuration
Night Start	5:00pm	Q Device Discovery
Emergency-All-Call Multicast RTP IP Address	239.1.1.1	
Emergency-All-Call Multicast RTP Port	6000	UHCP Server
Emergency All-Call Cut Level (dB)	-35	Email Configuration
All-Call Multicast RTP IP Address	239.1.1.2	r Export Report
All-Call Multicast RTP Port	6004	LDAP
All-Call Cut Level (dB)	-33	
Audio Distribution Multicast IP Address	239.1.1.3	Draduct Licopco
Audio Distribution Multicast Port	6008	
Audio Distribution Cut Level (dB)	-31	CRestart Server
Default Cut Level (dB)	-25	😃 Shut Down
Ambient Noise Sensor Multicast IP Address	None	≑ Sort Menu
Ambient Noise Sensor Multicast Port	None	A Station Supervision
Network Time Server	pool.ntp.org	
Appliances Network Time Server Source	nyquist	
Time Zone	America/Los Angeles	
Disable Preannounce Tone	No	
Disable Privacy Beep	Yes	

Figure 8. System Parameters Page

To view System Parameters:

From the navigation bar, select System Parameters.

The System Parameters page appears. For details, see *Table 19, "Edit System Parameters Page," on page 64* and *Table 20, "System Tools," on page 73*.

Using the System Parameters Page

From the System Parameters page, you can view many of the settings for the entire facility and perform the following tasks:

- Export a report. (See "Exporting a Report" on page 22.)
- Enter a product license. (See "Product License" on page 23.)
- Sort the menu. (See "Changing the Navigation Bar Order" on page 26.)
- Restart the server. (See "Restarting the Server" on page 27.)
- Monitor stations and set station supervision criteria. (See "Station Supervision" on page 27.)
- Configure settings for Simple Mail Transfer Protocol (SMTP) email notifications. (See "Email Configuration" on page 29.)
- Check for and perform system updates. (See "Performing a System Update" on page 32.)

- Configure Automatic Software Download. (See "Configuring Automatic Software Download" on page 38.)
- Shut down the server. (See "Shutting Down the Server" on page 40.)
- Check Internet site access. (See "Check Internet Site Access" on page 41.)
- Check the server status. (See "Check Server Status" on page 41.)
- Configure the local DHCP server. (See "DHCP Server" on page 44.)
- Modify custom configuration settings. (See "Custom Configuration" on page 42.)
- Capture network traffic on the Nyquist system. (See "Network Traffic Capture" on page 47.)
- Configure LDAP. (See "Lightweight Directory Access Protocol (LDAP)" on page 51).
- Configure NQ-S1810WBC Flasher behavior for Nyquist system audio events. (See "NQ-S1810WBC Flasher Configuration" on page 60).

Configuring Night Call Options

The mechanism by which the system handles outside calls that are received during nighttime hours is determined by how the Night Ring options are configured for the SIP Trunk (see *Table 27, "Edit SIP Trunks Page Parameters," on page 107*) and the System Parameters (see *Table 19, "Edit System Parameters Page," on page 64*, particularly the **Night Ring*** options).

Note: Despite the similar nomenclature, the Station's **Day Admin** and **Night Admin** settings (see *Table 36, "Station Configuration Page Parameters," on page 129*) are not related to Night Call behavior.

During daytime hours (between **Day Start** and **Night Start**), outside calls are routed to the **Day Admin** extension defined in the SIP Trunk that received the outside call (see *Table 27, "Edit SIP Trunks Page Parameters," on page 107*).

During nighttime hours (between **Night Start** and **Day Start**), outside calls are routed to the **Night Admin** extension defined in the SIP Trunk that received the outside call (*Table 27, "Edit SIP Trunks Page Parameters," on page 107*). If the **Night Ring Enabled** and **Night Ring Admin** system parameters are both set (see *Table 19, "Edit System Parameters Page," on page 64*), the call is also routed to the system's **Night Ring Admin**.

If the call is not answered within 15 seconds, the system does one of several things (in priority order):

- 1 If **Night Ring All Stations** is enabled, the call will be routed to all stations.
- 2 If **Night Ring Admin Group** is specified, the call will be routed to all stations in the specified Admin Group.
- 3 If the **Night Ring Zones** list is specified, the call will be routed to the specified stations.
- 4 If none of these conditions is true, the call will continue ringing to the station's **Night Admin** extension and the system's **Night Ring Admin**.

The call will continue to ring for 30 minutes. If the call is not answered within that time, the call will be dropped.

The following diagram illustrates how settings for these options affect night calls.



Figure 9. Night Ring Options

Exporting a Report

The Export Report feature generates an XML file in a Microsoft Excel format with a tab for each section of configurable variables, such as System Parameters, Zones, Stations, etc.

To export a report:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, select Export Report.

Warning This report contains decrypted passwords, API keys, and other security-sensitive information.

3 You may be prompted whether or not to download system_export.xml. If so, select an option to save the file.

- 4 Open the Excel application and open the downloaded file (typically located in the Downloads directory) to view the report (see *Figure 10, "System Report," on page 23*).
- *Tip:* If you would like to access this report but do not have Excel available, please contact your Bogen dealer or Bogen Technical Support for assistance.

		Autosave	off) ⊽ system_export ∨	2 Search		₩ -	
File H	ome Insert Page La	yout Formu	las Data Review View He	lp Acrobat		Comments	🖻 Share
41	\checkmark : $\times \checkmark f_x$ E	Extension					
A	В	С	D	E		F	
Extensi	on Name	Description	Туре	Type Description	Device Type		
0010	Admin Web UI		Admin Web Interface	Admin calling functions via Web Browswer Interface	n/a		
0020	0020 - TechDoc		Admin Web Interface	Admin calling functions via Web Browswer Interface	n/a		
0030	0030 - Web Admin		Admin Web Interface	Admin calling functions via Web Browswer Interface	n/a		
0040	0050 - Web Admin		Admin Web Interface	Admin calling functions via Web Browswer Interface	n/a		
0060	0060 - Web Admin		Admin Web Interface	Admin calling functions via Web Browswer Interface	n/a		
0100	Admin - IP Phone		Admin Phone	VoIP Phone with Admin capabilities	NQ-T1100 IP Phone	- Color Touch Dis	play
0101	IO CTRL		I/O Controller	NQ-E7010 I/O Controller.	NQ-E7010-Input Out	out Controller	
0102	EDP01		Analog Call Switch & Speaker	Call Switch and Speaker capabilites	NQ-EDP01-Entry Doc	or Phone	
0109	VoIP G3		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind NQ-S1810WT-G3 Vol	P Wall Baffle Spe	eaker Gen3
0110	VoIPG2		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind NQ-S1810WT-G2 Vo	P Wall Baffle Spe	eaker Gen2
0111	GA10P		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind NQ-GA10P-Intercom	Module	
0112	GA10PV		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind NQ-GA10PV-Intercor	n HDMI Module	
0113	MMPA		Matrix Mixer Pre-Amp	NQ-P0100 Matrix Mixer Pre-Amplifier.	NQ-P0100-Matrix Mi	xer Pre Amp	
0114	GA20P2		Paging-Audio Amp	Paging/Audio Amplifier, no intercom.	NQ-GA20P2-Amplifie	er with Line Outpu	ut
0115	GA40P3		Paging-Audio Amp	Paging/Audio Amplifier, no intercom.	NQ-GA40P3-Amplifie	er with Line In/Ou	Jt
0201	GA400P		Audio Gateway	Audio over IP Gateway	NQ-GA400P-AoIP Ga	iteway	
0202	GA400P		Audio Gateway	Audio over IP Gateway	NQ-GA400P-AoIP Ga	iteway	
0211	0211-PA240-LO		Paging-Audio Amp	Paging/Audio Amplifier, no intercom.	NQ-PA240 Public Ad	Idress Mixer Amp	lifier
0212	0212-PA240-SO		Paging-Audio Amp	Paging/Audio Amplifier, no intercom.	NQ-PAZ40 Public Ad	dress Mixer Amp	lifter
0215	A4000-GZ-CHA		Paging-Audio Amp	Paging/Audio Amplifier, no intercom.	NQ-A4060-GZ-Ampin	ier	
0210	A4060-G2-CHD		Paging Audio Amp	Paging/Audio Amplifier, no intercom.	NQ-A4060-G2-Ampli	ler	
0217	A4060-G2-CHD		Paging Audio Amp	Paging/Audio Amplifier, no intercom	NO A4060 G2 Ampli	ier	
0301	Classroom		Digital Call Switch & Speaker	Call Switch and Sneaker canabilities with call switch LED segments that	t ind Analog.Port		
0302	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0303	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0304	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0305	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0306	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0307	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0308	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0309	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0310	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
0311	Classroom		Digital Call Switch & Speaker	Call Switch and Speaker capabilities with call switch LED segments that	t ind Analog-Port		
< >	System Paramet	ers Zones	Stations Admin Groups	CoS Configuration Users + :			

Figure 10. System Report

When the System Report appears, you can select a tab to view specific configuration settings.

Product License

The Product License page allows you to activate, update, or release licenses, check Internet site access, and view current licensing information.

Installed License Activation Key: 4226- Software Update Subscription Expiration Date: 02012032 Software License Expiration Date: permanent Enter a Valid License Activation Key to Install: 1 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Software Update Subscription Expiration Date: 02012032 Software License Expiration Date: permanent 10 Enter a Valid License Activation Key to Install: (*) voor.xxxxxxxxxxxx 0 Activate License Update License V Check Internet Stite Access 100 End-User License Agreement Software License Agreement Software License Agreement Software License Agreement Third Party Software License agreement Routines API License Agreement Routines API License Agreement Routines API License Agreement Routines API License Agreement (PDF) Routines API License Agreement (PDF) Routines API License Agreement (PDF)
Software License Expiration Date: permanent 10 Enter a Valid License Activation Key to Install: • • VXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
Enter a Valid License Activation Key to Install: Current Call Count: 0 Activate License Update License Release License Check Internet Site Access Current Station Count: 36 End-User License Agreement End-User License Agreement End-User License Agreement Third Party Software Licensing and Attribution Routines API License Agreement (PDF) Routines API License Agreement (PDF) Routines API License Agreement (PDF) Koutines API License Agreement (PDF) Maximum Intercom Calls:
VOXX-XXXXX 0 Activate License Update License V Check Internet Site Access 100 Current Station Count: 100 End-User License Agreement 36 End-User License Agreement 36 Third Party Software Licensing and Attribution Unlimited Routines API License Agreement Current Zone Count: Routines API License Agreement (PDF) 5 Routines API License Agreement (PDF) 5 Maximum Intercom Calls: 3
Activate License Update License Check Internet Site Access Maximum Station Limit: 1 100 End-User License Agreement End-User License Agreement (PDF) Third Party Software Licensing and Attribution Routines API License Agreement Routines API License Agreement (PDF) Routines API License Agreement Routines API License Agreement Routines API License Agreement Routines API License Agreement (PDF) Maximum Intercom Calls: 1
Check Internet Site Access 100 Image: Static Constraints 100 Image: Static Constraints 36 Image: Static Consting Static Constraints 36
End-User License Agreement 36 End-User License Agreement (PDF) 36 Third Party Software Licensing and Attribution Unlimited Routines API License Agreement Current Zone Count: 1 Routines API License Agreement (PDF) 5 Maximum Intercom Calls: 1 1
Image: Section of Count Station Count: () Image: Section of Count Station Count Station Count: () Image: Section of Count Station
Image: Section of the section of th
Image: Third Party Software Licensing and Attribution Maximum Zone Limit: ① Image: Third Party Software License Agreement Unlimited Image: Routines API License Agreement (PDF) Current Zone Count: ③ Image: Software Linese Agreement (PDF) 5 Image: Maximum Intercom Calls: ③ Maximum Intercom Calls: ③
Current Zone Count: 3 Carrent Zone Count: 3 Maximum Intercom Calls: 3
Available 5 Maximum Intercom Calls: (1)
Maximum Intercom Calls: 1
Unlimited
Queue Count: 🚯
0
Maximum Page Stacking Queues: 🚯
999
Routine API: 1
Licensed
Routines API License Agreement: 1
None
Automatic Failover: 🚯
Not Licensed
Text-to-Speech: 🚯
Licensed
Sound Masking: (1)
Licensed

Figure 11. Product License Page

You must enter your product license activation key before you begin configuring the Nyquist system. Without a product license, you can only add a single station.

You can only enter one product activation key. Your product license specifies the number of maximum concurrent calls that can be made and the maximum number of stations that can be added to a system.

The Product License page provides the following information:

	Table 7. Product License Parameters
Installed License Activation Key	Provides the activation key installed on your server.
Software Update Subscription Expiration Date	Provides the expiration date in MMDDYYYY format for your software update subscription. If it has expired, then your system will not allow software updates.

_ . . _ _

Table 7. Product License Parameters (Continued)

Software License Expiration Date	Provides the software license expiration date for demo mode in dd- mmm-yyyy format. If not in demo mode, "permanent" is displayed.
Enter a Valid License	Enter the activation key for your product license.
Activation Key to Install	

The Product License page also provides the following information about your currently installed license:

Table 8. Licensing Information

Maximum Concurrent Calls Limit	Displays the maximum number of concurrent calls allowed. For this field, calls mean telephone calls, pages, tones, alarms, and announcements.
Current Call Count	Displays the number of active calls in the system.
Maximum Station Limit	Displays the maximum number of stations allowed for your licensed sys- tem or displays Unlimited if your system has no maximum station limit.
	A Nyquist station is a device used to access the web interface, a speaker, a phone, or a Nyquist appliance (except for an I/O Controller.
	If you need to increase your station limit, contact Tech Support.
Current Station Count	Displays the number of stations registered with your Nyquist system server.
Maximum Zone Limit	Displays the maximum number of zones (regardless of type) allowed for your licensed system.
	If you need to increase your zone limit, contact Tech Support.
Current Zone Count	Displays the number of zones created for your system.
Maximum Intercom Calls	Displays the maximum number of concurrent intercom calls allowed for your licensed system.
	If you need to increase this limit, contact Tech Support.
Queue Count	Displays the number of zone queues created for your system.
Maximum Page Stacking Queues	Displays the maximum number of zone queues allowed for your licensed system.
	If you need to increase this limit, contact Tech Support.
Routines API	Displays Licensed if the Routines API license is activated, otherwise it displays Not Licensed .
Routines API License Agreement	If the license has been accepted, displays the user name and user ID, as well as the date, time, and time zone when the license agreement was accepted; otherwise, displays None .
Automatic Failover	Displays Licensed if the Automatic Failover license is activated, other- wise it displays Not Licensed .

Table 8. Licensing Information (Continued)

Text-to-SpeechDisplays Licensed if the Text-to-Speech license is activated, otherwise it
displays Not Licensed.

Sound Masking Displays **Licensed** if the Sound Masking license is activated, otherwise it displays **Not Licensed**.

To enter a product license activation key:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, select **Product License**.
- 3 Type the activation key number.
- 4 Select one of the following buttons:

Table 9. Product License buttons

Activate License	This button becomes active only when data is entered into the Activa- tion Key field. Select this button to activate the Nyquist system.
	<i>Note:</i> Before activating a license key, use Check Internet Site Access (described below) to ensure that your Nyquist server can access hostedactivation.com.
Update License	Select this button to have the Nyquist system server check for any changes that have been made to the license (such as maximum station count or maximum calls) and update the system to reflect those changes.
	<i>Note:</i> Before updating a license key, use Check Internet Site Access (described below) to ensure that your Nyquist server can access hostedactivation.com.
Release License	Select this button if you want to release the license, which allows it to be moved to another server.
	<i>Note:</i> Before releasing a license key, use Check Internet Site Access (described below) to ensure that your Nyquist server can access hostedactivation.com.
Check Internet Site Access	Select this button to verify that your Nyquist server can access URLs required to run properly, as well as status for the default gateway, Net- work Time Protocol server, and Domain Name Servers, and to display the Nyquist server's public IP address. For more information, see "Check Internet Site Access" on page 41.

5 Select Done.

Changing the Navigation Bar Order

Through the System Parameters menu option, you can change the order of the selections that appear after Dashboard in the navigation bar.

To change the menu order:

1 From the navigation bar, select System Parameters.

- 2 From the System Parameters page, select **Sort Menu**.
- 3 Drag and drop the menu items until you have them in the order you prefer.
- 4 Select **Done**.

To return to the default settings for the menu order:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, select **Sort Menu** and then select **Reset Menu**.
- 3 Select Done.

Restarting the Server

Restarting the server should take less than a minute and is provided as a troubleshooting tool to use if the Nyquist system is not functioning. For example, if you are unable to page or make calls, you probably want to restart the server.

If you want to shut down the server, see "Shutting Down the Server" on page 40.

To restart the server:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, select **Restart Server** and select one of four options:
 - Graceful: System will restart after all current calls are completed.
 - Now: All current calls will be dropped.
 - Force: Use only if Graceful and Now do not work. The Force option will resolve more issues than the Graceful and Now options, including issues involving Recorded Paging (Queues), Routines, and Audio Distribution. This option will cause any running Routines to be terminated and will then start all routines that include a **Reboot** trigger.
 - **Reboot**: Unlike the previous options, which just reboot the Nyquist services, this option performs a soft reboot of the operating system and all Nyquist services.

Station Supervision

You can set up parameters for alert notifications when a device, or station, goes offline. With this feature, you can set up email notifications, specify where records are to be stored, select what type of devices will be supervised, and select stations to be excluded from station supervision.

Note: Alert notifications for stations connected to an Analog Station Bridge (ASB) appliance will usually be consolidated into one alert per ASB, though there may be instances where two or three notifications may be generated. The notification will indicate the ASB bridge and a comma-delimited list of its stations that have gone offline.

Edit Station Supervision 👩
Enable: 1
No
Syslog Config: 1
Syslog Facility: 1
Use Email Configuration: (1)
bogenorlando 🗸
Email Subject: ()
Supervise Types: ()
× Paging-Audio-Intercom Module
×Paging-Audio-Intercom-Display Module
Excluded Stations: 1
Add station exclusions
X Cancel

Figure 12. Edit Station Supervision

To set up station supervision parameters:

- 1 From the navigation bar, select **System Parameters**.
- 2 From the System Parameters page, select **Station Supervision**.
- **3** Select desired options from the Edit Station Supervision page.
- 4 Select Save.

Table 10. Edit Station Supervision Parameters

Enable	Use the slider to enable or disable the station supervision feature and the associated alerts creation. By default, this feature is disabled.
Syslog Enable	Use the slider to select if alerts will be recorded in the syslog file.
Syslog Config	Use the slider to select Yes to enable syslog configuration by the station supervision feature or select No if you are doing your own syslog configuration.

Table 1	0. Edit Station Supervision Parameters (Continued)			
Syslog Facility	Select the syslog facility that will be used to report alerts to syslog.			
Use Email Configuration	Use the slider to select No if you want to use SMTP parameters from the /etc/msmtprc file. If the default Yes is used, SMTP parameters from the SMTP configuration list will be used.			
Send Email To	Enter email addresses separated by commas for all recipients who will receive an email message if a station goes down. If this field is left blank, email notification is disabled.			
	Note: This option appears if Use Email Configuration is set to No.			
	<i>Tip:</i> To send a text message, use one of the email address formats described in <i>Table 131, "Email Address Formats for Cellular Carriers," on page 451.</i>			
SMTP Account	Specify the SMTP account that will be used for alert notification emails.			
	Note: This option appears if Use Email Configuration is set to Yes.			
Email Subject	Enter a subject line to appear on the email notifications. The default is Nyquist Alert .			
Supervise Types	Select the station type or types that you want to be supervised.			
Excluded Stations	Select the station extensions that are to be excluded from station super- vision. If this option is left blank, no stations with the selected Supervise Type are excluded.			

Email Configuration

The Email Configuration feature can be used to send SMTP email notifications when a station is not responding to the server. For example, if a Digital Call Switch (DCS) and speaker is offline, an automatic email can be sent to a facilities manager or IT personnel.

SMTP is an Internet standard for email transmission.

Account: 🕕		
@gmail.com		
Host: 🚯		
smtp.gmail.com		
Port: 1		
Auth: 3 On		
Username: ()		
@gmail.com		
Password: 🚺		
••••••	Show Password	
From: 🚯		
@gmail.com		
Го: 🕦		
@gmail.com		
TLS: () On		
ILS STARTTLS: (1)		
TLS Trust File: 🜖		
/etc/ssl/certs/ca-certificates.crt		
Demoine A		

Figure 13. Edit Email Configuration

To set up email configuration:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, select **Email Configuration**.
- 3 Select desired options from the Edit Email Configuration page (see *Table 11 on page 31*).
- 4 Select Save.

Caution This email configuration can be used for any of several notifications (e.g., station supervision, I/O controller input and output notifications, custom routines, etc.). To disable email notifications, do not change the email configuration, as it may be used for other notifications. Instead, update the configuration of the notifications to be disabled.

Table 11. Edit Email Configuration

Send Test Email	Sends a test email using a saved Email Configuration. This allows you to quickly verify your email configuration settings for correctness by send- ing to an arbitrary email address using the configured email server and account.		
Account	Enter the user-defined name for this account. The default account name is Gmail .		
Host	Enter the SMTP server to send the email to. The value may be either a host name or a network address (e.g., smtp.gmail.com).		
Port	Enter the port that the SMTP server uses to receive email transmissions. Typically, this is set to 25 for SMTP, 465 for SMTPS, or 587 for submission.		
Auth	Use the slider to enable or disable SMTP authentication. By default, Auth is set to On , which is the recommended setting. When authentica- tion is enabled, a user must provide a valid username and password to send email.		
Username	Enter the username for SMTP authentication.		
Password	Enter the password for SMTP authentication.		
	Note: The password cannot contain single- or double-quote characters.		
	<i>Note:</i> Certain email servers, such as Gmail, do not support use of the standard user password and instead require the use of an App Password. For details on how to obtain a Gmail App Password, see https://support.google.com/mail/answer/185833.		
Show Password	Select this button to show the password entered for SMTP authentica- tion.		
	<i>Note:</i> For security reasons, only the currently entered password will be displayed, not the saved password.		
From	Enter the name that is to appear in the From field for the email.		
То	Enter the email addresses for the recipients. Separate each email address by a comma.		
	<i>Tip:</i> To send a text message, use one of the email address formats described in <i>Table 131, "Email Address Formats for Cellular Carriers," on page 451.</i>		
TLS	Use the slide to enable or disable the use of TLS. When you have one email server send a message to another email server over TLS, the con- nection itself is encrypted so no one can intercept the payload informa- tion. But, the actual data itself is still unencrypted. It's secure and compliant because it was sent over an encrypted channel.		
TLS STARTTLS	Use the slider to enable or disable the use of STARTTLS. STARTTLS is an email protocol command that tells an email server that an email client, including an email client running in a web browser, wants to turn an existing insecure connection into a secure one.		

Table 11. Edit Email Configuration (Continued)

TLS Trust FileEnter the location for the CA-Certificate trust file. The default location is
/etc/ssl/certs/ca-certificates.crt.

DomainSpecify the domain of the server that is initiating the SMTP connection.If the email is rejected due to anti-SPAM programs, this domain name is
used as the fully qualified domain name for the SMTP EHLO command.

Performing a System Update

System Update Done 🕢 Version 7.0.0:511				
🛓 Upload	▲ Upload ▲ Check For System Updates Configure Automatic Software Download			
▲ Upgrade Debian Operating System Components				
		Search		
Actions	Filename 🔶			
0 i 💼	nyquist-c4000-7.0.0.491.tar.gz			
0 i 💼	nyquist-c4000-7.0.0.511.tar.gz			

Figure 14. System Update

This feature updates the server software and configuration data for the E7000 server. From the System Update screen, you can choose to upload or check for new versions of the software as well as set configuration options for automatic software downloads.

Note: New appliances may have been introduced in a newer server release than the release you are using. To use these appliances, you must perform a **System Update**.

Software updates can be major releases, bug fixes, or even updates that are created specifically for your system.

Note: After a new software release is installed, permissions for features introduced by this new release must be set for the roles that will use these features. See *"Assigning and Editing Permissions" on page 244*

A list of downloaded software appears on the System Update screen. When you first access the System Update screen, the list will show only the default file that was installed. You can select **Check for**

Updates to obtain a list of software available for download or select **Upload** to browse for system update packages.

Note: Shortly before your Software Update Subscription (SUS) expires, you will receive a dashboard message explaining that you must contact your Bogen dealer to purchase a subscription renewal to access system updates. The message will include the subscription renewal part number (based on the number of currently licensed zones) and your Product License Key, both of which should be included when contacting your Bogen dealer.

Before performing a system update, you should perform the following tasks:

- 1 Perform a system backup and export the backup (see "Backing Up Your Nyquist System and Files" on page 344).
- 2 Execute **Check Internet Site Access** (and ensure that all sites with "Install/Update" in the "During" column are accessible from the Nyquist server (i.e., Status is "SUCCESS").
- If you are using the Automatic Failover feature (see "Automatic Failover" on page 78), execute Check Server Status (see "Check Server Status" on page 41) before you update the Primary server and verify that Slave_IO_Running and Slave_SQL_Running are both Yes. If one of these has No instead of Yes, perform a Sync DB operation between the Primary and Secondary servers before performing the system update. This is to ensure that your Secondary server contains the most update-to-date configuration data, as the Secondary server will temporarily become the Master server while the Primary sever is being updated.

To perform a system update:

- 1 From the navigation bar, select **System Parameters**.
- 2 From the System Parameters page, select **System Update**.
- 3 If you want the system to check for new server software updates, select **Check for Updates**. A popup window appears with one of the following messages:
 - *No Nyquist System Software updates available.* When this message appears, select **OK** to exist the popup window.
 - Can't check for updates. Check Internet connection and try again.
 - Nyquist System Software download successful.
 - Nyquist System Software download failed, try again.
- 4 If you want to upload a file using the browser:
 - a) Select Upload.
 - b) Select Choose file.
 - c) Locate the .tar or .tar.gz file.
 - d) Select Upload.
- 5 If you want to update your system, select the **Run Update** icon for the file that you want to use for the update.

Note: During an update, volume control levels (Cut Levels) will be set to factory defaults. If you have changed these levels, you will need to make adjustments again.

A series of screens will appear when the System Update is running.



Figure 15. System Software Update Message

The first screen warns that the Nyquist System Software is being updated. Do not close the window or click anything on the computer screen until the update is completed.



Figure 16. Nyquist Web Server Update Message

After the application software has been updated, the system will update any files, such as PHP files, needed for the Nyquist application. The screen that appears during this Nyquist web server update includes a progress clock that shows how many minutes and seconds remain before the update is complete. Again, do not close the message or click anything on the computer screen.



Figure 17. System Update Completed Message

6 When the system update completes, a message and an **OK** button appear. Select **OK** and check the Nyquist dashboard for a confirmation message before restarting the Nyquist server.



Figure 18. Dashboard Message After System Update

The dashboard message provides the date and time the update ran and the software version that was installed.

- 7 You might see a blank message box with an OK button. If so, click **OK**.
- 8 If a PHP message appears (like the one shown in *Figure 19, "PHP Message," on page 35*), press the refresh key (typically F5) repeatedly until the dashboard message appears.

```
<? php
* Laravel - A PHP Framework For Web Artisans
* @package Laravel
* @author Taylor Otwell <taylorotwell@gmail.com>
 _____
 Register The Auto Loader
                         ------
 Composer provides a convenient, automatically generated class loader for
 our application. We just need to utilize it! We'll simply require it
 into the script here so that we don't have to worry about manual
 loading any of our classes later on. It feels nice to relax.
*/
require __DIR__.'/../bootstrap/autoload.php';
 Turn On The Lights
 We need to illuminate PHP development, so let us turn on the lights.
 This bootstraps the framework and gets it ready for use, then it
 will load up this application that we can run it and send
 the responses back to the browser and delight our users.
*/
$app = require_once __DIR_.'/../bootstrap/app.php';
Run The Application
 Once we have the application, we can handle the incoming request
```

Figure 19. PHP Message

9 Once the update has completed, we recommend regenerating the System Controller's server certificate. From the System Parameters page, select the Edit button, then select the Generate Server Certificate button.

Upgrade Debian Operating System Components

You can use the **Upgrade Debian Operating System Components** feature to ensure that all Debian Operating System components (i.e., Linux Kernel, installed packages) are updated to the major Debian release version currently being used by the Nyquist system. Keeping Debian up-to-date can help improve security by ensuring that the latest versions of the Linux kernel and installed Debian packages are installed on the Nyquist server, as oftentimes these upgrades include security fixes. If a new vulner-ability arises with the Debian Linux Kernel, Debian system, or installed Debian packages, you will be able to upgrade all Debian operating system components on the Nyquist server.

Use the following steps to upgrade the Debian Operating System components on your Nyquist server:

- 1 The Nyquist server will not be fully operational during the Debian Upgrade, so make sure you have a maintenance window available during a time when the Nyquist server is not needed. It is impossible to predict how long the upgrade process will take; it could take five minutes, or it could take over an hour.
- 2 On the *System Parameters* page, press the **Check Internet Site Access** button and verify that the following sites can be accessed:
 - deb.debian.org
 - security.debian.org
 - dl-ssl.google.com
 - bogen-ssu.bogen.com
- 3 Press the Upgrade Debian Operating System Components button on the System Update page, found under System Parameters.
- 4 Read the displayed text (see image below).
- 5 If you're ready to start the upgrade process, press the Start Upgrade button; otherwise press the Cancel button:

Upgrade Debian Operating Syste	m Components
All installed Debian Operating System components we releases available. Components include: Debian Linux and all Debian packages installed by the Nyquist syst ensure that the Nyquist server is connected to the Inte can be accessed (use the Check-Internet-Site-Access to required Internet-based sites). This process can take turn off the Nyquist Server during this process.	ill be upgraded to the latest x Kernel, Apache web server, tem. Before continuing, please ernet, and that all required sites feature to test current access ke several minutes, DO NOT
	Cancel Start Upgrade

6 After you press Start Upgrade, a window entitled *Debian Upgrade Status* will open that displays the status of the Debian upgrade process:

Debian Upgrade Status			
Debian Operating System Components are now being upgraded, DO NOT close this window and DO NOT shutdown the Nyquist Server while the upgrade process is running.			
12:43 Preparing for Debian upgrade 12:44 Upgrading Debian Operating System components			

Warning DO NOT shutdown the Nyquist Server while the upgrade process is running.

7 When the upgrade finishes, the *Debian Upgrade Finished* window will be displayed:

Debian Upgrade Finished	
The Debian upgrade has successfully finished.	
12:41 Preparing for Debian upgrade 12:41 Upgrading Debian Operating System components 12:41 Debian upgrade finished. You may now close this window.	
	Close

After the upgrade is finished, you may be instructed to shutdown and power-cycle the Nyquist server to complete the upgrade process.

After performing the Debian Upgrade, you can view a list of the Debian operating system components that were upgraded by displaying the dpkg.log file found in the **System** section of the *System Logs* page.

During the Debian upgrade process, one of the following messages may be displayed:

• Upgrading Debian Operating System components...

This message indicates that the Debian operating system is currently being upgraded. DO NOT power off or shutdown the Nyquist server.

• Debian upgrades disabled by Bogen Administrator. No changes made.

This message indicates that the Debian operating system was not upgraded because Bogen has temporarily stopped Debian upgrades while possibly investigating a Debian upgrade issue.

• Unable to access: deb.debian.org

This message indicates that the Debian operating system upgrade was not performed because your Nyquist server is not able to access the Debian upgrade server. Check your Internet connection and firewall settings, then try again.

Unable to access: bogen-ssu.bogen.com

This message indicates that the Debian operating system upgrade was not performed because your Nyquist server was not able to access the Bogen Communications System Software Update server. Check your Internet connection and firewall settings, then try again.

• Please shutdown and power-cycle the Nyquist server to finish the Debian upgrade.

This message indicates that the Debian operating system upgrade was successful and that your Nyquist Server must be shutdown and power-cycled to finish the upgrade process.

1Shutdown your Nyquist Server by first selecting **Shut Down** in the System Parameters page.

2 After all lights have turned off on the Nyquist Server, turn off the power by flipping the power switch to the off position, wait 10 seconds, then turn the power back on by flipping the power switch to the on position.

• WARNING: Possible Debian upgrade issues encountered. Contact Bogen Technical Support for assistance.

This message indicates that an unexpected issue was encountered during the Debian upgrade process. To resolve the issue, please contact Bogen Technical Support for assistance.

• Apache web server was upgraded, restarting Apache server.

This message indicates that the Apache web server (used by the Nyquist web interface) was upgraded and restarted.

Configuring Automatic Software Download

From the Configure Automatic Software Download screen, you can schedule your Nyquist server to automatically check for and download server or firmware software updates.

Important: Downloaded software will *not* be automatically installed.

Configure Automatic Software Download	?
Server Software Check: (1)	
Server Software Auto Download: ()	
Firmware Check: ()	
Firmware Auto Download: 1	
Recurrence Minute:	
×15	
Recurrence Minute is required.	
Recurrence Hour:	
×8pm	
Recurrence Hour is required.	
Recurrence Day:	
×1st	
Not selecting a day will default to every day.	
Recurrence Month:	
Select month	
Not selecting a month will default to every month.	
Recurrence Day of Week:	
Select day of week	
Not selecting a day of week will default to every day of the week.	
★ Cancel 🖹 Save	

Figure 20. Configure Automatic Software Download

To configure automatic software downloads:

- 1 Do one of the following:
 - a) From the navigation bar, select **System Parameters**, then from the System Parameters page, select **System Update**.
 - **b)** From the navigation bar, select **Firmware**.
- 2 Select Configure Automatic Software Download.
- 3 Complete the options on the Configure Automatic Software Download screen.

Server Software Check	When set to Yes , the server automatically checks for Nyquist server soft- ware updates and posts notifications to the dashboard when new software is available.		
Server Software Auto Download	When set to Yes , the server automatically downloads Nyquist server soft- ware updates and posts notifications to the dashboard.		
Firmware Check	When set to Yes , the server automatically checks for Nyquist device firm- ware updates and posts notifications to the dashboard when new software is available.		
Firmware Auto Download	When set to Yes , the server automatically downloads Nyquist device firm- ware updates and posts notifications to the dashboard.		
Recurrence Minute	Select the minute setting for automatic checks and downloads to occur. This field is required.		
Recurrence Hour	Select the hour setting for automatic checks and downloads to occur. This field is required.		
Recurrence Day	Select the day of the month for automatic checks and downloads to occur. If left blank, the setting defaults to every day of the month.		
Recurrence Month	Select the month for automatic checks and downloads to occur. If left blank, the setting defaults to every month.		
Recurrence Day of Week	Select the day of the week for automatic checks and downloads to occur. If left blank, the setting defaults to every day of the week.		

Table 12. Configure Automatic Software Download Options

Shutting Down the Server

Using the **Shut Down** button is the recommended way to gracefully stop Nyquist processes and power down the Nyquist server. Powering down the Nyquist server manually via the **Power** button is not recommended.

Note: If you are using the System Controller, the **Shut Down** button powers the component down but does not toggle the **Power** switch. To turn the System Controller back on, you must toggle the switch to the **Off** position and then toggle it to the **On** position.

To shut down the Nyquist server:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, select **Shut Down**.
- 3 When prompted, select **Continue**.

Check Internet Site Access

You can use the **Check Internet Site Access** button to verify that your Nyquist server can access URLs, commonly referred to as web addresses, that are required for Nyquist to run properly. This information can be used for resolving or debugging networking issues.

The **Check Internet Site Access** button appears on the *System Parameters* page, *System Update* page, and the *Product License* page.

Internet Site Access Status				
Status	Site	Required for	During	IP Address
SUCCESS SUCCESS	hostedactivation.com downloads.asterisk.org	(License management) (Nyquist Server)	Install/Update Install/Update	69.28.84.25 oss-downloads.sangoma.com. 165.22.184.19
SUCCESS SUCCESS	www.pjsip.org raw.githubusercontent.	(Nyquist Server) com (Nyquist Server)	Install/Update Install/Update	23.108.108.200 185.199.109.133 185.199.111.133 185.199.108.133 185.199.110.133
SUCCESS	ftp.us.debian.org	(Nyquist Server)	Install/Update	64.50.233.100 64.50.236.52 208.80.154.139
SUCCESS	deb.debian.org	(Nyquist Server)	Install/Update	debian.map.fastlydns.net. 151.101.42.132
SUCCESS	security.debian.org	(Nyquist Server)	Install/Update	151.101.2.132 151.101.130.132 151.101.194.132 151.101.66.132
SUCCESS	dl-ssl.google.com	(Google Chrome Install)	Install/Update	dl-ssl.l.google.com. 142.251.2.190 142.251.2.93 142.251.2.136

Figure 21. Check Internet Site Access

To check Internet site access:

- 1 From the navigation bar, select System Parameters.
- 2 From the *System Parameters* page, do one of the following:
 - a) Select Check Internet Site Access.
 - b) Select System Update and then select Check Internet Site Access.
 - c) Select Product License and then select Check Internet Site Access.
- 3 When finished viewing the *Check Internet Site Access* display, select **Close**.

Check Server Status

The Check Server Status window:

- indicates if the default gateway, Network Time Protocol (NTP) servers, and Domain Name Servers (DNS) are configured and reachable (via ping);
- · reports the network interface and routing tables status;
- displays the Nyquist server's public IP address, operation status, and software component versions;
- · shows disk space utilization;
- warns if one or more stations are still using the default password;

- indicates which, if any, events are scheduled on overlapping zones, meaning that two or more target zones include the same station (see "Zone Overlap Messages" on page 363);
- and displays the Automatic Failover status (if the feature is enabled) as well as other server status details.

```
Nyquist Server Status - Tue Jan 21 10:33:21 PST 2025
NQ-E7000 10.0.0:xxx
System Name: Main Facility
System Controller Serial Number: 1916HAN06637
Debian 12.7 - Linux kernel version:
6.1.0-26-amd64 #1 SMP PREEMPT_DYNAMIC Debian 6.1.112-1 (2024-09-30) x86_64 GNU/Linux
Nyquist Server's Hostname: nq-sysctrl-0030180f5c8f
     Network Interfaces Status
1: lo: [LOOPBACK,UP,LOWER_UP] mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
      valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host
      valid_lft forever preferred_lft forever
2: enp3s0: [BROADCAST,MULTICAST,UP,LOWER_UP] mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 00:30:18:0f:5c:8f brd ff:ff:ff:ff:ff:ff
   inet 192.168.90.10/24 brd 192.168.90.255 scope global noprefixroute enp3s0
      valid_lft forever preferred_lft forever
```

Figure 22. Check Server Status

To check server status:

- 1 From the navigation bar, select **System Parameters**.
- 2 From the System Parameters page, select Check Server Status.
- 3 When finished viewing the Check Server Status display, select **Close**.

Custom Configuration

You can use the **Custom Configuration** button to customize any of the following three configuration files:

• Actions and Custom Variables

Allows you to enter custom variable settings for Nyquist and Debian Linux-related services, as recommended by Bogen Technical Support.

• Simple Network Management Protocol (SNMP) Configuration

Allows you to customize the SNMP configuration (e.g. setup private community string passwords, enable SNMP traps, etc.).

• Syslog Configuration

Allows you to configure how system log entries are sent to remote hosts that manage syslogs of remote devices.

Note: To use Custom Configuration, the Custom Configuration permission must be enabled for the user.

🗲 Custor	n Configuration Done		
When you are fin	ished with custom configuration, press "Done" to p	assword lock the custom con	figuration page.
		Filter	
	Name	Description	Instructions
i 2	Actions and Custom Variables	Show	Show
i 🖊	SNMP Configuration	Show	Show
	Syslog Configuration	Show	Show

Figure 23. Custom Configuration

To edit custom configuration files:

- 1 From the navigation bar, select System Parameters.
- 2 From the System Parameters page, press the **Custom Configuration** button.
- 3 You will be prompted to enter your login password. After you enter your password, the web interface will display a list of configuration files that can be edited.
- 4 Move your mouse pointer over the description field of a configuration file to read the description for the configuration file.
- 5 Move your mouse pointer over the instructions field of a configuration file to read instructions related to editing the configuration file.
- 6 Press the information icon to view configuration file details.
 - a) To edit a configuration file, press the **Edit** icon for one of the configuration files. A new window will open with the content of the configuration file.
 - b) Make changes to the configuration file to meet your requirements.
 - c) When you're finished making changes, press **Save and Implement Now** or **Save and Implement Later**. You can press **Cancel** if you want to abandon your changes.
- 7 Press the Custom Configuration page's **Done** button to relock the page.

Table 13. Custom Configuration options

Save and Implement Now	Saves your configuration changes and forces the Nyquist system to immediately implement the changes.
Save and Implement Later	Saves your configuration changes, but the Nyquist system will not immediately implement the changes. In this case, the changes will be implemented the next time the Nyquist server is rebooted or the next time you edit the file and press Save and Implement Now .

Important: If you are using Automatic Failover, changes made within the *Actions and Custom Variables* section will be automatically synchronized to the secondary server, except for the

purge_old_updates and fix_swap_issue variables, which will still need to be manually replicated. Changes made to the SNMP Configuration and Syslog Configuration sections will also need to be manually replicated.

Warning In most cases, the Nyquist system will not validate the changes you make to configuration files; it is your responsibility to ensure the validity of changes that you make.

DHCP Server

The Nyquist server provides a DHCP server that can be used during the initial setup of a Nyquist system. This can be very helpful in the discovery and configuration of the various Nyquist devices, as well as third-party devices like the Grandstream HT813, Cisco ATA devices, and VoIP phones. It also provides clients with the Nyquist server's TFTP address to facilitate Nyquist device configuration.

Tip: The Nyquist E7000 server's TFTP service provides autoconfiguration information for many Nyquist devices. Its DHCP server uses extended DHCP option 66 to provide the address of its TFTP service to these devices. Many Nyquist and non-Nyquist devices can use the TFTP service to automatically retrieve configuration settings and notify the E7000 of their address, thereby simplifying the initial discovery and configuration of these devices.

This mechanism is referenced in many Nyquist device guides under their **TFTP Server from DHCP** configuration setting.

If you choose to use your router's DHCP server during the device discovery process, many professionalgrade routers allow you to configure extended DHCP option 66 to provide the IP address of the Nyquist server. This mechanism can greatly simplify many configuration operations.

The user would first configure a static IP address and subnet mask for Port-A of the Nyquist server, possibly using the Network Wizard (http://<server>/setup/network), then configure the DHCP service to provide a range of IP addresses that the server would assign to Nyquist and other network devices on that subnet. Once discovered, these devices can be configured, typically assigning each a static IP address.

This service would typically be disabled after all devices are discovered and configured. However, if no other DHCP server is available and only Nyquist devices are on the subnet, it could be used permanently, providing dynamic IP addresses to Nyquist devices.

Note: The DHCP server will use the same subnet mask as that which is configured for Port-A of this Nyquist server. This value can be viewed (usually in CIDR format) in the output of the **Check Server Status** command (see "*Check Server Status*" on page 41).

Configuration	DHCP Leases		Auto Re	fresh: On 🛛 😂 I	Refre
nabled: 1			Filte	Ē	
)efault Lease Time: 🚯	Mac Address	ne	÷	Valid Until	
604800	No	matching records found			
lax Lease Time: 🚯					
2592000					
PRange Start: 1					
PRange End: 🚯					
ateway: 🕦					
Domain Name: 🐧					
NS Servers: 🐧					

Figure 24. DHCP Configuration

Configuring the DHCP Server:

- 1 From the Navigator bar, select **System Parameters**.
- 2 From the System Parameters page, select **DHCP Server**.
- **3** If the DHCP Server has not yet been configured, you can populate the configuration properties with reasonable values by selecting the **Auto Configure** button.
- 4 Modify the values to the desired configuration. For details, see "DHCP Configuration Parameters" on page 46.
- 5 Press **Save** to persist the values.
- **6** To enable the DHCP feature and start allocating IP addresses via DHCP, toggle the **Enabled** switch to **Yes**, then press **Save**.

	Table 14. DHCP Configuration Parameters	
Enabled	Enables or disables the DHCP server for the subnet connected to Port-	
	Warning When the DHCP server is enabled on Port-A, it will be authorita- tive! Do <i>not</i> enable the DHCP server while another DHCP server is providing DHCP addresses to the subnet defined on Port-A.	
Default Lease Time	Length in seconds that will be assigned to a lease if the client does not request a specific expiration time. Decrease this value if you are only using the DHCP server to stage Nyquist devices.	
Max Lease Time	Maximum length in seconds that will be assigned to a lease. Decrease this value if you are only using the DHCP server to stage Nyquist devices.	
IP Range Start	Start of the IP address range from which to allocate addresses to devices on the Port-A subnet. After performing Auto Configure, you can increase this value to reserve a range of IP addresses on the subnet for fixed address assignments.	
IP Range End	End of the IP address range from which to allocate addresses to devices on the Port-A subnet. After performing Auto Configure, you can decrease this value to reserve a range of IP addresses on the subnet for fixed address assignments.	
Gateway	Gateway address sent to DHCP clients used for routing packets outside of the Port-A subnet. Auto Configure will set this value based on the cur- rent Port-A setup; you can still change it if needed.	
	<i>Note:</i> If you are setting up the Nyquist DHCP server to provide IP Addresses and TFTP Server IP Address to Nyquist appliances, the Gateway IP address must be set to the Nyquist server's IP address; if you leave it blank, paging and audio distribution will not function. If you're using the Automatic Failover feature, the Gateway address must be set to the Master IP Address.	
Domain Name	Domain name for devices operating on the subnet, excluding hostname. Leave this parameter blank if the Port-A subnet is private and not included in DNS managed domain. If the server has a domain name set, Auto Configure will use the server value. This is typically left blank.	
DNS Servers	Comma-delimited list of DNS servers that devices on the subnet can use to resolve hostnames. Auto Configure will set this value; you can change it if needed.	
Save	Saves the specified DHCP configuration.	
Auto Configure	This button selects appropriate DHCP configuration values based on the existing server configuration. These values can be modified by the user before saving the settings.	
	<i>Note:</i> These values will not be saved until the user clicks the Save button.	
Reset	Sets all fields to their default values.	

	Table 14. DHCP Configuration Parameters
DHCP Leases	Displays a list of network devices that have been allocated IP addresses by the DHCP server.
Auto Refresh	If set to On, the list of DHCP leases will be periodically refreshed.
Refresh	Immediately refresh the list of DHCP leases.
MAC Address	The MAC address of the network card of the DHCP client.
Hostname	The hostname of the DHCP client.
IP Address	The IP address of the DHCP client. A link icon which provides a hyperlink to the device is displayed next to the IP address.
Valid Until	The date and time when the DHCP lease expires.

Network Traffic Capture

The **Network Traffic Capture** tool can be used to capture the network traffic present on the Nyquist system, typically for the purpose of troubleshooting networking issues. Network Traffic Capture uses the tcpdump command to capture network traffic to a PCAP file that will be downloaded to your computer. The PCAP file can be viewed by any application that can read PCAP files (e.g., Wireshark).

To use the Network Traffic Capture tool to capture network traffic:

- 1 Navigate to the *System Parameters* page.
- 2 Press the Network Traffic Capture button, the Network Traffic Capture popup window will be displayed.

Network Traffic Capture
The Network Traffic Capture feature uses tcpdump to capture network traffic into a PCAP file that can be viewed with any application that can read PCAP files. See tcpdump documentation for information related to the Options and Expression fields.
Capture Seconds (default: 900): 🚺
Tcpdump Options (optional): 🚺
Tcpdump Expression (optional): ()
Close Start

3 Optionally change the parameters to meet your capture requirements (see *Table 15, "Network Traffic Capture Parameters," on page 48*):

If you leave all fields blank, the default action is to capture all packets on all interfaces for 15 minutes.

	Table 15. Network Traffic Capture Parameters
Capture Seconds	The number of seconds to capture network traffic.
	If left blank, network traffic will be captured for 15 minutes (900 seconds).
	Note: The network capture will automatically stop if available disk space goes below 10 GB.
	Default: 900
	Caution Long capture periods may result in a very large capture file, so make sure your server has sufficient disk space (see "Check Server Status" on page 41 to determine the Nyquist server's available disk space).
Tcpdump Options	Command line options to apply to the tcpdump command (see https://www.tcpdump.org/manpages/tcpdump.1.html for further details). Only a few of the tcpdump options are supported, and none of the print-related modifier options are supported. If left blank, "-i any" is automatically used to capture network packets on all interfaces.
	Default: -i any
	<i>Note</i> : As a result of the implementation-specific context in which tcpdump is executing, the following options are <i>not</i> supported:
	monitor-moderelinquish-privileges=user -W -G -F -I -r -z -Z -V
	Caution Do not specify options unless you are knowledgeable about the tcp- dump command. See "Useful tcpdump options" on page 50.
Tcpdump Expression	An optional expression to use on the tcpdump command. The expression is used to further filter the network traffic that you wish to capture.
	For more information regarding expression syntax and use, consult the tcp- dump documentation (see https://www.tcpdump.org/manpages/pcap- filter.7.html) as well as the tcpdump example expressions shown below.
4 Press Start to begin	the network traffic capture.
The window will now	include a Cancel and Stop button, and inform you that the capture is running.

Note: If errors exist in values supplied in the Options or Expression field, the errors will be displayed in the text window and the capture will not be started.

Network Traffic Capture	
The Network Traffic Capture feature uses tcpdump to capture network traffic into a PCAP file that can be viewed with any application that can read PCAP files. See tcpdump documentation for information related to the Options and Expression fields.	
Capture Seconds (default: 900): 🚺	
Tcpdump Options (optional): 🚺	
Tcpdump Expression (optional): ()	
Network Traffic Capture Running	
Close X Cancel Stop 3	

5 Once the capture has started, you can either wait for the capture to complete, or press the Close button, allowing you to use the Nyquist dashboard to start Nyquist features while the network capture continues. After pressing Close, when you're ready to download the capture file, you can return to *Network Traffic Capture*. When you return, if the capture has finished, you can press the Download button to download the PCAP file. If the capture is still running, you will receive the following message asking you if you want to stop the capture.



After stopping the capture by pressing **Yes**, you can then press the **Download** button on the Network Traffic Capture tool. If you press **No** instead, the network capture will continue.

- 6 While network traffic is being captured (and you have not pressed **Close**), you can press the **Stop** button to stop capturing traffic before the capture seconds has elapsed.
- 7 If, for any reason, you no longer want the captured network traffic, press **Cancel** to stop the capture process. Canceling the capture will not download the capture file; instead, the capture file will be deleted.
- 8 After the network capture has completed, the capture file will be downloaded to your client computer.

Network Traffic Capture
The Network Traffic Capture feature uses tcpdump to capture network traffic into a PCAP file that can be viewed with any application that can read PCAP files. See tcpdump documentation for information related to the Options and Expression fields.
Capture Seconds (default: 900): 🚺
Tcpdump Options (optional): 🚺
Tcpdump Expression (optional): ()
tcpdump -G 900 -W 1 -w <pcap-file> -i any tcpdump: listening on any, link-type LINUX_SLL (Linux cooked), capture size 262144 bytes Maximum file limit reached: 1 46820 packets captured 52493 packets received by filter 0 packets dropped by kernel</pcap-file>
Delete PCAP (10 MB) Lownload PCAP Close Start

9 When the capture has finished, information regarding the number of packets captured will be displayed. If you notice that "packets dropped by kernel" is greater than zero (0), be aware that not all packets were captured, most likely due to very busy network activity as seen by the Nyquist server.

Tip: You can try to fix a dropped packets issue by using the tcpdump -B option to increase the buffer size.

10 After the PCAP file has been download to your computer, you can press the Delete PCAP button to delete the PCAP file from the Nyquist server (to save disk space). If you do not delete the PCAP file, you can return to the Network Traffic Capture tool in the future and download it again, or delete it. The next time you start a download, any previous PCAP files are automatically deleted.

Useful tcpdump options

To view the current version of the tcpdump command, enter the following into the Tcpdump Options field:

--version

This is useful to ensure that you're referencing the correct version of the tcpdump documentation.

To view the list of available network interfaces, enter the following into the Tcpdump Options field:
 -D

This is useful if you wish to use interface filters in the **Tcpdump Expression** field. Sample output:

```
1.enp3s0 [Up, Running]
2.enp4s0 [Up, Running]
3.any (Pseudo-device that captures on all interfaces) [Up, Running]
```

In the above example on Nyquist System Controllers, enp3s0 is Port-A, enp4s0 is Port-B, and any refers to both interfaces.

In very rare cases on Nyquist System Controllers, you may see eth0 and eth1 instead; in this case, eth0 is Port-A and eth1 is Port-B.

 To capture packets from only a specific network interface, enter the following into the **Tcpdump Options** field, where <interface-name> is the name of the interface (as returned by the aforementioned -D option, e.g., enp3s0):

-i <interface-name>

Example tcpdump expressions

To capture all packets to and from IP address 192.168.90.15:

net 192.168.90.15

To capture RTP packets:

portrange 10000-20000

To capture SIP packets (when SIP TLS is not enabled):

port 5060

To capture SIP and RTP packets (when SIP TLS is not enabled):

udp port 5060 or udp portrange 10000-20000

To capture SIP packets when SIP TLS is enabled, modify the previous commands to use port 5061. Be aware, however, that the packets will be captured, but not decoded, as SIP TLS packets are encrypted.

Caution If the E7000 does not have at least 10 GB of available disk space, the network capture will not start (see "Check Server Status" on page 41 to determine the Nyquist server's available disk space).

In general, the largest consumers of disk space are: old system backups, obsolete system updates, obsolete firmware updates, audio files (e.g., announcements, tones, songs), and recorded voice conversations.

You can manually remove system backups (see "Deleting a Backup File" on page 346); obsolete system updates (see "Performing a System Update" on page 32); obsolete firmware updates (see "Deleting Listed Firmware" on page 119); and unneeded announcements (see "Deleting an Announcement" on page 326), tones (see "Deleting a Tone" on page 336), songs (see "Deleting a Song" on page 294), and voice recordings (see "Managing Recordings" on page 337).

To automatically remove obsolete Nyquist system updates, you can set purge_old_updates=true in the Actions and Custom Variables (see *"Custom Configuration" on page 42*).

Lightweight Directory Access Protocol (LDAP)

The Nyquist E7000 can be configured to obtain user account and group information from an Active Directory (AD) server using the LDAP protocol. This minimizes or eliminates the need to maintain user
information in the Nyquist system. Once configured, users can be imported from the AD server, assigned to Nyquist roles, and authenticated upon login. It can also be configured to regularly update this information from the AD server (based on a configured schedule).

Important: Nyquist servers currently only support LDAP connections to a Microsoft Active Directory (AD) server.

🔒 LDAP 👩	
Active Directory Configuration	LDAP Tools
Yes	Fest LDAP Connection
Host: 🚯	
172.31.11.25	Import/Sync Active Directory Users Import/Sync Active Directory Users
Username Path: ()	
cn=read-only-admin,dc=nyquist-testlab,dc=com	Loload TLS CA Certificate
Password: ()	
	Laravel Log: 1
Port: 📵	
389	↑ Top ↓ Bottom ← Export
Base DN (Base Search Path): 1	File Path:
ou=Bogen,dc=nyquist-testlab,dc=com	
Filter: 🚯	
(memberOf:1.2.840.113556.1.4.1941:=cn=System Test,ou=Bogen,dc=nyquist-testlab,dc=com)	
Timeout: 1	
Enable Auto Import/Sync Schedule: (1)	
Schedule Minute: 🚯	
Select minute	
Not selecting a minute will default to every minute.	
Schedule Hour: 1	
Select hour	
Rotedula David	
Schedule Day:	
Not selecting a day will default to every day.	
Schedule Month: 🚯	
Select month	
Not selecting a month will default to every month.	
Schedule Day of Week: 1	
Select day of week	
Not selecting a day of week will default to every day of the week.	
🗙 Cancel 🖺 Save	

Figure 25. LDAP Settings

	Table 16. Active Directory Configuration Settings
Enabled	Indicates if user account information will be retrieved from an Active Directory server via LDAP.
Host	The IP address or hostname of the Active Directory server.
Username Path	Specifies the user name of the Active Directory user account to be used to make the LDAP queries against the Active Directory server.
	<i>Note:</i> This value can be specified using the X.500 Directory Specification Distinguished Name (DN) format, User Principal Name (UPN) format, or down-level logon name format.
	The following are examples of valid values:
	CN=admin,DC=bogen,DC=com admin@bogen.com
Decoverd	bogen (admin
Password	The password of the user specified in Osername Path .
Port	port 389 (or port 636 for LDAP over TLS).
Base DN (Base Search	The Active Directory directory to be used as the base path in which to search for users.
Path)	Note: This value is specified as an X.500 Directory Specification Distinguished Name (DN) value.
	The following is an example of a valid value:
	OU=nyquist,DC=bogen,DC=com
Filter	Specifies an Active Directory filter string to specify which Active Directory users will be imported as Nyquist users. This filter is applied to the Base DN. If no filter is specified, all entries found within the Base DN path will be included.
	Important: This value must not include carriage return or line feed charac- ters.
	Caution Once a user has been imported, that user will not be removed from the Nyquist Users list if, in the future, that user no longer matches this filter (e.g., if the Active Directory directory entries have changed or this filter has changed).
	For a detailed discussion on LDAP syntax filter strings, see "LDAP Syntax Filter" on page 57.
Timeout	The number of seconds to wait for a response from the LDAP server.

Tal	ole 16. Active Directory Configuration Settings (Continued)
Use TLS	Indicates whether or not to use TLS to establish a secure connection to the Active Directory server whenever Active Directory users are imported or syn- chronized.
	Important: A TLS Certification Authority (CA) certificate must be uploaded via Install TLS CA Certificate for a TLS connection to be established.
Enable Auto Import/Sync Schedule	If enabled, the E7000 will periodically update the list of users from the Active Directory server. The configurable details of the schedule are only visible when enabled.
Schedule Minutes	Sets one or more minutes after the hour on which the scheduled Import/Sync operation will occur.
	If left blank, the operation will default to every minute.
Schedule Hours	Sets one or more hours of the day on which the scheduled Import/Sync opera- tion will occur.
	If left blank, the operation will default to every hour.
Schedule Days	Sets one or more days of the week on which the scheduled Import/Sync opera- tion will occur.
	If left blank, the operation will default to every day.
Schedule Months	Sets one or more months of the year on which the scheduled Import/Sync operation will occur.
	If left blank, the operation will default to every month.
Schedule Days of Week	Sets one or more days of the week on which the scheduled Import/Sync opera- tion will occur.
	If left blank, the operation will default to every day of the week.

For further details about the X.500 Directory Specification Distinguished Name (DN) format, the following may be helpful:

- https://learn.microsoft.com/en-us/previous-versions/windows/desktop/ldap/distinguished-names
- https://datatracker.ietf.org/doc/rfc4514/
- https://ldap.com/ldap-dns-and-rdns

There are several tools provided to assist in configuring the E7000 to interoperate with LDAP/Active Directory, as described in *"LDAP Tools" on page 56*.

Table 17. LDAP Tools

Test LDAP Connection	Uses the LDAP configuration settings to verify that a connection can be suc- cessfully made to the Active Directory server using the specified host, user- name path, password, and port.
	The operation and completion status of the connection attempt will be dis- played next to this button for approximately five seconds.
	Important: The connection attempt will be made using the saved configura- tion values, not necessarily the displayed values. Be sure to save any configuration changes before testing.
Import/Sync Active Directory Users	Imports the user accounts specified by the Active Directory host and Base DN (and filtered by the Filter Path) into the Nyquist server's Users list. If user accounts have already been imported, they will be synchronized (i.e., updated based on the Username).
	The operation and completion status of the import operation will be displayed next to this button for approximately five seconds.
	Important: The import/sync operation will be made using the saved configuration values, not necessarily the displayed values. Be sure to save any configuration changes before importing.
Upload TLS CA Certificate	Uploads a PEM file containing the public Certification Authority (CA) certificate of the Active Directory server. If Use TLS is enabled, the uploaded CA certificate will be used to validate the Active Directory server connection whenever Active Directory users are imported or synchronized.
	Note: An adjacent message will indicate whether or not a CA certificate has been installed.
Laravel Log	This section allows you to view the current and archived laravel.log files in the File Path edit box. These provide details on LDAP operations that have been performed and/or failed. Selecting a log file will display its contents in the text box below.
	There are three buttons that provide extra functionality:
	Top: Scrolls the log file listing to the top of the file.
	Bottom: Scrolls the log file listing to the bottom of the file.
	Export: Exports the displayed log file to a text file. Be sure to select the log file in the Laravel Log combo box first.

Importing the Active Directory Server's TLS Certification Authority

To securely connect to an Active Directory server using TLS (which is highly recommended), **Use TLS** must be enabled and the Active Directory server's CA certificate must be uploaded to the E7000 so it

can validate the identity of the server. A PEM file containing the CA certificate can be uploaded via the **Upload TLS CA Certificate** button.

For details on how to obtain the Active Directory CA certificate, please refer to Microsoft's documentation.

Once the CA certificate has been exported to a CER file, it can be converted to a PEM file by renaming the file to <cacertfile>.pem. Import the CA certificate into the LDAP settings via the **Upload TLS CA Certificate** button in **LDAP Tools** (see *Figure 17*, *"LDAP Tools*," on page 56).

LDAP Syntax Filter

You may want to include restrictions to limit which Active Directory entries are imported as users into your Nyquist system. LDAP filters are very flexible, allowing for very precise specification of which users to include and/or exclude.

The following Microsoft article provides detailed descriptions and numerous examples of LDAP syntax filters for the Active Directory platform which may be helpful:

https://social.technet.microsoft.com/wiki/contents/articles/5392.active-directory-ldap-syntax-filters.aspx

- **Important:** Keep in mind that changing the Filter Path will not remove Users that were previously imported but no longer match the filter. If you do not wish to keep those user accounts in the Nyquist system, you will need to manually delete them. If you do keep them, remember that they will *not* be synchronized if they do not match the currently specified LDAP filter.
- *Tip:* For details on the LDAP filter capabilities and syntax, see RFC4515 (https://www.rfceditor.org/rfc/rfc4515) or search the web for "LDAP filters" (e.g., https://ldap.com/ldapfilters). Note that Microsoft's Active Directory supports several platform-specific extensions that may be relevant (see https://learn.microsoft.com/en-us/windows/win32/adsi/search-filtersyntax).

Note: The E7000 automatically disables or enables Nyquist users based on the status of the corresponding Active Directory accounts, so there should be no need to filter based on the ACCOUNTDISABLE bit of the Active Directory userAccountControl attribute.

LDAP Filter Examples

The following are examples of LDAP syntax filters that may be helpful. They do not show the full capabilities of the LDAP syntax filter mechanism, but are provided simply for illustrative purposes. They assume an LDAP structure in which all users and groups are defined within CN=users, DC=bogen, DC=com. The structure of your LDAP environment will be different.

The following LDAP filter retrieves all users that are direct members of the Engineering group:

(memberOf=CN=Engineering,CN=users,DC=bogen,DC=com)

Note: The memberOf property of an LDAP user object specifies a list of groups to which the user belongs.

The following Active Directory-specific example—which uses a Microsoft LDAP extensible matching rule to perform a recursive search—retrieves all users that are direct *or indirect* members of the Engineering group, which includes members of any group that is a direct or indirect member of the Engineering group:

(memberOf:1.2.840.113556.1.4.1941:=CN=Engineering,CN=users,DC=bogen,DC=com)

Tip: For more information on Microsoft Active Directory's extensible matching rules (e.g., the dot-separated series of number in the previous example), see https://learn.microsoft.com/enus/openspecs/windows_protocols/ms-adts/0bb88bda-ed8d-4af7-9f7b-813291772990. The one shown in the previous example, LDAP_MATCHING_RULE_TRANSITIVE_EVAL (1.2.840.113556.1.4.1941), is documented at https://learn.microsoft.com/enus/openspecs/windows_protocols/ms-adts/1e889adc-b503-4423-8985-c28d5c7d4887.

The following example queries the Active Directory for all users in the Engineering or Operations groups:

(|(memberOf:1.2.840.113556.1.4.1941:=CN=Engineering,CN=users,DC=bogen,DC=com) (memberOf:1.2.840.113556.1.4.1941:=CN=Operations,CN=users,DC=bogen,DC=com))

The following example further restricts users to those that have an object category of "person", an object class of "user", and are members of the Engineering or Operations groups:

```
(&(objectCategory=person)(objectClass=user)(|(memberOf:1.2.840.113556.1.4.1941:=C
N=Engineering,CN=users,DC=bogen,DC=com)(memberOf:1.2.840.113556.1.4.1941:=CD=Oper
ations,CD=users,DC=bogen,DC=com)))
```

Testing an LDAP syntax filter

There are many tools available for viewing Active Directory structures and data, such as:

- Microsoft's LDP (available as part of the RSAT feature),
- Sysinternals Active Directory Explorer (https://learn.microsoft.com/en-us/sysinternals/downloads/adexplorer),
- the PowerShell ActiveDirectory module (for command-line access), and
- many other tools, such as those listed at https://ldap.com/ldap-tools.

These tools can be very useful for exploring your Active Directory/LDAP structure to help you define your filters, and some (e.g., LDP, PowerShell, etc.) can be helpful for experimenting with LDAP filter expressions.

For example, the following PowerShell script (PowerShell is built into Windows and available on most other platforms) shows a useful technique for testing an LDAP filter without actually importing the users. Modify the *\$user* and *\$adserver* values to the appropriate values for your environment, and modify the *\$ldapfilter* as needed to experiment with different filter values. (These commands can be executed as a script or at the command line.)

Important: If executing from a Windows client environment (i.e., not Windows Server), this Power-Shell code requires that Remote Server Administration Tools (RSAT) be installed. For details on installing RSAT, see https://learn.microsoft.com/en-US/troubleshoot/windows-server/system-management-components/remote-server-administration-tools.

```
# Specify the AD server address and credentials
$adserver = '192.168.11.25'
$user = 'read-only-admin@bogen.com'
$cred = Get-Credential -UserName $user
# Specify the LDAP filter to test. Remember: no line breaks!
$ldapfilter = '(&(objectCategory=person)(objectClass=user)
(|(memberOf:1.2.840.113556.1.4.1941:=CN=Software,OU=Bogen,DC=nyquist-
testlab,DC=com)(memberOf:1.2.840.113556.1.4.1941:=CN=System Test,OU=Bogen,DC=nyquist-testlab,DC=com)))'
# Use the filter to retrieve a list of users.
Get-ADUser -Server $adserver -AuthType Negotiate -Credential $cred -LDAPFilter $ldapfilter
```

Tip: You can append "| Format-Table" to the Get-ADUser command to view the results as a table or "| Out-GridView" to view the results in a spreadsheet-like window.

Note: This code explicitly specifies the -Server parameter of the Get-ADUser cmdlet, which is unnecessary if the current environment is part of the AD domain.

NQ-S1810WBC Flasher Configuration

The flashers of any NQ-S1810WBC speakers attached to the Nyquist system can be configured to indicate the activation of Nyquist audio events, such as Emergency-All-Call Page, Emergency Announcement, Alarm, etc.

NQ-S1810WBC Flasher	Configuration Dom	e 😮		
This view uses inline-editing. Changes are saved	d instantly.			
Event Type	Flasher Pattern	Number of Flasher Pattern Cycles	Flasher Color	Message Priority
Emergency-All-Call Page	Quad	<u>0</u>	Red	<u>6</u>
All-Call Page	Fast	<u>0</u>	Amber	4
Emergency Announcement	Triple	Ω	Red	5
Nornal Announcement	Slow	<u>0</u>	Amber	4
Alarm	Fast	<u>0</u>	Red	5
Tone	Slow	<u>0</u>	Amber	<u>3</u>
Check-In	None (disabled)	<u>0</u>	Blue	<u>6</u>
Night-Ring	Quad	<u>0</u>	Blue	<u>3</u>
Zone-Page	Slow	<u>0</u>	Green	3

Figure 26. NQ-S1810WBC Flasher Configuration

To configure the NQ-S1810WBC flasher parameters:

- 1 From the navigation bar, select **System Parameters**.
- 2 From the System Parameters page, select NQ-S1810WBC Flasher Configuration.
- 3 On the NQ-S1810WBC Flasher Configuration page that appears, make the desired changes. For parameter descriptions, see Table 18 on page 61.

Ta	able 18. NQ-S181	10WBC Flasher Configuration
Event Type	The audio event enabled.	t during which the NQ-S1810WBC flashers can be
Flasher Pattern	Specifies the on	o/off pattern the flasher will display.
	Valid values are	
	No Change:	The message will not cause the selected flasher to change from its current flasher setting.
	• Off:	The selected flasher will be turned off unless a higher priority message is using the flasher. When the flasher is turned off, it will remain off until another message is sent with a new flasher setting.
	• Slow:	The selected flasher will blink at a rate of once per second for the duration of the message.
	• Fast:	The selected flasher will blink at a rate of twice per second for the duration of the message.
	• Double:	Flash two (2) times within one second with a 1-second pause and repeat.
	• Triple:	Flash three (3) times within 1.5 seconds with a 1-second pause and repeat.
	• Quad:	Flash four (4) times within two seconds with a 1-second pause and repeat.
Number of	Specifies the nu	mber of times that the flasher pattern will repeat.
Flasher Pattern Cycles	Valid values are tinuously for the	1 through 65536 or specify zero (0) to flash con- e duration of the message.
Flasher Color	Specifies the co	lor of the LED flasher. Valid values are:
	• Amber	
	• Blue	
	• Green	
	Orange	
	• Red	
	• Violet	
	• White	
	• Yellow	
Mossage Priority	Spacifies the die	splay message priority for the flasher where zero

Message Priority Specifies the display message priority for the flasher, where zero is the lowest and six is the highest. For details, see *"Message Priorities and Precedence" on page 486*.

Setting System Parameters

To set system parameters:

- 1 From the navigation bar, select **System Parameters**. The *System Parameters* page displays all key system parameters.
- 2 To change the settings, select the **Edit** icon.
- 3 On the *Edit System Parameters* page that appears, make changes to the appropriate settings.
- 4 After entering all changes, select **Save**.

Using the Edit System Parameters Page

The Edit System Parameters page contains the parameters that can be set for the entire facility and is accessed by selecting the **Edit** icon on the System Parameters page. Through the Edit System Parameters page, you can also set passwords for the system and various system features, including setting passwords for page and announcement types and alarms and tones.

■ Edit System Parameters	
× Cancel В Save	System Tools ()
Main Facility	Server IP Address: 1 192 168 90 10
Day Start: () Hour: Minute:	Change Server IP Address
8 v 0 v Night Start: (1) Hour: Minute:	Use Network Time Server defined by DHCP: (1)
17 • 0 • Emergency-All-Call Multicast RTP IP Address: (1) 239 1 1 Emergency-All-Call Multicast RTP Port: (1)	Network Time Server: () Current NTP Server: 198.137.202.32 Current NTP Server Name: 198.137.202.32 pool.ntp.org
6000	E Change Network Time Server
All-Call Multicast RTP IP Address:	Appliances Network Time Server Source: ()
All-Call Multicast RTP Port: () 6004	Server Date/Time: 1:35:35 PM PDT 2024-04-18 13:35:35
- + Audio Distribution Multicast IP Address: ()	Change Server Date/Time
239 1 1 3 Audio Distribution Multicast Port: (1)	Time Zone: () Los Angeles
6008	O Change Time Zone
Audio Distribution Cut Level (dB): -31 (1) - +	Dialing Length: () 3 -
- +	III Change Dialing Length

Figure 27. Edit Systems Parameters Page

The following tables describes the system parameters (Table 19 on page 64) and System Tools (Table 20

Name	Specifies t characters	he name given to the entire facility. The name can be up to 30
Day Start	Identifies v specifies the phones wi outside line Hour and be less that	when the system switches to its "Day" mode of operation and he time period for which the Day Admin Station is active. Tele- th night-only outside line access are prevented from placing he calls during this time. Use the down arrows to select the Minute values. Valid times range from 00:00 to 23:58, but must an the Night Start time.
Night Start	Identifies v specifies the During this place outs ute values the Day St	when the system switches to its "Night" mode of operation and he time period for which the Night Admin Station is active. s time, telephones with the night-only outside line access can ide line calls. Use the down arrows to select the Hour and Min . . Valid times range from 00:01 to 23:59 and must be larger than art time.
Emergency-All-Call Multicast RTP IP Address	Identifies t All-Call. Re ured.	the IP address to use for multicast RTP paging for Emergency- eceiving IP telephones must also have this IP address config-
	Bogen sug recommer	gests an address in the range 239.0.0.0–239.255.255.255, but nds consulting with your IT department to avoid conflicts.
Emergency-All-Call Multicast RTP Port	Identifies t Emergency configured	the first of four RTP ports to use for multicast RTP paging for y-All-Call. Receiving IP telephones must also have this RTP port d.
	Recomme	nded range: 6000 to 7499
	Suggested	l value: 6000 (i.e., ports 6000–6003)
	Caution	Ensure that this port range does not overlap other port range assignments, such as All-Call Multicast RTP Port , Audio Distribution Multicast Port , RTP Start Port through RTP End Port , or Multicast ports used for Zones.
Emergency-All-Call Cut Level (dB)	Sets the cu is -42 to (ut volume for Emergency-All-Call audio. The cut volume range) dB.
All-Call Multicast RTP IP Address	Identifies the All-Call Multicast RTP IP address. Receiving IP telephones must also have this IP address configured.	
	Bogen sug recommer	gests an address in the range 239.0.0.0–239.255.255.255, but nds consulting with your IT department to avoid conflicts.

All-Call Multicast RTP Identifies the first of four RTP ports to use for multicast RTP paging for All-Call. Receiving IP telephones must also have this RTP port configured. Port Recommended range: 6000 to 7499 Suggested value: 6004 (i.e., ports 6004–6007) Ensure that this port range does not overlap other port range Caution assignments, such as Emergency-All-Call Multicast RTP Port, Audio Distribution Multicast Port, RTP Start Port through RTP End Port, or Multicast ports used for Zones. All-Call Cut Level (dB) Sets the cut volume for All-Call audio. The cut volume range is -42 to 0 dB. Identifies the RTP multicast IP address to use for audio distribution to all **Audio Distribution** stations (All Speakers). For more information about audio distribution, Multicast IP Address see "Managing Audio" on page 285. Bogen suggests an address in the range 239.0.0.0-239.255.255.255, but recommends consulting with your IT department to avoid conflicts. **Audio Distribution** Identifies the first of four RTP multicast ports to use for audio distribution to all stations. **Multicast Port** Recommended range: 6000 to 7499 Suggested value: 6008 (i.e., ports 6008–6011) Ensure that this port range does not overlap other port range Caution assignments, such as Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, RTP Start Port through RTP End Port, or Multicast ports used for Zones. Audio Distribution Cut Sets the cut volume for audio distributions played to all stations (All Speakers). The cut volume range is -42 to 0 dB. Level (dB) See "Using Audio Distribution" on page 392 for information on controlling audio distribution played to zones. **Default Cut Level (dB)** Defines the default cut volume level for a new zone. The cut volume range is -42 to 0 dB. For information about zones, see "Viewing Zone Information" on page 201. **Ambient Noise Sensor** Identifies the multicast IP address to use by ambient noise sensors (ANSs) to send volume data. Multicast IP Address **Ambient Noise Sensor** Identifies the multicast port number to be used by ANSs to send volume data. **Multicast Port**

Disable Preannounce Tone	Indicates if the preannounce tone is disabled. If disabled, the tone is not heard when connecting to a speaker or prior to a page.
Disable Privacy Beep	Indicates if the privacy beep feature is disabled.
Emergency Tone	Identifies the preannounce tone played before an Emergency-All-Call is made.
All Call Tone	Identifies the preannounce tone played before an All-Call is made.
Intercom Tone	Identifies the preannounce tone played before an intercom call is made.
Intercom Wait Tone	Indicates if an intercom caller will hear a continuous ringing while the call is being initiated which stops when the connection to the call recipient is established.
	<i>Note:</i> The "ringing" is not a typical ringtone. It does not include the silence between rings. Instead, the user will hear a continuous ring until the call is established and ready for communication. The length of the ringing depends on the length of the Intercom Tone specified in the system parameters (see above).
Appliance Backup Scheduled Tone	Identifies the tone played by appliances if they are unable to communi- cate with the E7000 System Controller at the scheduled time.
	Note: The device will continue to play scheduled tones for up to 72 hours.
Default Registration Password	Provides an optional default SIP registration password to be used when adding new stations.
	The Nyquist controller remembers the station-specific SIP registration password of <i>each</i> station that will register with it for SIP communications. Specifying a Default Registration Password simplifies the process of adding a new station.
	If the station's Registration Password is not specified, the Nyquist con- troller's Default Registration Password will be used. However, if the Nyquist controller's Default Registration Password is not specified, the station's Registration Password is required.
	The minimum length is five characters.
Default Web Password	Provides an optional default web password to be used when adding a new appliance (i.e., station, bridge, or amplifier).
	If the appliance's Web Password is not specified, the Nyquist controller's Default Web Password will be used. However, if the Nyquist controller's Default Web Password is not specified, the station's Web Password is required.
	The minimum length is five characters.
Default Codecs Allowed	Provides the default list of media codecs to be used.

Admin Queue Timeout	Specifies the maximum amount of minutes that a call switch or handset station can remain on an administrative queue. When the time is exceeded, the call switch or handset station is removed from the queue. Valid timeout values range from 1 to 999 minutes.
Night Ring Enabled	Indicates if a night ring is enabled. When enabled, you can optionally set a Night Ring Admin and optionally set one additional option from the following list:
	Night Ring All Stations
	Night Ring Admin Group
	Night Ring Zones
	(For more information on night ring behavior, see "Configuring Night Call Options" on page 21.)
Night Ring Admin	Identifies the specific Admin Station that handles outside line calls received during night hours. Outside line calls not answered within 15 seconds ring all or selected stations. If Night Ring Admin is the only option set, then the specified Admin extension rings for 30 minutes and hangs up if the call is not answered within that time.
	<i>Note:</i> If Night Admin is also included in the call, both Night Admin and Night Ring Admin ring. An analog phone cannot be used as a Night Ring Admin even if the station has the admin CoS enabled.
Night Ring All Stations	Indicates if all stations receive night rings during night hours. When enabled, any ringing station can answer the call. The specified stations will ring for up to 30 minutes, then hang up if the call is not answered within that time.
	Note: NQ-P0100 Matrix Mixer Pre-Amp stations will also ring.
Night Ring Admin Group	Identifies the Admin Group that handles outside line calls received during night hours. The Admin Group is called if the Night Admin and Night Ring Admin do not answer within 15 seconds. The specified stations will ring for up to 30 minutes, then hang up if the call is not answered within that time.
Night Ring Zones	Identifies which zones receive night rings when outside calls are received during night hours. The specified stations will ring for up to 30 minutes, then hang up if the call is not answered within that time.
Parking Lot	Defines the range of numbers to use for call parking. The first number listed is used to initiate call parking, which is a feature that allows you to put a call on hold at one telephone set and continue the conversation from any other telephone set.
Record Monitoring	Indicates if call and location monitoring will be recorded.

Emergency Link	Specifies the station that functions as the system's Emergency Link Sta- tion. An Emergency Link Station is the station that an emergency call (but not a 911 call) is routed to if the station's associated Admin Station is busy, rejects the call, or fails to answer within 15 seconds. A value of 999 means that this feature is disabled.
	If the Emergency Link Station is a ringable device (a Nyquist phone), the station will ring and the call will be displayed on the station's display (if so equipped) as an "Emergency Call."
	If the Emergency Link Station is not a ringable device (a Nyquist VoIP speaker), the station will auto-answer, preannouncing the call as an "Emergency." The Admin Station will continue to ring if an emergency call is auto-answered by a non-ringable Emergency Link Station device. The Admin Station can retrieve the call by answering it, and the Emergency Link Station device will then drop the call.
	As with any Emergency Call, all calls to an Emergency Link Station will be recorded.
Max Restricted Digits	Specifies the maximum number of digits that can be dialed if a station has been assigned restricted outside line access.
DISA Password	Identifies the four-digit password used for Direct Inward System Access (DISA).
Security DISA Password	Identifies the four-digit password used to access Nyquist through a security DISA line.
CDR Storage Duration	Identifies the number of days that a record of call details will be kept. The maximum value for CDR Storage Duration is 365 days.
Trunk Priority	Identifies the first trunk type to use for placing outbound calls.
Bump on Emergency	Indicates if emergency calls to the Admin Station will bump existing non- emergency calls.
Bump on 911	Indicates if outbound calls to 911 will bump trunk calls if no available outbound trunk is available.
Allow Local Emergency-All-Call Page Interrupt	When enabled, allows a locally initiated Emergency-All-Call page to inter- rupt an ongoing Multi-Site-Emergency-All-Call page or Emergency-All- Call page, after entering the system PIN code.
Allow Multi-Site- Emergency-All-Call Page Interrupt	When enabled, Emergency-All-Call pages can be interrupted by Multi- Site-Emergency-All-Call pages.

Auth Code	Allows users to enable the features of a specific station while using a dif- ferent telephone or web station (on which the Walking Class of Service CoS feature is enabled). This four-digit code activates features of the specified station on the station being used by using the Walking CoS DTMF code (see "Walking CoS" on page 571):
	3*{auth-code}*{extension}
	This should be followed by the DTMF dial code(s) of the desired fea- ture(s).
Facility Password	Identifies the password to be used by facility servers that are registering with this server. The maximum password size is 12 characters.
Remote Facility CoS	Identifies the CoS for remote facility access.
RTP Start Port	Identifies the start port number for UDP RTP traffic.
	The default value is 10000.
RTP End Port	Identifies the stop port number for UDP RTP traffic.
	The default value is 20000.
	Caution Ensure that the port range from RTP Start Port to RTP End Port does not overlap other port range assignments, such as
	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones.
Enable RTP Checksums	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones. Indicates if UDP checksums are enabled for RTP traffic. A checksum is a count of the number of bits in a transmission that is included with the transmission so that the receiver can check to see if the same number of bits arrived.
Enable RTP Checksums Enable ICE Support	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones. Indicates if UDP checksums are enabled for RTP traffic. A checksum is a count of the number of bits in a transmission that is included with the transmission so that the receiver can check to see if the same number of bits arrived. Indicates if Interactive Connectivity Establishment (ICE) support is enabled.
Enable RTP Checksums Enable ICE Support	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones. Indicates if UDP checksums are enabled for RTP traffic. A checksum is a count of the number of bits in a transmission that is included with the transmission so that the receiver can check to see if the same number of bits arrived. Indicates if Interactive Connectivity Establishment (ICE) support is enabled. <i>Note:</i> Disabling ICE support could result in audio issues when making calls using the Web Interface.
Enable RTP Checksums Enable ICE Support STUN Server	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones. Indicates if UDP checksums are enabled for RTP traffic. A checksum is a count of the number of bits in a transmission that is included with the transmission so that the receiver can check to see if the same number of bits arrived. Indicates if Interactive Connectivity Establishment (ICE) support is enabled. <i>Note:</i> Disabling ICE support could result in audio issues when making calls using the Web Interface. Identifies the host name or IP address for the STUN server that is used when determining the external IP address and port for an RTP session. (Port number is optional.) If omitted, the default value of 3478 will be used.
Enable RTP Checksums Enable ICE Support STUN Server TURN Server	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones. Indicates if UDP checksums are enabled for RTP traffic. A checksum is a count of the number of bits in a transmission that is included with the transmission so that the receiver can check to see if the same number of bits arrived. Indicates if Interactive Connectivity Establishment (ICE) support is enabled. <i>Note:</i> Disabling ICE support could result in audio issues when making calls using the Web Interface. Identifies the host name or IP address for the STUN server that is used when determining the external IP address and port for an RTP session. (Port number is optional.) If omitted, the default value of 3478 will be used. Identifies the host name or IP address for the TURN server that is to be used as a relay. (Port number is optional.) If omitted, the default value of 3478 will be used.
Enable RTP Checksums Enable ICE Support STUN Server TURN Server	Emergency-All-Call Multicast RTP Port, All-Call Multicast RTP Port, Audio Distribution Multicast Port, or Multicast ports used for Zones. Indicates if UDP checksums are enabled for RTP traffic. A checksum is a count of the number of bits in a transmission that is included with the transmission so that the receiver can check to see if the same number of bits arrived. Indicates if Interactive Connectivity Establishment (ICE) support is enabled. <i>Note:</i> Disabling ICE support could result in audio issues when making calls using the Web Interface. Identifies the host name or IP address for the STUN server that is used when determining the external IP address and port for an RTP session. (Port number is optional.) If omitted, the default value of 3478 will be used. Identifies the host name or IP address for the TURN server that is to be used as a relay. (Port number is optional.) If omitted, the default value of 3478 will be used. Identifies the user name used to authenticate with the TURN server.

Retention Recordings	Identifies the number of days to retain recordings. Recordings that are older than the retention period are automatically deleted. You can set a maximum retention period of 99,999 days.
Backup Retention System	Identifies the number of days to retain system backup files. System back- ups that are older than the retention period are automatically deleted, provided at least one system backup file remains. You can set a maximum retention period of 99,999 days.
Backup Retention Recordings	Identifies the number of days that backups of recordings are retained. Backups that are older than the retention period are automatically deleted, provided at least one backup remains. You can set a maximum retention period of 99,999 days.
Backup Retention Voicemail	Identifies the number of days that voicemail backups are retailed. Back- ups that are older than the retention period are automatically deleted, provided at least one backup remains. You can set a maximum retention period of 99,999 days.
System Password	Displays the password required whenever a user is prompted for the System Password.
Multi-Site-Emergency- All-Call Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting a Multi-Site-Emergency-All-Call page. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting a Multi-Site-Emergency-All-Call page.
Multi-Site-All-Call Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting a Multi-Site-All-Call page. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting a Multi-Site-All-Call page.
Facility-Page Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting a Facility page. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting a Facility page.
Emergency-All-Call Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting an Emergency-All-Call page. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting an Emergency-All-Call page.
All-Call Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting an All-Call page. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting an All-Call page.
Emergency- Announcement Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping an Emergency Announcement. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting or stopping an Emergency Announcement.

Announcement Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping an Announcement. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting or stopping an Announcement.
Facility-Announcement Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping a Facility Announcement. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting a Facility Announcement.
Facility-Emergency- Announcement Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping a Facility Emergency Announcement. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting a Facility Emergency Announcement.
Zone-Page Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting a zone page. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting a zone page.
Alarm Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping an Alarm. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting or stopping an Alarm.
Tone Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping a tone. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting or stopping a Tone.
Audio Distribution Password	Identifies the 4-digit password to use if a caller is required to enter a password when starting or stopping an audio distribution. A password of four zeros (0000) requires the caller to enter 1 for confirmation when starting or stopping an audio distribution.
Disable Emergency All- Call and Intercom when Audio Disabled	If Audio Disabled is enabled (see <i>"Enabling and Disabling Audio" on page 395</i>), this indicates whether or not Emergency All-Call and Intercom calls will also be disabled.
Zone Control Password	Identifies a password to access the Zone Control view (see "Zone Control: Volume and Audio Distribution Panel" on page 339).
Enable Callback Request Indicator	Indicates if the Callback Request Indicator feature is enabled for this system (see "Managing Calls via the Dashboard" on page 384).
	<i>Note:</i> This feature only applies to Digital Call Switch G2 stations with a CoS-based call-in level of Normal+Emergency or Urgent+Emergency.
Callback Request Indicator Expiration	Identifies for how many hours a Callback Request Indicator will remain active before being turned off. A value of zero (0) indicates no expiration.
Enable Queued Paging Instruction Message	When enabled (Yes), verbal instructions are provided before a queued message is recorded via Record Page. When disabled (No), only a beep tone is played to indicate the start of recording.

Enable Queue All-Call Page	When enabled (Yes), All-Call pages will be recorded and queued for play- ing to all speakers. Queued All-Call pages have higher priority than queued zone pages and will interrupt any that are currently playing, which will be replayed after completion of the All-Call page.
ASB Talkback Hold Time (ms)	The length of time (in milliseconds) that talkback is disabled after a voice is detected from the admin phone.
ASB Talkback Threshold (dB)	The level at which a voice is considered "detected" on the admin phone. Higher levels are recommended for loud environments.
Play Talkback Not Supported	When enabled, an audio message will be played (to the caller) when an intercom call is placed to an amplifier extension indicating that talkback is not supported. The intercom call will become a page to the attached speaker.

System Tools

The *Edit System Parameters* page contains a section called System Tools. These settings are managed independently from the parameters listed in *Table 19, "Edit System Parameters Page," on page 64* (i.e.,

they are not controlled by the **Cancel** and **Save** buttons, but instead take effect immediately). The following table describes parameters for this section.

Table 20. System Tools

Server IP Address	ldentifies t Nyquist de server.	the Nyquist system server IP address that will be used by evices to register and communicate with the Nyquist system				
	<i>Note:</i> This is the IP address to specify as an appliance's TFTP Server , from which it can retrieve its <i>Configuration</i> settings via the Get Configuration from Server button. The E7000's IP configurations for both Port A and Port B are specified using the Network Wizard, which can configure each port to either use a static IP address or obtain its IP configuration from an external DHCP server (or, for Port B, to disable it).					
	Caution	The Nyquist DHCP service does not operate on the Port B network. If the Nyquist DHCP service is needed, do not select the Port B IP address.				
	<i>Note</i> : If this N on page 78), change this	Nyquist Server is configured for Automatic Failover (see "Automatic Failover" this will show the Master IP address and the user should not attempt to value. If the Master IP address must be changed, you should:				
	1 disable Automatic Failover,					
	2 change the server IP address (via the Network Wizard),					
	3 and reconfigure Automatic Failure.					
	<i>Tip:</i> The and, usin	network settings (i.e., IP address, subnet, gateway, DHCP server, /or DNS servers) of both network ports can be viewed and changed g the Network Wizard, which can be accessed via the following URL:				
	htt	ps:// <server>/setup/network</server>				
Use Network Time Server defined by DHCP	When ena	bled, the Network Time Server will be defined by DHCP.				
Network Time Server	Identifies a comma-delimited list of IP addresses and/or domain names of Network Time Protocol (NTP) servers to be used.					
	The maxim	num length of this list is 768 characters, including commas.				
	To change then select	the NTP server, enter the IP address or the domain name, and t Change Network Time Server .				

Appliances Network Time Server Source	Identifies the time source for all appliances on the Nyquist network. The appliances may use one of the following sources:
	 nyquist When this option is selected, all Nyquist appliances will use the Nyquist system server as the NTP server; this is the default option.
	 dhcp When this option is selected, all Nyquist appliances will use the NTP server provided via DHCP Option 42. If the built-in Nyquist DHCP Server feature is being used, all Nyquist appliances will use the Nyquist server for NTP service via the Server IP Address.
	 ntpserver When this option is selected, all Nyquist appliances will use the Net- work Time Server defined in System Parameters.
	To change the time source for the appliances, use the down arrow to select the desired source, and then select Change Appliances Network Time Server .
Server Date/Time	Identifies the date and time of the server.
	To change the Server Date/Time, use the Calendar icon to select the new date, and then select Change Server Date/Time .
Time Zone	Sets the time zone for the server.
	To change the time zone, select a new time zone from the drop-down menu, and then select Change Time Zone .
	Note: You must reboot the server after changing the time zone.
Dialing Length	Specifies the number of digits required to dial within the system. Valid values are 3, 4, 5, or 6.
	To change the dialing length, select a new value from the drop-down menu, and then select Change Dialing Length . You must reboot all Nyquist appliances and IP phones. A system backup is automatically created.
Routines API Key	The Routines API Key is used as an authorization passcode by Routines API (REST) calls. Every Routines API call must include an HTTP header called Authorization whose value is the string, "Bearer xxxxxxx", where xxxxxxxx is the Routines API Key . If this value is missing or incorrect, the call will fail. For further details, see <i>"Using the Routines API" on page 419</i> .
Reset	Invalidates the current Routines API Key and randomly generates a new one. This will prevent a potentially compromised key from being used, as all subsequent calls using the old key will fail. This new key should be securely communicated to all valid users of the Routines API.
	Be aware that this operation immediately invalidates the key. You will be prompted with a warning after clicking this button to prevent accidental resets.

Additional IP addresses and/or DNS names to include in the Server Certificate	Additional IP addresses and/or DNS names, as a space-separated list, to include in the generated server certificate's Subject Alternative Names (SAN) field. This indicates to a client that this certificate is valid for a server at any of these IP addresses or DNS names. A domain wildcard may be included (e.g. *.your-domain.com).
	This is primarily intended for adding an alternate IP address and/or DNS name, such as a public-facing network connected to Ethernet Port-B or a valid DNS name, that your site is supporting for the Nyquist server.
	<i>Note</i> : Automatic Failover configurations automatically include the Master, Primary, and Secondary IP addresses in the SAN, so this need not be set explicitly.
Generate Server Certificate	Generates a server certificate for this Bogen server. The certificate will include any additional IP addresses and/or DNS names specified in the aforementioned "Additional IP addresses" setting as part of the certifi- cate's Subject Alternative Name (SAN) field.
	Important: After a system update, the bogenCA.crt file needs to be recreated before it can be downloaded to a client again (see "Client Requirements" on page 9). Use this button to re-generate the certificate.
Download Bogen CA Certificate	Initiates a download of a CRT file containing the public Bogen Certifica- tion Authority (CA) certificate. This CA certificate should be installed on any devices that will connect to this Bogen server, whether through a browser or through the Routines API, so that they can authenticate it as a valid Bogen server.
Remote Calendar Control	Configures which Facilities, if any, will be allowed remote access to this system's Calendars.
	• Disabled : Remote Facilities are not permitted to control this system's calendar (although this Facility may still be able to access a remote Facility's calendar).
	• Allow Facilities : All enabled Facilities from the Facilities view are per- mitted to remotely access and control this system's calendar.
	• Allow Access List: All specified Facilities (as specified by IP addresses in the Calendar Control Access List field) are permitted to remotely access and control this system's calendar. See Calendar Control Access List for more information.
	<i>Note:</i> If none of the Facilities are using Automatic Failover, Allow Facilities is the easiest way to enable Remote Calendar Control. If any of the Facilities are using Automatic Failover, you will need to use Allow Access List to enable Remote Calendar Control.
	<i>Note:</i> Only users whose Role has the Remote Calendar Control permission will be able to access remote calendars.

Calendar Control Access List	This field is only shown if Remote Calendar Control is configured as Allow Access List.		
	A space-separated list of IP addresses specifying the remote Facilities that are permitted to manage this system's calendar. This list should include the Primary IP Address, Secondary IP Address, and Server IP Address of each Facility that uses Automatic Failover, as well as the Server IP Address for each server that does not use Automatic Failover.		
Update Remote Calendar Control	When pressed, the Remote Calendar Control and optional Calendar Control Access List changes will take effect.		
Nyquist Control Password	Specifies a password used to secure Nyquist control messages between the E7000 controller and associated Nyquist appliances. The password specified on each Nyquist appliance must match the password specified here for that appliance to support certain Nyquist features, such as sound masking, amp protection mode, and station check-in.		
	The specified password must be exactly 20 characters long and include uppercase, lowercase, and numeric characters.		
	<i>Note:</i> This password cannot be set unless the current user's password has been modified from the default value. Similarly, this password cannot be set on a Nyquist appliance unless the Web Password for that appliance's Station, Amplifier, or Gateway device has been changed from the default value.		
Save Password	Saves the value specified in the Nyquist Control Password field as the current Nyquist control password.		
	Warning After the password has been modified and saved, features that depend on this password will not work until this password has been updated on all Nyquist devices.		
Show Saved Password	Displays the current Nyquist control password.		
Update Nyquist Devices	Updates the Nyquist control password on connected Nyquist devices using the current Nyquist control password.		
	Warning Nyquist devices that are not currently connected will not be updated. These may need to be updated manually on the device's web interface, or use this button again when they are connected.		
Schedule Site Settings: Label Singular	Specifies a word or phrase to be used throughout the schedules in place of the word "school."		
Schedule Site Settings: Label Plural	Specifies a word or phrase to be used throughout the schedules in place of the word "schools."		
Schedule Site Settings: Icon	Specifies the icon to be used throughout the schedules to represent one or more sites.		

Schedule Site Settings: Save Settings	Apply changes to the site labels and icons.				
Call Assurance Audio	Identifies the audio to be played to the caller to indicate that a call to the admin station has been placed.				
	To choose a new file, select Choose File , browse to select the new file to be used for the Call Assurance audio, and press Save Call Assurance Audio .				
	The supported audio formats are:				
	WAV (8 kHz, 16-bit, mono)GSM				
	<i>Tip:</i> There are websites (e.g., https://convertio.co) that can convert audio files into an appropriate audio format.				
Urgent Call Assurance Audio	Identifies the audio to be played to the caller to indicate that an urgent call to the admin station has been placed.				
	To choose a new file, select Choose File , browse to select the new file to be used for the Urgent Call Assurance audio, and press Save Urgent Call Assurance Audio .				
	The supported audio formats are:				
	WAV (8 kHz, 16-bit, mono)GSM				
Emergency Call Assurance Audio	Identifies the audio to be played to the caller to indicate that an emer- gency call to the admin station has been placed.				
	To choose a new file, select Choose File , browse to select the new file to be used for the Call Assurance audio, and press Save Emergency Call Assurance Audio .				
	The supported audio formats are:				
	WAV (8 kHz, 16-bit PCM, mono)GSM				
Nyquist Appliance VoIP Security	Enables or disables SIP TLS and SRTP security for all currently configured Nyquist appliances.				
	<i>Note:</i> This option is only available if the Nyquist Appliance VoIP Security permission is assigned to the user's role and if all Nyquist appliances are using firmware versions of 5.0 or later.				

Automatic Failover

Nyquist servers provide the ability to configure two Nyquist servers to act as a Master and Slave. If and when the Master Nyquist server fails, the Slave server can automatically take over, thereby ensuring reliable functionality.

The basic mechanism by which Automatic Failover works is conceptually very simple. Each of two servers, a primary and a secondary, are assigned IP addresses. A third IP address, known as the Master IP Address, is then assigned to the primary server. This master IP address is used by users and devices to access the Nyquist system, and the server providing service via the master IP address is known as the Master server. The secondary server is known as the Slave server, which monitors the Master server.

If the Master server fails for any reason, the Slave server detects the failure, assigns the master IP address to itself, and takes over as the Master. When the primary server recovers, the secondary server releases the master IP address, becoming the Slave, and the primary server reassigns the master IP address to itself, once again becoming the Master.

The Automatic Failover feature also includes another concept: Standby mode. A server in Standby mode will relinquish the Master role, if it is currently the Master, and will not resume as Master until explicitly removed from Standby. This is useful when you wish to force the secondary server to assume Master functionality, such as for primary server maintenance purposes.

Recoverable Failures

There are any number of server failures which will cause the Automatic Failover mechanism to promote the secondary server to Master. The following list is not comprehensive, but provides a number of examples.

Hardware Failures

- Catastrophic server failure causing server to no longer power up or boot
- Loss of power
- Damaged Ethernet hardware (NIC)
- Damaged RAM
- Ethernet cable no longer supplying network connection (e.g., cable pulled out, cable damaged, failed network switch, network switch isolated from network, etc.)
- Catastrophic SSD failure

Software Failures

- Catastrophic software failure that prevents system from booting
- Operating System failure (becomes unresponsive or reboots)
- Repeated Operating System service failures (e.g., web server, database server, DHCP server, etc.)
- Repeated Nyquist service failures (Communication service, Device Monitor, Queue Manager)

- System becomes unresponsive, due to software issue
- · Disk full, resulting in software failures
- System Update being performed on Primary server (this is a normal cause of failover, though it's not really a failure.)

Note: Some of these conditions may only be temporary. The primary server may resume the primary role after a successful reboot or it becomes responsive again.

Automatic Failover Configuration

To use the Automatic Failover functionality, the administrator must configure the two servers with their static IP addresses—both on the same subnet—and with the master IP address. The administrator will then step the two servers through several coordination phases—Initialization, Database, Services, and Resources—at the end of which the primary server will be in master mode and the secondary server will be in slave mode, ready to take over and provide service.

Allocate three IP addresses to be used for the servers, all within the same subnet, and ensure that these addresses are reserved (i.e., will not be used by other machines or allocated by a DHCP server). You will also need to select an authentication password, which is used by each of the servers to verify that it is a legitimate failover partner.

If there are any firewalls between the primary and secondary servers, the following network ports must be opened for both in- and out-bound traffic before proceeding.

- UDP 5405
- TCP 2224
- TCP 3121

Note: The servers do not share USB-based audio files. If the primary server is using USB-based audio distribution files, make sure that the secondary server has an exact copy of the USB flash drive being used by the primary server.

To configure the primary and secondary servers:

- 1 Determine the IP addresses and authentication password to be used by the servers:
 - Master IP address
 - Primary IP address
 - Secondary IP address
 - Authentication password The authentication password must match on both the primary and secondary servers for the Automatic Failure mechanism to work.
- 2 Activate a Nyquist system controller to use as a primary server. Assign the master IP address (*not* the primary IP address) to Port-A of the system.
- 3 Activate a Nyquist system controller to use as a secondary server. Assign the secondary IP address to Port-A of the system.

- 4 Ensure the secondary server contains an Automatic Failover license before proceeding any further with the configuration process. This can be verified by clicking the Product License button on the System Parameters page of the secondary server. If the Automatic Failover property of the Licensing Information section shows "Licensed," the feature is enabled. Note the primary server will report this as "Not Licensed" until after Automatic Failover is fully configured. If needed, contact Bogen or an Authorized Reseller to purchase the Automatic Failover License Key.
- 5 Install the server's Certification Authority on your local machine (see "Bogen Digital Certification Authority" on page 553).

Note: Browser security warnings will not immediately be eliminated as the servers may not yet have a certificate with the appropriate IP addresses associated with it, but these warnings should stop within the next couple steps.

Configuration	Setup Steps	
rimary Hostname: 🟮	Primary Node	Secondary Node
econdary Hostname: 🚯	Initialization	Initialization
	Database	Database
faster IP Address: 1	Services	Services
rimary IP Address: 🚯	Resources	Resources
iecondary IP Address: ()	Current Setup Step Instruc No matching Hostname.	tions:
uthentication Password: ()		

Figure 28. Automatic Failover Configuration

Note: Subsequent instructions will indicate on which server to perform the operations, with sub-items providing the steps to perform.

- 6 Primary server
 - a) Open a browser window or tab and navigate to the Dashboard using the Master IP address, then to the **Automatic Failover** area.
 - b) Enter the hostname and IP address for each of the primary and secondary servers.
 - c) Enter the master IP address (i.e., the same address which your browser is currently addressing).
 - d) Enter the secret authentication password.
 - e) Press the **Save** button and wait for confirmation.
 - f) To continue the process on the primary server, you will need to login again using the *primary* IP address (instead of the *master* IP address).
- 7 Secondary server
 - a) Open a new browser window or tab and navigate to the Dashboard using the secondary IP address, then to the **Automatic Failover** area.

Tip: As you will be alternating between the primary and secondary servers frequently, it may be easiest to keep them in separate browser windows.

- b) Enter the hostname and IP address for each of the primary and secondary servers.
- c) Enter the master IP address.
- d) Enter the same secret authentication password used on the primary server.
- e) Press the Save button and wait for confirmation.

From this point forward, the **Setup Steps** section of the **Automatic Failover** page will indicate instructions to perform for each step. These instructions should directly correspond to the steps provided here.

This stage of the configuration process will walk you through a sequence of configuration steps, requiring you to alternate between the browser windows of the Primary and Secondary servers. The following table summarizes these Setup Steps (i.e., button clicks) and on which server (i.e., browser) each step should be performed.

Note that the sequence of buttons to be clicked for each stage (i.e., Initialization, Database, Services, and Resources) follows the same pattern:

- Primary Server, Primary Node button
- Secondary Server, Primary Node button
- Secondary Server, Secondary Node button
- Primary Server, Secondary Node button

Primary Server			Secondary Server				
#	Primary Node	#	Secondary Node	#	Primary Node	#	Secondary Node
1	Initialization	4	Initialization	2	Initialization	3	Initialization
5	Database	8	Database	6	Database	7	Database
9	Services	12	Services	10	Services	11	Services
13	Resources	16	Resources	14	Resources	15	Resources

8 Primary server

- a) Press the Initialization button under Primary Node and wait for confirmation.
- 9 Secondary server
 - a) Press the Initialization button under Primary Node and wait for confirmation.
 - b) Press the Initialization button under Secondary Node and wait for confirmation.
- **10** Primary server
 - a) Press the Initialization button under Secondary Node and wait for confirmation.
 - b) Press the Database button under Primary Node.
 - c) Refresh the web page until the **Database** button turns green. If errors are displayed, continue refreshing the web page until the **Database** button turns green.

11 Secondary server

- a) Press the **Database** button under **Primary Node** and wait for confirmation.
- b) Press the Database button under Secondary Node.
- c) Refresh the web page until the **Database** button turns green. If errors are displayed, continue refreshing the web page until the **Database** button turns green.

12 Primary server

- a) Press the **Database** button under **Secondary Node** and wait for confirmation.
- **b)** Press the **Services** button under **Primary Node** and wait for confirmation.

13 Secondary server

- a) Press the Services button under Primary Node and wait for confirmation.
- b) Press the Services button under Secondary Node and wait for confirmation.

14 Primary server

- a) Press the Services button under Secondary Node and wait for confirmation.
- b) Press the **Resources** button under **Primary Node** and wait for confirmation. If errors are displayed, refresh the web page.
- c) If a login screen is displayed, log back into the web interface, open the **Automatic Failover** area and confirm that the **Resources** button is green.

15 Secondary server

- a) Press the **Resources** button under **Primary Node** and wait for confirmation.
- b) Press the **Resources** button under **Secondary Node** and wait for confirmation.

16 Primary server

a) Press the **Resources** button under **Secondary Node** and wait for confirmation.

If all setup buttons are green at this point, the **Primary Node** is in master mode and the **Secondary Node** is in slave mode. The system has been successfully configured for Automatic Failover.

Configuration	Setup Steps	
Primary Hostname: 1	Primary Node	Secondary Node
Secondary Hostname: ()	Initialization	Initialization
nq-sysctrl-0030180d567c	Database	Database
10 10 5 2	Services	Services
Primary IP Address: (1)	Resources	Resources
10 10 5 3 Secondary IP Address: (1)	Operation Commands:	
10 10 5 1	Standby Maintenance	Refresh Sync DB
Authentication Password: 🚯		

Figure 29. Automatic Failover Operations mode

Note: The Automatic Failover page can be accessed via the Primary or Secondary IP address, or via the Master IP address. When accessed via the Primary or Secondary IP address, it displays and allows the user to access the Operation Commands, as shown in *Figure 29*. When accessed via the Master IP address, links to the Primary and Secondary servers are shown instead.

Table 21. Automatic Failover Parameters

Hostname

Name of the current server.

Table 21. Automatic Failover Parameters

Operational Mode	Indicates the current state of the Automatic Failure configuration or operation on this server. Possible values are:			
	• setup			
	• master			
	 slave 			
	 standby 	ý		
	• mainter	nance		
Primary Hostname	Name of t	he Primary server.		
Secondary Hostname	Name of t	he Secondary server.		
Master IP Address	The IP address that is used by Nyquist devices, the Nyquist web interface, SIP-based telephony devices, and Routines API clients of the Nyquist sys- tem to communicate with the Nyquist system. The Master IP Address is also known as the Server IP Address.			
Primary IP Address	The IP address of the primary server, used for communicating with the secondary server and for performing specific Automatic Failover opera- tions through the web interface.			
Secondary IP Address	The IP address of the secondary server, used for communicating with the primary server and for performing specific Automatic Failover operations through the web interface.			
Authentication Password	Password used for authentication between the primary and secondary servers.			
Save	Saves the currently shown configuration settings.			
Disable	Disables the Automatic Failover functionality for this server, returning thi server to a standalone server. To temporarily disable Automatic Failover use the Standby or Maintenance modes instead.			
	Caution	This action will completely remove the Automatic Failover configu- ration and is not reversible without performing the setup process over again.		
Setup Steps	Shows which setup step is currently being performed during the Auto- matic Failover setup process. Successfully completed steps are displayed in green.			
Standby	Places the current server in Standby mode, which causes the server to surrender the Master role to the partner server and to subsequently refuse to accept the Master role.			
Unstandby	Removes the current server from Standby mode and potentially resumes the Master role.			

	Table 21. Automatic Failover Parameters
Maintenance	Places the current server in Maintenance mode.
	<i>Note:</i> Do not place your server into Maintenance mode unless instructed to do so by Technical Support.
	While in Maintenance mode, a server will neither assume nor relinquish the Master role due to failures, but will maintain its current role.
	For example, if the Primary server is in Maintenance mode and suffers a software error or controlled software restart, it will not relinquish the Master role to the Secondary server.
	Similarly, if the Secondary server has assumed the Master role and is then placed into Maintenance mode, it will not assume the Master role when the Primary server recovers until the Secondary server is taken out of Maintenance mode.
	<i>Note:</i> Although a server will not explicitly assume or relinquish the Master role while in Maintenance mode, the other server may still assume the Master role if the server in Maintenance mode is incommunicado due to a shutdown, reboot, or other network issues.
Unmaintenance	Removes the current server from Maintenance mode.
	<i>Note</i> : Do not place your server into Maintenance mode unless instructed to do so by Bogen Technical Support.
Refresh	Refreshes the Automatic Failover status. This clears previous failures that may have caused failover from Master to Slave.
Sync DB	Synchronizes the database between Master and Slave servers.
	To synchronize the databases, first execute Sync DB while logged into the Primary server IP address. Wait for confirmation that the operation has completed, then execute Sync DB while logged into the Secondary server IP address.
	<i>Note</i> : You <i>must</i> execute the Sync DB command on the Primary server first.

Automatic Failover Process

The failover process, once configured, will automatically occur if the primary server fails. The failure may be an internal error that is detected by the primary server itself, or it may be a catastrophic failure, such as a hardware failure, where the secondary server loses contact with the primary and assumes the Master role.

Warning It is STRONGLY recommended that system configuration changes NOT be made while the Secondary server is acting as the Master server. Any such changes will not be replicated to the Primary server. If changes *must* be made (e.g., while awaiting a replacement Primary server), be sure to perform the same changes on the Primary server when it is placed in service.

Initiating a Server Shutdown

If you need to shutdown the primary server and you want the secondary server to provide service during the primary server's downtime, put the primary server into Standby mode by pressing the **Standby** button before performing the shutdown. Later, when the primary server boots up, it will remain in Standby mode. When you're ready for it to resume the master role, take it out of Standby mode by pressing the **Unstandby** button.

To shutdown the secondary server while it is in Slave mode, you can immediately perform the shutdown. Later, when the secondary server boots up, it will automatically resume in Slave mode.

To shutdown the secondary server while it is in Master mode, there are two possible scenarios. If the primary server is available, put the secondary server into Standby mode before performing the shutdown. Later, when the secondary server boots up, it will still be in Standby mode. When you're ready for it to resume the Slave role, take it out of Standby mode by pressing the **Unstandby** button. If the primary server is in Standby mode or not available, the secondary server will take the Master role and provide service.

Primary Server Permanent Failure

If the Primary server permanently fails, forcing the use of the Secondary server as the Master, you will need to setup a new System Controller to use as the Primary, disable Automatic Failover on the Secondary, and then perform the Automatic Failover configuration on the two servers.

Caution Although the secondary server will provide full functionality, the Automatic Failover license will not operate indefinitely without a primary server. Please contact Bogen or an Authorized reseller for information on replacing the primary server.

Restore the System from a System Backup

To restore an Automatic Failover-configured system from a system backup, follow these steps:

- 1 Perform the system restore on the primary server using a system backup that was created after the **Automatic Failover** setup (see *"Restoring a Backup File" on page 349*).
- 2 On the Automatic Failover page of the primary server, press Sync DB under Operation Commands and wait until it finishes.
- 3 On the Automatic Failover page of the secondary server, press Sync DB under Operation Commands and wait until it finishes.
- 4 On the Automatic Failover page of the primary server, press the Refresh button.
- 5 On the System Parameters page, press Check Server Status.

- 6 In the **Automatic Failover Status** section, check that the following statements are true:
 - "MySQL Master Status, File" is equal to "MySQL Slave Status, Master_Log_File"
 - "MySQL Master Status Position" is equal to "MySQL Slave Status, Read_Master_Log_Pos"
 - "MySQL Slave Status, Slave_IO_Running" is Yes
 - "MySQL Slave Status, Slave_SQL_Running" is Yes
- 7 If any statements in step #6 are false, repeat the procedure starting with step #2
- 8 If statements listed in step #6 are not true, even after repeating the steps, contact technical support.

Note: System Restore will only restore configuration data; it will not repair all issues that may be related to the **Automatic Failover** feature. If system restore does not solve the problem you're experiencing, then disable the **Automatic Failover** feature and repeat the **Automatic Failover** setup process. If your problem is still not resolved, please contact technical support.

System Update Procedure

Warning Please read the Release Notes for the system update that you're about to use. The release notes may include changes to this procedure.

The following procedure should be followed to perform System Updates on the Primary and Secondary servers when Automatic Failover is enabled:

1 Update Primary Server: Access the Primary server using the Primary server's IP address.

Note: While using the Automatic Failover feature, the system will not allow you to start a System Update from the Master IP Address.

- 2 *Optional step*: If you are performing system updates on systems that are currently providing service, place the Primary server into standby mode, and wait until the Secondary server has assumed the master role.
- 3 Start the System Update on the Primary server, wait until the update has finished.
- 4 In the unlikely event that the update fails, stop the procedure and contact Technical Support. The Secondary server will continue to provide service until the issue is resolved on the Primary server.
- 5 *Optional step*: If you placed the Primary server into standby mode, take the Primary server out of standby mode, and wait until the Primary server has assumed the master role.

Note: If the Primary server assumed the master role after the system update, this step can be skipped.

- 6 Update Secondary Server: Access the Secondary server using the Secondary server's IP address.
- 7 Start the System Update on the Secondary server, wait until the update has finished.
- 8 Verify Operation: Access the Primary server using the Primary server IP address.
9 On the System Parameters page, press Check Server Status.

10 In the Automatic Failover Status section, check that the following statements are true:

- "MySQL Master Status, File" is equal to "MySQL Slave Status, Master_Log_File"
- "MySQL Master Status Position" is equal to "MySQL Slave Status, Read_Master_Log_Pos"
- "MySQL Slave Status, Slave_IO_Running" is Yes
- "MySQL Slave Status, Slave_SQL_Running" is Yes
- 11 If any statements in the previous step are false, continue to the next step, otherwise the system update procedure is finished.
- 12 On the Automatic Failover page of the primary server, press Sync DB under Operation Commands and wait until it finishes.
- **13** On the **Automatic Failover** page of the secondary server, press **Sync DB** under **Operation Commands** and wait until it finishes.
- 14 On the Automatic Failover page of the primary server, press the Refresh button.
- 15 On the System Parameters page, press Check Server Status.
- **16** In the **Automatic Failover Status** section, check that the following statements are true:
 - "MySQL Master Status, File" is equal to "MySQL Slave Status, Master_Log_File"
 - "MySQL Master Status Position" is equal to "MySQL Slave Status, Read_Master_Log_Pos"
 - "MySQL Slave Status, Slave_IO_Running" is Yes
 - "MySQL Slave Status, Slave_SQL_Running" is Yes
- 17 If any statements in step #16 are false, repeat the procedure starting with step #12
- 18 If statements listed in step #16 are not true, even after repeating the steps, contact technical support.

Configuration Limitations

• Changes to Network Time (NTP) Server should be applied to both Primary and Secondary servers.

Note: As a safety feature, the NTP server of the Primary server will be automatically applied to the Secondary server when the Secondary server becomes the Master server. To ensure they are both synchronized, however, it is recommended that changes be applied to both at the same time.

- Changes to Time Zone must be applied to both Primary and Secondary servers.
- Changes made via Custom Configuration must be applied to both Primary and Secondary servers.

Failover Limitations

• Queued paging messages are not copied to the Secondary server. If the Secondary server becomes the Master server, the queued paging messages that were created on the Primary server will not be played.

- Ongoing check-in processes are not migrated between Primary and Secondary servers. If a check-in is started on the Primary server, and during the check-in process the Secondary server becomes the Master, the current check-in process is not migrated to the Secondary server.
- Audio Distributions are terminated and no attempt is made to resume Audio Distributions that were playing before the failover.
- Routines that were operating are terminated, and thus the state of various features may not be updated if a Routine was responsible for updating the state. For example:
 - Display messages (missing delete command)
 - I/O Contact state (missing open/close command)

One way to work around this issue is to create Routines with reboot triggers that are responsible for setting features to a known state after a failover occurs, when applicable.

• Recordings and Voicemail made while the Secondary server is providing service are not copied to the Primary server when it resumes service.

Failover Routines and Triggers

The following table lists Routine triggers that can be used to execute Routines upon Automatic Failover events. The "Executed on node" column indicates on which node the Routine actions will execute.

Routine Trigger	Automatic Failover Event	Executed on node
af-primary-avail	The Secondary server is now able to con- tact the Primary server.	Secondary Primary (*rejoin)
af-primary-error	An error has occurred on the Primary server that requires attention.	[Not used in this release]
af-primary-master	The Primary server is now in master mode providing service.	Primary (Master)
af-primary-maint	The Primary server is now in maintenance mode. If the Primary server is currently the master, it will continue to provide ser- vice. While in maintenance mode, failover to the Secondary server will only occur if the Primary server is shutdown, reboots, or losses network connectivity. The server should not be left in maintenance mode unless instructed to do so by technical support.	Primary

Table 22. Failover Event Routine Triggers

af-primary-standby	The Primary server is now in standby mode and is not providing service.	Primary
af-primary-unavail	The Secondary server is unable to contact the Primary server. This may indicate a primary server failure or be due to a net- work connection issue on the primary or secondary server.	Secondary
af-secondary-avail	The Primary server is now able to contact the Secondary server.	Primary Secondary (*rejoin)
af-secondary-error	An error has occurred on the Secondary server that requires attention. Example: MySQL may be out of sync with Primary server.	[Not used in this release]
af-secondary-master	The Secondary server is now in master mode providing service.	Secondary (Master)
af-secondary-maint	The Secondary server is now in mainte- nance mode. If the Secondary server is currently the master, it will continue to provide service. If the Secondary server is currently the slave, it will not assume the master role if the Primary server fails. The server should not be left in maintenance mode unless instructed to do so by tech- nical support.	Secondary
af-secondary-slave	The Secondary server is now in slave mode, is not providing service, and is waiting for failover.	Secondary
af-secondary-standby	The Secondary server is now in standby mode, is not providing service, and is unavailble for failover.	Secondary
af-secondary-unavail	The Primary server is unable to contact the Secondary server. This may indicate a secondary server failure or be due to a network connection issue on the primary or secondary server.	Primary

Table 22. Failover Event Routine Triggers

* "rejoin" indicates that the node has rejoined after being offline

Recommendations

- If a Routine includes an action to display a message to GA10PV display devices, consider specifying a unique identifier for that message. This will make it easier to delete the message when it is no longer relevant, such as when the failover state changes. For example, when the secondary server becomes the Master, a display message might be created for that event. Later, when the primary becomes Master again, a Routine started by the **af-primary-master** trigger will be able to delete the previously displayed message related to the secondary becoming the Master by using the message identifier specified by the secondary server when it created the message.
- Most triggers will *not* cause Routines to be executed on *both* servers. Keep that in mind when you're
 planning which actions to perform. For example, a Routine triggered by **af-secondary-slave** will
 execute actions only on the Slave server, so attempting to perform actions that affect Nyquist
 devices will not take affect because the Nyquist devices are only communicating with the Master
 server.
- Remember that Routines that execute on a non-Master node cannot display messages on, or otherwise communicate with, Nyquist devices.
- Every time a server becomes the Master, the **Reboot** trigger is also fired. This allows the **Reboot** trigger to be used to initialize the server environment. The **af-primary-master** and **af-secondary-master** triggers should be used for actions that should only occur when the failover mechanism has caused the switch.
- Whenever you use a Routine trigger related to a server being unavailable (e.g., af-secondaryunavail), keep in mind that the reason could be that the reporting server is no longer attached to a network and thus Routine actions that require network connectivity could fail.
 - Similarly, remember that the **af-secondary-unavail** and **af-primary-unavail** triggers may *both* fire, each on a different server, if both servers are still functioning but are unable to communicate for any reason. The Routines should be designed with this possibility in mind.
- *Tip:* Whenever Routines are configured to be triggered by any of the Automatic Failover event triggers, we highly recommend that you thoroughly test everything to ensure that the expected actions are performed. It may be safest to test outside of normal operating hours.

Using CoS Configuration

Class of Service (CoS) configuration is used to define the Nyquist features that stations are permitted to use, and defines the Call-in Level that stations will use when calling an Admin Station. All stations in the Nyquist system must have an associated CoS that defines the feature privileges granted to that station. An unlimited number of CoS definitions can be configured and assigned. Once created, a CoS can be

assigned to a station as a Day CoS and/or Night CoS. (See *"Editing Station Configuration Settings" on page 141*.) Note that an analog phone cannot be used as a day or night admin.

Q 0	CoS	6 Configu	ration 🔸	0											
														Filter	
		Name 🔅	Call in Level	Zone Paging	All-Call Paging	Emergency All-Call	Inter-Facility Call/Page	Audio Distribution	Remote Pickup	Join Conversation	Call Forwarding	Walking Class of Service	External Call Routing	Call Transfer/3-way Calling	Manu
	8	Admin Phone	Normal+Emergency	Yes	Yes	Yoo	Yes	Yes	Yes	Yos	Yes	Yes	Yos	Yes	
1	8	Classroom	Normal+Emergency	No	No	No	No	No	No	No	No	No	No	No	
	8	No Privs	Normal+Emergency	No	No	No	No	No	No	No	No	No	No	No	

Figure 30. CoS Configuration Page

The following table describes the CoS parameters:

Table 23. CoS Configuration Page Parameters

Name User-provided name for the CoS.

Call in LevelFor call-switch station types, identifies the call as Normal+Emergency,
Urgent+Emergency, or Emergency-Only.

The system defaults to **Normal+Emergency**.

 Normal+Emergency: Initiates a normal- or emergency-level call. Pressing the Analog/Digital Call Switch once triggers a normal-level call to the administrator. Pressing a Digital Call Switch three times, or pressing an Analog Call Switch four times, triggers an emergency-level call to the administrator.

After placing a normal-level call with a Digital Call Switch, before it has been answered, the call can be elevated to an emergency-level call by pressing the call switch one more time.

After placing a normal-level call with an Analog Call Switch, before it has been answered, the call can be elevated to an emergency-level call by pressing the call switch four times.

 Urgent+Emergency: Initiates an urgent- or emergency-level call. Pressing the Analog/Digital Call Switch once triggers an urgent-level call to the administrator. Pressing a Digital Call Switch three times, or pressing an Analog Call Switch four times, triggers an emergency-level call to the administrator.

After placing an urgent-level call with a Digital Call Switch, before it has been answered, the call can be elevated to an emergency-level call by pressing the call switch one more time.

After placing an urgent-level call with an Analog Call Switch, before it has been answered, the call can be elevated to an emergency-level call by pressing the call switch four times.

• **Emergency Only**: Initiates an emergency-level call by pressing the call switch one time.

Note: The Callback Request Indicator feature cannot be used with stations that have Call in Level set to **Emergency Only**.

	Table 23. CoS Configuration Page Parameters
Call in Level (cont'd)	When an emergency call is placed to an Admin:
	Caller ID will include "Emergency".
	 Timeout to roll over to Admin Group for unanswered call to Admin is 15 seconds instead of 30 seconds.
	 Routines with Emergency-Call trigger will execute.
	 I/O controllers will be notified that Emergency Call was placed.
	 Station recording will be automatically enabled.
	• If Emergency Link is enabled, Emergency Link Station will be called.
	 If Bump on Emergency is enabled, existing Admin Call currently con- nected to Normal call will be bumped.
Zone Paging	Specifies if Zone Paging, Zone-based Announcements, and Record Announcements are enabled for the associated station.
All-Call Paging	Specifies if the associated station can simultaneously page or play announcements to all speakers within the facility.
Emergency All-Call	Specifies if the associated station can place a top priority all-call page.
Inter-Facility Call/Page	Specifies if the associated station can call or page another facility.
Audio Distribution	Specifies if the associated station can start and stop audio distributions.
Remote Pickup	Specifies if the associated station can remotely answer internal and incoming outside line calls by dialing 7* <extension-to-pickup>.</extension-to-pickup>
Join Conversation	Enables the caller to interrupt or join an existing call. If a call is placed to a busy station, the system waits 10 seconds and then bumps or interrupts the call with the new caller, or the caller can dial an access string to join the existing call. This feature applies to administrative display phones only.
Call Forwarding	Permits a user to redirect or route incoming calls to another station.
Walking Class of Service	Enables the CoS settings of the station to be temporarily overridden with the CoS of a different station via the Walking CoS DTMF code (see "Walk- ing CoS" on page 571).
External Call Routing	Enables the station to transfer a call to an outside line.
Call Transfer/3-way Calling	Allows the associated station user to contact a third-party while on a call, establish a three-way conversation and then drop off allowing the two other parties to remain connected.
Manually Activate Tone Signals	Enables a user to initiate tones outside of the schedule.
Call Any Station	Enables a station to call any station.
Manage Recordings	Allows the station user to manage recordings, such as emergency call recordings.

Table 23. CoS Configuration Page Parameters

Monitor Calls	Allows the station user to monitor active calls.
Monitor Locations	Allows the station user to monitor locations (not active calls).
Conference Admin	Allows the station user to join a conference as an administrator.
Conference User	Allows the station user to join a conference as a user.
Voicemail	Allows the station user to receive voicemail.
Record Calls	Allows the station user to begin recording an active call by pressing *3 any time during the call. This option is for use with admin phones when a Normal, Urgent, or Emergency intercom call is being made.
Activate Alarm Signals	Allows the station to activate alarms.
Disable Audio	Allows a station with contact closure to disable audio during a fire alarm or other emergency, allows an Admin web interface station to manually disable audio via the dashboard, and allows an Admin Phone to disable audio via DTMF code.
	<i>Note</i> : There also exists a related Role permission, Enable/Disable Audio Button, that determines whether or not users will see the Enable Audio and Disable Audio buttons on their Dashboard. The Role permission does not, however, prevent the user from using this feature through other mechanisms, such as via an Admin phone or the Routines API.
Enable Audio	Allows enabling of audio previously disabled during an emergency event, allows an Admin web interface station to manually enable audio via the dashboard, and allows an Admin Phone to enable audio via DTMF code.
	Note: See Disable Audio note regarding related Role permission.
Allow Callee Auto- answer	Allows call auto-answer by the callee for calls placed by this station.
Multi-Site Paging	Allows station to perform multi-facility paging and multi-facility announcements.
Inter-Facility Features	Allows the station to call extensions on remote facilities for voice mail and access to recorded calls and to stop audio.
Manage Output Contacts	Allows the station to activate or reset output contacts on I/O Controllers. For more information about managing output contacts, see "Configuring I/O Controller Output Rules" on page 150.
Execute Routines	Allows the station to execute routines via DTMF codes. For more informa- tion about managing routines, see "Using Routines" on page 416.
Call Speaker Stations	Allows the station to call speaker stations (i.e., stations that do not have the ability to hang up), such as VoIP speaker stations and amplifier sta- tions.

Editing CoS Parameters for a Station

To edit CoS Parameters for a station:

- 1 On the navigation bar, select **CoS Configuration**.
- 2 For the station that you want to edit CoS settings, select the **Edit** icon.
- 3 Make the desired changes. You can use the **All On** button to turn all features on or the **All Off** button to turn all features off. For information about the settings, see *Table 23, "CoS Configuration Page Parameters," on page 92.*
- 4 After all changes are made, select **Save**.

Deleting CoS Parameters for a Station

To delete CoS Parameters for a station:

- 1 On the navigation bar, select **CoS Configuration**.
- 2 For the station that you want to delete CoS settings, select the **Delete** icon.
- 3 When prompted, select **Delete**.

Adding CoS Parameters for a Station

To add CoS Parameters for a station:

- 1 On the navigation bar, select **CoS Configuration**.
- 2 Select the **Add** icon.
- 3 Complete Parameters for the station. For information about the settings, see *Table 23, "CoS Config-uration Page Parameters," on page 92*.
- 4 After all changes are made, select **Save**.

Managing SIP Trunks

A Session Initiation Protocol (SIP) trunk is an IP-based network connection between Nyquist and an Internet Telephony Service Provider (ITSP, also known as a VoIP telephone service provider). It allows you to use VoIP telephony beyond the facility's firewall without the need for a Public Switched Telephone Network (PSTN), providing a configuration that is easier and less expensive to operate and maintain. SIP trunks can carry VoIP calls, Enhanced 911, and other real-time communications services.

A SIP Tie-Trunk (or a SIP Tie-Line) functions similarly to a SIP trunk, but serves as an IP-based interconnection between Nyquist and a local (premises-based) or hosted IP-PBX. For information about using SIP Tie-Trunks with Nyquist, refer to *"SIP Trunk Custom Configuration Settings" on page 102*.

Before you can set SIP parameters in Nyquist, you must first set up the system's DISA function by creating a station with the **Type** of **DISA Line**. (See "Adding a Station" on page 171.) It is recommended that the technician performing the installation be skilled with SIP implementation and testing. The firewall setting must allow port 5060 and ports 10000–20000 for the RTP traffic. Any other type of SIP connectivity could be available via an individual case basis process.

How Nyquist Handles Incoming SIP Calls

Note: If a SIP trunk is configured but disabled, then incoming calls from the SIP trunk are ignored.

When a SIP trunk is enabled and Nyquist receives an incoming call on that SIP trunk, Nyquist routes the call based on the **Access** parameter set in the Nyquist SIP trunk's parameters. The **Access** parameter is set when editing or adding SIP trunk configuration (see *"Editing a SIP Trunk Configuration" on page 106* and *"Adding SIP Trunk Configuration Parameters" on page 100*) and must match the ITSP switch configuration.

Based on the **Access** parameter setting, Nyquist does one of the following:

- Routes the call to a DISA function/station
- Routes the call to a Security DISA function/station
- Routes the call to a defined Day Admin or Night Admin

The following **Access** settings route the incoming SIP trunk call to the DISA functionality:

- DISA Bi-directional No password
- DISA Bi-directional Password
- DISA Incoming only No password
- DISA Incoming only Password
- PBX Connection Incoming only. Allow DISA, No password
- PBX Connection Incoming only. Allow DISA, Password

When the Nyquist system receives an incoming call, the caller will hear a dial tone. The caller can then dial any Nyquist extension or any Dual Tone Multi-Frequency (DTMF) code that is associated with a Nyquist feature. For example, after hearing the dial tone, the caller can dial #0911 to start an Emergency All-Call page. (See *"Nyquist DTMF Feature Dialing Codes" on page 562* for a list of DTMF codes.)

When incoming calls are routed to the DISA function, the SIP trunk **Extension** setting is used to map the SIP trunk to a station of type **DISA Line**; the associated station's CoS configuration is used to determine which Nyquist functions the incoming DISA user is allowed to initiate. (See "Adding CoS Parameters for a Station" on page 95.) The **Extension** parameter is also used as the caller ID when a DISA user dials a station extension.

The following **Access** settings route the incoming SIP trunk call to Security DISA functionality:

- Security DISA Bi-directional Listen only
- Security DISA Incoming Listen only

• PBX Connection – Incoming only, security DISA

The caller must enter a valid extension to be monitored and can only listen to calls or station locations.

The following **Access** settings route the incoming SIP trunk call to the defined Day or Night Admin:

- Unrestricted
- Incoming Only

If the Day or Night Admin does not answer the incoming call, the call is routed, or rolled over, to the Admin Group. (See "Using Admin Groups" on page 253.)

If the call is not answered during night hours and the **Night Ring** option is enabled, the call is routed using the Night Ring functionality. (See "Configuring Night Call Options" on page 21.)

Note: For incoming calls over SIP Trunks, authorization is based on *IP Address* or *Hostname*, as defined in the SIP Trunk's **Host** configuration field. Since incoming call authorization is based on *IP Address* or *Hostname*, the SIP Trunk provider or PBX is not required to register with the Nyquist system to place calls into the Nyquist system. The Nyquist system permits SIP INVITES from the **Host** defined in the SIP Trunk configuration.

How Nyquist Handles Outgoing SIP Calls

Nyquist users can initiate outside calls by dialing a number that starts with the outside call prefix (98). Outside calls are only sent to SIP Trunks that have one of the following **Access** settings:

- DISA Bi-directional No Password
- DISA Bi-directional Password
- Security DISA Bi-directional Listen only
- Unrestricted
- Outgoing Only

Note: Use the PBX Connection options only if the PBX accepts 7-digit and 10-digit domestic and 12-digit international PSTN telephone numbers and can initiate outbound calls to specified telephone numbers.

- PBX Connection Bi-directional, No DISA
- PBX Connection Bi-directional, Allow DISA, No password
- PBX Connection Bi-directional, Allow DISA, Password
- PBX Connection Bi-directional, Security DISA

When outside calls are placed, the outbound caller ID is set to the Direct Inward Dial (DID) defined for the SIP Trunk. (See *"Editing a SIP Trunk Configuration" on page 106* or *"Adding SIP Trunk Configuration Parameters" on page 100*.)

When **Access** is set to **911 Only**, only outgoing 911 calls may be routed on the associated SIP trunk. The **DID** parameter is not used for outgoing 911 calls; it is expected that the SIP trunk provider has mapped the Billing Telephone Number (BTN) to E911 service.

All outgoing calls are routed through the SIP trunk provider using the following SIP trunk configuration parameters:

- Host IP Address
- Username
- Password

If the SIP trunk provider expects all called numbers to be prefixed with a specific code, the **Dial Prefix** setting can be used to satisfy the requirement.

If the SIP trunk provider expects all called 7-digit numbers to be prefixed with a specific local area code, the **Local Area Code** setting can be used to satisfy the requirement. (See "Adding SIP Trunk Configuration Parameters" on page 100.)

Dialing PBX Extensions via Nyquist SIP Trunks

If the Nyquist system has one SIP trunk configured that is attached to a PBX system, Nyquist users can dial PBX extensions via the Nyquist SIP trunk. The SIP trunks can be setup using DAHDI hardware, Grandstream HT813 FXO ports, or configured SIP Trunks.

Calls initiated via the Nyquist system that start with *** will be routed through an available Nyquist SIP trunk, presumably to an attached PBX system.

For example, dialing ***123 will cause the Nyquist system to place a call to 123 using an available SIP trunk (which should be attached to a PBX system).

Any combination of characters can follow the *** prefix. This allows complete flexibility to match the dial plan syntax of the attached PBX system.

For example, if the PBX is programmed to accept calls to extensions when prefixed with #, the Nyquist user can dial ***#123 to place a call to extension 123.

Notes

 When a Nyquist station uses the *** prefix to dial a PBX extension via a Nyquist SIP trunk, the Nyquist station must have **Outside Access** enabled. If the calling station's **Outside Access** parameter is set to **No Access**, the calling station will hear "access denied" and the call will not be placed. Any choice other than **No Access** will allow the station to place calls using the *** prefix; but if the **Restricted Day/Night** options are used, they will also be in affect to control access to day or night only.

- If the PBX extension length matches the Nyquist Dialing Length, you can add Admin PBX Extension stations to the Nyquist system to allow Nyquist users to call the PBX extension via the Admin PBX Extension without the need to use the *** prefix. For example, if your PBX has extensions 401, 402, and 403, and the Nyquist Dialing Length is three (3), you can add three Nyquist Admin PBX Extension stations using 401, 402, and 403 as the extensions. After that, Nyquist users can simply dial 401 to call PBX extension 401, 402 to call PBX extension 402, and 403 to call PBX extension 403.
- The SIP Trunk DID field can be set to whatever value is required by the PBX system that will be
 receiving calls from the Nyquist system. For example, if the PBX system wants to see the Nyquist
 incoming call as extension 123, the SIP Trunk DID can be set to 123 to make sure that—from the
 PBX system's perspective—the incoming call is coming from the caller id equal to 123.
- To enable this feature, the SIP Trunk Access setting should use one of the available choices that start with "PBX Connection".

Limitations

- Only one PBX system connection via a single SIP trunk is supported. Multiple PBX system connections is not supported because Nyquist does not yet have a method to allow users to select a specific PBX system for calls to PBX systems using the *** prefix.
- Nyquist does NOT support the use of '***' to dial PBX extensions via SIP trunks if the Nyquist system is also being used to dial PSTN DIDs via a SIP trunk attached to the PSTN (e.g. using PSTN SIP Trunk provider, or FXO attached to PSTN, instead of being attached to a PBX system).

On the other hand, If a PBX system is programmed to route incoming PSTN DID extensions through the PSTN, and Nyquist is attached to a single such PBX system, then Nyquist outbound calls via the PBX system are also supported.

Configuring SIP Tie-Trunks Between Nyquist and PBX Systems

If you want all incoming calls from the PBX to always use DISA to prompt the user for Nyquist dial codes, then use one of the **Access** options that starts with **DISA** (for example, **DISA – Incoming only -No password**).

If you want all incoming calls from the PBX to directly pass in dial codes that have already been collected from the user by the PBX or created by the PBX, then choose one of the **Access** options that starts with **PBX Connection** (for example, **PBX Connection – Incoming only, Allow DISA, No password**).

When any of the following **Access** options are configured for the SIP Tie-Trunk, the Nyquist server expects that dialing digits are provided by the PBX system (the dialing digits should be included in the SIP INVITE from the PBX), and Nyquist will immediately initiate a Nyquist call based on the digits provided:

- PBX Connection Incoming only, No DISA
- PBX Connection Incoming only, Allow DISA, No password
- PBX Connection Incoming only, Allow DISA, Password

- PBX Connection Bi-directional, No DISA
- PBX Connection Bi-directional, Allow DISA, No password
- PBX Connection Bi-directional, Allow DISA, Password

If the PBX Connection option includes **Allow DISA**, the PBX may start the DISA function by sending dialing code 950. The DISA function will also be started if the PBX does not pass any dialing digits in the SIP INVITE.

If **PBX Connection – Incoming only, No DISA** is used, the SIP Trunk must still have a DISA station type linked to the SIP trunk extension to provide the Nyquist CoS settings to be used for incoming calls, but when incoming connections are made from the PBX, the Nyquist system will ignore dialing code 950. The DISA function cannot be requested if the **No DISA** option is used.

The dialing digits provided by the PBX can be any of the DTMF codes supported by the Nyquist system. Access to various Nyquist features is granted based on the Nyquist CoS settings of the DISA station extension defined in the SIP Trunk.

If the PBX is not able to pass through # in the dialing digits, alternative dialing codes may be used to replace Nyquist extensions that start with #. For details, see "Alternate Dialing Codes" on page 574).

When the following Access options are configured for the SIP Tie-Trunk, upon connection from the PBX system (via SIP INVITE), the Nyquist system automatically activates the Security DISA function:

- PBX Connection Incoming only, security DISA
- PBX Connection Bi-directional, Security DISA

The caller must enter an access PIN, followed by the extension number of the station to monitor.

Another available option for connecting Nyquist with PBX Systems is the use of the Grandstream HT813 FXO Port. Please see *"Using a Grandstream HT813 Adapter" on page 176* for details.

Adding SIP Trunk Configuration Parameters

Before adding a SIP trunk, the following parameters must be configured or known:

- Extension for the Nyquist DISA line station associated with the specified SIP trunk; the station will have **DISA Line** selected as **Type** (see *"Viewing Station Configuration Settings" on page 128*).
- Dial prefix and format used to connect to an outside line
- Local area code
- · Username and password for the DISA line
- DID phone number associated with the DISA line
- Codecs allowed
- Admin Group set up for the SIP extension (see "Using Admin Groups" on page 253)

To add a SIP trunk:

1 On the navigation bar, select **SIP Trunks**.

- 2 On the SIP Trunks page, select the **Add** icon.
- 3 On the Add SIP Trunk page, complete the parameters. (See "Adding SIP Trunk Configuration Parameters" on page 100.)
- 4 Select Save.

Table 24. Add SIP Trunk Page Parameters

Name	Enter the name for the SIP trunk. The name cannot contain spaces or a slash (/) and cannot exceed 16 characters.			
Extension	Select the DISA station extension that is associated with the SIP trunk.			
Dial Prefix	Enter the dial prefix required by the ITSP to complete an outbound call over the SIP trunk. For example, :9, 9+1, etc.			
Local Area Code	Enter the local area code if the ITSP requires 7-digit telephone numbers be prefixed with the area code. Otherwise, this field is left blank.			
Enabled	Specify if the SIP trunk is enabled. The SIP trunk should be configured before it is enabled to avoid erratic system behavior.			
Access	Select the outside access permissions for the SIP trunk. Options are:			
	• 911 Only			
	DISA – Bi-directional – No password			
	DISA – Bi-directional – Password			
	 DISA – Incoming only – No password 			
	 DISA – Incoming only – Password 			
	Incoming Only			
	No Access			
	Outgoing Only			
	 Security DISA – Bi-directional – Listen only 			
	 Security DISA – Incoming – Listen only 			
	Unrestricted			
	 PBX Connection – Incoming only, No DISA 			
	 PBX Connection – Incoming only, Allow DISA, No password 			
	 PBX Connection – Incoming only, Allow DISA, Password 			
	 PBX Connection – Incoming only, security DISA 			
	 PBX Connection – Bi-directional, No DISA 			
	 PBX Connection – Bi-directional, Allow DISA, No password 			
	 PBX Connection – Bi-directional, Allow DISA, Password 			
	 PBX Connection – Bi-directional, Security DISA 			
Username	Enter the user name that is required to access the SIP trunk.			

Tab	e 24. Add SIP Trunk Page Parameters (Continued)
Password	Enter the password that is required to access the SIP trunk. The password is provided by the SIP trunk provider or hosted VoIP provider.
Password Confirmed	Re-enter the SIP trunk password.
Host	Enter the host name or IP address for the ITSP.
DID	Enter the 10-digit DID telephone number that the SIP trunk or hosted VoIP provider has assigned the SIP trunk, using the format NPANXXxxxx (that is, no spaces or dashes).
Day Admin	Select the Admin Station to call during daytime hours.
Night Admin	Select the Admin Station to call during nighttime hours.
Admin Group	Select the Admin Group to call if the day or night Admin Stations do not answer the call.
Call Recording	Indicates if incoming and outgoing calls are to be recorded.
Allow Outbound Intercom Calls	Indicates if call-switch–based stations are allowed to place calls to PBX- based Admin extensions via the SIP Trunk using Day/Night Admin-PBX- Extension.
	See <i>"Routing Intercom Calls to PBX Extensions via SIP Trunk" on page 194</i>) for further details.
Allow	Provide a list of media codecs that are allowed.
	<i>Tip:</i> The PSTN standard codec, G.711, can be specified via either the <i>alaw</i> or <i>ulaw</i> companding algorithm.
Description	Provide user-provided description for the SIP trunk.
Custom Settings	Provide custom setting configurations that are provided by Technical Support. (See "SIP Trunk Custom Configuration Settings" on page 102.)

SIP Trunk Custom Configuration Settings

The **Custom Settings** parameter can be used if additional parameters are needed during SIP trunk configuration to satisfy SIP trunk provider requirements. Bogen Technical Support will provide any necessary custom settings. In most cases, **Custom Settings** are not required.

Custom Settings can be entered when adding or editing SIP Trunk parameters (see "Adding SIP Trunk Configuration Parameters" on page 100 or "Editing a SIP Trunk Configuration" on page 106) using the following format:

:TABLE-NAME:<variable>=<value>:TABLE-NAME:

where TABLE-NAME is ENDPOINT, AOR, AUTH, Or SIPTRUNK; <variable> is a valid variable from one of the pjsip tables (i.e., ps_endpoints, ps_aors, ps_auths) or the sip_trunk table; and <value> is a valid value for the specified variable.

Contact Bogen Technical Support for information regarding custom settings for your specific IP-PBX type and configuration.

Registering as a Third-Party SIP Endpoint

You can configure a Nyquist SIP trunk to register with a third-party SIP endpoint with an IP-PBX. This will allow users to dial an IP-PBX defined extension to initiate Nyquist features, such as paging.

The steps to register the Nyquist SIP trunk as a third-party SIP endpoint for an IP-PBX are:

- 1 Define a Third-Party SIP Phone/Endpoint on your IP-PBX system. On the IP-PBX system, set up a third-party SIP phone/endpoint as you would for a standard single-line basic SIP IP phone with a username and password to use for authentication. Typically, the username would be the extension number. The Nyquist system will attempt to register with your IP-PBX system as a SIP endpoint extension using the provided username (extension) and password pair. Your IP-PBX users will dial the provided IP-PBX extension to access the Nyquist system.
- 2 Define a DISA station on Nyquist system. On the Nyquist System, create a DISA Line station Type. This station's extension will define the feature CoS permissions to be used when the IP-PBX calls into the Nyquist system.

Note: The station extension used for the DISA Line must be different than the extension being used by your IP-PBX.

3 Define a SIP Trunk on Nyquist system. Configure a Nyquist SIP Trunk using the username (PBX extension) and password that was defined on your IP-PBX in step 1.

For example, suppose the IP-PBX has defined extension 511 as the SIP endpoint with password **test-password**. The Nyquist SIP trunk must use **511** in the **Name**, **Username**, and **DID** parameters on the Add SIP Trunk page. Nyquist station extension 500 is defined as a **DISA** station.

When an IP-PBX user calls 511, the Nyquist system will see an incoming call to extension 511. Nyquist converts to the DISA station extension 500 (to provide CoS definitions for 511 and Caller-ID to the Nyquist system). DISA will be started, allowing the IP-PBX caller to initiate a feature on the Nyquist system. When DISA starts, the IP-PBX user hears a dial tone. The IP-PBX user can then enter DTMF/dial-pad based feature commands to start paging and other Nyquist features.

Table 25. Nyquist SIP Trunk Configuration

Name	511
	(Username/extension provided by IP-PBX)
Extension	500
	(DISA station extension defined on the Nyquist system. On Nyquist, it will look like the call came from this extension.))
Dial Prefix	NOT USED

	Table 25. Nyquist SIP Trunk Configuration (Continued)
Local Area Code	NOT USED
Enabled	Yes
Access	 PBX Connection – Incoming only, Allow DISA, No password
	 PBX Connection – Incoming only, Allow DISA, Password
Username	511
	(Username/extension provided by IP-PBX)
Password	testpassword
	(Password provided by IP-PBX)
Host	10.10.5.100
	(The IP-PBX's IP Address or fully qualified domain name, for example, myhost.mycompany.com)
DID	511
	(Username/extension provided by IP-PBX)
Day Admin	NOT USED
	(Pick any valid Nyquist Admin extension)
Night Admin	NOT USED
	(Pick any valid Nyquist Admin extension)
Admin Group	NOT USED
	(Pick any valid Nyquist Admin extension)
Allow	g722
	(or ulaw or other codec if needed)
Custom Settings	:AUTH:realm='':AUTH:
	:SIPTRUNK:context='511':SIPTRUNK:
	<i>Note:</i> If realm='' does not work, try realm=' <server_ip_address>'or realm='<server_host- name>'</server_host- </server_ip_address>

Viewing SIP Trunks

To view available SIP trunks for your facility:

On the navigation bar, select **SIP Trunks**.

The following table describes the details that can be viewed for each SIP trunk:

Table 2	26. SIP	Trunks	Page	Parameters
---------	---------	--------	------	------------

Name	Provides the name for the SIP trunk. The name cannot contain spaces or a slash (/).			
Description	Provides user-provided description for the SIP trunk.			
Enabled	Specifies if the SIP trunk is enabled.			
Status	Provides registration status of the SIP trunk. If the credentials are used by the SIP end point, the Status might be Register . If the SIP end point does not use credentials, the Status might be Rejected but this will not impede a successful SIP connection.			
Access	Identifies the outside access permissions for the SIP trunk. Options are:			
	• 911 Only			
	 DISA – Bi-directional – No password 			
	 DISA – Bi-directional – Password 			
	 DISA – Incoming only – No password 			
	 DISA – Incoming only – Password 			
	Incoming Only			
	No Access			
	Outgoing Only			
	 Security DISA – Bi-directional – Listen only 			
	 Security DISA – Incoming – Listen only 			
	Unrestricted			
	 PBX Connection – Incoming only, No DISA 			
	 PBX Connection – Incoming only, Allow DISA, No password 			
	 PBX Connection – Incoming only, Allow DISA, Password 			
	 PBX Connection – Incoming only, security DISA 			
	 PBX Connection – Bi-directional, No DISA 			
	 PBX Connection – Bi-directional, Allow DISA, No password 			
	 PBX Connection – Bi-directional, Allow DISA, Password 			
	 PBX Connection – Bi-directional, Security DISA 			
Extension	Identifies the station extension that is associated with the outside line (DISA station mapping and caller ID for incoming DISA).			
DID	Identifies the DID telephone number associated with the outside line. This number is assigned by the ITSP provider.			
Username	Identifies the user name that is required to access the SIP trunk.			
Host	Identifies the host name or IP address for ITSP.			

Та	ble 26. SIP Trunks Page Parameters (Continued)
Dial Prefix	Provides the prefix required by the ITSP to complete an outbound call over the SIP trunk. For example, :9, 9+1, etc.
Local Area Code	Provides the local area code if the ITSP requires the 7-digit telephone number be prefixed with the area code. Otherwise, this field is left blank.
Туре	Identifies this system trunk's type as a SIP trunk.
Day Admin	Identifies the Admin Station to call during daytime hours.
Night Admin	Identifies the Admin Station to call during nighttime hours.
Admin Group	Identifies the Admin Group to call if the Day or Night Admin Stations do not answer the call.
Allow Outbound Intercom Calls	Indicates if call-switch–based stations are allowed to place calls to PBX- based Admin extensions via the SIP Trunk using Day/Night Admin-PBX- Extension.
	See <i>"Routing Intercom Calls to PBX Extensions via SIP Trunk" on page 194</i>) for further details.
Codecs Allowed	Provides a list of media codecs that are allowed. Codecs are separated by a semi-colon.
Call Recording	Indicates if incoming and outgoing calls are being recorded.
Custom Settings	Identifies custom setting configurations that are provided by Technical Support. For more information, refer to "SIP Trunk Custom Configuration Settings" on page 102.

Editing a SIP Trunk Configuration

You cannot edit the name given to a SIP trunk, but you can edit other fields, such as the Dial Prefix and Local Area Code.

± Edit SIP Trunk	0
X Cancel	
Name: 1	
TestSipTrunk	
Extension: (1)	
500 -	
Dial Prefix: ()	
9+1	
Local Area Code: 🐧	
201	
Yes Access: 1	
Unrestricted -	
Username: 📵	_
test	
Change Password: ()	
Confirm Password Change:	
Host: 🜖	
192.168.17.12	
DID: (1)	
9734346056	

Figure 31. Edit SIP Trunks Page

To edit a SIP Trunk's configuration:

- 1 On the navigation bar, select **SIP Trunks**.
- 2 On the SIP Trunks page, select the **Edit** icon for the SIP trunk that you want to edit.
- 3 On the Edit SIP Trunk page, make the desired changes. (See *Table 27*.)
- 4 Select Save.

Table 27. Edit SIP Trunks Page Parameters

Name	Displays the name for the SIP trunk. This parameter cannot be edited.	
Extension	Enter the Nyquist DISA station extension that is associated with the out- side line (DISA station mapping and caller ID for incoming DISA).	
Dial Prefix	Enter the dial prefix required by the ITSP to complete an outbound call over the SIP trunk. For example, :9, 9+1, etc.	

Table 27. Edit SIP Trunks Page Parameters (Continued)				
Local Area Code	Enter the local area code if the ITSP requires the 7-digit telephone num- ber be prefixed with the area code. Otherwise, this field is left blank.			
Enabled	Specify if the SIP trunk is enabled. SIP trunks should be fully configured before they are enabled to avoid erratic system behavior.			
Access	Enter the outside access permissions for the SIP trunk. Options are:			
	• 911 Only			
	 DISA – Bi-directional – No password 			
	DISA – Bi-directional – Password			
	 DISA – Incoming only – No password 			
	 DISA – Incoming only – Password 			
	Incoming Only			
	No Access			
	Outgoing Only			
	 Security DISA – Bi-directional – Listen only 			
	 Security DISA – Incoming – Listen only 			
	Unrestricted			
	 PBX Connection – Incoming only, No DISA 			
	 PBX Connection – Incoming only, Allow DISA, No password 			
	 PBX Connection – Incoming only, Allow DISA, Password 			
	 PBX Connection – Incoming only, security DISA 			
	 PBX Connection – Bi-directional, No DISA 			
	 PBX Connection – Bi-directional, Allow DISA, No password 			
	 PBX Connection – Bi-directional, Allow DISA, Password 			
	 PBX Connection – Bi-directional, Security DISA 			
Username	Enter the user name that is required to access the SIP trunk.			
Change Password	Enter the password that is required to access the SIP trunk. The password is provided by the SIP trunk provider or hosted VoIP provider.			
Confirm Password	Re-enter the SIP trunk password.			
Change				
Host	Enter the host name or IP address for the ITSP.			
DID	Enter the DID telephone number associated with the outside line.			
Day Admin	Select the Admin Station to call during daytime hours.			
Night Admin	Select the Admin Station to call during nighttime hours.			
Admin Group	Select the Admin Group to call if the Day or Night Admin Stations do not answer the call.			

Table 27. Edit SIP Trunks Page Parameters (Continued)				
Call Recording	Select if incoming and outgoing calls are to be recorded.			
Allow Outbound Intercom Calls	Indicates if call-switch–based stations are allowed to place calls to PBX- based Admin extensions via the SIP Trunk using Day/Night Admin-PBX- Extension.			
	See <i>"Routing Intercom Calls to PBX Extensions via SIP Trunk" on page 194</i>) for further details.			
Allow	Enter a list of media codecs that are allowed. PSTN standard codecs are G.711 or ULAW.			
Description	Edit user-provided description for the SIP trunk.			
Custom Settings	Edit custom setting configurations that are provided by Technical Sup- port. For more information, refer to "SIP Trunk Custom Configuration Set- tings" on page 102.			

Deleting a SIP Trunk Configuration

If you are no longer paying for or using a SIP trunk service via an external provider, you may want to delete a previously added SIP trunk.

To delete a SIP trunk:

- 1 On the navigation bar, select **SIP Trunks**.
- 2 On the SIP Trunks page, select the
- **3 Delete** icon next to the SIP trunk that you want to delete.
- 4 Select **Delete**.

Viewing Outside Line Status

The status of every outside line in a facility can be quickly determined by using the Outside Lines feature.

To view the outside lines:

On the navigation bar, select **Outside Lines**.

	Table 28. Outside Lines Page Parameters		
Name	Identifies the system port name for the outside line.		
Description	Identifies the user-provided description of the outside line's purpose.		
Enabled	Specifies if the outside line is enabled.		
Status	Provides the status of the line.		
Port Type	Identifies system port type used for this line.		
Access	Identifies level of access allowed on this outside line. Options are:		
	• 911 Only		
	 DISA – Bi-directional – No password 		
	DISA – Bi-directional – Password		
	 DISA – Incoming only – No password 		
	 DISA – Incoming only – Password 		
	Incoming Only		
	No Access		
	Outgoing Only		
	 Security DISA – Bi-directional – Listen only 		
	 Security DISA – Incoming – Listen only 		
	Unrestricted		
	 PBX Connection – Incoming only, No DISA 		
	 PBX Connection – Incoming only, Allow DISA, No password 		
	 PBX Connection – Incoming only, Allow DISA, Password 		
	 PBX Connection – Incoming only, security DISA 		
	 PBX Connection – Bi-directional, No DISA 		
	 PBX Connection – Bi-directional, Allow DISA, No password 		
	 PBX Connection – Bi-directional, Allow DISA, Password 		
	 PBX Connection – Bi-directional, Security DISA 		
Dial Prefix	Identifies the digit or digits that must be dialed to obtain an outside line.		
Extension	Identifies the station extension that is associated with the outside line (DISA station mapping and caller ID for incoming DISA).		

Table 28. Outside Lines Page Parameters (Continued)			
DID	Identifies the DID telephone number associated with the outside line.		
Day Admin	Identifies the Admin Station to call during daytime hours.		
Night Admin	Identifies the Admin Station to call during nighttime hours.		
Admin Group	Identifies the Admin Group to call if the Day or Night Admin Stations do not answer the call.		

Editing Outside Lines

You can edit information or disable an outside line through the Edit Outside Line page.

To edit an outside line:

- 1 On the navigation bar, select **Outside Lines**.
- 2 Select the **Edit** icon next to the outside line name.
- 3 Make desired edits.
- 4 Select Save.

⁷ Edit Outside Line	0
X Cancel	
Name: 1	
DAHDI/1-1	
Enabled: 1	
No	
Port Type: 1	
DAHDI FXO 🗸	
Access: ()	
No Access -	
Dial Prefix: (1)	
Extension: (1)	
0 -	
Admin Group: (1)	
None 🗸	
Day Admin:	
100 *	
Night Admin: (1)	
100 *	
DID: ()	
Description: ()	
New port	



Table 29. Edit Outside Line Page Parameters

Name Identifies the system port name for the outside line. This parameter cannot be edited.

Enabled Specifies if the outside line is enabled.

Port Type Identifies system port type used for this line. This parameter cannot be edited.

	Table 29. Edit Outside Line Page Parameters (Continued)
Access	Identifies level of access allowed on this outside line. Options are:
	• 911 Only
	 DISA – Bi-directional – No password
	 DISA – Bi-directional – Password
	 DISA – Incoming only – No password
	 DISA – Incoming only – Password
	Incoming Only
	No Access
	Outgoing Only
	 Security DISA – Bi-directional – Listen only
	 Security DISA – Incoming – Listen only
	Unrestricted
	 PBX Connection – Incoming only, No DISA
	 PBX Connection – Incoming only, Allow DISA, No password
	 PBX Connection – Incoming only, Allow DISA, Password
	 PBX Connection – Incoming only, security DISA
	 PBX Connection – Bi-directional, No DISA
	 PBX Connection – Bi-directional, Allow DISA, No password
	 PBX Connection – Bi-directional, Allow DISA, Password
	 PBX Connection – Bi-directional, Security DISA
Dial Prefix	Identifies the digit or digits that must be dialed to obtain an outside line.
Extension	Identifies the station extension that is associated with the outside line (DISA station mapping and caller ID for incoming DISA).
Admin Group	Identifies the Admin Group to call if the Day or Night Admin Stations do not answer the call.
Day Admin	Identifies the Admin Station to call during daytime hours.
Night Admin	Identifies the Admin Station to call during nighttime hours.
DID	Identifies the DID telephone number associated with the outside line.
Description	Identifies the user-provided description of the outside line's purpose.

Discover Ports

The Discover Ports feature allows Nyquist to automatically discover a newly installed DAHDI PCI card and to automatically create entries for each port supported by the installed card. You can then edit each port with custom settings. The port name and port type are automatically set by Nyquist and cannot be changed.

Configuring Appliance Firmware

Firmware, computer software stored on a hardware device, can be updated for Nyquist appliances through the Nyquist Admin Web UI or through the appliance's web UI. For information about the appliance's web UI, refer to the device's configuration guide.

Note: Before configuring or using any Nyquist appliances, you should ensure that the appliance firmware is updated to the latest release. The latest firmware release can be obtained from the secured ES Dealer Login website: https://www.bogen.com/dealers

Through the Nyquist Admin Web UI, you can upload a firmware file to the Nyquist system server, download firmware to a station, view a list of stations that are linked to a firmware name, set default firmware for any stations to be added, and delete firmware entries.

You can also configure automatic software downloads (see "Configuring Automatic Software Download" on page 38).

For stations that are attached to a Networked Power Amplifier, such as an NQ-A2300, the firmware is updated to the amplifier and not to the individual station.

Viewing Firmware Stored on the Nyquist System Server

From the Firmware page, you can view a list of available firmware, bring up a list of devices that can be selected for updating firmware, set the file to the default firmware, check for updates, view release notes, select to edit information about or delete firmware files on the Nyquist system server, and configure automatic software downloads.

Firmware 👩				
🛓 Upload 🛃 🕹 C	heck For Updates	Download	l	
		Fi	ter	
Actions	Filename 🍦	Ac	ided Date	Notes
🖊 🕹 🗿 🖬 🗎	Default: NyqUpdate-1.2.811.tar.gz	201	9-07-08 09:47	
🖊 土 🔍 💿 i 🗎	NyqUpdate-1.2.911.tar.gz	201	9-07-18 14:10	

Figure 33. Firmware Page

To view firmware available for loading into Nyquist devices:

On the Navigation bar, select Firmware.

The following table describes the information provided for each available firmware file:

Table 30. Firmware Page Parameters		
Filename	Provides the name of firmware file that is ready for installing to a Nyquist device.	
Added Date	Provides the date that the firmware file was loaded to the Nyquist system server.	
Notes	Provides notes entered by a user.	

Viewing Devices With a Specific Firmware Installed

You can obtain a list of all devices in your Nyquist system that have a specific firmware version installed.

Sort By:	Extension	Name Filter by	y Extension:	
	Extension	Name	Device Type	
1	0116	0116 - IO CTRL	NQ-E7010-Input Output Controller	
1	0117	0117 - MMPA	NQ-P0100-Matrix Mixer Pre Amp	
-	0118	0118 - MMPA	NQ-P0100-Matrix Mixer Pre Amp	
1	0120	0120 - SPKR	NQ-S1810-VolP Speaker	
1	0121	0121 - SPKR	NQ-S1810-VolP Speaker	
1	0123	0123 - SPKR	NQ-S1810-VolP Speaker	
1	0124	0124 - SPKR	NQ-S1810-VolP Speaker	
1	0125	0125 - SPKR	NQ-S1810-VoIP Speaker	
1	0126	0126 - SPKR	NQ-S1810-VolP Speaker	
1	0127	0127 - SPKR	NQ-S1810-VoIP Speaker	

Figure 34. Selected Devices for Firmware Version

To obtain a list of devices with the same firmware version installed:

1 On the Navigation bar, select **Firmware**.

2 On the Firmware page, select the **View Selected Devices** icon next to a listed firmware version.

A list of the devices that have the selected firmware version installed appears.

3 Select **Close** to return to the Firmware page.

Uploading New Firmware to the Server

The Firmware page contains an **Upload** button that allows you to upload new firmware files to your Nyquist server.

To upload new firmware to the server:

- 1 On the navigation bar, select **Firmware**.
- 2 On the Firmware page, select Upload.
- 3 Navigate to the file that you want to upload.
- 4 Select Upload.

Note: The upload could take as much as a couple minutes. The Upload dialog will automatically close when the upload has completed.

Checking for Updates

The Firmware page contains a **Check for Updates** button that allows you to check if new firmware is available and download updates that exist.

To check for firmware updates:

- 1 On the navigation bar, select **Firmware**.
- 2 On the Firmware page, select Check For Updates.A popup window appears with one of the following messages:
 - No firmware dates available
 - Can't check for updates, check Internet connection, and try again
 - Downloading firmware update
 If the system attempts to download a firmware update, you will receive a message that the firmware download was either successful or failed. In the case of a failure, you will be prompted to
 try again.
- 3 When prompted, select **OK**.

Selecting Devices for Firmware Update

Device Selection for NyqUpdate-1.2.350.tar.gz Extension Name Filter by Extension: Sort By: Device Type: All Firmware: All * 101 - VolP SPKR 101 NQ-S1810-VoIP Speaker 1.2.350 102 102 - VolP SPKR NQ-S1810-VoIP Speaker 1.2.350 103 103 - VolP SPKR NQ-S1810-VolP Speaker 1.2.350 104 - VolP SPKR NQ-S1810-VoIP Speaker 1.2.350 104 141 - 1/0 : 1 NQ-E7010-Input Output Controller 1.2.350 141 Name Device Type Firmware A2300 - 1 : 1CH NQ-A2300-Amplifier 1.2.350 A2120 - 1 : 2CH NQ-A2120-Amplifie 1.2.350 Close

You can select one or more devices for a firmware update.

Figure 35. Device Selection for Firmware Update

To select devices for firmware update:

- 1 On the navigation bar, select Firmware.
- 2 On the Firmware page, select the **Device Selection** icon next to the firmware version that you want to load.
- 3 Select the device or devices that you want to install the firmware to.
- 4 Select Update.

You can select to install firmware to one device at a time. The Device Selection for firmware version screen remains until you select **Close**.

Setting Default Firmware

Through the Firmware page, you can set a firmware file as the default firmware for any new stations added to your Nyquist system.

Important: Selecting a new default does not change the firmware version currently configured and used by existing devices. It only applies to devices added after the default has been changed.

To set a default firmware file:

- 1 On the navigation bar, select **Firmware**.
- 2 On the Firmware page, select the **Set as Default Firmware** icon next to a listed filename.

3 Select **Yes** to continue.

Downloading Firmware to a Device

To download firmware from the Nyquist system server to a station:

- 1 On the navigation bar, select Firmware.
- 2 On the Firmware page, select the **Device Selection** icon next to a listed filename.
- 3 Select the **Update** icon next to the device that you are updating firmware for.

Editing Firmware

You can edit **Notes** for firmware, but you cannot change the **Filename** or **Added Date** information.

To edit notes for firmware:

- 1 On the navigation bar, select Firmware.
- 2 Select the **Edit** icon next to the desired firmware file.
- 3 Make changes to the **Notes** parameter.
- 4 Select Save.

Viewing Release Notes for Firmware

Not all firmware versions have release notes. For those that do, you can view the release notes by selecting the appropriate icon in the Actions column.

To view release notes for a firmware version:

- 1 On the navigation bar, select **Firmware**.
- 2 On the Firmware page, select the **Information** icon.
- 3 After viewing the release notes, select **OK**.

Warning Completing this procedure will set the selected firmware file as the default firmware for all new devices, overriding the factory installed firmware. Ensure that the selected firmware version is compatible with your server's software version. To use some appliances, you may need to update your server software.

Viewing Stations Linked to Firmware

To view stations linked to a specific firmware file:

- 1 On the navigation bar, select Firmware.
- 2 On the Firmware page, select the **View Selected Devices** icon next to a listed filename.

Deleting Listed Firmware

Note: Firmware cannot be deleted if it is associated with a device.

To delete a firmware file from the Nyquist system server:

- 1 On the navigation bar, select Firmware.
- 2 On the Firmware page, select the **Delete** icon next to the filename that you want to delete.
- 3 When prompted, select **Delete**.

Configuring Facilities

A facility is a site with one or more buildings managed by a single Nyquist system server.

With **Facilities**, you can connect multiple Nyquist facilities (servers) to provide the following multi-site paging and calling features:

- Multi-Site Emergency-All-Call paging to all connected facilities in the Facilities list
- Multi-Site All-Call paging to all connected facilities in Facilities list
- · Multi-Facility Paging to one or more selected Facilities
- Facility Announcement to one or more selected Facilities
- Paging to a specific facility in the Facilities list
- · Intercom calls between stations in different facilities in the Facilities list
- Start Routines on one or more remote Facilities

For information about the Facilities list, see "Viewing Facilities" on page 120.

Any connected facility can perform multi-site paging (i.e., paging to all facilities listed in the Facilities list), provided the facility has at least one station with the necessary CoS permissions enabled. If you are using an Admin Phone with the correct CoS permissions enabled, you can dial specific DTMF codes to perform various activities.

The following table provides a list of CoS permissions required and DTMF codes used for specific activities.

Activity	Required CoS Permissions	DTMF Syntax
Multi-Site Emergency- All-Call Page	Emergency All-Call, Multi-Site Paging	##0911
Multi-Site All-Call Page	All-Call Paging, Multi-Site Paging	##0
Facility All-Call Page	Inter-Facility Call/Page	## <facility-page-number></facility-page-number>
Multi-Facility Paging	Inter-Facility Call/Page	## <facility-page-number>*<facility-page- Number></facility-page- </facility-page-number>
Facility Announcement	Multi-Site Paging, Inter-Facility Call/Page	*97 <dtmf-code>#<facility-page- Number>*<facility-page-number></facility-page-number></facility-page- </dtmf-code>
Intercom Call to Remote Facility	Inter-Facility Call/Page	##* <facility-page-number>*<station extension<br="">Number></station></facility-page-number>
Activate System Fea- ture at Remote Facility	Inter-Facility Features	##* <facility-page-number>*[900 – 999] ##*<facility-page-number>*#<feature code=""> ##*<facility-page-number>**<feature code=""> ##*<facility-page-number>*00000<feature Extension></feature </facility-page-number></feature></facility-page-number></feature></facility-page-number></facility-page-number>

Table 31. Activities, CoS Permissions, and DTMF Codes

For information about Facility Error Conditions, see "Facility Error Conditions" on page 361.

Viewing Facilities

The Facilities page provides a quick view of the building or remote facilities (Nyquist servers) that are connected to this Nyquist server.

8	Fac	cilities	+ 0	2	Refresh				
								Filter	
		Page #	Name 🕴	Enabled	Host	Password		Status	
	Û	1	facility-00	Yes	10.10.10.10	BogenSrvNyq0	Registered,Remote 1	0.10.10.10 registered (Ok	(<mark>(1 ms</mark>))

Figure 36. Facilities Page

To view facilities:

On the navigation bar, select Facilities.

Table 32 describes the Facility page parameters:

Table 32. Facilities Page Parameters

Page #	ID number for facility that is used when paging the facility.
Name	Displays the facility name of the remote server. Spaces in the name are replaced by dashes. The maximum facility name length is 30 characters.
Enabled	Specifies if the facility will register with the remote facility.

Table 32. Facilities Page Parameters

- Host Displays the host name or host IP address of the remote server.
- **Password** Displays the password that is used for the remote connection.

Your Nyquist network can use multiple servers that all have the same password, or you can set different passwords for each server.

The maximum password length is 12 characters.

StatusDisplays the registration status of the local and remote facility peers.Some possible statuses are:

- **Registration request sent; remote not registered**: Indicates that a connection is not established between the facilities.
- **Registered**; **remote not registered**: Indicates that the local facility is registered with the remote facility but the remote facility is not registered with the local facility. This could be a temporary status captured during server startup, or it might result from the remote server not having the local facility properly configured.
- **Timeout; remote not registered**: Indicates that a connection is not established between facilities. This is probably due to a network connection issue or the remote facility may be down.
- **Timeout; remote 10.10.5.100 registered (OK (8 ms))**: Indicates that the remote facility has registered with the local facility and the connection is good, or OK, with 8 millisecond turnaround time (one-way connection).
- **Registered; remote 10.10.5.100 registered (OK (3 ms))**: Indicates that the local facility has registered with the remote facility, the remote facility has registered with the local facility, and the connection is OK with 3 millisecond turnaround time. This is the desired state, and it's OK if the reported millisecond turnaround time is not 3.
- **Rejected; remote not registered**: Probably indicates that the remote facility has disabled the local facility's configuration entry.
- **Registered; remote 10.10.5.100 registered (UNREACHABLE)**: Indicates that both ends are (or were) registered but the local facility cannot reach the remote. This is probably due to a network issue or the remote Nyquist system server is down.

Editing a Facility

From the Edit Facility page, you can change parameters for a facility connected to your Nyquist system server.

Note: You cannot edit a facility linked to a **Facility-Page** routine action **Type** (see "Understanding Action Parameters" on page 450).

To edit a facility:

- 1 On the navigation bar, select **Facilities**.
- 2 Select the **Edit** icon next to the facility that you want to edit.
- 3 Make the desired changes. (See Table 33, "Edit Facility Page Parameters," on page 122.)
- 4 Select Save.

Table 33. Edit Facility Page Parameters

Page	ID number for facility that is used when paging the facility.
Name	Displays the facility name of the remote server. Spaces in the name are replaced by dashes.
Enabled	Specifies if the facility will register with the remote facility.
Host	Displays the host name or host IP address of the remote server.
Password	Displays the password that is used for the remote connection.

Deleting a Facility

Note: You cannot delete a facility linked to a **Facility-Page** routine action **Type** (see "Understanding Action Parameters" on page 450).

To delete a facility:

- 1 On the navigation bar, select Facilities.
- 2 On the Facilities page, select the **Delete** icon next to the facility that you want to delete.
- 3 When prompted, select **Delete**.

Adding a Facility

From the Add Facility page, you can add another Nyquist facility to the list of facilities connected to your Nyquist system server.

🗞 Add Facility 👩			
Name: (1)			
Enabled: ()			
Password: 1			
★ Cancel 🕒 Save			

Figure 37. Add Facility Page

To add a facility:

- 1 On the navigation bar, select **Facilities**.
- 2 On the Facilities page, select the **Add** icon.
- 3 Complete the Add Facility parameters. (See *Table 34*.)
- 4 Select Save.

Table 34. Add Facility Page Parameters

Name	Enter the name of the remote facility. Spaces in the name are replaced by dashes. Maximum length is 30 characters.
Enabled	Specify if this facility will register with the remote facility.
Host	Enter the host name or host IP address of the remote server.
Password	Enter the password that is used for the remote connection. Maximum length is 12 characters.

Note: If you're planning to link more than 45 Facilities, you will need to use Facility Names and Facility Passwords that contain less than the maximum number of characters allowed. For example, if you're planning to link 78 Facilities, the maximum Facility Name length should be 12 and the maximum Facility Password length should be 12. If you are going to link more than 45 facilities, ask Technical Support to recommend the maximum character lengths to use for Facility Name and Password.
Appliance Discovery Wizard

The **Nyquist Appliance Discovery and Network Settings Configuration Wizard** can be used at any time to discover Nyquist appliances on the network (via Port A and optionally Port B) and change the appliances' network settings. The available options for an appliance are:

- Enable or disable DHCP on the appliance.
- If DHCP is disabled, specify the appliance's static IP configuration, including a static IP address, subnet mask, and gateway IP address.
- Specify a TFTP server IP address, or indicate that DHCP option 66 will be used to obtain it.

Caution Configuring any address *other* than the Nyquist server for DHCP option 66 will cause problems with device discovery and autoconfiguration.

The wizard can be accessed via the **Device Discovery** button, which can be found on the *Stations*, *New Stations*, *Bridge Devices*, *Stations Status*, *Amplifier and Gateway Devices*, and *Appliance Status* pages or accessed directly via the following URLs:

https://<server>/setup/discovery
http://<server>/setup/discovery

The wizard will first ask if Nyquist appliances will be configured to receive IP addresses and (optionally) the TFTP server IP address from the DHCP server or if they will be explicitly configured.

		Nyquist Appliance Di	scovery and Network	Settings Cor	nfiguration Wizar	d	
Nyquist App This wizard helps u Appliances found o The Update Select user to answer the the table.	Will appliances n t ec Will appliances	receive their IP Addre	esses from a netwo er IP Address from a	rk DHCP Ser a network DH	ver? Yes	v Yes v	/ides a list of Nyquist for multiple devices. ge and allows the Lloads new data into
	The Course of Co				Exit Mizord	Continue Wizard	
Q Scan Network	clu				P* EXIL WIZAIU	Continue Wizard	
Q Scan Network In Selection Status	Device Type	MAC Address	IP Address	Firmware	Link Net	mask Gateway	TFTP Server

Figure 38. Network Appliance Discovery and Network Settings Configuration Wizard (start)

• Will appliances receive their IP Addresses from a network DHCP Server?

No allows the user to configure the IP Address, Netmask, and Gateway settings for discovered Nyquist appliances.

Yes indicates that these settings will be configured by the DHCP server.

This option corresponds to the **DHCP Enabled** option on the *Network Settings* page of the appliance's web interface.

• Will appliances receive a TFTP Server IP Address from a network DHCP Server?

No allows the user to configure the TFTP Server address for discovered Nyquist appliances.

Yes indicates that the TFTP server address will be configured by the DHCP server. This option is not available if *Will appliances receive IP Addresses from a DHCP Server*? is set to **No**.

This option corresponds to the **TFTP Server from DHCP** option on the *Network Settings* page of the appliance's web interface.

NYQUIST. BOGEN.									
Nyquist Appliance Discovery and Network Settings Configuration Wizard This wizard helps users find Nyquist Appliances on their network and change Nyquist Appliance Network Settings. The table below provides a list of Nyquist Appliances found on the network (Port-A Only scanned by default). Inline editing allows the user to update and save available settings for multiple devices. The Update Selected button saves settings for all devices checked in the Selection column. The Restart Wizard button reloads the page and allows the user to answer the two DHCP server questions again. The Scan Network button clears the table, searches for Nyquist Appliances, and loads new data into the table.									
Q Scan N	Q Scan Network Include Port-B in Scan: No								
Selection	Status	Device Туре	MAC Address	IP Address	Firmware	Link	Netmask	Gateway	TFTP Server
	٢	NQ-A2060-G2-Amplifier + Create	a406e92d503f	192.168.90.18	5.0.181	ß	Set by DHCP Server	Set by DHCP Server	Set by DHCP Server
	۲	NQ-E7010-Input Output Controller	883f4a9d636b	192.168.90.38	5.0.147	ß	Set by DHCP Server	Set by DHCP Server	Set by DHCP Server
	Image: Set by DHCP Server Set by DHCP Server Set by DHCP Server Set by DHCP Server Set by DHCP Server				Set by DHCP Server				
2 Restart	C Restart Wizard Vupdate Selected								

Figure 39. Network Appliance Discovery and Network Settings Configuration Wizard (appliances)

After scanning the network, the wizard will present a list of all Nyquist appliances found on the network(s). Depending on which options were selected at the beginning of the wizard, one or more configurable settings may be available for each appliance.

Table 35. N	yquist Appliance Discovery and Network Setting Wizard Configuration Settings
Scan Network	Initiates a network scan to identify Nyquist appliances on the attached net- work(s).
Include Port-B in Scan	If set to Yes , both network ports (A and B) on the E7000 will be scanned for Nyquist appliances. If set to No (the default), only port A will be scanned. This takes effect the next time Scan Network is selected.
Selection	Select one or more appliances that will be updated when the Update Selected button is clicked.
Status	Indicates the status of the appliance. Possible values are:
	Device Ready
	Update Complete
	Updating Device
	Update Error
Device Type	The type of Nyquist appliance discovered.

Create	The Create button will be displayed next to the Device Type if the E7000 does not already have a station configured for this appliance. Selecting this button will create a new Station for the appliance.			
	<i>Tip:</i> If a station had previously been defined for this appliance and then deleted, the Create button may not be displayed. Reboot the device (e.g., use the Link button to access the appliance's configuration pages and press the Reboot Appliance button on the Firmware Update page), wait 30 seconds, and press the Scan Network button to refresh the status.			
MAC Address	Displays the MAC address of the appliance.			
	This helps identity specific devices when installing multiple devices of the same type.			
IP Address	Displays the current IP address of the appliance. If DHCP will not be used, selecting this value allows the IP address to be modified.			
	IP addresses will not be changed until Update Selected is clicked.			
	Warning Be careful to avoid specifying a currently used IP address (e.g., when swapping IP addresses) as this could result in IP address conflicts.			
Firmware	Displays the current version of the appliance firmware running on the appliance.			
Link	This provides a login window for the appliance. After you enter your Username and Password , the web UI for the device appears.			
Netmask	If DHCP will not be used for this appliance, the IP subnet mask must be speci- fied.			
Gateway	If DHCP will not be used for this appliance, the gateway IP address must be specified.			
TFTP Server	If the appliance will not receive the TFTP server IP address from the DHCP server, its IP address must be specified.			
Restart Wizard	Selecting this button restarts the Appliance Discovery Wizard.			
Skip Wizard	Exits the wizard and displays the E7000 Dashboard.			
Update Selected	Updates appliances for which the Selected box is checked with the provided val- ues.			

Managing Stations, Zones, and Queues

You can divide your facility into zones to control paging and audio activities or features.

For example, suppose you want to allow the use of an audio source—such as a flash drive—in a cafeteria, but prevent it from being played in a conference room. This feature, called *audio distribution*, can be turned on by zone, so the cafeteria could be placed in a zone that allows audio distribution, while the conference room would *not* be placed in that zone.

There is no limit to the number of stations that can be in a multicast zone, but performance limits do exist for unicast connections. The station limit for your system is determined by your Nyquist license (see "NQ-E7000SSL – Nyquist E7000 System Station License" on page 609). For licensing purposes, an I/O Controller is not counted as a station.

With the Page Queuing feature, you can record an unlimited number of pages or messages for queuing (stacking) for a specified zone or zones. A zone can only be added to a single queue, but a queue may have multiple zones associated with it. Zones must be created before a queue can be created.

Note: A station can be in multiple zones.

A Nyquist station can be:

- A device used to access the web interface
- A speaker
- A phone
- A Nyquist appliance

To manage stations and zones, you first add stations and then create zones that contain one or more stations. You can add stations by allowing the Nyquist server to automatically discover the device type, MAC address, IP address, and serial number, or manually add these and other parameters. For more information about adding a station, see "Adding a Station" on page 171.

Speaker Extension Muting

When a station that is associated with a Speaker Extension initiates a page, the associated speaker will be muted during the page. This is to prevent the creation of an audio feedback loop.

All paging types are supported: Emergency-All-Call, All-Call, Zone-Page, Facility Pages that include the local facility, Multi-Site All-Call, and Multi-Site Emergency-All-Call. The associated speaker is muted for Facility Page to eliminate possible interference from local pages while the station is performing the Facility Page.

Viewing Station Configuration Settings

On the Stations page, you can:

- View all configured stations.
- Edit a station's configuration. (See "Editing Station Configuration Settings" on page 141.)
- Exclude a station from paging via the **Page Exclusion** button. (*See "Excluding Stations from Paging"* on page 195.)
- Initiate the *Appliance Discovery Wizard* via the **Device Discovery** button. (See "Appliance Discovery Wizard" on page 124.)
- Access the *Simplified Configuration* page via the **Simplified Configuration** button. (See "Simplified Configuration" on page 206.)
- View station status via the Stations Status button. (See "Viewing Station Status" on page 197.)
- Add new stations via the New Stations button. (See "Adding a Station" on page 171.)
- View the status of Nyquist appliances, such as the I/O controller, via the **Appliance Status** button. (See *"Viewing Appliance Status" on page 199.*)
- Edit a station. (See "Editing Station Configuration Settings" on page 141.)
- Delete a station. (See "Deleting a Station" on page 170.)
- View device status information for the station. (See "Displaying Device Status" on page 207.)

Page	ge Exclusion Q Device Discovery			Simplified Con	figuration	Sew Stations			
							Filter		
		Extension 🕴	Name 🗍	Description	Туре 👙	Device Type	\$	MAC Addre	ss
	i	None	Sound Mask	Show	Sound Masking	NQ-A2120-G2-An	nplifier	None	
	i	None	Sound Mask A	Show	Sound Masking	NQ-A2120-G2-An	nplifier	None	
8	i	0010	Admin Web UI	Show	Admin Web Interface	n/a		None	
	i	0020	0020 - TechDoc	Show	Admin Web Interface	n/a		None	
	i	0030	0030 - Web Admin	Show	Admin Web Interface	n/a		None	
1	i	0040	0040 - Web Admin	Show	Admin Web Interface	n/a		None	
	i	0050	0050 - Web Admin	Show	Admin Web Interface	n/a		None	
	i	0060	0060 - Web Admin	Show	Admin Web Interface	n/a		None	
	i	0100	Admin - IP Phone	Show	Admin Phone	NQ-T1100 IP Phone - Color	r Touch Display	001565f30b	38
	i	0101	IO CTRL	Show	I/O Controller	NQ-E7010-Input Outpu	t Controller	f0b5d14bc2l	be
8	i	0102	EDP01	Show	Analog Call Switch & Speaker	NQ-EDP01-Entry Do	or Phone	a8e77def08	el
	-			(

Figure 40. Stations Page

To view all stations:

On the navigation bar, select **Stations**.

The following table, *Table 36*, describes station configuration information:

Table 36. Station Configuration Page Parameters

Note: Some of the following fields do not appear when adding or editing stations for specific device types.

Edit the station.
Delete the station.
Display the device status for this station.
Specifies the unique multi-digit extension number for the station. Valid values range from 030 to 899 for three-digit dialing. The system can be configured to use three, four, five, or six-digit dialing.
<i>Note:</i> Extensions 900 to 999 are reserved by Nyquist features; do not assign these extensions to stations.
Specifies the name for the station. Names can contain up to 16 charac- ters.
<i>Note:</i> Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Provides a description for this station.
<i>Note:</i> Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .

Туре

Note: The available Type options are determined by the indicated Device Type, which should be specified first.

Note: Once the station has been added, this setting cannot be modified.

Specifies the station type. Types include:

- Admin Phone
- Admin Web Interface

Note: A station of type Admin Phone or Admin Web Interface is generally referred to as an "Admin Station." Although most capabilities of these station types can be explicitly granted to other station types, the typical usage is to specify one of these types for stations that will be used for administrative purposes.

- Admin PBX Extension
- Web Interface
- IP Phone
- Mobile Device
- VoIP Speaker Only
- Analog Call Switch & Speaker
- Digital Call Switch & Speaker
- Analog Phone

Note: An analog phone cannot be used as an Admin Phone destination (Day or Night Admin) even if it has the correct CoS set. An analog phone cannot be added to a zone, cannot be used as an emergency, cannot be monitored, and cannot be a call forwarding target from an Admin Phone.

- DISA Line
- 911 Line
- I/0 Controller

Note: For licensing purposes, an I/O Controller is not counted as a station, so they do not subtract from the available station count set in the installed license.

- Matrix Mixer Pre-Amp
- Paging-Audio Amp
- Paging-Audio-Intercom Module
- Ambient Noise Sensor
- Push-To-Talk Microphone
- Audio Gateway
- Sound Masking

Device Type

Note: Nyquist does not display this field when adding or editing an Admin Web Interface, Web Interface, DISA Line, or Mobile Device.

Identifies the physical device used by the station. Device types include:

- Analog-Port
- Cisco ATA191/192-3PW-K9
- Cisco SPA112
- DAHDI FXS
- Grandstream GXW4224 Analog Phone FXS Port
- Grandstream HT813 Analog Phone FXS Port
- NQ-A2060[-G2]-Amplifier
- NQ-A2120[-G2]-Amplifier
- NQ-A2300[-G2]-Amplifier
- NQ-A4060[-G2]-Amplifier
- NQ-A4120[-G2]-Amplifier
- NQ-A4300[-G2]-Amplifier
- NQ-E7010-Input Output Controller
- NQ-EDP01-Entry Door Phone
- NQ-GA10P-Intercom Module
- NQ-GA10PV-Intercom HDMI Module
- NQ-GA20P2-Amplifier with Line Output
- NQ-GA400P-AoIP Gateway
- NQ-GA40P3-Amplifier with Line In/Out
- NQ-P0100-Matrix Mixer Pre Amp
- NQ-PA120 Public Address Mixer Amplifier
- NQ-PA240 Public Address Mixer Amplifier
- NQ-PA600 Public Address Mixer Amplifier
- NQ-S1810-E7020 VoIP Speaker CallSwitch
- NQ-S1810-VoIP Speaker
- NQ-S1810CT-G2 VoIP Ceiling Speaker Gen2
- NQ-S1810CT-T1 VoIP Ceiling Speaker with Transformer
- NQ-S1810WBC VoIP Wall Baffle Combo Spkr/Clock/Msg
- NQ-S1810WT-G2 VoIP Wall Baffle Speaker Gen2
- NQ-S1810WT-G3 VoIP Wall Baffle Speaker Gen3
- NQ-T1000 IP Phone Basic LCD Display
- NQ-T1100 IP Phone Color Touch Display
- NQ-T2000 IP Phone Basic LCD Display
- NQ-ZPMS Zone Paging Microphone Station
- Yeastar-TA2400 Analog FXS Port

Nyquist only displays this field when adding or editing a **Type** of **Analog Phone** and a **Device Type** of **DAHDI FXS**.

Identifies the system port name for the analog line.

Port

MAC Address	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, Admin PBX Extension, Analog Phone, Mobile Device, Paging-Audio Amp, or DISA Line.
	Specifies the Media Access Control (MAC) address, which is a unique identifier assigned to network interfaces for communications on the physical network segment.
Serial Number	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, Admin Phone, IP Phone, or DISA Line.
	Identifies the serial number for the device.
Facility	Identifies the facility where this station is installed.
Day CoS	Identifies CoS permissions that apply to this station during day time hours.
Night CoS	Identifies CoS permissions that apply to this station during night time hours.
Day Admin	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin PBX Extension, I/O Controller, Paging Audio Amp, or Matrix Mixer Pre-Amp. An analog phone cannot be used as an admin destination (day or night admin) even if it has the correct CoS set.
	Identifies the Admin Station that covers this station during daytime hours. This is the station that will be called when the user dials zero (0, *0, or **0) or presses the call switch.
	If Admin Group is specified, all the Admin Stations of the caller's Admin Group will be called instead of a single Admin Station. If the Admin Group includes web interface stations, they will be called directly, receiv- ing the call as an incoming call pop-up dialog.
	<i>Note:</i> If Admin Group is specified, the Emergency Link feature is not supported for this the station. See the Emergency Link description on page 68 for further details.
	For more information about CoS, see "Using CoS Configuration" on page 91.

Night Admin	<i>Note:</i> Nyquis sion, I/O Col cannot be u CoS set.	st does not display this field when adding or editing an Admin PBX Exten- ntroller, Paging Audio Amp, or Matrix Mixer Pre-Amp. An analog phone sed as an admin destination (day or night admin) even if it has the correct			
	Identifies t hours. This *0, or **0)	the Admin Station that covers this station during nighttime s is the station that will be called when the user dials zero (0, or presses the call switch.			
	 If Admin Group is specified, all the Admin Stations of the caller's Admin Group will be called instead of a single Admin Station. If the Admin Group includes web interface stations, they will be called directly, receiving the call as an incoming call pop-up dialog. <i>Note</i>: If Admin Group is specified, the Emergency Link feature is not supported for this the station. See the Emergency Link description on page 68 for further details. 				
	For more information about CoS, see "Using CoS Configuration" on page 91.				
Admin Group	<i>Note:</i> Nyqui: Admin Web Matrix Mixer	st does not display this field when adding or editing an Admin Phone, Interface, Admin PBX Extension, I/O Controller, Paging Audio Amp, or r Pre-Amp.			
	Identifies Group is c 30 second	the Admin Group associated with the station. The Admin alled if the Day Admin or Night Admin does not answer within s.			
Registration Password Registration Password	(Add and Edit only) Specify the password that this station will use when it registers with this Nyquist server as a SIP client. The Nyquist server will remember the registration password for each station.				
Confirmation	If Registration Password is unspecified, the Default Registration Password will be used (see <i>Table 19, "Edit System Parameters Page," on page 64</i>). If the Default Registration Password is not specified, Registration Password is required.				
	The minim	num length is five characters.			
	Caution	This field should appear blank, even when defined, unless the user enters a new password. If this field is automatically populated, it is probably due to the browser's autofill feature. It may be safest to disable or otherwise limit password management for the E7000 website to avoid accidentally changing this or other passwords.			
Show Password	(Add and	Edit only) Selecting this button shows the current password to			
Show Saved Password	the right c	of the button for four seconds. If at least one character is typed			
(Registration Password)	Saved Pas	sword field, the button laber dynamically changes from Snow ssword to Show Password.			
Codecs Allowed	Identifies	the list of coders supported by the device that is associated			
Courts Allowed	with this s	tation.			

Voicemail Password	<i>Note:</i> Nyquist does not display this field when adding a VoIP Speaker Only, Call Switch & Speaker, I/O Controller, or Matrix Mixer Pre-Amp.				
Voicemail Password Confirmation	(Add only) Provide the password used to access voicemail. This field can contain numeric characters only.				
Show Password	(Add and Edit only) Selecting this button shows the current password to the right of the button for four seconds. If at least one character is typed				
Show Saved Password	in the password field, the button label dynamically changes from Show				
(Voicemail Password)	Saved Password to Show Password.				
Force Name	<i>Note:</i> Nyquist does not display this field when adding or editing a VoIP Speaker Only, Call Switch & Speaker, I/O Controller, or Matrix Mixer Pre-Amp.				
	Forces the user to record his name when setting up voicemail.				
Force Greeting	<i>Note:</i> Nyquist does not display this field when adding or editing a VoIP Speaker Only, Call Switch & Speaker, I/O Controller, or Matrix Mixer Pre-Amp.				
	Forces the user to record a greeting when setting up voicemail.				
Call Recording	<i>Note:</i> Nyquist does not display this field when adding or editing an I/O Controller, Pag- ing Audio Amp or Matrix Mixer Pre-Amp.				
	Determines if all calls made and placed to this station are recorded.				
Paging	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, Web Interface, DISA Line, I/O Controller, 911 Line, or Analog Phone.				
	When set to Off , the station does not receive tones from the schedules, All-Call pages, or Zone pages. However, the station will receive Emergency All-Call pages unless the station is a NQ-T1000 or NQ-T2000 phone.				
	If Paging is set to On for a NQ-T1000 or NQ-T2000 phone, then this device will receive Emergency All-Call pages even if the station is in the Paging Exclusion list. This device will receive All-Call and zone paging provided the station is not in the Paging Exclusion list. If Paging is set to Off , then the station will not receive Emergency All-Call, All-Call, or zone paging.				
Audio Distribution to All Speakers	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, Web Interface, DISA Line, I/O Controller, 911 Line, IP Phone, or Analog Phone.				
	Determines if the station can receive audio distribution played to all sta- tions. Audio distribution played to zones will still be received if the sta- tion is in the audio zone.				
Intercom Cut Level (dB)	Specifies the volume cut level for intercom calls. The cut level can range from -42 to 0. The default level is -6 .				

Talkback Gain (dB)	<i>Note:</i> This field only applies if viewing, adding, or editing a station that is associated with an NQ-GA10P or an NQ-GA10PV Intercom Module or with an NQ-7030 Analog Station Bridge.
	Indicates the gain that is to be applied to the talkback function for channels 1 and 2. Gain is the measure of the ability to increase the power or amplitude of a signal. The Talkback Gain can range from -12 to $+20$; default is set at 0.
Microphone Input Gain (dB)	<i>Note:</i> This field only applies if viewing, adding, or editing a station that is associated with an NQ-GA10P or an NQ-GA10PV Intercom Module and the station Type is Push-To-Talk Microphone .
	Indicates the gain that is to be applied to the microphone function for channels 1 and 2. Gain is the measure of the ability to increase the power or amplitude of a signal. The Microphone Input Gain can range from -12 to $+20$; default is set at 0.
Outside Access	<i>Note:</i> Nyquist does not display this field when adding or editing an I/O Controller or Matrix Mixer Pre-Amp.
	Identifies permissions for this station to place outside calls. Parameters are:
	No Access
	Restricted
	Restricted Day Only
	Restricted Night Only
	Unrestricted
	Unrestricted Day Only
	Unrestricted Night Only
911 Route	<i>Note:</i> Nyquist does not display this field when adding or editing a VoIP Speaker Only, Call Switch & Speaker, I/O Controller, or Matrix Mixer Pre-Amp.
	Identifies where 911 calls placed by this station are routed, such as to a specific SIP trunk.
Auth Code	<i>Note:</i> Nyquist does not display this field when adding or editing an I/O Controller or Matrix Mixer Pre-Amp.
	Allows the user to enable the capabilities and features of this station if the Walking Class of Service CoS feature is enabled. The four-digit code activates features from the user's associated station to the station being used.
	If Auth Code is set to 0000, this feature is disabled.

Speaker Extension/Mute	<i>Note</i> : Nyquist does not display this field when adding or editing an I/O Controller or Matrix Mixer Pre-Amp.
Speaker	Identifies the extension of the speaker associated with the station for speaker drop-to-phone feature and the toggle audio distribution feature (*9).
	Note: Only one speaker extension can be associated with a station.
	<i>Note:</i> When a station that is associated with a Speaker Extension initiates a page, the associated speaker will be muted during the page to prevent feedback. For details, see <i>"Speaker Extension Muting" on page 127</i> .
VLAN Configuration	<i>Note</i> : Nyquist does not display this field when adding or editing an Admin Web Inter- face, 911 Line, or DISA Line unless the Admin Phone or IP Phone is connected to a Yeastar TA2400 or Grandstream GXW4224 port.
	Specifies how the station receives its Virtual Local Area Network (VLAN) configuration. Options are:
	 Server: Allows you to configure the VLAN settings via the Nyquist server web interface. The configured setting will then be sent to the Nyquist appliance by the Nyquist server.
	• Network/Device : The Nyquist devices will either listen for VLAN con- figuration from DHCP (Network) or the VLAN settings can be config- ured via the Nyquist device's web interface (Device).
	• Disabled : VLAN is disabled and not used.
VLAN ID	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, 911 Line, or DISA Line unless the Admin Phone or IP Phone is connected to a Yeastar TA2400 or Grandstream GXW4224 port.
	Identifies the VLAN for this station. The VLAN ID parameters range from 2 through 4094 and pertain to the bridge's network interface (not to the ports or stations).
VLAN Priority	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, 911 Line, or DISA Line unless the Admin Phone or IP Phone is connected to a Yeastar TA2400 or Grandstream GXW4224 port.
	Identifies the priority for the port. Values range from 0 through 7.
Web Username	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, Admin Phone, IP Phone, 911 Line, or DISA Line unless the Admin Phone or IP Phone is connected to a Yeastar TA2400 or Grandstream GXW4224 port.
	When applicable, provides a username for logging into the web inter- face of the device hosting the station.

Web Password Web Password Confirmation	<i>Note:</i> These fields appear only when adding or editing a station, provided the station is not an Admin Web Interface, Admin Phone, IP Phone, 911 Line, or DISA Line unless the Admin Phone or IP Phone is connected to a Yeastar TA2400 or Grandstream GXW4224 port. When applicable, provides a password for logging into the web interface			
	of the device hosting the station.			
	The minimum length is five characters.			
Show Password	(Add and Edit only) Selecting this button shows the current password to the right of the button for four seconds. If at least one character is typed			
Show Saved Password	into the password field, the button label dynamically changes from			
(Web Password)	Snow Saved Password to Snow Password.			
Load Impedance	<i>Note:</i> This field appears only when adding or editing a station where the Device Type is NQ-A2060-Amplifier, NQ-A2120-Amplifier, NQ-A2300-Amplifier, NQ-A4060-Ampli- fier, NQ-A4120-Amplifier, NQ-A4300-Amplifier, NQ-PA120 Public Address Mixer Amplifier, NQ-PA240 Public Address Mixer Amplifier, or NQ-PA600 Public Address Mixer Amplifier.			
	This field is used to select the impedance of the attached load.			
	Select High for devices that use 25V/70V and Low for devices that use 4 Ω or 8 Ω .			
Output Power (Watts)	<i>Note:</i> This field appears only when adding or editing a station for VoIP speakers, NQ-S1810WBC, NQ-GA10P, NQ-GA10PV, NQ-GA20P2, NQ-GA40P23, two- or four-channel amplifiers, or NQ-PAxxx amplifiers.			
	Selects the channel output power setting.			
	Defaults and settings vary depending on the appliance.			
	For example, VoIP speakers, NQ-GA10P, and NQ-GA10PV devices allow options of $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, 1, 2, 4, and 8W, while NQ-GA20P2 devices also allow 16W and NQ-GA40P3 devices also allow 16W and 32W.			
	The default for these devices is $1/2$.			
	For the other applicable devices, the available settings increment by 1 and range from -6 to $+6$ dB with the default being 0.			
Firmware	<i>Note:</i> Nyquist does not display this field when adding or editing an Admin Web Inter- face, Admin Phone, IP Phone, Mobile Device, Analog Call Switch & Speaker with an Analog Port device type, or VoIP Speaker Only with an Analog Port device type or when adding or editing a Networked Power Amplifier.			
	Provides information about firmware available for the station. A Nyquist appliance connected to the Nyquist network receives a configuration file from the Nyquist server that includes the latest firmware available from the server. If the firmware is later than the one installed on the appliance, an automatic firmware update occurs. To prevent an automatic update, you must leave this Firmware parameter empty.			

Schools	Provides the schools that this station can view or edit on the Dashboard and in schedules. For NQ-T1100 and NQ-ZPMS Admin Phones, this setting also specifies the school schedules that will be displayed on the phone's display and included in the phone's Schedules menu.					
<i>Note:</i> The E7000 can be con- figured to use a different word or phrase in place of "Schools" in most places within the application (see the Schedule Site Settings settings in <i>Table 20, "System Tools," on</i> <i>page 73</i>).						
Maps	<i>Note:</i> This parameter is only displayed for Web Interface and Admin Web Interface stations.					
	Provides the maps that this station is authorized to view from the dash- board.					
Queue Zone	Provides the default zone number for the station that will be used for page queuing (Record Page feature). If a zone number does not appear, the station user will be prompted to enter a zone number.					
Announcement Zone	<i>Note:</i> This parameter appears only when adding or editing a station if the Type is set to Admin Web Interface , Admin Phone , IP Phone , Analog Phone , or Mobile Device .					
	Announcement Zone overrides the Play to Zone set when creating an announcement.					
	Select a zone number to be used as this station's default zone when playing announcements. If an Announcement Zone is not set, you will be prompted for a zone number when playing an announcement. (See <i>"Using Announcements" on page 314</i> .)					
Announcement Zone Configuration Type	<i>Note:</i> This parameter appears only when adding or editing a station if the Type is set to Admin Web Interface , Admin Phone , IP Phone , Analog Phone , or Mobile Device .					
	Displays either Fixed or Default , depending on whether you can change the zone for announcements created by this station. If set to Fixed , the zone used to play announcements will always be the zone number pro- vided for Announcement Zone and cannot be changed. If set to Default , the Announcement Zone value is used as the default zone, but you can set an announcement to play to another zone.					
External Relay Trigger	<i>Note:</i> This parameter only applies to NQ-GA10P, NQ-GA10PV, NQ-GA400P, NQ- S1810CT-T1 Gen2 VoIP Speaker, and NQ-S1810WT-G3 VoIP Speakers.					
	Specifies if the device should trigger an external relay when audio is present.					

Dial Plan Type	<i>Note:</i> This parameter only appears when adding or editing a station with Device Type of Cisco SPA112, Cisco ATA191/192-3PW-K9, or Grandstream HT813 Analog Phone FXS Port .					
	Specifies whether the station uses the default or a custom dial plan or if it will automatically dial an extension when the phone is taken off hook. The Dial Plan Type options are:					
	• Default . When you select this option, the station has DTMF access to all Nyquist features.					
	• Auto Dial . When you select this option, you must add the extension that will be automatically dialed when the phone is taken off hook.					
	• Custom . When you select this option, the Dial Plan option appears and you can enter a custom dial plan string with a maximum of 255 characters.					
Auto Dial Extension	<i>Note:</i> This parameter only appears when adding or editing a station with Device Type of Cisco SPA112 , Cisco ATA191/192-3PW-K9 , or Grandstream HT813 Analog Phone FXS Port and Auto Dial has been selected as the Dial Plan Type .					
	Specifies the station extension that will be automatically dialed when the phone is taken off hook.					
Dial Plan	<i>Note:</i> This parameter only appears when adding or editing a station with Device Type of Cisco SPA112, Cisco ATA191/192-3PW-K9, or Grandstream HT813 Analog Phone FXS Port .					
	This field will display Nyquist Default if the Dial Plan Type is set to Default .					
	If the Dial Plan Type is set to Auto Dial , then Dial Plan is set to S:1,(PO <:station extension>). For example, if you have entered 200 for the Auto Dial Extension , then this field displays S:1,(PO <:200 >).					
	If Dial Plan Type is set to Custom , enter the custom dial plan string, which can contain up to 255 characters.					
Description	Allows a user description for this station.					

Annunciation Station	Specifies the speaker station at which a call-in announcement will be played ("Call from station <calling-extension>") when <i>this</i> station receives a call.</calling-extension>								
	Available options include stations of the following Types:								
	VoIP Speaker Only								
	Analog Call Switch & Speaker								
	Digital Call Switch & Speaker								
	Paging-Audio Amp								
	Paging-Audio-Intercom Module								
	<i>Note:</i> If the annunciation station is already busy when a call is received, the announcement will not be played.								
	Important: Emergency All Call pages will temporarily disable call-in announcements.								
Add Phase Shift	Indicates whether the generated masking signal will be phase shifted (Yes) or not (No). <i>Note:</i> This parameter only appears when adding or editing a Sound Masking station.								
	Warning If downward-facing speakers are installed and two amplifier stations are used within the same masking zone, it is critical that either the stations come from different amplifiers (preferable) or the Add Phase Shift setting for the two stations are configured differently (i.e., one Yes, one No). Otherwise, there will be phasing issues or uncontrollable variations in masking levels.								
Check-in as Station Extension	Specifies the check-in extension to use when this station performs a check-in. This allows the current station to perform a check-in on behalf of the specified station.								
	If set to None , the station's own extension will be tracked during check- in events.								
	<i>Note:</i> If specified, the current station will be added to the exclusion list to ensure it is not managed separately from the check-in station.								
	For further details about check-in, see "Manage Check-In" on page 510.								
	<i>Tip:</i> Configure all stations (including Web Interface stations) in a small physical area, like a room, to check-in as one area-specific station.								

	Table 36. Station Configuration Page Parameters
Use Uploaded Wallpaper Image	If set to Yes , the phone can use a custom wallpaper image uploaded via the phone's web interface and will not reset it to the default Bogen wall-paper each time the phone is provisioned.
	If set to No , the phone can use a custom wallpaper image, but it will reset it to the default wallpaper each time the phone is provisioned.
Enable SIP TLS	Enables the use of TLS to secure SIP traffic for this station. This enables secure, encrypted call setup between the station and the Nyquist server.
	If the Firmware version is 5.0.0 or higher, the default value is Yes . If not, the default value is No .
	<i>Note</i> : For stations associated with an amplifier or gateway, this value is determined by the amplifier or gateway configuration.
Enable SRTP	Enables encryption of voice traffic for this station. This enables secure, encrypted voice communication for intercom calls and calls between IP phones.
	If the Firmware version is 5.0.0 or higher, the default value is Yes . If not, the default value is No .
	<i>Note:</i> For stations associated with an amplifier or gateway, this value is determined by the amplifier or gateway configuration.

Editing Station Configuration Settings

The *Edit Station* page allows you to change a station's configuration settings. For example, if you want to disable paging for a station or change a station's access to an outside line, you edit the station's configuration settings.

Note: You cannot change the extension for a station linked to a routine (see "Using Routines" on page 416).

St	tation Type	Available Option(s)
•	Admin Web Interface	Announcement Zone Configuration Type and
•	Admin Phone	Announcement Zone
•	IP Phone	If the Announcement Zone Configuration Type is
•	Analog Phone	will always be the zone number provided for
•	Mobile Device	Announcement Zone and cannot be changed. If set to Default , the Announcement Zone value is used as the default zone, but you can set an announcement to play to another zone.

Table 37. Station Type-specific Configuration Options

Station Type	Available Option(s)			
I/O Controller	Configure Rules (see "Configuring I/O Controller Input Rules" on page 148 or "Configuring I/O Control- ler Output Rules" on page 150)			
	Configure Schedule (see "Adding an I/O Contacts Output Daily Schedule" on page 155)			
• MMPA (NQ-P0100)	Configure PTT (see "Configuring Devices for Push- To-Talk" on page 158)			
 Intercom Module (NQ- GA10P, NQ-GA10PV) 	Configure Intercom Module (see "Push-To-Talk Configuration for GA10P or GA10PV Intercom Mod- ule" on page 160)			
 Intercom HDMI Module (NQ-GA10PV) 	Display Configuration and options to configure how the message and clock appear on the monitor (see "Configuring Intercom HDMI Module Display Options" on page 162).			
 NQ-S1810WBC VoIP Wall Baffle Combo Spkr/Clock/Msg 	WBC Display Configuration (see "Configuring WBC Display Options" on page 168 and "NQ-S1810WBC Flasher Configuration" on page 60)			

 Table 37. Station Type-specific Configuration Options

 Edit Station
Configure Rules
★ Cancel Bave
Extension: ()
108
Name: 🚺
IO Controller 1
Туре: 🚯
I/O Controller -
Device Type: 🚺
NQ-E7010-Input Output Controller -
MAC Address: 1
222222222222
Serial Number: 🚺
21312312312312312312312312312312312
Facility: ()
Main Facility -
Day CoS: (1)

Figure 41. Edit Station Page

To edit a station's configuration settings:

- 1 From the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the station that you want to edit configuration settings.
- 3 Make desired changes. For information about the configuration settings, see *Table 36, "Station Configuration Page Parameters," on page 129*.
- 4 Select Save.

Viewing I/O Controller Configuration Rules

The I/O Controller allows Nyquist to recognize third-party switch contact closures and to provide external circuits. Configuration rules can be set for each input and output port on an I/O Controller, so, for example, you can set a rule that if a contact is opened an alarm sounds, or set a rule that if a doorbell rings an Admin user can trigger another rule that opens the door.

₿ C	Configure Controller Rules - 0101-IO-CTRL (0101)																				
Done	bore 🖌 Contigue Schedule																				
Inputs	0																				
	Contact #	Enabled	Name	Description	Close Inter	val Ac	tion	Action Id	Stop On	Zones	Close Extension	n Close Contact	Duration	Dashboard Type	Dashboard Title	Dashboard Scope	Dashboard Text	Dashboard Style	Email	Email Account	Synchronize Time
	1	No	Contact 1	Show	0	Ali	arm	13	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	2	No	Contact 2	Show	0	Ot	ther	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	3	No	Contact 3	Show	0	Ot	her	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	4	No	Contact 4	Show	0	Ot	ther	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	5	No	Contact 5	Show	0	0	her	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	6	No	Contact 6	Show	0	Ot	her	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	7	No	Contact 7	Show	0	Ot	her	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:00:00
	8	No	Contact 8	Show	0	Sync	-Clock	None	Manual Contro	ol Show	None	None	0	none		Admin	Show	basic			00:30:00
Outpu	its 👩	1																			
	Contact #	Enabled	Name	Description	Trigger	Trigger Id	Zones	a Duration	On Time	Days Cr	ontrol Stations C	lose Button Label	Open But	ton Label							
	1	No	Contact 1	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							
	2	No	Contact 2	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							
	3	No	Contact 3	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							
	4	No	Contact 4	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							
	5	No	Contact 5	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							
	6	No	Contact 6	Show	No Trigger	None	Show] 0	00:00	Sun	Show	Close	Op	en							
	7	NO	Contact 7	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							
	8	NO	Contact 8	Show	No Trigger	None	Show	0	00:00	Sun	Show	Close	Op	en							

Figure 42. Configure Controller Rules Page

To view the configuration rules for an I/O Controller:

- 1 From the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select **Configure Rules**.
- 4 When finished viewing, select **Done**.

Inputs	
Contact #	Displays the assigned number for this contact. This parameter is auto- matically set and cannot be edited.
Enabled	Indicates if a rule is enabled for this contact.
Name	Displays the user-provided name for the contact.
Description	Displays the user-provided description for the contact.
Close Interval	Displays how long the input contact must remain closed (in milliseconds) before the Action is started by the I/O Controller.

Action	Displays the action, if any, that is to be taken when the contact is closed. Options are:								
	 Audio: Starts the selected audio distribution specified by the Program Distribution field. 								
	<i>Note:</i> When an audio distribution is started, it can be set to stop when the input contact opens, or manually by using the Admin Web Interface or Admin Phone.								
	• Alarm: Plays the alarm file selected by the Action ID.								
	 Announcement: Plays the announcement file selected by the Action ID. 								
	• Disable-Audio : Disables all audio in the Nyquist system, performing the same action as when the Disable Audio button on the dashboard is selected. This action can be used by an external emergency system (for example, fire alarms) to disable all Nyquist audio, which includes: Audio Distribution, Tones, Alarms, Paging.								
	<i>Note</i> : This contact closure action will only initiate the disabling of audio, it will not restore the audio. To restore audio, use a different contact with the action Enable Audio , or enable audio via an Admin Web Interface or Admin Phone.								
	 Other: Used when you don't want to take one of the available actions, but you do want to close a contact, create a dashboard message, or send an email when the contact is closed. 								
	 Tone: Plays the tone file selected by the Action ID. 								
	 Enable-Audio: Enables all audio in the Nyquist system, performing the same action as when the Enable Audio button is selected on the dashboard. 								
	 Sync-Clock: Sets the Nyquist server's system time to the value speci- fied in Synchronize Time. 								
Action ID	Displays identifier for action, such as an alarm or tone number.								
	Note: This parameter is only available for Alarm, Announcement, and Tone actions.								
Stop On	Specifies how the action is stopped. If set to Manual Control , you must manually stop the action. If set to Contact Open , the action automatically stops when the contact is opened.								
Zones	Displays the zones that are affected by the action.								
	Note: This parameter is only available for Alarm, Announcement, and Tone actions.								
Close Extension	Specifies the target I/O Controller to use/operate.								
Close Contact	Specifies contact number to close.								
Duration	Displays duration of contact closure in milliseconds. A value of 0 means leave contact closed.								
Dashboard Type	Specifies if the message appears in the dashboard message pane alone or also in a popup message.								
Dashboard Title	Specifies the user-provided title that appears for the dashboard message.								

Dashboard Scope	Specifies which devices receive the message. Options are:			
	• All: All web interface dashboards will receive the message.			
	 Admin: Only Admin web interface dashboards will receive the mes- sage. 			
Dashboard Text	Specifies the user-provided text that appears for the dashboard message.			
Dashboard Style	Specifies the icon and color coding that appear with the message. Options are:			
	• Basic			
	• Success			
	• Info			
	Warning			
	• Danger			
Email	Specifies an email address for notification when an I/O contact is closed.			
	<i>Tip:</i> To send a text message, use one of the email address formats described in <i>Table 131, "Email Address Formats for Cellular Carriers," on page 451.</i>			
Email Account	Specifies the SMTP account to use for sending email.			
Synchronize Time	If the Action is Sync-Clock, this field specifies the time to which the Nyquist clock should be set when the contact closes.			
Outputs				
Contact #	Displays the assigned number for this contact. This parameter is auto- matically set and cannot be edited.			
Enabled	Indicates if a rule is enabled for this contact.			
Name	Displays the user-provided name for the contact.			
Description	Displays the user-provided description for the contact.			

Trigger	Displays the Nyquist system activity that will close the output contact when the activity starts, and will open the output contact when the activ- ity stops.
	<i>Note:</i> If duration is greater than 0, the output contact opens after duration milliseconds even if the system activity is still ongoing. When a system activity is started, the output contact is closed; the contact is opened when the system activity ends.
	Options are:
	 911: A call to 911 has been initiated. Audio: The selected Program Distribution has started playing. Alarm: The selected Alarm has been activated. Announcement: The selected Announcement has been started. All-Call: An All-Call page has been started. Multi-Site-All-Call: A Multi-Site All-Call page has been started. Multi-Site-Emergency-All-Call: A Multi-Site Emergency All-Call page has been started. Emergency-Call: An Emergency Call has been started. Emergency-All-Call: An Emergency-All-Call page has been started. Emergency-Call: An Emergency-All-Call page has been started. Hourly: Close the contact hourly at the specified minute and second. Audio-Disabled: Audio has been disabled. No Trigger: This is the default trigger for outputs that have not yet been configured. Page: A zone page has been started to the specified Zones. Tone: The specified Tone has been started.
Trigger Id	Displays the Activity identifier for the output contact trigger (e.g., Alarm number).
Zones	Provides a list of paging zones that trigger an output. If blank, all zones are affected.
	Note: This field only appears when Trigger is set to Page.
Duration	Displays the duration of the contact closure in milliseconds. A value of 0 leaves the contact closed.
On Time	Specifies the minutes and seconds when the Action is set for Hourly . When set to 00:00, hourly closure is not enabled.
Days	Specifies the days of the week that the hourly closure of contact occurs.
Control Stations	Provides a list of stations that can manually control the output contact.
Close Button Label	Displays the user-provided label for the Dashboard button that is associ- ated with the closing of an output contact. The duration for the contact must be set to 0 for this label to appear.
Open Button Label	Displays the user-provided label for the Dashboard button that is associ- ated with the opening of an output contact. The duration for the contact must be set to 0 for this label to appear.

Configuring I/O Controller Input Rules

You can configure a unique input rule for each of the I/O Controller's eight inputs.

To configure an I/O Controller Input Rule:

- 1 From the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select **Configure Rules**.
- 4 Select the **Edit** icon for the input contact that you want to configure.
- 5 On the **Edit Controller Rule** page, complete the desired **Input Contact Rule Parameters** (see *Table 39, "Input Contact Rule Parameters," on page 148*).
- 6 Select Save.

Table 39. Input Contact Rule Parameters

Enabled	Indicates if a rule is enabled for this contact.
Contact Number	Displays the assigned number for this contact. This parameter is auto- matically set and cannot be edited.
Contact Type	Displays if the contact is an input or output contact. This parameter is automatically set and cannot be edited.
Extension	Displays the station extension. This parameter is automatically set and cannot be edited.
Name	Displays the user-provided name for the contact.
Description	Displays the user-provided description for the contact.
Close Interval	Specifies how long the input contact must remain closed (in millisec- onds) before the Action is started by the I/O Controller.

Table 39. Input Contact Rule Parameters

	-
Action	Specifies the action, if any, that is to be taken when the contact is closed. Options are:
	 Audio: Starts audio distribution to all stations (using previously selected playlist or matrix mixer input channel).
	<i>Note</i> : The I/O Controller can only be used to start audio distribution to all stations; it cannot stop the audio to all stations. Another method must be used to stop the audio such as selecting Stop from the Admin Web Interface or Admin Phone.
	• Alarm: Plays the alarm file selected as the Action ID.
	 Announcement: Plays the announcement file selected as the Action ID.
	• Disable-Audio: Disables all audio in the Nyquist system, performing the same action as when the Disable Audio button on the dashboard is selected. This action can be used by an external emergency system (for example, fire alarms) to disable all Nyquist audio, which includes: Audio Distribution, Tones, Alarms, Paging.
	<i>Note</i> : This contact closure action will only initiate the disabling of audio, it will not restore the audio. To restore audio, use a different contact with the action Enable Audio , or manually enable audio via an Admin Web Interface or Admin Phone.
	 Other: Used when you don't want to take one of the available actions, but you do want to close a contact, create a dashboard message, or send an email when the contact is closed.
	 Tone: Plays the tone file selected as the Action ID.
	 Enable-Audio: Enables all audio in the Nyquist system, performing the same action as when the Enable Audio button is selected on the dashboard.
	 Sync-Clock: Sets the Nyquist server's system time to the value speci- fied in Synchronize Time.
Alarms	Specifies the alarm file that plays.
	<i>Note:</i> This parameter is only available for an Alarm Action .
Announcements	Specifies the announcement that plays.
	<i>Note:</i> This parameter is only available for an Announcement Action .
Tones	Displays the tone that plays.
	<i>Note:</i> This parameter is only available for a Tone Action .
Program Distribution	Specifies which audio distribution to play.
	<i>Note:</i> This parameter is only available if the Action is set to Audio .
Stop On	Sets how the Action is stopped. Options are:
	Manual Control: You must manually stop the action.
	 Contact Open: Action automatically stops when the relevant input contact is opened.

Table 39. Input Contact Rule Parameters

Zones	Specifies the zone that is affected by the action.
	<i>Note</i> : This parameter is only available for Alarm, Announcement, and Tone actions, and only a single zone can be added for an input rule.
Synchronize Time	Specifies the time to which the Nyquist clock should be set when the rel- evant input contact closes.
Close Extension	Specifies which target I/O Controller to use/operate.
Close Contact	Specifies which contact number to close on the target I/O Controller.
Duration	Specifies duration of target output contact closure in milliseconds. A value of zero (0) means leave contact closed.
Dashboard Type	Specifies if the message appears in the dashboard message pane alone or also in a popup message.
Dashboard Title	Specifies the user-provided title that appears for the dashboard message.
Dashboard Scope	Specifies which devices receive the message. Options are:
	• All: All web interface dashboards will receive the message.
	 Admin: Only Admin web interface dashboards will receive the mes- sage.
Dashboard Text	Specifies the user-provided text that appears for the dashboard message.
Dashboard Style	Specifies the icon and color coding that appear with the message. Options are:
	• Basic
	• Success
	• Info
	Warning
	• Danger
Email	Specifies an email address for notification when an input contact is closed.
	<i>Tip:</i> To send a text message, use one of the email address formats described in <i>Table 131, "Email Address Formats for Cellular Carriers," on page 451.</i>
Email Account	Specifies the SMTP account to use for sending email.

Configuring I/O Controller Output Rules

You can configure a unique output rule for each of the I/O Controller's eight outputs.

To configure an I/O Controller Output Rule:

- 1 From the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select **Configure Rules**.
- 4 Select the Edit icon for the output contact that you want to configure.
- 5 On the Edit Controller Rule page, complete the desired Output Contact Rule Parameters (see *Table 40, "Output Contact Rule Parameters," on page 151*).
- 6 Select Save.

	Table 40. Output Contact Rule Parameters
Enabled	Select if a rule is to be enabled for this contact.
Contact Number	Displays the assigned number for this contact. This parameter is auto- matically set and cannot be edited.
Contact Type	Displays that the contact is an output contact. This parameter is automat- ically set and cannot be edited.
Extension	Displays the station extension. This parameter is automatically set and cannot be edited.
Name	Provide a name for the contact.
Description	Provide a description for the contact.

	Table 40. Output Contact Rule Parameters
Trigger	Select the Nyquist system activity that will close the output contact when the activity starts, and will open the output contact when the activity stops.
	<i>Note:</i> If duration is greater than 0, the output contact opens after the specified number of milliseconds even if the system activity is still ongoing. When a system activity is started, the output contact is closed; the contact is opened when the system activity ends.
	Options are:
	 911: A call to 911 has been initiated. Audio: The selected Program Distribution has started playing. Alarm: The selected Alarm has been activated. Announcement: The selected Announcement has been started. All-Call: An All-Call page has been started. Multi-Site-All-Call: A Multi-Site All-Call page has been started. Multi-Site-Emergency-All-Call: A Multi-Site Emergency All-Call page has been started. Emergency-Call: An Emergency Call has been started. Emergency-All-Call: An Emergency-All-Call page has been started. Hourly: Close the contact hourly at the specified minute and second. Audio-Disabled: Audio has been disabled. No Trigger: This is the default trigger for outputs that have not yet been configured. Page: A zone page has been started to the specified Zones. Tone: The specified Tone has been started. Manual: Creates a dashboard button that can be used to manually close or open specified output contact.
On Time	Use the down arrows to select the Minute and Second if the Trigger is set for Hourly . When set to 00:00, hourly closure is not enabled.
Days	Specifies the days of the week that the hourly closure of contact occurs. This parameter appears only if the Trigger is set to Hourly .
Zones	Specifies which paging zones trigger the output contact closure if the Trigger is set to Page . If left blank, any zones started trigger the output contact closure.
Tones	Specifies which tone triggers the output contact closure when the Trig-ger is set to Tone .
Announcements	Specifies which announcement triggers the output contact closure when the Trigger is set to Announcement .
Alarms	Specifies which alarm triggers the output contact closure when the Trig- ger is set to Alarm .
Program Distribution	Specifies which audio distribution triggers the output closure when the Trigger is set to Audio .
Duration	Provide the duration of the contact closure in milliseconds. A value of 0 leaves the contact closed until the triggering event ends.

Control Stations	Select the stations that can manually control the output contact. A button for manually setting the output contact appears on the dashboard.
Close Button Label	Provide a label for the Dashboard button that is associated with the clos- ing of an output contact. The duration for the contact must be set to 0 for this label to appear.
Open Button Label	Provide a label for the Dashboard button that is associated with the opening of an output contact. The duration for the contact must be set to 0 for this label to appear.

Table 40. Output Contact Rule Parameters

Sample I/O Controller Configuration Rules

The following sections describe scenarios that can be achieved using I/O Controller Configuration Rules.

Using Nyquist to Open a Secured Door

One example of the configuration and use of the I/O Controller is the opening of a secured, or locked, door. The I/O Controller can be connected to a doorbell that, when pressed, sends a dashboard message to Admin Stations that someone wants to gain access through a secured door. You or other Admin users can then select an **Activate** button that unlocks the door and allows entry to the secured area.

In this example, the dry contact connection of the doorbell would be wired to an I/O Controller input terminal and the secured door's relay driver would be wired to an I/O Controller's output terminal. (Refer to NYQUIST Input/Output Controller NQ-E7010 Installation and Use.)

Follow the steps for configuring an I/O Controller Input Configure Rule (see "Configuring I/O Controller Input Rules" on page 148) using the following parameters:

- For **Close Interval**, enter how long (in milliseconds) the input contact must remain closed before the input action is triggered.
- For Action, select Other.
- For **Close Extension**, select that extension, or station number, for the I/O Controller connected to the output contact that, when closed, will open the door.
- For Close Contact, select the Output Contact # that is to be closed when Activate is pressed on the dashboard message.
- For **Duration**, enter the number of milliseconds required for the door open circuit to open the door.
- For Dashboard Type, select io-contact.
- For **Dashboard Title**, enter a title for the dashboard popup message (for example, **Front Door**).
- For **Dashboard Text**, enter the message that you want displayed on the dashboard popup message (for example, **Front doorbell activated; press "Activate" to open the front door**.
- For **Dashboard Style**, select **basic**.

When configured properly, the doorbell sounds and a message appears when the doorbell is pressed.



Figure 43. Example of Dashboard Message

If you select **Activate**, the door opens. If you select **Ignore**, the door remains closed and the popup message disappears.

Synchronizing Nyquist Server Time to an I/O Input Contact Closure

An I/O Controller Input Contact can be used to synchronize the Nyquist server's clock to a specified time whenever the I/O Input Contact is closed.

You can create an I/O Controller Input Rule using action **Sync-Clock**, defining the **Synchronize Time** property as the value (i.e., time) to which the Nyquist system clock should be set when the I/O Contact closes. The **Synchronize Time** field is expressed in 24-hour military time format: HH:MM:SS.

For example, if the **Synchronize Time** is defined as "23:00:00", when the I/O Contact closes, the Nyquist server's system clock will be set to 23:00:00 (or 11:00:00 p.m.).

Caution Only the time will be set on the Nyquist server, not the date. This could cause issues if the contact closure occurs shortly before or after 00:00:00 (server time), as clock drift may result in a different date than intended. For best results, set the **Synchronize Time** at least several minutes before or after midnight.

Important: Set the Input Contact's **Close Interval** to at least 1000 (1 second) to compensate for the 1-second delay when setting the **Synchronize Time** field. Setting the clock happens very fast, the only delay you should see is the Close Interval delay.

Viewing an I/O Controller Schedule

You can view all contact closures set for specific dates and times using the Configure Schedule button on the I/O Controller's Edit Station page. For information about scheduling a output contact event, *see "Adding an I/O Contacts Output Daily Schedule" on page 155*.

🛗 Out	tput Conta	cts Daily Schedule -	I/O Devid	ce (116)) + 0		
Done							
						Filter	
	Contact # 🔶	Description	Enabled	State	Activity Time	Days	Duration
🖉 📋	1	Automatically locks	Yes	On	17:30:00	Mon, Tue, Wed, Thu, Fri	0

Figure 44. Output Contacts Daily Schedule – I/O Device Page

To view contact closure schedules for an I/O Controller:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select Configure Schedule. The I/O Contacts Output Daily Schedule page appears.

Table 41. I/O Contacts Output Daily Schedule Page

Contact #	Displays the assigned number for the contact. This parameter is automat- ically set and cannot be edited.
Description	Displays the user-provided description for the contact.
Enabled	Indicates if a contact activity event is enabled.
State	Displays if the closure is open or closed.
Activity Time	Displays the time to change the contact event in HH:MM:SS format.
Days	Displays the day or days of the week that the event is to be executed.
Duration	Displays the duration of the contact closure in milliseconds. A value of 0 means that the contact remains closed until an open event occurs.

Adding an I/O Contacts Output Daily Schedule

Contact closures can be set for specific dates and times using the **Configure Schedule** button on the I/O Controller's Edit Station page. For example, suppose you want to schedule an output that unlocks a door at 7:30 each weekday morning. You can set up an output contact closure schedule for 7:30 a.m. Monday through Friday. When the Activity Time occurs, the contact is closed, which in turn triggers a third-party contact switch that unlocks the door.

Add Output Contact Event - I/O Device (116)	0
X Cancer El Save	
Contact Number: ()	
Enabled 🚯	
State ()	
Activity Time:	
Hour Minute Second	
Duration: ()	
Days: 🚯	
Add Days	Clear Add All
Description: 🚯	
🗶 Cancel 🖺 Save	

Figure 45. Add Output Contact Event Page

To add an output daily schedule for an I/O contact:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select **Configure Schedule**.
- 4 On the I/O Contacts Output Daily Schedule page, select the **Add** icon.
- 5 Complete the parameters on the Add I/O Contact Output Event page (*Table 42, "Add or Edit I/O Contact Output Event Parameters," on page 156*).
- 6 Select Save.

Table 42. Add or Edit I/O Contact Output Event Parameters

Contact #	Select the contact number for this contact.
Enabled	Select to enable the contact activity event.
State	Select the state for this new output event from the drop-do Options are:

- **On**: The contact is closed.
- Off: The contact is open.

wn menu.

Table 42. Add or Edit I/O Contact Output Event Parameters (Continued)

Activity Time	Enter the time to change the contact event, using the down arrows to make the appropriate selections in the Hour , Minute , and Second fields.
Duration	Enter the duration of the contact closure in milliseconds. A value of 0 means that the contact remains closed until an open event occurs.
Days	Enter the day or days of the week that the event is to be executed.
Description	Enter a description for the contact event. This field is required.

Editing the Daily Schedule for an I/O Contact

The Edit Output Contact Event - I/O Controller page allows you to change the parameters, such as duration, for an I/O contact's daily schedule.

To edit an output daily schedule for an I/O contact:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select **Configure Schedule**.
- 4 On the I/O Contacts Output Daily Schedule page, select the **Edit** icon next to the contact that you want to edit.
- 5 Make desired changes to the Edit I/O Contact Output Event page. (For information about the parameters for this page, see *Table 42, "Add or Edit I/O Contact Output Event Parameters," on page 156.*)
- 6 Select **Save** to return to the I/O Contact Output Daily Schedule page.

Deleting an I/O Contacts Output Daily Schedule

You can delete an output contacts daily schedule that is no longer needed from the station's Output Contacts Daily Schedule page.

To delete an output daily schedule for an I/O contact:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the desired I/O Controller.
- 3 On the Edit Station page, select **Configure Schedule**.
- 4 On the I/O Contacts Output Daily Schedule page, select the **Delete** icon next to the contact that you want to delete.
- 5 When prompted, select **Delete**.

Configuring Devices for Push-To-Talk

Push-To-Talk (PTT) functionality can be configured for the Matrix Mixer Pre-Amp and the GA10P/GA10PV Intercom Modules.

Push-To-Talk Configuration for a Matrix Mixer Pre-Amp (MMPA)

Edit Push To Talk Configuration	9
Push To Talk Channel: 🚯	
4	
Push To Talk Type: 🚯	
Zone-Page -	
PTT Audio Source for Mixer Output: 1	
Analog +	
PTT Output:	
Line-Out +	
Push To Talk Zone: 🚯	
Zone-1: Zone 1 *	
IP Address: 🚯	

Figure 46. Push-To-Talk Configuration Page (MMPA)

To edit Push-To-Talk configuration for a Matrix Mixer Pre-Amp:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the Matrix Mixer Pre-Amp that you want to configure.
- 3 Select Configure PTT.
- 4 Specify parameters from the Edit Push To Talk Configuration page. For details, see *Table 43*, "MMPA *Push-To-Talk Configuration Parameters," on page 159*.
- 5 Select Save.

Table 43. MMPA Push-To-Talk Configuration Parameters	
Push To Talk Channel	Channel 4 is the only available PTT channel.
Push To Talk Type	Select the type of activity that is performed when the button is pressed on the microphone. Options are:
	Disabled
	Analog-Output
	All-Call-Page
	Emergency-All-Call-Page
	• Zone-Page
	Record-Zone-Page
	Multi-Site-All-Call-Page
	Multi-Site-Emergency-All-Call-Page
	<i>Note:</i> For all selections other than Disabled , the DSP Router settings of the device are overridden to route the PTT microphone input signal (Analog 4) to the output channel (Analog 1).
	<i>Tip:</i> To prevent the PTT microphone signal from being sent to the network, select Analog-Output. All other settings (other than Disabled) will send the PTT microphone signal over the network.
PTT Audio Source for Mixer Output	<i>Note</i> : This field does not appear if Push To Talk Type is set to Disabled or Analog-Out- put .
	Specifies whether the PTT microphone signal is sent to the network out- put or both the analog and network outputs.
	If Analog is selected, the PTT microphone input is routed as specified in the PTT Output setting as well as being sent over the network.
	If Network is selected, the PTT microphone input is routed only through the network. Note that this could create a small but noticeable delay.
PTT Output	Selects the output used for locally playing PTT-initiated paging if either Push To Talk Type is Analog-Output or PTT Audio Source for Mixer Output is Analog . Options are:
	Disabled
	• Line-Out
Push To Talk Zone	Note: This field appears only if Push To Talk Type is set to Zone-Page .
	Select the zone to receive the page.
IP Address	Displays the IP address of the device, if known, and a Link button that allows you to start the device's UI. If the Nyquist server has not discovered the device's IP address, the Link button does not appear.
Push-To-Talk Configuration for GA10P or GA10PV Intercom Module

If you have added an NQ-GA10P or NQ-GA10PV Intercom Module with a station type of Push-To-Talk Microphone, you can select the type of page that can be made when the PTT microphone is active.

Edit Intercom Module Configuration - GA10P (0110)	?
Push To Talk Type: 1	
Zone-Page - Push To Talk Zone: 1	
Zone 2 🔹	
🗶 Cancel 🖺 Save	

Figure 47. Edit Intercom Module Configuration

To edit an intercom module:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the intercom module that you want to configure.
- 3 Select Configure Intercom Module.
- 4 Specify parameters from the Edit Intercom Module Configuration page (see *Figure 44, "Edit Intercom Module Configuration Parameters," on page 160*).
- 5 After making your edits on the Edit Intercom Module Configuration page, select **Save**.

Table 44. Edit Intercom Module Configuration Parameters

- **Push To Talk Type** Select the type of pages that can be made from the microphone. The available options are:
 - All-Call-Page
 - Emergency-All-Call-Page
 - Zone-Page
 - Record-Zone-Page
 - Multi-Site-All-Call-Page
 - Multi-Site-Emergency-All-Call-Page

Push To Talk Zone Use the drop-down arrow to select a zone to receive the page. Only one zone can be selected.

Note: This option is only available when Push To Talk Type is Zone-Page or Record-Zone-Page.

Configuring Ambient Noise Sensor

The Ambient Noise Sensor (ANS) ensures that page announcements and music are audible even during periods of high noise levels by continuously monitoring the ambient noise level through a microphone module and adjusting the paging signal level for that area's amplifier channel.

NS Listeners 💽				
emove	Station	Max Boost	Threshold	Volume Adjust
×	0200	50	-40	25
×	0201	50	-40	25

Figure 48. Configure Ambient Noise Sensor

This feature requires that an ANS500M Ambient Sound Microphone be attached to an intercom module station type. For installation instructions, refer to the NQ-GA10P, NQ-GA10PV VoIP Intercom Module Installation and Use manual.

You must set the **Ambient Noise Sensor Multicast IP Address** and **Ambient Noise Sensor Multicast Port** system parameters (see "Setting System Parameters" on page 62).

Then, create a station with **Type** as **Ambient Noise Sensor** and **Device Type** as **NQ-GA10P-Intercom Module** or NQ-GA10PV-Intercom HDMI Module (see "Adding a Station" on page 171).

To configure ANS parameters:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the **Ambient Noise Sensor** station.
- 3 Select Configure.
- 4 Select the **Add** icon to add an ANS Listener.

An ANS Listener is a station that will receive Sound Pressure Level (SPL) reports from the ANS. For example, suppose you have speakers in a warehouse area that you want the volume to automatically adjust when noisy machines are operating. You would add the speaker stations as ANS Listeners. When the SPL in the warehouse increases, the ANS reports the increase to the ANS Listeners and the speakers' volumes are adjusted automatically.

- 5 Set the ANS parameters for the ANS Listener.
- 6 If you want to remove a station from the ANS Listener list, select the **Remove** icon on the station's row.

7 When all edits are made, select **Save**.

Table 45. Configure Ambient Noise Sensor Parameters

- **Station** Displays the extension number of the station that is an ANS Listener. A station can only listen to one ANS.
- Max Boost (dB) Displays the maximum dB gain adjustment allowed. Setting this parameter to -42 disables any volume adjustments from the ambient noise sensor. The default value is 0 dB.
- **Threshold (dBFS)** Displays the *decibels relative to full scale* (dBFS) value at which the device will adjust the volume to compensate for the increased ambient noise volume. This value should be between -42 and 0 dBFS. A fairly noisy environment is approximately -20 dBFS. Quiet environments are approximately -42 dBFS. The default value is -24 dBFS.

Volume AdjustDisplays the amount of decibels to stay above the ambient noise level. Setting
this to 0 disables any volume adjustments from the ANS. The default value is
12 dB.

Sample Length(s) Displays the ambient noise sampling length, which can range from 1 to 20 seconds. Short lengths provide quicker response to changes in the ambient noise; longer lengths will ignore sudden, short fluctuations in the ambient noise.

Configuring Intercom HDMI Module Display Options

Note: When a NQ-GA10PV boots up, it queries the attached display and sets the display mode settings to the highest compatible setting (1080@30Hz or 1080@24Hz). If the display does not support either of those settings, the attached display is set to the highest non-compatible setting and a message appears that lists this unsupported resolution and the resolutions that are supported.

If you have a NQ-GA10PV Intercom HDMI Module **Device Type**, you can set display types for the connected monitor, including the type of clock and display colors that appear.

Options configured for the station affect the overall appearance of the display, such as the background color for the display and fonts used to display date and event. Options for specific messages are set through the **Display Message** option on the dashboard (see *"Creating a Display Message via the Dashboard" on page 487*).

You can also configure it to automatically display the check-in status map during an active check-in process (e.g., a lockdown), allowing staff and emergency personnel to quickly and easily view check-in status information. To enable the check-in status map, set **Check-In Enabled** to **Yes** on the GA10PV's *Display Configuration* page. You can also select what will be displayed during the check-in process; the available configuration settings are similar to those available on the Manage Check-In page (see "Manage Check-In" on page 510).

Display Configuration - 0)112-GA10PV (0112) 👩
Type: (1) Analog Clock -	Check-In Enabled: (1)
Date Format:	Check-In Font Size Minimum: 150
Show Date: (1)	Check-In Show Name: (1)
Show Event: (1)	Check-In Show Not Checked In Only: (1)
Show Seconds: (1)	Check-In Show Vacant: (1)
Background Color:	Check-In Show Excluded: (1)
Text Color: ()	
rgb(0,0,0)	
Gelasio - Text Size: (1)	
70	
× Cancel	

Figure 49. Display Configuration for GA10PV Station

To configure display options:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the intercom HDMI module that you want to configure.
- **3** Select **Display Configuration**.
- 4 After making your edits on the Display Configuration page, select **Save**.

	Table 46. Display Configuration
Туре	Select one of the five layouts available:
	 Analog Clock. Displays an analog clock on the left side of the display screen.
	• Digital Clock . Displays a digital clock on the top of the screen.
	 Messages 1 Column. Displays messages only in a single column.
	 Messages 2 Columns. Displays messages only in two columns.
	 Messages 3 Columns. Displays messages only in three columns.
Date Format	Select the format for displaying the date. Available formats are:
	DDD, MMM DD
	MMM DD, YYYY
	DD MMM YY
	DD MMM YYYY
	• DD/MM/YY
	DD/MM/YYYY
	• MM/DD/YY
	MM/DD/YYYY
Show Date	Use the slider to select if the date will be displayed.
Show Event	Use the slider to select if the scheduled events will be displayed. (See "Under- standing Event Settings" on page 266.)
Show Seconds	Use the slider to select if seconds will be displayed on the clock.
Background Color	Select a background color for the display. You can select a color by:
	Using the color picker
	• Entering a hex color (for example: #000000, for black)
	• Entering an RGB color (for example: rgb(0,0,0) for black)
	Entering a color alias name (for example: red, blue, etc.)
	For more information, see "Using Color in Display Messages" on page 492.
Text Color	Select a color for the text. You can select a color by:
	Using the color picker
	Entering a hex color (for example: #000000, for black)
	• Entering an RGB color (for example: rgb(0,0,0) for black)
	• Entering a color alias name (for example: red, blue, etc.)
	For more information, see "Using Color in Display Messages" on page 492.

Table 46. Display Configuration

Text Font	Select a font for the text from the drop-down list. Available fonts are:
	Comic-Relief
	Courier-Prime
	Gelasio
	Liberation Sans
	Linux Libertine
Text Size	Enter the text size.
	This value is based on font points, with 72 points being an inch.
Time Format	Select whether the time is to appear in 12 or 24 hour format.
Time Color	Select the color for the time display. You can select a color by:
	Using the color picker
	Entering a hex color (for example: #000000, for black)
	 Entering an RGB color (for example: rgb(0,0,0) for black)
	 Entering a color alias name (for example: red, blue, etc.)
	For more information, see "Using Color in Display Messages" on page 492.
Time Font	Select a font for the time from the drop-down list. Available fonts are:
	Comic-Relief
	Courier-Prime
	Gelasio
	Liberation Sans
	Linux Libertine
Time Size	Select the font size for the time.
	This value is based on font points, with 72 points being an inch.
Check-In Enabled	If set to Yes , the GA10PV will automatically display check-in status during an active check-in procedure while disabling the display of clock and messages.
Check-In Font Size Minimum	The Minimum Font Size specifies the minimum font size to use during scaling (do not scale below the minimum specified value).
	Stations displayed on the check-in status screen will automatically be scaled in an attempt to fit as many stations on the available screen space as possible. The minimum font size can help ensure that the font is large enough to read the station list from the anticipated viewing distance while attempting to fit as many stations on the display as possible.
	This value is based on font points, with 72 points being an inch.

Table 46. Display Configuration

Check-In Show	If set to Yes , station names will be displayed under the station extension.
Name	Hiding station names may allow you to fit more stations on the screen.
Check-In Show Not Checked In	If set to Yes , stations that have not checked in will be displayed, while stations that have checked in will not be displayed.
Only	This option can help fit more stations on the screen.
Check-In Show	If set to Yes , stations that are marked as vacant will also be displayed.
Vacant	If a vacant station checks in, it will be displayed as checked-in (green) instead of vacant.
Check-In Show Excluded	If set to Yes , stations that are excluded from the check-in process will also be displayed.

If you select to use an analog clock, the clock appears on the left side of the HDMI connected display and messages appear on the right side. If you select to use a digital clock, the time appears on the top of the display and the messages appear beneath.



Figure 50. Example of Display with Type Analog Clock



Figure 51. Example of Display with Type Digital Clock

Groups, Clubs and Organizations will get their pictures taken on Monday in the Auditorium. If you have a new group, club or organization, please let Mrs. Smith know, so that she can add them to the picture schedule.

CACC Open House on Monday from 5:00 pm to 7:00 pm. Meet teachers, tour the building and learn about the different programs available for juniors and seniors.

Figure 52. Example of Display with Type Messages 1 Column

Groups, Clubs and Organizations will get their pictures taken on Monday in the Auditorium. If you have a new group, club or organization, please let Mrs. Smith know, so that she can add them to the picture schedule.

Figure 53. Example of Display with Type Messages 2 Columns

Groups, Clubs and	Groups, Clubs and	Groups, Clubs and
Organizations will	Organizations will	Organizations will
get their pictures	get their pictures	get their pictures
taken on Monday	taken on Monday	taken on Monday
in the Auditorium.	in the Auditorium.	in the Auditorium.
If you have a new	If you have a new	If you have a new
group, club or	group, club or	group, club or
organization,	organization,	organization,
please let Mrs.	please let Mrs.	please let Mrs.
Smith know, so	Smith know, so	Smith know, so
that she can add	that she can add	that she can add
them to the picture	them to the picture	them to the picture

Figure 54. Example of Display with Type Messages 3 Columns

If **Check-In Enabled** is set to **Yes**, the check-in status of the relevant stations will be displayed on GA10PV devices during active Check-In processes. For details, see *"Managing Check-In Status" on page 510*.

Started: 12:05:21pm	0100	0101
Elapsed: 56m 52s	Admin Web UI	Web Interface
0102	0103	0104
Admin 2	WBC	GA10PV
0400	0401	0402
0400	0401	0402
0403 0403		

Figure 55. Example of Check-In Status (Check-In Enabled set to Yes, during Check-In process)

Configuring WBC Display Options

The NQ-S1810WBC includes an LED display and flasher, which have several configurable settings. These settings can be configured via the WBC Display Configuration page or via a Routine, which might be executed in response to a System Event (e.g., Emergency All-Call, etc.) or as part of a calendar schedule (see "Adding a Schedule" on page 260) or as a scheduled routine (see "Add a Scheduled Routine" on page 280).

Important: Be aware that the NQ-S1810WBC's LED display can only display uppercase characters. Lowercase characters are allowed as input, but will display as uppercase.

WBC Display Configuration - WBC (220)
Enable Clock Display: (1)
Clock Time Format: (1)
Show Clock Seconds: (1)
Enable Flasher Use: () Yes
Message LED Brightness: (1) Medium -
Flasher LED Brightness: (1) High -
★ Cancel Bave

Figure 56. WBC Display Configuration

To configure the LED display and flasher:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Edit** icon for the NQ-S1810WBC device that you want to configure.
- 3 Select WBC Display Configuration.
- 4 Complete the configuration parameters for the station. Parameters are described in *Table 47, "WBC Display Configuration," on page 169.*

Table 47. WBC Display Configuration

Enable Clock Display	Specify Yes if the clock will be enabled (i.e., displayed) or No if it will be disabled (i.e., hidden).
	When the clock is disabled, the WBC can still be used to display mes- sages and LED flashers.
Clock Time Format	Specify 12 Hour to display the clock in AM/PM format or 24 Hour to display the clock in 24-hour (i.e., military time) format.

Table 47. WBC Display Configuration

Show Clock Seconds	Specify Yes to display seconds or No to hide them.	
Enable Flasher Use	Select Yes to enable the LED flasher or No to disable it.	
	If disabled, the LED flasher will never be illuminated, even if requested.	
Message LED Brightness	Specify the brightness level of the red message LEDs on the display.	
	Valid values are:	
	• Off	
	• Low	
	• Medium	
	• High	
Flasher LED Brightness	Specify the brightness level of the message LEDs.	
	Valid values are:	
	• Low	
	• Medium	
	• High	

Deleting a Station

Note: You cannot delete a station that is used in a routine **Action** (see "Understanding Action Parameters" on page 450).

When you delete a station, all of its settings are deleted and the station will not be able to register with the Nyquist system server. If it is an Admin Station, you may not be able to delete it until you delete all associations that the Admin Station has (for example, member of Day Admin, Night Admin, Night Ring, or Admin Group).

After you delete a second station from an SPA112 or ATA191/192-3PW-K9 Analog Telephone Adapter (ATA), the Nyquist system server reboots the ATA device. If the Nyquist system server does not know the ATA device's IP address, you must reboot the device for the changes to take effect on that device.

When a station is deleted from an ATA device, it can take several minutes for the changes to show up on the device's web interface. When the second station is deleted from the device, the remaining station is set up on the first port (Phone 1) even if that station was previously set up on the second port (Phone 2). If this situation occurs, move the attached phone cable from Phone 2 to Phone 1.

To delete a station's configurations:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Delete** icon for the station that you want to delete configuration settings.

Adding a Station

Using the Nyquist system server's TFTP-based automatic discovery and configuration feature is the preferred method of adding a station. If you manually add a station, you risk having the MAC address entered incorrectly, which would prevent the station from functioning properly.

Important: If TFTP-based discovery is not possible, we recommend that stations be added using the "*Appliance Discovery Wizard*", as described on page 124.

Station SIP Registration Password

Stations that will initiate or receive SIP calls must register with the Nyquist E7000 server each time they become available (e.g., after connecting to the network). To prevent unauthorized SIP clients from registering, a **Registration Password** is assigned to each station, and the Nyquist server, which remembers each station's password, authenticates the password during each station registration.

Although each station can have a distinct registration password, it is very common to assign the same password to all SIP stations. To simplify manual configuration of stations, the E7000's **Default Registration Password** can be configured in the *System Parameters* page (see *Table 19, "Edit System Parameters Page," on page 64*). When a station is added, if its **Registration Password** is specified, it will be used (*Table 36, "Station Configuration Page Parameters," on page 129*); but if not, the **Default Registration Password** will be used.

Caution If you are using a password manager to auto-fill your E7000 password (e.g., your browser asks if you want it to remember your login credentials), it may auto-fill your registration password with your login password when adding or editing a station.

To view and add discovered stations:

- 1 On the navigation bar, select **Stations**.
- 2 On the Stations page, select New Stations.
- **3** From the *New Stations* page, select the **Add** icon next to the newly detected appliance that you want to configure.
- *Tip:* If the new appliance is not shown, make sure the appliance has an IP address and is configured to use this E7000 (e.g., by enabling the E7000's DHCP server or configuring option 66 of the DHCP server with the IP address of the E7000), then try rebooting it.

Important: Non-Nyquist devices, such as phones, do not appear under **New Stations**. Stations can be manually added and configured for these devices by specifying the MAC address of each. Once added, the phone can be connected to the network, where it can use the TFTP auto-configuration feature to download the configured Station settings.

4 Complete the configuration parameters that are not automatically configured. Parameters are described in *Table 36, "Station Configuration Page Parameters," on page 129.*

Note: If this new appliance is replacing an existing one, see "Swapping a Nyquist Device" on page 172.

5 When prompted, enter the Web Interface password.

6 Select Save.

To manually add a station:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Add** icon.
- 3 Complete the configuration parameters for the new station. Parameters are described in *Table 36*, *"Station Configuration Page Parameters," on page 129*.

Important: Make sure to select the correct **Type** and **Device Type**, as these cannot be modified for most appliance types once the station has been created.

- *Tip:* Some Device Type-specific options are not available while adding the device (see *Table 37, "Station Type-specific Configuration Options," on page 141*). To access these options, add the new device, then edit its settings (see *"Editing Station Configuration Settings" on page 141*).
- 4 Select Save.

Swapping a Nyquist Device

Through the **New Stations** option, you can replace an existing device with an identical replacement device. This option allows you to replace a device, such as VoIP speaker, with a new device of the same type and maintain the original device's extension and configuration.

Note: You can replace a VoIP speaker with a VoIP speaker G2 and replace a VoIP speaker G2 with a VoIP speaker G2, but you cannot swap a VoIP speaker G2 with an earlier generation VoIP speaker.

You can also use the **New Stations** option to replace an audio power amplifier with another amplifier, regardless of type. For example, you can replace an NQ-A2060 amplifier with an NQ-A2300 amplifier. You can also replace an earlier generation 2- or 4-channel amplifier with a later generation amplifier,

assuming the number of channels is the same. For example, you can replace an NQ-A2060 with an NQ-A2300 G2.

Select **Swap** under the **Action** column to switch a discovered appliance for an appliance that was previously added to the database but now needs to be removed. For example, the old device may have stopped working and new hardware is replacing the broken device.

Tip: If possible, upgrade both the original and replacement devices' firmware to the latest version before swapping in the new device. This will improve compatibility and help ensure the conversion will be successful. This is particularly important for pre-1.2.1647 firmware releases, for which the configuration will not be preserved.

Using a Cisco SPA112 or ATA191/192 Analog Telephone Adapter

The Cisco SPA112 and ATA191/192-3PW-K9 Analog Telephone Adapters (ATAs) allow an analog phone to access IP phone services through two standard telephone RJ-11 phone ports.

The following limitations exist when a Cisco ATA is used as a Nyquist Admin Phone station:

- Call queuing is not supported.
- Call waiting is limited to one call. If the Admin Phone is associated with an Admin Group, a call made to the Admin Phone when the phone is already on a call will automatically ring the Admin Group. If the Admin Phone is not associated with an Admin Group and receives a call when already on a call, a beep sounds on the Admin Phone to indicate a call is on call waiting.
- When you add two stations to an ATA device, you must enter the same MAC address for both ports.
- The station number with the lowest numerical value will be set up on the first port (Phone 1) of the SPA112.
- After you add or delete a second station to or from the ATA device, the Nyquist system server reboots the device. If the Nyquist system server does not know the device's IP address, you must manually reboot the device for the changes to take effect on that device.
- When a station is added to the ATA device, the web password is changed to **bogen**. You can change the web password when adding or editing the station.
- If you configure two stations on the same ATA device, the web password is set to the station with the highest station number, even if the other station has a different web password defined. Ensure that the same web password is entered for both stations on the ATA device.
- When you delete the second station from the ATA device, the remaining station is set up on the first port (Phone 1) even if that station was previously set up on the second port (Phone 2). If this situation occurs, move the attached phone cable from Phone 2 to Phone 1.
- When you configure two stations on the same ATA device, the second station (Phone 2) uses port # 5061.
- It can take several minutes for changes to show up on the ATA device's web interface when adding, modifying, or deleting stations to or from the device.
- When you add a station to an ATA device for the first time, you must reboot the device after adding the station with the Nyquist web UI before the device will retrieve its configuration information.

- If station VLAN settings are provided and two stations are defined on the ATA device, the VLAN settings from the station with the lowest station number are used. The best practice is to ensure that both stations on the SPA112 use the same VLAN settings.
- *Tip:* Refer to the *Cisco Small Business SPA100 Series Phone Adapters Administration Guide* or the *Cisco ATA 191 and ATA 192 Analog Telephone Adapter Administration Guide for Multiplatform Firmware* for instructions on connecting the ATA.

To add a Cisco SPA112 or Cisco ATA191/192-3PW-K9 station:

- 1 On the navigation bar, select **Stations**.
- 2 Select the **Add** icon.

Note: If **Use Network Time Server defined by DHCP** is set to Yes on the Nyquist system server, the Cisco ATA device's NTP server configuration is not changed; otherwise the device's NTP server is set to the Nyquist system server's defined NTP server.

- 3 Complete the configuration parameters for the new station:
 - a) For Type, select Admin Phone or IP Phone.
 - b) For Device Type, select Cisco SPA112 or Cisco ATA191/192-3PW-K9.
 - c) For MAC Address, enter the MAC address of the Cisco SPA112 or Cisco ATA191/192-3PW-K9.

Note: The MAC address can be found on the Voice \rightarrow Information tab of the device's Phone Adapter Configuration Utility (see subsequent steps).

d) For Dial Plan Type, select Custom, and for Dial Plan, specify the following value:

S:5,(911|91x.|*92x.|*94x.|*96x.|##0911S0|#0911S0|#x.|*xxx|#xxx|987*x.|98x.|*x.|*990|*991x.| 7*x.|971x.|972x.|973x.|974x.|978x.|xxx|##x.#x.|##*x.x.|904x.|904x.|3*xxxx*xxx.|942#x.#x.|94 3#x.#x)

For all other parameters, see Table 36, "Station Configuration Page Parameters," on page 129.

- 4 If you would like to create a second station for this ATA device (it supports up to two lines), repeat the previous steps, providing the same MAC address but a different extension.
- 5 Select Save.
- 6 From your web browser, enter the IP address of the Cisco SPA112 or Cisco ATA191/192-3PW-K9 device.



Figure 57. Cisco SPA112 or Cisco ATA191/192-3PW-K9 Login Window

7 Log into the device.

ation 1	Provisioning				
ionina	Configuration Profile				
al	Provision Enable:	yes 🔻	Resync On Reset:	yes 🔻	
	Resync Random Delay:	2	Resync At (HHmm):		
	Resync At Random Delay:	600	Resync Periodic:	14400	
	Resync Error Retry Delay:	3600	Forced Resync Delay:	14400	
	Resync From SIP:	no 🔻	Resync After Upgrade Attempt:	yes 🔻	
	Resync Trigger 1:	\$REGTMR1 gt 300 and \$PRVTMR ge 6	00		
	Resync Trigger 2:				
	Resync Fails On FNF:	yes 🔻			
	Profile Rule:	tftp://10.10.10.10:69/spa\$MA.cfg			
	Profile Rule B:				
	Profile Rule C:				
	Profile Rule D:	<u>.</u>			
	DHCP Option To Use:	66,160,159,150	Transport Protocol:	tftp 🔻	
	Log Resync Request Msg.	\$PN \$MAC Requesting resync \$SCHE	EME://\$SERVIP:\$PORT\$PATH		
	Log Resync Success Msg.	\$PN \$MAC Successful resync \$SCHE	ME://\$SERVIP:\$PORT\$PATH		
	Log Resync Failure Msg	SPN SMAC Resvoc failed: SERR			
	Report Rule:				
	Firmware Upgrade				
	Upgrade Enable:	yes 🔻			

Figure 58. Provisioning Settings

- 8 Select the Voice tab, and then select Provisioning.
- 9 Set the Profile Rule value to tftp://<nyquist-sysctrl-ip>:69/spa\$MA.cfg, replacing <nyquist-sysctrl-ip> with the IP address of the E7000 System Controller.
- 10 Set Transport Protocol to tftp, and then select Submit to reboot the device.
- **11** Verify that the device has been provisioned.
 - On the device, select the Voice tab and then select Information. Scroll to the bottom of the page and verify that Provisioning Status is set to Successful. Verify that Registration State under Line 1 Status (and Line 2 Status, if two stations are being added) indicates Registered.
 - On the System Controller, navigate to the **Stations** tab and press the **Stations Status** button. On the *Stations Status* page, find the device. Ensure its Status says "Not in use" in green.

12 Log back into the device. The E7000 system server will have set the following parameters:

- Quick Setup \rightarrow Line 1 (and optionally Line 2) \rightarrow Proxy
- Quick Setup \rightarrow Line 1 (and optionally Line 2) \rightarrow Display Name
- Quick Setup \rightarrow Line 1 (and optionally Line 2) \rightarrow User ID
- Quick Setup \rightarrow Line 1 (and optionally Line 2) \rightarrow Password

- Quick Setup \rightarrow Line 1 (and optionally Line 2) \rightarrow Dial Plan
- Network Setup \rightarrow Basic Settings \rightarrow Connection Settings \rightarrow Host Name
- Network Setup \rightarrow Time Settings \rightarrow Time Server \rightarrow Manual
- Network Setup → Time Settings → Time Server (IP or Hostname)
- Network Setup \rightarrow Auto Recovery After Reboot \rightarrow Yes (checked)
- Network Setup \rightarrow Advanced Settings \rightarrow VLAN \rightarrow Enable VLAN
- Network Setup \rightarrow Advanced Settings \rightarrow VLAN \rightarrow VLAN ID
- Voice \rightarrow Provisioning \rightarrow Resync Trigger 1
- Voice → Provisioning → Profile Rule → "tftp://<nyquist-sysctrl-ip>:69/spa\$MA.cfg"
- Voice \rightarrow Provisioning \rightarrow Resync From SIP \rightarrow "no"
- Voice \rightarrow Line 1 (and optionally Line 2) \rightarrow Mailbox ID \rightarrow <nyquist-station-extension-number>
- Voice → Line 1 (and optionally Line 2) → Mailbox Subscribe URL → <nyquist-server-ip-address>
- Voice → Line 1 (and optionally Line 2) → Proxy → <nyquist-server-ip-address>
- Voice \rightarrow Line 1 (and optionally Line 2) \rightarrow Subscriber Information \rightarrow Display Name, User ID, Password
- Voice \rightarrow Line 1 (and optionally Line 2) \rightarrow Dial Plan
- Administration \rightarrow Management \rightarrow User List \rightarrow password for username = admin

13 Log out of the device.

Note: Each time the ATA device is rebooted, it will retrieve the configuration settings from the Nyquist System Controller.

Using a Grandstream HT813 Adapter

The Grandstream HT813 Analog Telephone Adapter (ATA) provides one analog telephone FXS port and one PSTN line FXO port.

For further details about this product, refer to the following product documentation provided by Grandstream:

- https://www.grandstream.com/hubfs/Product_Documentation/HT813_User_Guide.pdf
- https://www.grandstream.com/hubfs/Product_Documentation/HT813_Administration_Guide.pdf
- https://www.grandstream.com/products/gateways-and-atas/analog-telephone-adaptors/product/ht813
- https://www.grandstream.com/support/resources?title=HT813

Setting up the HT813 for use by the Nyquist system

Users can choose to use the FXS port, the FXO port, or both ports (FXS and FXO).

1 Start with basic device setup using the HT813 web interface (see *"Basic HT813 Setup" on page 177*)

- 2 Configure a Nyquist Station to use the HT813 FXS port (see "Configure station to use HT813 FXS port" on page 178)
- 3 Configure a Nyquist SIP Trunk to use the HT813 FXO port (see "Configure SIP Trunk to use HT813 FXO port" on page 180)

Basic HT813 Setup

- 1 Plug an Ethernet cable into the HT813's WAN Port. The cable should be connected to a switch that is connected to your Nyquist server network.
- Power up the HT813 by plugging it in.
 By default, the HT813 will request an IP address from a DHCP server over the WAN port.
- 3 Upgrade the HT813 firmware to version 1.0.5.2 or greater. https://www.grandstream.com/support/firmware

Note: Upgrading to this version is very important, the Nyquist system will not be able to properly configure the device if it is not using this firmware version or greater.

- 4 If DHCP is used in the Nyquist network and the DHCP server provides the Nyquist server's TFTP IP address via option 66, skip to step #7.
- 5 On the HT813 "Basic Settings" page, configure the HT813's static IP address.
- 6 On the HT813 "Advanced Settings" page, select TFTP for Firmware Upgrade and Provisioning and then enter the Nyquist server's IP address in the "Config Server Path:" field (see "Grandstream Device Configuration Advanced Settings" on page 178).
- 7 You are now ready to configure the FXS and FXO ports by using the Nyquist server web interface. See "Configure station to use HT813 FXS port" on page 178 and "Configure SIP Trunk to use HT813 FXO port" on page 180 for details.

Grandstream Device Configuration							
STATUS BASIC SETTINGS ADVANCED SETTINGS FXS PORT FXO PORT							
New Admin Password:	(purposely not displayed for security protection)						
Confirm Admin Password:							
Layer 2 QoS:	802.1Q/VLAN Tag 0 (0-4094) SIP 802.1p 0 (0-7) RTP 802.1p 0 (0-7)						
Black List for WAN Side Port:							
STUN server is:	(URI or IP:port)						
Keep-alive Interval:	20 (in seconds, default 20 seconds)						
Use STUN to detect network connectivity:	 No Yes, total STUN response misses 3 to restart DHCP (mininum=3) 						
Use DNS to detect network connectivity:	● No ○ Yes						
Verify host when using HTTPS:	● No ○ Yes						
Firmware Upgrade and Provisioning:	Upgrade Via TFTP HTTP HTTPS FTP FTPS Firmware Server Path: fm.grandstream.com/gs Config Server Path: 10.10.5.2						

Figure 59. Grandstream Device Configuration Advanced Settings

Configure station to use HT813 FXS port

- 1 From the navigation bar, select **Stations**.
- 2 From the Station page, select the **Add** icon.
- 3 Add a new Station for the FXS port using the station settings specified in *Table 48, "Add Station Properties to use HT813 FXS port," on page 178* (which only details HT813-specific fields).
- 4 Press the **Save** button.
- 5 Reboot the HT813 device (see "HT813 Device Reboot Required after making changes" on page 182).

	Table 48. Add Station Properties to use HT813 FXS port
Туре	Select either "Admin Phone" or "IP Phone".
Device Type	Select "Grandstream HT813 Analog Phone FXS Port".
MAC Address	Enter the HT813's LAN MAC Address.
	This address can be obtained by viewing the HT813's Status page (see "Grandstream Device Configuration Status Page" on page 180).
	Please make sure you enter the LAN MAC Address, not the WAN MAC Address.
	<i>Note:</i> The HT813 uses the LAN MAC Address for configuration file names, even when the WAN Port is used to connect it to the network.

Table 48. Add Station Properties to use HT813 FXS port

VLAN Configuration (optional)	If a VLAN is going to be used, you can enter the VLAN information.		
Registration Password	Enter a password that the HT813 will use to register with the Nyquist server as a SIP client. The Nyquist server will remember the registration password for each station.		
Web Password	Enter a new password to be used by the HT813's web interface.		
Web Password Confirmation	Since the default password for the HT813 web interface is "admin", we strongly recommend that you change it for security reasons.		
	<i>Note</i> : Changing the "Web Username" is not supported. Any value you enter in the "Web Username" field that differs from "admin" will be ignored.		
Dial Plan Type	You may change the dial plan type to meet your requirements.		
	If you choose "Auto Dial", you can then select an "Auto Dial Extension". If you select "Auto Dial" and select an "Auto Dial Extension", do not change the data that is automatically entered into the "Dial Plan" field.		
	If you select "Custom" to create a custom dial plan, refer to the Grandstream HT813 Administration Guide (https://www.grand- stream.com/hubfs/Product_Documentation/HT813_Administra- tion_Guide.pdf) for details on the Dial plan format used by the HT813. You will also need to understand the DTMF codes used by the Nyquist system to create a valid dial plan (see "Nyquist DTMF Feature Dialing Codes" on page 562).		

Grandstream Device Configuration							
ST	ATUS BASIC SETTINGS ADVANCED SETTINGS FXS PORT FXO PORT						
MAC Address:	WAN 00:0B:82:E9:E6:D2 LAN 00:0B:82:E9:E6:D1 (Device MAC)						
WAN IPv4 Address:	10.10.5.59						
WAN IPv6 Address:							
Product Model:	HT813						
Serial Number:							
Hardware Version:	V1.1A Part Number 9610006311A						
Software Version:	Program 1.0.5.2 Bootloader 1.0.5.1 Core 1.0.5.2 Base 1.0.5.2 CPE 1.0.1.139						
Software Status:	as: Running Mem: 19896						
System Up Time:	13:59:47 up 5:19						
PPPoE Link Up:	Disabled						
NAT:	NAT: Unknown NAT						
Port Status:	Port Hook User ID Registration						
	FXS On Hook 551 Registered						
	FXO Not Connected ht813-82e9e6d1 Registered						
Port Options:	Port Options: Port DND Forward Busy Forward Delayed Forward						
	FXS No						
Dravision	Not running. Last status : Doumloading file from un						
Core Dump	Clean						
Core Dump:	CIEdil All Bishte Received Crandotroom Nationice. Ter: 2006-2020						

Figure 60. Grandstream Device Configuration Status Page

Configure SIP Trunk to use HT813 FXO port

- 1 From the navigation bar, select **SIP Trunks**.
- 2 From the SIP Trunks page, select the **Add** icon.
- 3 Add a new SIP Trunk for the FXO port, using the SIP Trunk settings specified in *Table 49, "Add SIP Trunk Properties to use HT813 FXO port," on page 181*.
- 4 Press the **Save** button.
- 5 Reboot the HT813 device (see "HT813 Device Reboot Required after making changes" on page 182).

Note: The HT813 cannot be rebooted via the Nyquist system. You can reboot the HT813 by performing a power cycle, or you can initiate a reboot via the HT813's Advanced Settings page of the web interface (see "Grandstream Device Configuration Advanced Settings" on page 178).

Table 49. Add SIP Trunk Properties to use HT813 FXO port Name The name must match the following format: ht813-<last-8-digits-of-HT813-LAN-MAC-Address> For example, if the HT813's LAN MAC address is 000b82e9e6d1, the name must be: ht813-82e9e6d1 Note: Lowercase characters must be used in the MAC address portion, and a dash must be included between the ht813 portion and the MAC address portion. Extension Select a previously created DISA Station extension. Username Set this equal to the SIP Trunk's Name field. Example: ht813-82e9e6d1 Host Set this to the IP address of the HT813 WAN Port IP Address. The WAN port IP address can be obtained by viewing the HT813's web interface Status page (see "Grandstream Device Configuration Status Page" on page 180). For a PSTN-based POTS line connection (assuming the FXO port is plugged into a DID standard POTS line), set this value to match the POTS line phone number, including area code. Whenever a standard POTS line is used, this value will not change the outbound Caller-ID, because it is already assigned by the POTS line. If the FXO is connected to a PBX system, the DID may affect the Caller-ID seen by the PBX. Allow Set this field to "ulaw" only, no other value is supported. Custom While displaying the HT813's Status page, copy the MAC address information from the HT813's Status page into the "Custom Settings" field. Settings Sample MAC address information copied from HT813 Status page: WAN - 00:0B:82:E9:E6:D2 LAN - 00:0B:82:E9:E6:D1 Caution If you forget to add the MAC address information into the Custom Settings field, the configuration will not properly create a valid SIP Trunk for the FXO port.

Custom Settings (for SIP Trunk - FXO Port)

First, make sure that the HT813's MAC address information is the first information included in the Custom Settings field. This is mandatory. You can use copy/paste to transfer this information directly from the HT813's Status page into the custom settings field; the extra spaces and dashes are automatically handled by the custom settings parser.

Example MAC address information taken from HT813 web interface Status page:

WAN - 00:0B:82:E9:E6:D2 LAN - 00:0B:82:E9:E6:D1

Custom P-Value Parameters

In addition, with consultation from Bogen Technical Support, custom parameters for configuring the HT813 can be included in the custom settings field after the MAC Address information.

Example one:

```
WAN - 00:0B:82:E9:E6:D2 LAN - 00:0B:82:E9:E6:D1
:PVALS:(P100]0(/P100]:PVALS:
```

Example one will set P100 to 0 on the HT813 device.

Example two:

```
WAN - 00:0B:82:E9:E6:D2 LAN - 00:0B:82:E9:E6:D1
:PVALS:
(P100]1(/P100]
(P200]10.10.5.2(/P200]
:PVALS:
```

Example two will set P100 to 1 and P200 to 10.10.5.2 on the HT813 device.

The use of P-value custom parameters is not required by the Nyquist system when the FXS and FXO ports are used as designed to integrate with the Nyquist system.

For further details about custom parameters, contact Bogen Technical Support.

HT813 Device Reboot Required after making changes

After making any changes to a SIP Trunk or Station related to an HT813 device, the HT813 device must be manually rebooted by power cycling the device (Nyquist has no way to instruct the device to reboot). To power cycle the device, unplug it, wait a few seconds, then plug it back in. While powering up, the HT813 device will read the configuration file from the Nyquist server and apply any changes that were made to SIP Trunks that affect the FXO port, and apply any changes that were made to a Nyquist Station that affect the FXS port.

You can also initiate a reboot by using the HT813's web interface, Advanced Settings page ("Grandstream Device Configuration Advanced Settings" on page 178). Press the "Reboot" button at the bottom of the configuration menu to reboot the ATA remotely. The web browser will then display a message window to confirm that reboot is underway. Wait 30 seconds to log in again.

HT813 Firmware Updates

The Nyquist system is not responsible for maintaining available firmware for the HT813 or responsible for upgrading the HT813 firmware. The customer has sole responsibility for maintaining and upgrading the HT813 firmware. Customers can use the HT813 user interface to upgrade the firmware and to initiate automatic upgrade using Grandstream's servers.

Using the Yeastar TA2400

The Nyquist system supports the use of the Yeastar TA2400 FXS VoIP Gateway to integrate 24 standard analog phones into your IP communications system.

To install the gateway, refer to the Yeastar TA2400 installation guide at:

https://www.yeastar.com/download/TAXX00/Yeastar_TA1600&2400&3200_V3_Installation_Guide_en.pdf

To configure the Yeastar TA2400 for use with the Nyquist system, you first set up the Yeastar TA2400 to retrieve configuration from the Nyquist server. (See *"Connect the Yeastar TA2400 to the Nyquist Server" on page 183*.) You then add a station that uses a port on the TA2400 via the Nyquist Admin UI. (See *"Adding a Station that Uses a Yeastar TA2400 Port" on page 184*.)

You can also use the Yeastar TA2400 web interface to view port status. (See "Viewing Yeastar TA2400 Status" on page 185.)

Connect the Yeastar TA2400 to the Nyquist Server

Setting up the Yeastar TA2400 to retrieve information from the Nyquist server is done through the Yeastar TA2400 web interface.

Follow instructions in the Yeastar TA Series Analog VoIP Gateway Installation Guide for getting an IP address for the Yeastar TA2400 and for logging into the Yeastar TA2400 web interface.

Provision Method:	
PNP:	Yes 🔻
DHCP:	No 🔻
Server URL:	Yes ▼
Server Address:	
Server URL 3 :	
User Name ^① :	
Password 🛈 :	
○ Ir	nterval of time 180 Minute
• s	Specified time Everyday ▼ 00 ▼ : 00 ▼
Other	
ouch.	
AES Key🔍:	
Always Apply 🛈 :	No 🔻

Figure 61. Yeastar Auto Provisioning Settings

To set up the Yeastar TA2400:

- 1 From the Yeastar TA2400 web interface, select System.
- 2 Under System Preferences, select Auto Provision Settings.
- 3 In Provision Method, change Server URL to Yes.
- 4 In **Server Address**, select the **Server URL** field and type tftp:// followed by the IP address of the Nyquist server and /. For example: tftp://10.10.5.2/.
- 5 Leave **User Name** and **Password** blank.
- 6 In the Interval of time field, enter 60.
- 7 Select Save.

- 8 Select Apply Changes.
- 9 Under System Preferences, select Reset and Reboot.
- **10** If prompted, select **OK**.

Adding a Station that Uses a Yeastar TA2400 Port

To add a station that uses a Yeastar TA2400 port to your Nyquist system, follow the procedures for adding a station (See "Adding a Station" on page 171).

When you select **Yeastar-TA2400 Analog FXS Port** as the **Device Type**, you must select the **Port Number** that the station is attached to from the drop-down list. Valid values are 1 through 24.

Note: Port number 1 must always be used.

If you have only one phone attached to the TA2400, it must be attached to port 1. If you have multiple phones attached to the TA2400, one must be attached to port 1 but the use of the other ports can be random. For example, you can have phones attached to port 1, 2, 5, and 10. However, you cannot attach phones to just ports 2, 5, and 10 since that combination does not include phone 1.

The following rules apply when adding a station to a Yeastar TA2400 port:

- Device Type is Yeastar-TA2400 Analog FXS Port.
- You can select Admin Phone or IP Phone for Type.
- MAC Address is a required field. If you are adding the first station for this MAC Address, the Port Number is automatically set to 1.
- Paging is set to No and cannot be changed.
- Multicast Audio Distribution is set to No but does not appear on the Add Station or Edit Station pages.
- Volume controls do not appear.
- Codecs Allowed is set to g722 and cannot be changed.
- If you enter 1 for **Port Number**, the Admin Web UI displays the **VLAN settings**, **Web Username**, and **Web Password** fields.
- Stations attached to the Yeastar TA2400 are not available for ringing during Night Ring operations.
- You can associate an external (classroom) speaker to a TA2400 port by selecting a **Speaker Extension**.
- After adding a station, the Yeastar TA2400 must be manually rebooted via the Yeastar TA2400's web interface.
- The Nyquist **Appliances Network Time Server Source** will be used to configure the Network Time Service on the Yeastar TA2400. (See "Using the Yeastar TA2400" on page 182.)
- The Yeastar TA2400 time zone will be set to match the Nyquist server's time zone.

Viewing Yeastar TA2400 Status

You can use the Nyquist Station Status feature to view overall status of the Yeastar TA2400 device. (See *"Viewing Station Status" on page 197.*)

You can obtain status of the individual ports through the Yeastar TA2400 UI.

F	FXS Port Status					
	Port	UP/Down/Break	Name	Status	Voice Mail(New/Old)	Off-hook/On-hook
	1	Up	Yeastar301	ОК	-	On Hook
	2	Up	Yeastar302	OK	-	On Hook
	<u>3</u>	Up	Yeastar303	ОК	-	On Hook
	4	Up	Yeastar304	ОК	-	On Hook
	<u>5</u>	Up	Yeastar305	ОК	-	On Hook

Figure 62. FXS Port Status

To view port status:

1 From the Yeastar TA2400 web interface, select **Status**.

2 Select Port Status.

Parameters that can be viewed and a description of the possible statuses are described in *Table 50* on page 185.

Table 50. Port Status Parameters

Port	Provides the port number for the associated station.				
Up/Down	Displays Up if the FXS module is working. Otherwise, displays Down .				
Name	Provides the name of the station.				
Status	Shows the state of the port Possible statuses are:				
	• OK . Registration is successful, and the port is ready for use.				
	 Unreachable. The FXS module cannot determine the status of the port. 				
	• Request Sent . A request for registering the port has been transmit- ted to the FXS module.				
	 Waiting for authentication. The FXS module is verifying that the correct password and user name have been entered. 				
	• Failed. The port registration has failed.				
Voice Mail (New/Old)	This field is not used.				
Off hook/On hook	On Hook appears if the FXS port is idle. Off Hook appears if the FXS port is busy.				

Using the Grandstream GXW4224

The Nyquist system supports the use of the Grandstream GXW4224 FXS VoIP Gateway to integrate 24 standard analog phones into your IP communications system.

Note: Quantum/Multicom MCESS and MCWESS phones are not supported by this device.

To install the gateway, refer to the Grandstream GXW4224 installation guide at:

https://documentation.grandstream.com/article-categories/gxw4200-series

To configure the Grandstream GXW4224 for use with the Nyquist system, you first set up the Grandstream GXW4224 to retrieve configuration from the Nyquist server (see *"Connect the Grandstream GXW4224 to the Nyquist Server" on page 186*). You then add a station that uses a port on the GXW4224 via the Nyquist Admin UI (see *"Adding a Station that Uses a Grandstream GXW4224 Port" on page 187*).

You can also use the Grandstream GXW4224 web interface to view port status (see "Viewing Grandstream GXW4224 Status" on page 188).

Connect the Grandstream GXW4224 to the Nyquist Server

Setting up the Grandstream GXW4224 to retrieve information from the Nyquist server is done through the Grandstream GXW4224 web interface.

Follow instructions in the *GXW42XX series Analog IP Gateway User Manual* for getting an IP address for the Grandstream GXW4224 and for logging into the Grandstream GXW4224 web interface.

Maintenance	Upgrade and Provisioning			
Network Settings				
Upgrade and Provisioning	Lock Keypad Update	● No ○ Yes		
Web/SSH Access TR-069	Firmware Upgrade and Provisi oning	 Always Check for New Firmware Check New Firmware Only When F/W pre/suffix Change Always Skip the Firmware Check 		
SNMP	XML Config File Password			
RADIUS	HTTP/HTTPS User Name			
DDNS	HTTP/HTTPS Password			
802.1x VPN	Always send HTTP Basic Authe ntication Information	⊖ Yes ● No		
Security Settings –	Upgrade via			
Security	Firmware Server Path	fm.grandstream.com/gs		
Trusted CA	Config Server Path	10.10.5.2		

Figure 63. Grandstream GXW4224 Upgrade and Provisioning

To set up the Grandstream GXW4224:

- 1 Log into the Grandstream GXW4224 web interface. The default username is **admin** and default password is **admin**.
- 2 From the Grandstream GXW4224 web interface, select **Maintenance** tab.
- **3** Select **Upgrade and Provisioning**.
- 4 In the **Config Server Path** field type the IP address of the Nyquist server.
- 5 Select Save and Apply.
- 6 From the Grandstream GXW4224 web interface, select **Maintenance** tab.
- 7 Select Date and Time
- 8 Select desired Time Zone from the **Time Zone** field.
- 9 Select Save and Apply.
- **10** Manually reboot the GXW4224 by pressing **Reboot** located on the upper-right corner of the GXW4224's web interface. You will also need to reboot the device after adding associated stations to the Nyquist server.

Adding a Station that Uses a Grandstream GXW4224 Port

To add a station that uses a Grandstream GXW4224 port to your Nyquist system, follow the procedures for adding a station (see "Adding a Station" on page 171).

When you select **Grandstream GXW4224 Analog Phone FXS Port** as the Device Type, you must select the Port Number that the station is attached to from the drop-down list. Valid values are 1 through 24.

Note: Port number 1 must always be used. If you have only one phone attached to the GXW4224, it must be attached to port 1. If you have multiple phones attached to the GXW4224, one must be attached to port 1, but the use of the other ports can be random. For example, you can have phones attached to port 1, 2, 5, and 10. However, you cannot attach phones to just ports 2, 5, and 10 since that combination does not include port 1.

The following rules apply when adding a Nyquist station for a Grandstream GXW4224 port:

- Device Type is Grandstream GXW4224 Analog Phone FXS Port.
- You can select Admin Phone or IP Phone for Type.
- **MAC Address** is a required field. If you are adding the first station for this MAC Address, the Port Number is automatically set to 1.
- All stations configured for a Grandstream GXW4224 instance must have the same **MAC Address** configured.
- Transmit/Receive Volume Gain fields are settable on Port 1 only, and apply to all ports.
- Paging is set to No but does not appear on the Add Station or Edit Station pages..
- Multicast Audio Distribution is set to No but does not appear on the Add Station or Edit Station pages.

- Codecs Allowed is set to g722 and cannot be changed.
- If you enter 1 for **Port Number**, the Admin Web UI displays the **VLAN settings**, **Web Username**, and **Web Password** fields. The **Web Username** is always **admin** and can't be changed.
- You can associate an external (classroom) speaker to a GXW4224 port by selecting a **Speaker Extension**.
- The Nyquist Appliances Network Time Server Source will be used to configure the Network Time Service on the Grandstream GXW4224.
- The Grandstream GXW4224 time zone must be set via the Grandstream GXW4224 web interface.
- Stations attached to the Grandstream GXW4224 are not available for ringing during Night Ring operations.
- After adding/editing a station, the Grandstream GXW4224 must be manually rebooted.

Important: After you make changes to stations associated with a Grandstream GXW4224, you must reboot the GXW4224 to force it to fetch the configuration file from the Nyquist server and update its settings.

Viewing Grandstream GXW4224 Status

You can use the Nyquist *Station Status* feature to view overall status of the Grandstream GXW4224 device via the station status of related stations (see *"Viewing Station Status" on page 197*). Nyquist stations associated with GXW4224 devices will show the IP address of the device.

You can obtain status of the individual ports through the Grandstream GXW4224 UI by selecting **Port Status** under the Status tab.

The Grandstream GXW4224 locally uses ports in the range 5061 through 5107. If the use of these port numbers causes network issues (e.g., firewall or diagnostics), you can instead setup the Grandstream GXW4224 to use ephemeral port numbers by making the following change via the Grandstream GXW4224 web interface:

- 1 Under Profiles, select Profile $1 \rightarrow SIP$ Settings \rightarrow Basic Settings
- 2 Change "Use Actual Ephemeral Port in Contact with TCP/TLS" to **Yes**
- 3 Select Save and Apply
- 4 Select **Reboot**, located on the top-right of the web page.

Grandstream GXW4224 Security

- Consider enabling HTTPS for secure web access.
 Select Maintenance tab, then select HTTPS for Web Access Mode.
- Consider disabling SSH.
 Select Maintenance tab, then select Yes for Disable SSH.

- Consider disabling user-level and viewer-level web access.
 Select Maintenance tab, then select Yes for Disable User Level Web Access and Disable Viewer Level Web Access.
- Consider updating GXW4224 firmware to 1.0.23.8 or later (optional).

Customizing an NQ-T1100 IP Phone – Color Touch Display

Once a NQ-T1100 IP Phone - Color Touch Display has been added as a Station (see "Adding a Station" on page 171), the placement and labels of keys on the NQ-T1100 admin phone can be customized.

To edit the line keys of the NQ-T1100 IP phone:

- 1 Select **Stations** from the navigation bar.
- 2 Select the Edit button next to the NQ-T1100 station, which will have a Device Type of "NQ-T1100 IP Phone - Color Touch Display".
- 3 Press the **Edit Line Keys** button.
- 4 The Edit Line Keys view will be displayed (see "NQ-T1100 IP Phone Color Display Edit Line Keys" on page 191).
- 5 Click on each key to be customized to display and edit the **Edit Line Key** properties for that key, as described in *Table 51, "Edit Line Key # Properties," on page 190.*

Note: The existing settings for a key will not always be displayed in the **Edit Line Key** properties window.

- 6 When all keys have been defined, click Update Phone Settings to update the settings on the NQ-T1100 device. After pressing Update Phone Settings, it will take a couple of minutes for the NQ-T1100 Admin phone to reboot and update the touch-screen keypad to match the edits performed via the web interface.
- 7 Press the **Done** key.

Table 51. Edit Line Key # Properties

Туре	The type of action to be initiated by this key. The listed types are fairly self- explanatory, but there are several special values:					
	 Custom Speed Dial: The key's label and value (DTMF dialing digits) can be configured by the user. 					
	 Empty: The key will be inoperable with no label. 					
	• Reserved : The Nyquist system will not configure the key, allowing the user to manually configure it via the Admin Phone's touch screen interface. The Nyquist web interface will label the key "Reserved" as a reminder that Nyquist will reserve the key for user customization via the Admin Phone.					
Label	A string of characters that will be displayed on the line key.					
	Maximum length is 30 characters.					
	<i>Tip:</i> You may want to use extra spaces to align text that spans multiple lines.					
Value	Only available when Type is Custom Speed Dial .					
	A string of characters that will be used to place a call when the specified line key is pressed on the Admin phone. Any valid Nyquist DTMF sequence can be used. See <i>"Nyquist DTMF Feature Dialing Codes" on page 562</i> for further details.					
	Maximum length is 99 characters.					
Format String	Only available when Type is Zone .					
	A string of characters that are used to format the label for a line key that rep- resents a Paging Zone speed dial. It may contain the following variables, which will be replaced with the appropriate value when the line key label is created for a Paging Zone:					
	Sname: Paging Zone name					
	\$number : Paging Zone number					
	For example, the following format string:					
	Z\$number: \$name					
	when used for a zone with zone number 5 and a zone name of "Outdoor" would show up on the line key as "Z5: Outdoor". This is the default format for Zone line keys, which is used if a value is not specified for the Format String field.					
	Maximum length is 30 characters.					
	<i>Note:</i> The buttons will not display the label defined by the Format String during the customiza- tion process, but instead simply display "Zone" (as shown in "NQ-T1100 - IP Phone - Color Dis- play Edit Line Keys" on page 191).					

Edit Line Key	Edit Line Keys						
Done 🖺 Update Pho	one Settings	late Dhone Settings"	button when fin	ished			
2 048	s, and press the ope	ate i none octango	batton when his	09	26 AM Sat, Apr 15		
* Routines	Zone	¹² Zone	18	Zone 24	7 All-Call		
Reserved	Zone	¹³ Zone	19	Zone	Emergency ⁸		
Record ³ Page	Zone	¹⁴ Zone	20	Zone	Announce ⁹		
Routines 4	Zone	¹⁵ Zone	21	Zone	Audio ¹⁰ Distribution		
Multi-Site ⁵ All-Call	Zone	¹⁶ Zone	22	Zone	Schedules		
Multi-Site ⁶ Emerg-All-Call	Zone	¹⁷ Zone	23	Zone	- Hide		
	R Carl	1	i	H	NIVOUNCE		
COMMUNICATIONS LLC	History	Directory	Status	Menu	NYQUISI.		

Figure 64. NQ-T1100 - IP Phone - Color Display Edit Line Keys

Customizing an NQ-ZPMS Zone Paging Microphone Station

Once an NQ-ZPMS Zone Paging Microphone Station has been added as a station (see "Adding a Station" on page 171), the placement and labels of keys on the NQ-ZPMS phone can be customized.

To edit the line keys of the NQ-ZPMS IP phone:

- 1 Select **Stations** from the navigation bar.
- 2 Select the Edit button next to the NQ-ZPMS station, which will have a Device Type of "NQ-ZPMS Zone Paging Microphone Station".
- 3 Press the **Edit Line Keys** button.
- 4 The *Edit Line Keys* view will be displayed (see *Figure 65, "NQ-ZPMS Zone Paging Microphone Station Edit Line Keys," on page 194*).
- 5 Click on each key to be customized to display and edit the *Edit Line Key* properties for that key, as described in *"Edit Line Keys Properties" on page 192*. All keys are customizable except the top-left key, which displays the station name, and the rightmost column of keys.
- *Tip:* This view provides access to four pages of keys that can be viewed and edited. Click on one of the black dots shown above the first row of keys to view a different page.

Note: The existing settings for a key will not always be displayed in the *Edit Line Key* properties window.

- 6 When all keys have been defined, click Update Phone Settings to update the settings on the NQ-ZPMS device. After pressing Update Phone Settings, it will take a couple of minutes for the NQ-ZPMS phone to reboot and update the touchscreen keypad to match the edits performed via the web interface.
- 7 Press the **Done** key.

Table 52. Edit Line Keys Properties

TypeThe type of action to be initiated by this key. The listed types are fairly self-
explanatory, but there are several special values:

- **Custom Speed Dial**: The key's label and value (DTMF dialing digits) can be configured by the user.
- **Empty**: The key will be inoperable with no label.
- **Reserved**: The Nyquist system will not configure the key, allowing the user to manually configure it via the phone's touch screen interface. The Nyquist web interface will label the key "Reserved" as a reminder that Nyquist will reserve the key for user customization via the phone.
- **SIP Line**: If you have configured additional SIP Lines on the phone, this line key **Type** can be used to associate the line key with a specified SIP Line. If the SIP Line is registered, a green indicator will show on the line key. Pressing this line key will initiate dialing using the defined SIP line.
- LabelA string of characters that will be displayed on the line key. If the text does not
fit in the space provided, it will scroll.

Maximum length is 30 characters.

Table 52. Edit Line Keys Properties (Continued)

Value Only available when **Type** is **Custom Speed Dial**. A string of characters that will be used to place a call when the specified line key is pressed on the phone. Any valid Nyquist DTMF sequence can be used. See *"Nyquist DTMF Feature Dialing Codes" on page 562* for further details.

Maximum length is 99 characters.

Format String Only available when **Type** is **Zone**.

A string of characters that are used to format the label for a line key that represents a Paging Zone speed dial. It may contain the following variables, which will be replaced with the appropriate value when the line key label is created for a Paging Zone:

- **\$name**: Paging Zone name
- **\$number**: Paging Zone number

For example, the following format string:

Z\$number: \$name

when used for a zone with zone number 5 and a zone name of "Outdoor" would show up on the line key as "Z5: Outdoor". This is the default format for Zone line keys, which is used if a value is not specified for the Format String field.

Maximum label length is 30 characters.

Note: The buttons will not display the label defined by the Format String during the customization process, but instead simply display "Zone".

Done Dupdate Phone Settings								
102 😭	102 ₽							
102@Main Facility	Record Page	T ^{Zone}	₹ ^{2 Zone}	Uialer				
All-Call	NWS Alerts	Zone	€ Zone	مه ۱۳۳				
Emerg All-Call #0911	Zone	T ^{Zone}	€ Zone	Contacts				
Announcements	Zone	Zone	€ Zone	Call Log				
Audio Distribution	Zone	Zone	€ Zone	Forward				
Routines			Tone	Redial				
Schedules		Zone	T ^{⊲ Zone}	Collapse				

Figure 65. NQ-ZPMS Zone Paging Microphone Station – Edit Line Keys

Routing Intercom Calls to PBX Extensions via SIP Trunk

The Nyquist system can be configured to route call-switch–initiated intercom calls to Admin extensions on PBX systems by using a SIP Trunk and one or more *Admin PBX Extension* stations.

Nyquist stations that include Day/Night Admin configuration but do not have a call-switch can also place Admin intercom calls to Admin PBX extensions by dialing 0, *0, or *00:

- 0 = Normal intercom call to Day/Night Admin
- *0 = Emergency intercom call to Day/Night Admin
- *00 = Urgent intercom call to Day/Night Admin

Regarding this feature, the term *intercom call* does not include calls placed by dialing a station's extension. This feature requires call-switch–based initiated calls to an Admin station or the use of 0, *0, *00 to place a call to an Admin station. The Admin station called is defined by the caller's Day/Night Admin setting.

The following steps outline configuration for using this feature.

1 Configure a SIP Trunk with Allow Outbound Intercom Calls enabled.

Set **Allow Outbound Intercom Calls** to *Yes* to allow call-switch–based stations to place calls to PBX-based Admin extensions via the SIP Trunk, using Day/Night Admin-PBX-Extension.

2 Add one or more stations with **Station Type** equal to *Admin PBX Extension*.

The Admin PBX Extension stations are used as Day/Night Admin stations to route intercom calls to PBX-based Extensions via a SIP Trunk.

Note: When adding an Admin PBX Extension station, the length of the Extension field is not restricted to the Dialing Length set on the Nyquist system. For example if the Nyquist Dialing Length is set to three, you can still use any dialing length in the Extension field of the Admin PBX Extension station. For example, suppose your Nyquist system's Dialing Length is set to three, but your PBX extensions all use four digits. In this case, if your PBX extension is 1001, you can enter 1001 into the Extension field of the Admin PBX Extension, even though it exceeds the three-digit Dialing Length currently set on the Nyquist system.

3 Configure **Day/Night Admin** extensions for call-switch–based station.

To send call-switch-based intercom calls to Admin PBX Extension stations, specify Day/Night Admin extensions that have the following format:

<Admin-PBX-Extension>@<SIP-Trunk-Name>

where <Admin-PBX-Extension> represents the station extension of an existing station of type Admin PBX Extension and <SIP-Trunk-Name> represents the name of the SIP Trunk to use for placing the intercom call to the Admin PBX Extension station.

Day Admin:<Admin-PBX-Extension>@<SIP-Trunk-Name>

Night Admin:<Admin-PBX-Extension>@<SIP-Trunk-Name>

For example, if the Day/Night Admin is using PBX extension 100 and SIP Trunk with name equal to "UHS":

100@UHS

This would cause call-switch–based intercom calls to ring PBX extension 100 over SIP Trunk with name "UHS."

Excluding Stations from Paging

Stations can be excluded from paging except for Emergency All Call pages. Emergency All Call pages will be sent and heard at the station even if that station is set to exclude paging.

Stations excluded from paging are also excluded from receiving audio distribution, even if the station's **Multicast Audio Distribution** parameter is enabled, the station is a member of a zone being used for Audio Distribution, or both.

If you exclude a station from paging and the station is included in a **Time** or **Paging+Time** zone, the station does not receive tones either.
Tip: There is no need to exclude the Speaker Extension associated with a station to avoid feedback, as the associated speaker of a station is automatically muted while paging from that station. For details, see *"Speaker Extension Muting" on page 127*.

			Filter	
	Extension	÷.	Name	
	010		Admin Web UI	
	030		030 - Web Admin	
	040		040 - Web Admin	
	050		050 - Web Admin	
	060		060 - Web Admin	
	110		110-VoIPG2	
0	212		212-PA600-SO	

Figure 66. Paging Exclusions Page

To add a station to the Page Exclusions list (i.e., exclude it from paging):

- 1 Select **Paging Exclusions** from the navigation bar.
 - a) Alternatively, select **Dashboard** from the navigation bar and select **Page Exclusion** in the **Call-ing/Paging** area.
- 2 Select the Add (+) button to display the Add Paging Exclusions popup.
- 3 Optionally, filter the displayed list of stations by extension or name.
- 4 Select one or more stations.
 - Click **Toggle All** to select (or deselect) the entire list of stations.
- 5 Select the Add Exclusions button to add the selected stations to the Page Exclusions list.

Warning Adding or deleting a station from the page exclusions list may force the station to reboot.

To remove a station from the Page Exclusions list:

- 1 Select Paging Exclusions from the navigation bar.
 - Alternatively, select Dashboard from the navigation bar and select Page Exclusion in the Calling/Paging area.
- 2 Select one or more extensions to be deleted from the exclusion list.
 - Optionally, toggle the checkbox in the header row above the selection checkboxes to select (or deselect) the entire list of stations.

Note: You can also use the Page-Exclusion Routine Action (see *Table 151, "Routine Action Type-Specific Parameters," on page 576*) to add or remove stations from Paging Exclusions.

Viewing Station Status

The Station Status feature allows you to quickly assess the status of all stations.

Page Exclus	sion Q Devic	e Discovery 🛛 🖓 Sin	mplified Configuration	Stations	C Refresh			
						Filter		
	Extension 🗍	Name 🕴	Device Ty	pe 🗄	Status 🕴	IP Address	Link	Action
	0010	Admin Web UI	n/a		Unavailable	Unknown	Unknown	
	0020	0020 - TechDoc	n/a		Unavailable	Unknown	Unknown	
8	0030	0030 - Web Admin	n/a		Unavailable	Unknown	Unknown	
ê (i	0040	0040 - Web Admin	n/a		Unavailable	Unknown	Unknown	
8	0050	0050 - Web Admin	n/a		Unavailable	Unknown	Unknown	
8	0060	0060 - Web Admin	n/a		Unavailable	Unknown	Unknown	
	0100	Admin - IP Phone	NQ-T1100 IP Phone - C	olor Touch Display	Not in use	172.31.19.205	B	
	0101	IO CTRL	NQ-E7010-Input Ou	utput Controller	Not in use	172.31.8.31	ß	ර Reboo
	0102	EDP01	NQ-EDP01-Entry	Door Phone	Not in use	172.31.9.22	ß	C Reboo
8	0109	VoIP G3	NQ-S1810WT-G3 VoIP Wa	II Baffle Speaker Gen3	Not in use	172.31.9.29	ß	් Reboo
8	0110	VoIPG2	NQ-S1810WT-G2 VoIP Wa	II Baffle Speaker Gen2	Not in use	172.31.9.34	ß	C Reboo
	0111	GA10P	NQ-GA10P-Inter	com Module	Not in use	172.31.8.166	C	O Reboo

Figure 67. Station Status Page

To view station status:

- 1 On the navigation bar, select **Stations**.
- 2 Select Stations Status.

The following information appears for all stations:

Extension	Specifies the unique multi-digit extension number for this station. Valid values range from 001 to 899 for three-digit dialing. The system can be configured to use three-, four-, five-, or six-digit dialing.
	Note: For Sound Masking stations, None will be displayed.
Name	Specifies the name for the station. Names can be up to 16 characters in length.
Device Type	Specifies the Device Type, such as NQ-P0100 Matrix Mixer Pre Amp.
Status	Shows the current state of the station. Possible statuses are:
	 Not in use. This status indicates that the station is registered with the Nyquist system server and is not on a call.
	 In use. This status indicates that the station is off hook and either plac- ing a call or in a call, such as an intercom call, page, or using a Nyquist feature.
	 Ring+Inuse. Indicates that the station is off hook, on a call, and ring- ing (at least one incoming call is ringing the station).
	 Ringing. Indicates that the station is on hook and ringing (at least one incoming call is ringing the station).
	 Unavailable. Indicates that the station is not registered with the Nyquist system server and is unavailable. A station in this status is unable to receive calls and most likely cannot place calls.
IP Address	Provides the IP address of the station.
Link	If the device can be configured or managed via an appliance web UI, this provides a login window for the device. After you enter your Username and Password , the web UI for the device appears.
Action	Provides a Reboot button for Nyquist devices that have an IP address. Selecting this button reboots the device.

Viewing Appliance Status

The Appliance Status feature allows you to quickly view the status of appliances such as I/O controllers and Matrix Mixer Pre-Amps without having to set a filter or manually search for each appliance.

 Applian 	ce Status	+ 0						
Ø Page Exclus	ion Q Devic	ce Discovery	Simplified Configuration	Sta	itions 🛛 📿 I	Refresh		
						Filter		
	Extension 🔶	Name 🔶	Device Type		Status 👙	IP Address	Link	Action
Image:	0101	IO CTRL	NQ-E7010-Input Output Controller		Not in use	172.31.8.31	ß	🖒 Reboot
Image:	0113	MMPA	NQ-P0100-Matrix Mixer Pre Amp		Not in use	172.31.9.35	ß	C Reboot
	n/a	ASB-01	NQ-E7030-Analog Station Bridge		Up:24 of 24 stations	172.31.8.168	ß	😃 Reboot
Image: A state of the state	n/a	A2120-G2	NQ-A2120-G2-Amplifier		Up	172.31.9.40	ß	🖒 Reboot
Image: Contract of the second seco	n/a	A4060-G2	NQ-A4060-G2-Amplifier		Up:4 of 4 stations	172.31.9.39	ß	🖒 Reboot
Image: Contract of the second seco	n/a	GA400P	NQ-GA400P-AoIP Gateway		Up:2 of 2 stations	172. <mark>31</mark> .9.36	ď	එ Reboot
	n/a	PA-240	NQ-PA240 Public Address Mixer Ampli	fier	Up:2 of 2 stations	172.31.9.38	ß	🖒 Reboot

Figure 68. Appliance Status Page

To view appliance status:

- 1 On the navigation bar, select **Stations**.
- 2 Select Appliance Status.

The following information appears for each appliance recognized by the Nyquist system server:

	Table 54. Appliance Status Page Parameters
Extension	Specifies the unique multi-digit extension number for this station. Valid values range from 001 to 899 for three-digit dialing. The system can be configured to use three, four, five, or six-digit dialing.
	<i>Note</i> : For appliances that can have more than one station associated with them, n/a will be displayed. If the appliance is being used for Sound Masking, n/a will be displayed.
Name	Specifies the name for the station. Names can be up to 16-characters in length.
Device Type	Identifies the type of appliance such as NQ-E7010-Input Output Con- troller.

	Table 54. Appliance Status Page Parameters (Continued)
Status	Shows the current state of the appliance. Possible statuses are:
	 Not in use. This status indicates that the station is registered with the Nyquist system server and is not on a call.
	 In use. This status indicates that the station is off hook and either placing a call or in a call, such as an intercom call, page, or using a Nyquist feature.
	 Unavailable. Indicates that the station is not registered with the Nyquist system server and is unavailable.
	• Unknown . The server is unable to determine the state of the device.
	 Unreachable. Indicates that the appliance is currently unreachable (which usually means that a ping test failed).
	• Up . Indicates that the device is reachable and operational. This status may also include the number of stations that are currently registered with the Nyquist server.
IP Address	Provides the IP address of the appliance.
	If Status is currently Unreachable , this indicates the last known IP address of the appliance.
Link	If the device can be configured or managed via an appliance web UI, this provides a login window for the device. After you enter your Username and Password , the web UI for the device appears.
Action	Provides a Reboot button for Nyquist devices that have an IP address. Selecting this button reboots the device.

You can return to the Stations page by selecting **Stations**.

Viewing Zone Information

From the Zones page you can select to add, edit, or delete zones and view parameters for all existing zones.

4 -	_										
🔁 Zones	+	0									
Simplified Co	onfigurat	ion									
										Search	
	laan	Number	Nama A	Tree	Broompourper Tene	Cut Lovel (dD)	Audio Distribution Cut Loval (dB)	Ctations	Description	Multiset ID Address	Multiaget Dart Number
	ICON	Number -	Name 👳	туре	Preannounce ione	Cut Level (dB)	Audio Distribution Cut Level (dB)	stations	Description	Multicast IP Address	Multicast Port Number
🖌 🖸 🧰	₹1	1	Zone1	Paging+Time+Audio	1-Second	-25	0	Show	Show	239.1.1.10	6100
🕗 🖸 🧰	1	2	Zone2	Paging+Time+Audio	1-Second	-6	-30	Show	Show	239.1.1.11	6104
[] [1	3	Zone3	Paging+Time+Audio	1-Second	-6	-19	Show	Show	239.1.1.12	6108
Image: Contract of the second seco	₩	4	Zone4	Paging+Time+Audio	1-Second	-6	-24	Show	Show	239.1.1.13	6112
Image: Contract of the second seco	1	5	Zone5	Paging+Time+Audio	1-Second	-6	-24	Show	Show	239.1.1.14	6116
Image: Contract of the second seco	F 2	6	Zone6	Paging+Time+Audio	1-Second	-6	-24	Show	Show	239.1.1.15	6120
1	₩	7	Zone7	Paging+Time+Audio	1-Second	-6	-24	Show	Show	239.1.1.16	6124
Image: Contract of the second seco	1	8	Zone8	Paging+Time+Audio	1-Second	-6	-24	Show	Show	239.1.1.17	6128
1	1	9	Zone9	Paging+Time+Audio	1-Second	-6	-24	Show	Show	239.1.1.18	6132
/ 🖸 🧰	1	10	Zone 10	Paging	None	-25	-24	Show	Show	239.1.1.20	6140
🕗 🖸 💼	15	44	Music room	Paging+Time+Audio	2-Second	-6	-17	Show	Show	239.1.1.19	6136

Figure 69. Zones Page

To view existing zones:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Zones.

Zone information is described in Table 55.

Details about each zone can be viewed in either table format or in a card view by zone format.

3 To change the format used for the view, select the **Filter** icon.

Table 55. Zone Page Parameters

Simplified Configuration	Displays the <i>Simplified Configuration</i> page, which presents an alternate method for configuring zones (see <i>"Simplified Configuration" on page 206</i>).
lcon	Displays a visual icon that represents the zone or zone type. For example, the Cutlery icon can be used for a zone that contains the cafeteria, while a Briefcase icon can be used for a zone that contains executive offices.
Number	Displays a number associated with the zone. This number can have up to five digits.
Name	Identifies the zone by the user-created name. The name can be alphanumeric (such as <i>Bldg 1</i>) and contain up to 30 characters.
Туре	Identifies the zone as being able to receive paging, time, audio, or a com- bination of paging, time, or audio.
Preannounce Tone	Identifies what, if any, tone should play before a paging announcement.

Table 55. Zone Page Parameters

Cut Level (dB)	Sets the device volume cut level to be used when devices included in the zone receive pages, time-scheduled tones, manually activated tones, and announcements. The cut level can range from -42 to 0.
Audio Distribution Cut Level (dB)	Sets the volume cut level to be used when devices in the zone receive audio distribution and scheduled audio (see <i>"Using Audio Distribution" on page 392</i>). The cut level can range from -42 to 0.
Stations	Displays the extensions included in the zone when Show is selected.
Description	Provides a description of the zone when Show is selected.
Multicast IP Address	Identifies the IP address for multicast calls to the zone.
Multicast Port Number	Identifies the port number for multicast calls to the zone.

Adding a Zone

To perform this procedure, you must have permission to add zones.

Note: The maximum number of zones that a Nyquist appliance can be enrolled in is 24. For ASBs, 2channel amplifiers, and 4-channel amplifiers, the maximum number of zones for all attached stations is 24. Admin Phones can be enrolled in a maximum of seven zones. An error displays if you attempt to add a Nyquist station to a zone and it is already enrolled in the maximum number of zones.

When you create a zone, you select whether the zone will allow manual paging (Paging zone), scheduled tones (Time zone), audio distribution (Audio zone), or any combination of manual paging, scheduled tones, and audio distribution.

Zone Type	Type of Audio	Audio Activities
Paging	Caller speaking (optionally after a preannouncement audio clip) Announcements (prerecorded)	One-way calls that allow the caller to speak an announcement to all stations (i.e., speakers) of Pag- ing-type zones. Announcements are also played to Paging-type zones.
Time	Tones	Scheduled events, routines, I/O contact closures, and manually initiated tones play to stations of Time-type zones. <i>Note:</i> These are known as "Time" zones because most Tones

Table 56. Audio Activities by Zone Type

Zone Type	Type of Audio	Audio Activities
Audio	Audio distribution (usually music)	Scheduled events, routines, I/O contact closures, and manually initiated audio distributions play to stations of Audio-type zones.

If you want tones to play during active pages, you must create separate Paging and Time zones, and the Time zones must be created first. Creating Time zones first sets the priority of Time zones over Paging zones.

Warning Although a station can be assigned to more than one zone, be aware that this can cause problems if a scheduled event is assigned to two or more zones that include the same station.

X Cancel		
Icon: 🔃		
Number: 🜖		
Name: 🚺		
	10	
Cut Level (dB): -25 🚺		
+		
Audio Distribution Cut Level (dB): -24 📵		
+		
Туре: 🚺		
Paging -		
Stations: ()		
Add Stations	Clear Add All	
Preannounce Tone:		
None		
Multicast IP Address:		
Multicast Port Number: 1		
Description: ()		

Figure 70. Add Zone Page

To add a zone:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select **Zones**.
- 3 Select the **Add** icon.
- 4 Complete all parameters for the zone. Parameters are described in*Table 57*.
- 5 Select Save.

Table 57. Add Zone Page Parameters

lcon	Use the drop-down menu to select a visual icon that represents the zone or zone type. For example, the Cutlery icon can be used for a zone that contains the cafeteria, while an Eraser icon can be used for a zone that contains only classrooms.			
Number	Enter a number associated with the zone. A zone number can contain a maximum of five digits.			
Name	Enter a name for the zone. The name can be alphanumeric (such as Bldg 1) and contain up to 30 characters.			
Cut Level (dB)Set the device volume cut level to be used when devices incl zone receive pages, time scheduled tones, manually activated announcements. The cut level can range from -42 to 0.				
Audio Distribution Cut Level (dB)	Set the volume cut level to be used when devices in the zone receive audio distributions and scheduled audio (see <i>"Using Audio Distribution" on page 392</i>). The cut level can range from -42 to 0.			
Туре	Identifies the zone as being able to receive paging, tones, audio, or a combination of paging, tones, and audio (see <i>Figure 56</i> , " <i>Audio Activities by Zone Type</i> "). Options are:			
	• Paging			
	• Time			
	• Audio			
	Paging+Time			
	Paging+Audio			
	Paging+Time+Audio			
	Audio+Time			
	<i>Note:</i> If you want tones to play during active pages, you must create separate paging and time zones and the time zones must be created first. Creating time zones first sets the priority of time zones over page zones. Stations can be in multiple zones, and you can create a paging zone (or a Paging+Audio zone) and a time zone (or Audio+Time zone) that contain the same stations.			
Stations	Add extensions for the stations to be included in the zone.			
(optional)	Note: An analog phone station cannot be added to a zone.			

Table 57. Add Zone Page Parameters

Preannounce Tone	Use the drop-down menu to select what, if any, tone should play b a paging announcement.							
Multicast IP Address	IP Address Specify the IP address for multicast calls to the zone.							
Multicast Port Number (optional)	Specify the first of four port numbers used for multicast calls to this zone. <i>Note:</i> This field is required if a Multicast IP Address is specified. The port number must be an even number and are assigned in increments of four. For example, if a zone was created with the Multicast Port Number of 6004, the next available Multicast Port Number would be 6008.							
	Caution	Not using multicast when a zone has many stations can cause per- formance issues.						
Description	Provide a	description of the zone.						

Editing Zone Configuration

The Edit Zone page allows you to change zone parameters, including adding or deleting stations from the zone. You must be logged in with a role that has permission to edit a zone before completing this procedure.

Note: You cannot edit a zone number for a zone that is linked to a routine.

To edit a zone:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Zones.
- **3** Select the **Edit** icon for the zone.
- 4 Complete all parameters for the zone. Parameters are described in *Table 57, "Add Zone Page Parameters," on page 204.*
- 5 Select Save.

Cloning a **Zone**

You can clone a source zone to a target zone, which essentially copies the list of stations of the cloned zone to the target zone. This can be very helpful for creating zones that have the same or similar list of

stations as another zone. It can also be used to create a zone that encompasses the stations of multiple existing zones by cloning multiple source zones to one target zone.

To clone a zone:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Zones.
- 1 If the target zone does not already exist, create it (see "Adding a Zone" on page 202). Cloning a zone does not create a new zone.
- 2 Select the **Copy Stations** icon for the source zone.
- 3 In the **To** combo box, specify the target zone to which all source zone Stations will be copied.
- 4 Select Copy Stations.
- 5 The *Edit Zone* page of the target zone is displayed with the Stations from the source zone added to this target zone.
- 6 Select Save.

Important: The stations from the source zone are not actually added to the target zone until the updated target zone is saved.

Deleting a Zone

You can delete a zone that is no longer being used.

Note: You cannot delete a zone that is linked to a routine.

To delete a zone:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Zones.
- 3 Select the **Delete** icon for the zone.
- 4 When the confirmation page appears, select **Delete**.

Simplified Configuration

The *Simplified Configuration* page provides an alternative interface for viewing and configuring Zones. *To display the Simplified Configuration view:*

1 Ensure the *Simplified Configuration* role permission is enabled.

- 2 On the navigation bar, expand **Zones and Queues**, then select **Zones**.
 - a) Alternatively, expand Stations or Amplifier and Gateway Devices.
- **3** Select the **Simplified Configuration** button.

8	Simplified Configuration 🛛 Note: A	Il changes are immediately applied to the Nyquist system and selected devices.
	r\$ Paging Zones	Audio Zones Q Device Discovery
	Amplifier and Gateway Devices (Click for Devi	ce Status)
	A4060-G2 NQ-A4080-G2-Amplifer NQ-GA400P-AoIP Gateway	240 Valio Address Amplifier
	Bridge Devices (Click for Device Status)	
	ASB-01	
	Stations (Click for Device Status)	
	Admin - IP Phone ND-11100 IP Phone - Color Touch Display	10P GA10PV Sachard PK-Infercom HDMI Module GA20P2 ND-GA10PZ-Amplifier with Line Output GA40P3 ND-GA40P3-Amplifier with Line In/Out GA40P3 ND-GA40P3-Amplifier with Line In/Out GA40P3 ND-GA40P3-Amplifier with Line In/Out Sachard PK-Infercom HDMI Safe Speaker Gen3
	VoIPG2 NG-S1810WT-02 VoIP Wall Baffie Speaker Gen2	

Figure 71. Simplified Configuration: Main Screen

The **Simplified Configuration** view displays an image of each appliance in the Nyquist system. The appliances are divided into lists of *Amplifier and Gateway Devices, Bridge Devices*, and *Stations*.

Hovering the mouse over an appliance image displays a tooltip indicating the appliance's configured extensions.

Displaying Device Status

Clicking an appliance image displays information about the device and its configuration.

Device Status A4060-G2 (NQ-A4060-G2-Amplifier)				
Amplifier Amplifier Status Amplifier Status Paging Paging Zones Audio Distribution Call Status Registered Amplifier Station Paging Zones Audio Distribution Call Status Registered Amplifier Station Paging Zones Audio Distribution	<pre>: IP Address: 172.31.9.39, Channels:ABCD, SN:172500100012, MAC:7804733b9208 : Up:4 of 4 stations : A4060-62 (Port:1, SN:172500100012, MAC:7804733b9208) : to station enabled : Time Zone,Zone Seven : to station enabled : Not in use : 0215/sip:0215@172.31.9.39:41979;ob : A4060-62 (Port:2, SN:172500100012, MAC:7804733b9208) : to station enabled : Time Zone,Zone Seven : to station enabled : Not in use : 0216/sip:0216@172.31.9.39:41979;ob : A4060-62 (Port:3, SN:172500100012, MAC:7804733b9208) : to station enabled : Not in use : 0216/sip:0216@172.31.9.39:41979;ob : A4060-62 (Port:3, SN:172500100012, MAC:7804733b9208) : to station enabled : Time Zone,Zone Seven</pre>			
Audio Distribution Call Status Registered Amplifier Station	: to station enabled : Not in use : 0217/sip:0217@172.31.9.39:41979;ob : A4060-G2 (Port:4, SN:172500100012, MAC:7804733b9208) to station combled			

Figure 72. Simplified Configuration Device Status

The information displayed is determined by the device's type and configuration. The properties displayed correspond to the device and stations configuration settings described in the following:

- Table 36, "Station Configuration Page Parameters," on page 129
- Table 37, "Station Type-specific Configuration Options," on page 141
- Table 61, "Add Bridge Device Parameters," on page 225
- Table 65, "Add Amplifier and Gateway Devices Parameters," on page 235

Paging Zones, Time Zones, and Audio Zones

The Simplified Configuration page includes three buttons—**Paging Zones**, **Time Zones**, and **Audio Zones**—that allow you to assign appliances to zones and configure zone cut levels. Select any one of these buttons to view and edit the zones of the selected type.

To configure Paging, Time, or Audio Zones:

- 1 On the navigation bar, expand **Zones and Queues**, then select **Zones**.
 - a) Alternatively, expand Stations or Amplifier and Gateway Devices.
- 2 Select the **Simplified Configuration** button.
- 3 Select the **Paging Zones**, **Time Zones**, or **Audio Zones** button, depending on which zone type you want to configure.

- 4 Select the zone to be edited using one of the following mechanisms:
 - a) select the left or right arrow buttons to iterate through the currently defined zones until the target zone is displayed, or
 - b) select the down-arrow button to display a list of all defined zones of the current type, then select the target zone.
- 5 The zone being edited is displayed at the top of the page as "<**zone type**> **Zones Zone**-#: <**zone name**>." Appliances that are assigned to the current zone will be displayed with a green border.

8	Simplified Configuration 📀 Note: All changes are immediately applied to the Nyquist system and selected devices.
	t≪ Paging Zones - Zone-3: Paging zone
	Main < 🗲 🕶 😝 😰 🧰 Cut Level 🚯:+ -14 dB
	Amplifier and Gateway Devices
	A4060-G2 N2-A4005-G2-Amplifier N2-GA400P-AoIP Gateway
	Bridge Devices
	ASB-01 NO_E7033-Analog Station Bridge
	Stations
	Admin - IP Phone
	VolPG2 NOLS1810WT-62 VolP Weit Baffe Speaker Gen2

Figure 73. Simplified Configuration: Paging Zones

From the **Paging Zones**, **Time Zones**, or **Audio Zones** page, stations can be added or removed from a zone and zones can be created, edited, and deleted.

To return to the Simplified Configuration Main Page, select the Main button.

Add or Remove a Station to or from a Zone

To add or remove a station to or from a zone:

- 1 Select the target zone.
- 2 Click on the corresponding appliance image.
 - a) If prompted whether or not to enable **Paging** for this appliance, select **Yes** or **No**.
- 3 An image of the appliance will be displayed with a button for each extension associated with this station (see *Figure 74, "Simplified Configuration Add or Remove Station," on page 210*). Toggle the extension button(s) to include or exclude the extension(s) from the current zone.



Important: Keep in mind that if the zone has multiple Zone Types (i.e., Paging+Time, Paging+Audio, Audio+Time, or Paging+Time+Audio), adding or removing a station while viewing one Zone Type will add or remove the station to or from the corresponding Zone Type pages.



Figure 74. Simplified Configuration Add or Remove Station

Create a Zone

To create a new zone:

- 1 Select the add button.
- 2 Follow the screens of the **Create Zone** wizard. For details, see "Adding a Zone" on page 202.

Edit a Zone

To edit a zone:

- 1 Select the zone to be edited.
- 2 Select the edit button.
- **3** Follow the screens of the **Edit Zone** wizard. For details, see *"Editing Zone Configuration" on page 205*.

Delete a Zone

To delete a zone:

- 1 Select the zone to be deleted.
- 2 Select the delete button.
- 3 Select **Delete** to confirm.

Changing the Cut Level

To change the cut level for a zone:

- 1 Select the zone to be configured using one of the following mechanisms:
 - a) select the left or right arrow buttons to iterate through the currently defined zones until the target zone is displayed, or
 - b) select the down-arrow button to display a list of all defined zones of the current type, then select the target zone.
- 2 Adjust the **Cut Level** slider to adjust the level.

For the *Audio Zones* view, the slider adjusts the zone's **Audio Distribution Cut Level**; for the *Time Zones* and *Paging Zones* views, it adjusts the zone's **Cut Level**.

Device Discovery

The **Device Discovery** button launches the *Appliance Discovery Wizard*. For details, see "*Appliance Discovery Wizard*" on page 124.

Page Queuing

Warning Changes to queues—including adding a queue, modifying an existing queue, or deleting a queue—will result in the deletion of all recorded pages that have not yet played. Changes should only be done after business hours or during a small maintenance window that does not exceed five minutes.

The Page Queuing feature allows you to record an unlimited number of pages or messages for queuing (aka, stacking) to one or more specified zones.

Note: A zone can only be added to a single queue, but a queue may have multiple zones associated with it. Zones must be created before a queue can be created.

Page Queuing is designed to eliminate feedback that can occur if a page is made in an area where a microphone and speaker are in close proximity. With Page Queuing, the page does not start until the user recording the page has indicated that the recording is completed. It also prevents page overlapping because pages sent to a queue play one at a time.

Though similar, the Page Queuing feature differs from the Schedule Announcement (see "Using the Schedule Announcements Feature" on page 273) and Record Announcement (see "Recording Announcements" on page 317) features. The Schedule Announcement feature allows you to specify a date and time when the announcement is to be played, and the Record Announcement (DTMF code *990) feature allows you to use the admin phone to record an announcement, which is played immediately after it is recorded.

With the Page Queuing feature, the recorded page is placed in a zone's queue. The pages in the zone's queue are played in the order that they are placed in the queue.

A live page started on a zone that is playing a recorded page will cause the recorded page to be terminated and sent back to the queue. The interrupted message will play again, from the beginning of the message, when the zone becomes idle. Multi-Site Emergency-All-Call, Multi-Site All-Call, Emergency All-Call, All-Call, Alarm, Tone, and Emergency Announcement will also interrupt any playing recorded zone messages. All re-queued interrupted messages will play again, from the beginning of the message, when the zones becomes idle.

If **Enable Queue All-Call Page** is set to **Yes** in the *System Parameters*, All-Call pages will also be queued. Queued All-Call pages have a higher priority than queued zone pages and will interrupt any that are playing, which will later be replayed upon completion of the All-Call page. To start a real-time All-Call page, without queuing, dial #0* (#0*# when using DISA, or 0000001 if the PBX is not able to pass hashtags).

Important: Multi-Site All-Call pages are not queued. Similarly, All-Call pages initiated by remote facilities are not queued. These will be played in real time.

Note: Unlike queued zone pages, queued All-Call pages do not support the Message Plays parameter. They are always played once.

Selecting **Disable Audio** will cause all recorded messages to stop. The messages will resume play from the beginning when audio is re-enabled.

For information about recording pages, see "Record Page" on page 370.

Viewing Queues

≡ Que	eues +	8					
A WARI recorde busines	A WARNING - Any and all changes to queues will result in the deletion of recorded pages that have not yet played. Changes should only be done after business hours, or during a small maintenance window (1 to 5 minutes).						
				Filter			
	Number 🍦	Name 🍦	Delay Between Messages	Message Plays	Zones		
	1	Q 1	2	3	Show		
	2	Q 2	2	1	Show		
	5	chipotle	3	2	Show		

Figure 75. Queues

Using DTMF codes *991 or *991*{zone} or selecting **Record Page** from the Admin Phone or the Admin web UI allows you to initiate a queued page.

When DTMF code #{zone} is used to initiate a zone page, Nyquist will start a queued page if the zone belongs to a queue. If you want to start a real-time page instead, dial #{zone}*.

To view existing queues:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select **Queues**.

Table 58 describes the Queue information:

Table 58. Queues Page Parameters

Number	Number that the user assigns to the queue.
Name	Name that the user assigns to the queue.
Delay Between Messages	Number of seconds to pause between pages. The delay can range between 1 and 10 seconds. The default is 2 seconds.
Message Plays	How many times each page in the queue will play. The number can range between 1 and 3. The default is 1, which means that the message plays only one time.
Zones	Select Show when viewing a queue to see the list of zones assigned to the queue. When adding a queue, only zones not already assigned to a queue and that are Paging , Paging+Time , Paging+Audio , and Paging+Time+Audio type appear in the drop-down menu.
	<i>Note</i> : A zone can only be associated to a single queue.

Adding a Queue

You can create multiple queues for stacking pages, and a queue may have one or more zones. However, a zone can only be associated with a single queue.

Warning Changes to queues—including adding a queue, modifying an existing queue, or deleting a queue—will result in the deletion of all recorded pages that have not yet played. Changes should only be done after business hours or during a small maintenance window that does not exceed 5 minutes.

■ Add Queue		
Number: 🚺		
Name: (1)		
Delay Between Messages: 2 (
Message Plays: 1 (1		
Zones:		
Add Zones	Clear	Add All
X Cancel		

Figure 76. Add Queue

To create a queue:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select **Queues**.
- 3 Select the **Add** icon.
- 4 Complete the Add Queue parameters. (See *Table 58, "Queues Page Parameters," on page 213*.)
- 5 Select Save.

Editing a Queue

You can edit a queue to change any of its parameters.

Warning Changes to queues—including adding a queue, modifying an existing queue, or deleting a queue—will result in the deletion of all recorded pages that have not yet played. Changes should only be done after business hours or during a small maintenance window that does not exceed 5 minutes.

To edit a queue:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Queues.
- 3 Select the **Edit** icon next to the queue that you want to modify.
- 4 Make desired changes to the queue parameters. (See *Table 58, "Queues Page Parameters," on page 213.*)
- 5 Select Save.

Deleting a **Queue**

You can delete a queue that is no longer needed.

Warning Changes to queues—including adding a queue, modifying an existing queue, or deleting a queue—will result in the deletion of all recorded pages that have not yet played. Changes should only be done after business hours or during a small maintenance window that does not exceed 5 minutes.

To delete a queue:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Queues.
- 3 Select the **Delete** icon next to the queue that you want to delete.
- 4 When prompted, select **Delete**.

Sound Masking Zones

A sound masking zone consists of one or more sound masking stations, each one corresponding to an amplifier channel attached to one or more speakers. Each sound masking station, however, can be associated with only one sound masking zone and cannot be used for any other purpose (e.g., announcements, paging, etc.).

The speakers associated with the stations within a sound masking zone will play generated noise designed to mask unwanted sound. This can reduce or eliminate the perception of sound, usually to minimize distracting noise and/or increase privacy.

Upon initial exposure, people may require time to acclimate to the masking sound. *Ramping* facilitates this process by playing the masking sound at a lower level (–10 dB relative to the final level) and grad-ually increasing the level to the final level over a masking zone-specific number of days (20 or 30 days), giving people time to slowly get used to the masking sound.

For similar reasons, it may be helpful, even after the initial ramping period, to gradually increase and decrease the masking sound levels, such as at the beginning and ending of each exposure period. For example, you may want to gradually increase the level by +10 dB at the beginning of each day and gradually decrease it by -10 dB at the end of each day. This can be accomplished by using scheduled routines (see *"Using Routines" on page 416*) that include the SM-Scheduled-Ramp action, which can gradually increase or decrease the masking sound volume over a period of one to two hours.

Tip: There are several Routine actions that are available for controlling sound masking operations: SM-Enable-Zone, SM-Disable-Zone, SM-Scheduled-Ramp, and SM-Set-Output-Gain. For more details, see *"Using Routines" on page 416.*

When a masking zone amplifier detects an Emergency-All-Call announcement, an Alarm tone or Emergency announcement that plays to all speakers, or the Disable-Audio routine action or dashboard control, the masking sound is immediately muted to allow important notifications to be heard. Once the announcement has completed, the masking sound will be automatically ramped up to its configured level over a period of five minutes. This also occurs whenever the masking zone signal has been disabled and re-enabled or when the appliance is restarted, such as a reboot, power cycle, or firmware update.

Note: Sound masking is *not* muted for an Emergency Announcement or Alarm that is being played to a specific zone.

Privacy needs often vary throughout the day and week. Several routine actions—SM-Disable-Zone, SM-Enable-Zone, and SM-Set-Output-Gain—allow you to enable, disable, and adjust the masking sound levels of your sound masking zones via scheduled and/or triggered routines (see "Using Routines" on page 416).

Viewing Sound Masking Zones

To view existing Sound Masking Zones:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Sound Masking Zones. See Table 59, "Sound Masking Zones Parameters," on page 217 for details.

•	Sound Masking Zones												
												Filter	
		Icon	Number 🔶	Name	Status	Enabled	Stations	Description	Speaker Orientation	Output Gain	Spectrum Preset	Slow Ramp Days	Ramp Days Left
1		۴	1	Meeting Zor	e Off	No	Show	Show	Down	-25	Non-ideal open-plan space	20	20

Figure 77. Sound Masking Zones

	Table 59. Sound Masking Zones Parameters					
Edit button	Edit this sound masking zone.					
Delete button	Delete this sound masking zone.					
	Note: An active sound masking zone must be disabled before it can be deleted.					
Start Ramping button	Start ramping up the sound masking noise for this zone.					
	Note: Only available when the sound masking zone is enabled.					
Stop Ramping button	Stop ramping up the sound masking noise for this zone.					
	Note: Only available when the sound masking zone is enabled.					
	<i>Note:</i> Stopping the ramping up process does not stop the sound masking; it sets the level to the defined, non-ramping gain level.					
lcon	Displays the icon configured for this zone.					
Number	Displays the unique number configured for this zone.					
Name	Displays the name configured for this zone.					
Status	Indicates the current sound masking status.					
	Valid values are:					
	• On : Sound masking is currently active.					
	 Off: Sound masking is currently inactive. 					
	 Pause: Sound masking has been temporarily paused, such as when audio is disabled. 					
	 Ramping: Sound masking is currently active and slowly ramping to full volume. 					
Enabled	Indicates whether or not this sound masking zone is enabled (i.e., Yes indicates signal is being played).					
	<i>Tip:</i> On the Sound Masking Zones page, this is a button that can be used to enable or disable the sound masking noise.					
Stations	Displays which Sound Masking stations are included in this sound mask- ing zone.					
Description	Displays the configured description of this sound masking zone.					

Table 59. Sound Masking Zones Parameters (Continued)						
Speaker Orientation	Indicates the configured orientation of the speakers.					
	Valid values are Up and Down .					
Output Gain	Indicates the configured output gain (in dB) of the sound masking noise.					
	The default value is -35 dB.					
Spectrum Preset	Indicates the preset frequency spectrum to be played for sound masking. The available options are described below.					
	Important: To change the Spectrum Preset for an active masking zone, disable the zone, change the preset, then re-enable the zone.					
Closed-plan spac	Recommended for private office or small conference room with some reflective surfaces, absorptive ceiling, and furnishings.					
Good open-plan space	Suitable for open office with 4- to 5-foot high cubical panels, some reflective surfaces, and moderate furniture absorption.					
ldeal open-plan space	Suitable for open offices with 5-foot or higher cubical panels, absorptive ceilings and furnishings, and proper layout.					
NCB Contour	Noise Criterion Balanced (NCB) Contour may be used to evaluate the acceptability of masking sound in various non-industrial environments.					
Non-ideal open- plan space	Recommended for open office with no cubical panels or with cubical panels under 4-foot high, reflective surfaces, and moderate furniture absorption.					
NRC Canada Contour	A cost-effective open-plan environment masking spectrum published by the National Research Council, Canada.					
NC40 Contour	Noise Criterion (NC) 40 Contour may be used to evaluate the acceptabil- ity of masking sound in an open office environment.					
Slow Ramp Days	Indicates the number of days over which the masking noise will gradually increase from –10 dB below the specified Output Gain level to the specified level.					
	Valid values are 20 and 30 days.					
	Gradually ramping up the sound levels this way helps listeners to slowly acclimate to the masking noise over time to avoid or minimize discom- fort.					
Ramp Days Left	The number of days remaining before the masking noise will reach the specified Output Gain level when ramping up the sound level.					

Adding and Editing a Sound Masking Zone

Before you can create a Sound Masking Zone, you must first create one or more Sound Masking stations. Unlike a standard station, however, a Sound Masking station is created via the *Station Management* view of the amplifier to be used as a Sound Masking station (see "Using Station Management for *Amplifiers and Gateway Devices" on page 239*). Edit each amplifier channel to be included in the Sound Masking Zone (see "*Editing Station Configuration Settings" on page 141* for details) and set its **Type** to **Sound Masking**.

Warning If downward-facing speakers are installed and two amplifier stations are used within the same masking zone, it is critical that either the stations come from different amplifiers (preferable) or the In-Phase setting for the two stations are configured differently (i.e., one Yes, one No). Otherwise, there will be phasing issues or uncontrollable variations in masking levels.

Once one or more Sound Masking stations have been defined, a Sound Masking Zone can be created.

Important: When adding a new Sound Masking station, always use the **Station Management** button of an amplifier listed in the **Amplifiers and Gateway Devices** view and select a channel of an existing amplifier. Adding a station from the **Stations** view and assigning a **Type** of **Sound Masking** will not associate the station with an actual device.

Warning Sound masking amplifiers and stations are not monitored by Station Supervision.

Clear Add All

Figure 78. Add Sound Masking Zone page

To create or edit a sound masking zone:

- 1 On the navigation bar, expand **Zones and Queues**.
- 2 Select Sound Masking Zones.
- 3 Select the Add icon.
- 4 Complete the parameters to the Add Sound Masking Zone page (see *Table 59, "Sound Masking Zones Parameters," on page 217*).

5 Select Save.

Managing Bridge Devices (Analog Station Bridge)

Bridge Devices, such as the NQ-E7030 Analog Station Bridge (ASB), allow the E7000 solution to use the existing analog call switches, 25 volt speakers, analog phones, and existing infrastructure when upgrading from Multicom 2000, Quantum Multicom IP, and supported third-party intercom systems. When used exclusively as a networked component of the E7000 series paging and intercom solution, the ASB permits a hybrid IP/analog system configuration through use or connection of analog 25V speakers and associated analog call switches (for example, CA-15C type).

The ASB has 24 station connections that attach to hardwired 25 volt speakers and their associated call switches. While each connection has its own SIP addressable Station ID, the ASB itself uses a single network IP address.

Viewing Bridge Devices

Through the Bridge Devices page, you can view information about all bridge devices configured for your E7000 system, add or edit devices, and manage stations for a bridge device.

	S + ?	3	Refresh							
								Filter		
Name 🕴	Manage	Action	Mac Address	Serial Number	IP Address	Link	Status	Description	Output Power	(dB)
ASB-01	Station Management	😃 Reboot	40bd3224489e	1937HAN05900	172.31.8.168	ß	Up:24 of 24 stations	Show	0	

Figure 79. Bridge Devices Page

To view bridge devices attached to your network:

On the navigation bar, select **Bridge Devices**.

The Bridge Devices page provides a list of all bridges that have been discovered by or manually configured for the E7000 system.

	Table 60. Bridge Devices Page Parameters				
🖉 Edit	Edit the bridge device.				
🔟 Delete	Delete the bridge device.				
i Device Status	Display the device status for this bridge device.				
Name	Provides a name for the bridge.				
Manage	Provides a link to the Station Management tools.				

	Table 60. Bridge Devices Page Parameters
Action	Provides a Reboot button to select if the bridge device needs to be rebooted.
MAC Address	Provides the MAC address for the bridge device.
Serial Number	Provides serial number of the bridge device.
IP Address	Provides the IP address for the bridge device.
Link	Provides a link to the bridge device's user interface.
Status	Provides the status of the bridge device. Possible statuses include:
	• Unknown . The server is unable to determine the state of the device.
	• Unreachable . The server is unable to ping the device.
	• Registering . More than one IP address has been found. Stations may still be registering with new IP addresses.
	• Up: X of 24 stations. Indicates the number of registered available stations attached to the bridge device. If the numbers do not match, then one or more stations attached to the bridge device is not available for service. The station or stations may be in the process of registering, or if the condition persists, there may be a configuration error.
	<i>Note</i> : After an ASB device is rebooted, it can take a few minutes for all associated sta- tions to register with the Nyquist server (usually less than three minutes).
Description	Provides a description for the bridge device.
Output Power (dB)	Provides the channel output setting. The available settings increment by 1 and range from -6 to 6 with the default being 0.
VLAN Configuration	Specifies how the VLAN configuration is set.
VLAN ID	Identifies the VLAN for this bridge device. The VLAN ID parameters range from 2 through 4094 and pertain to the bridge's network interface (not to the ports or stations).
VLAN Priority	Identifies the priority for the port. Values range from 0 through 7.
Web Username	Provides a username for logging into the bridge device.
Firmware	Provides information about firmware that is loaded onto the bridge device.
Enable SIP TLS	Identifies the use of TLS to secure SIP traffic is enabled for this bridge device.
	If the Firmware version is 5.0.0 or higher, the default value is Yes . If not, the default value is No .
Enable SRTP	Identifies the use of encryption to secure voice traffic is enabled for this bridge device.
	If the Firmware version is 5.0.0 or higher, the default value is Yes . If not, the default value is No .

Adding a Bridge Device

From the Add Bridge Device page, you can add a new bridge device to your E7000 system.

Tip: Bridge devices can also be added using the "*Appliance Discovery Wizard*", as described on page 124.

Add Bridge Device	0
× Cancel Save	
Name: 🚯	
MAC Address: ()	
Serial Number: 🚯	
Output Power (dB): 🚯	
0 -	
VLAN Configuration: 🚯	
Network/Device -	
VLANID: 6	
2	
M AN Drivetter	
0. Rest Effect	
0 - DESI ENOIT *	
Web Username: (1)	
admin	
Web Password: 1	
Web Password Confirmation:	
Firmware: (1)	
NyqUpdate-1.2.1577.tar.gz	*

Figure 80. Add Bridge Device Page

To add a bridge device:

- 1 On the navigation bar, select **Bridge Devices**.
- 2 On the Bridge Devices page, select the **Add** icon.
- 3 Complete the parameters on the Add Bridge Device page (see *Table 61 on page 225*).
- 4 Select Save.

After you save the information, the Station Management page appears so that you can add stations and select the settings to be applied to these new stations (see "Using Station Management" on page 226).

Table 61. Add Bridge Device Parameters

Name	Provides a name for the device.
MAC Address	Provides the MAC address for this device.
Serial Number	Provides the serial number for this device.
Output Power (dB)	Provides the channel output setting. The available settings increment by 1 and range from -6 to 6 with the default being 0.
VLAN Configuration	Set how the VLAN configuration is set. Parameters are Server, Net- work/Device, or Disabled.
	 Server: Allows you to configure the VLAN settings via the Nyquist server web interface. The configured setting will then be sent to the Nyquist appliance by the Nyquist server.
	 Network/Device: The Nyquist devices will either listen for VLAN con- figuration from DHCP (Network) or the VLAN settings can be config- ured via the Nyquist device's web interface (Device).
	• Disabled : VLAN is disabled and not used.
VLAN ID	Provides a numeric identifier for the VLAN. Valid values range from 2 to 4094. This field cannot be edited.
VLAN Priority	Provides the 802.1p priority. Valid values range from 0 to 7.
	This field can only be changed when the Server option is used for VLAN Configuration.
Web Username	Provides a username for logging into the bridge.
Web Password	Provide a password for logging into the bridge.
Web Password Confirmation	
Firmware	Select a firmware version from the drop-down menu.
Enable SIP TLS	Enables the use of TLS to secure SIP traffic for this bridge device.
	This is disabled by default.
Enable SRTP	Enables encryption of voice traffic for this bridge device.
	This is disabled by default.
Description	Provides a description for the bridge device.

Editing a Bridge Device

To edit a bridge device:

1 On the navigation bar, select **Bridge Devices**.

- 2 Select the **Edit** icon for the bridge that you want to edit.
- 3 Complete the parameters on the Edit Bridge Device page.
- 4 Select Save.

Table 62.	Editing	Bridge	Device	Parameters

Name	Provides a name for the device.
MAC Address	Provides the MAC address for this device.
Serial Number	Provides the serial number for this device.
Output Power (dB)	Provides the channel output setting. The available settings increment by 1 and range from -6 to 6 with the default being 0.
VLAN Configuration	Set how the VLAN configuration is set. Parameters are Server, Net- work/Device, or Disabled.
VLAN ID	Provides a numeric identifier for the VLAN. Valid values range from 2 to 4094. This field cannot be edited.
VLAN Priority	Provides the 802.1p priority. Valid values range from 0 to 7. This field can- not be edited.
Web Username	Provides a username for logging into the bridge.
Web Password	Provide a password for logging into the bridge.
Web Password Confirmation	
Firmware	Select a firmware version from the drop-down menu.
Enable SIP TLS	Enables the use of TLS to secure SIP traffic for this bridge device.
Enable SRTP	Enables encryption of voice traffic for this bridge device.
Description	Provides a description for the bridge device.

Using Station Management

With the E7000's Station Management feature, you can reorder the extension for a bridge device port (move an extension to another port), edit a station attached to a bridge device port, and select settings to apply to newly created stations. When adding a new bridge device, you can also use Station Management to auto-generate new stations.

ns		Auto Generate New St	ations
ing Locked: Yes		Number of Stations to Create	ə: 🚺
Name (Extension)		• •	
Port 1: 🗾 🧰 Classroom (0301)	\$	Select settings to apply to ne	ewly created stations:
Port 2: 🖉 👩 Classroom (0302)	¢	Station Type: ()	Station Name(s):
Port 3: 🖉 👩 Classroom (0303)	÷	VoIP Speaker Only -	[extension]
ort 4: 🗾 🧰 Classroom (0304)	¢	Day CoS: 🚺	First Extension:
ort 5: 🔽 🧰 Classroom (0305)	¢	Classroom -	0011
ort 6: 🖉 💼 Classroom (0306)	÷	Night CoS: (1)	First Port: ()
ort 7: 🔽 💼 Classroom (0307)	¢		Dav Admin: 🙃
Port 8: 💋 👩 Classroom (0308)	¢	Admin Group: 1	0100 *
Port 9: 🚺 🖬 Classroom (0309)		Perietration Pareword:	Night Admin: 🜖
20rt 10: 2 👩 Classroom (0310)	•	Registration Password.	0100 *
ort 11:	÷		
	*		
Classicom (0312)	*	Generate Stations A Stations cannot be generate	ed because the maximu
Port 13: 💋 💼 Classroom (0313)	*	of ports has been reached.	
Port 14: 💋 🛅 Classroom (0314)	•	Change Catting on All	Ctations
'ort 15: 🖉 💼 Classroom (0315)		Change Setting on All	Stations
Port 16: 📝 💼 Classroom (0316)	\$	Setting to Change: (1)	
Port 17: 💋 🛅 Classroom (0317)		Night Admin	*
Port 18: 🗾 💼 Classroom (0318)		Admin Group	
Port 19: 🖉 🛅 Classroom (0319)		Change Setting	
Port 20: 💋 📋 Classroom (0320)		a change setting	
Port 21: 🗾 🔟 Classroom (0321)	\$		
Port 22: 🖉 🔲 Classroom (0322)	¢		
Port 23: 🖉 👩 Classroom (0323)			
Port 24: 🗾 👩 Classroom (0324)			

Figure 81. Station Management Page

To use Station Management:

Note: The Station Management page automatically appears when you create a new bridge device. (See *"Adding a Bridge Device" on page 224*.)

- 1 On the navigation bar, select **Bridge Devices**.
- 2 Select **Station Management** for the desired bridge device, or select the **Add** icon if adding a new bridge device.
- 3 To move a station/extension to a different port:
 - a) Unlock the sorting functionality by toggling the Sorting Locked control, setting the value to No.
 - b) Select the icon next to the **Name (Extension)** of the port and drag the extension to the desired location.

Note: Be aware that moving one station will usually cause other stations/extensions to be reassigned to new ports as well.

- 4 To edit the station of a given port:
 - a) Select the **Edit** icon next to the desired station/port.
 - b) Make desired changes to the Edit Station page. (See *Table 36, "Station Configuration Page Parameters," on page 129.*)
 - c) Select Save.
- 5 To delete the station on a specific port:
 - a) Select the **Delete** icon next to the desired station/port.
 - b) Select Delete to confirm your choice.
- 6 To add a new station to an empty port:
 - a) Select the **Add** icon next to the empty port.
 - b) A notification that the Auto Generate New Stations settings will be used as default values for the new station will be displayed. Select the Save icon.
- 7 If you are adding a new bridge device and you want E7000 to auto-generate new stations:
 - a) Use the drop-down menu to select Number of Stations to Create.
 - **b)** Select the settings to apply to the newly created stations. (See the Auto Generate New Stations sections of *Table 63*.)
 - c) Select Generate Stations.
- 8 After completing all desired changes, select **Done**.

Stations				
Sorting Locked	If toggled to Yes, ports cannot be reordered by dragging rows up or down.			
🖉 Edit button	Opens the Edit Station page for the port.			
间 Delete button	Deletes the station for the port.			
🛨 Add button	Adds a new station for the port.			
	Important: The configuration values specified in the Auto-Generate New Stations section (see below) will be used to initialize the new station.			

Table 63. Station Management Parameters

Auto Generate New Stations

Number ofThe number of new stations to generate upon clicking the Generate Sta-
tions button.Stations to Createtions button.

	Table 63. Station Management Parameters
Station Type	Select the type of the new station(s). Options include:
	VoIP Speaker Only
	Analog Call Switch & Speaker
	Digital Call Switch & Speaker
	Analog Phone
	Multiple analog and digital call switches can be assigned the same port via the appliance web UI by assigning the Digital Call Switch & Speaker type to each digital and analog call switch. For more information, refer to the <i>E7000 Analog Station Bridge Configuration Manual</i> .
Day CoS	Select the default CoS to be applied to the new station(s) during daytime hours.
Night CoS	Select the default CoS to be applied to the new station(s) during nighttime hours.
Admin Group	Select the Admin Group to be called if the Day or Night Admin Station does not answer the call.
Registration Password	Specify the password that generated stations will use to register with this Nyquist server as SIP clients. The server will remember the registration password for each individual station.
	If Registration Password is unspecified, the Default Registration Password will be used (see <i>Table 19, "Edit System Parameters Page," on page 64</i>). If the Default Registration Password is not specified, Registration Password is required.
	The minimum length is five characters.
Station Name(s)	Enter the name format for the generated stations. Use [extension] if you want to include the extension in the name. Extension will be added to the name by default.
First Extension	Select the extension number of the first newly created station. Each station following the first station will be assigned the next available extension. The system can be configured to use 3-, 4-, 5-, or 6-digit extensions.
First Port	Select the port number of the first port for the generated stations. Each station following the first station will be assigned the next available port number.
Day Admin	Select the extension for the Admin Station that will cover the new sta- tion(s) during daytime hours.
Night Admin	Select the extension for the Admin Station that will cover the new sta- tion(s) during nighttime hours.
Generate Stations	Generates the specified number of new stations using the configuration values specified above.

Change Setting on All Stations

Setting to Change	Select a setting to modify on all stations for this ASB upon clicking the Change Setting button.
	Options include:
	Intercom Cut Level
	Talkback Gain
	Registration Password
	• Day CoS
	• Night CoS
	Audio Distribution to All Speakers
	Admin Group
	• Day Admin
	Night Admin
	These options are described below. For further information on these set- tings, see <i>Table 36, "Station Configuration Page Parameters," on page 129</i> .
Intercom Cut Level (dB)	Specifies the Intercom Cut Level setting on all of this ASB's stations.
Talkback Gain (dB)	Specifies the Talkback Gain setting on all of this ASB's stations.
Registration Password	Specifies the Registration Password setting on all of this ASB's stations.
Day CoS	Specifies the Day CoS setting on all of this ASB's stations.
Night CoS	Specifies the Night CoS setting on all of this ASB's stations.
Audio Distribution to All Speakers	Specifies the Audio Distribution to All Speakers setting on all of this ASB's stations.
Admin Group	Specifies the Admin Group setting on all of this ASB's stations.
Day Admin	Specifies the Day Admin setting on all of this ASB's stations.
Night Admin	Specifies the Night Admin setting on all of this ASB's stations.
Change Setting	When this button is clicked, the setting specified by Setting to Change is updated on <i>all stations</i> of this ASB.

Managing Amplifiers and Gateway Devices

You can assign stations to an audio power amplifier or a public address/mixer amplifier provided the amplifier has an available port. The station must be assigned manually but the amplifier itself can be automatically discovered by your Nyquist system.

Viewing Amplifier and Gateway Devices

Through the *Amplifier and Gateway Devices* page, you can view information about all audio power amplifiers and public address/mixer amplifiers configured for your Nyquist system; select to add, edit, or delete these devices; select to manage stations for an amplifier; and select to configure Push-To-Talk parameters for an amplifier.

Amplifie	r and G	ateway Devices 🛃 🔞					
						Filter	
	Name 👙	Device Type	Manage	Action	Mac Address	Serial Number	IP Address
	A2120-G2	NQ-A2120-G2-Amplifier		🕑 Reboot	7804733a9731	172500100012	172.31.9.40
2 🗐 🚺	A4060-G2	NQ-A4060-G2-Amplifier	F Station Management	(Reboot	7804733b9208	172500100012	172.31.9.39
	GA400P	NQ-GA400P-AoIP Gateway	F Station Management	🕲 Reboot	b0b113b62871	172500100012	172.31.9.36
2 🗈 🔳	PA-240	NQ-PA240 Public Address Mixer Amplifier	✓ Station Management ✓ Configure PTT	🖒 Reboot	40bd321ee4dc	172500100012	172.31.9.38

Figure 82. Amplifier and Gateway Devices

To view amplifiers and gateway devices attached to your network:

On the navigation bar, select Amplifier and Gateway Devices.

Table 64 describes the parameters for each amplifier or gateway device:

Table 64. Amplifier and Gateway Devices Page

🖉 Edit	Edit the amplifier or gateway device.	
🔟 Delete	Delete the amplifier or gateway device.	
i Device Status	Display the device status for this amplifier or gateway device.	
Name	Provides a name for the amplifier or gateway device.	
Device Type	Provides the type of device, such as NQ-A2120-Amplifier.	
Manage	Provides a link to the Station Management and, if applicable, Configure PTT tools for the amplifier or gateway device.	
Action	Provides a Reboot button to select the if amplifier or gateway device needs to be rebooted.	
MAC Address	Provides the MAC address for the amplifier or gateway device.	
Table 64. Amplifier and Gateway Devices Page

Serial Number	Provides the serial number of the amplifier or gateway device.
IP Address	Provides the IP address of the amplifier or gateway device.
Link	Provides link to the amplifier or gateway device's UI.
Status	Provides the status of the amplifier or gateway device. Possible statuses include:
	• Unknown . The server is unable to determine the state of the amplifier or gateway device.
	• Unreachable . The server is unable to ping the amplifier or gateway device.
	• Registering . More than one IP address has been found. Stations may still be registering with new IP addresses.
	• Up: # of # stations. Indicates the number of registered available stations attached to the amplifier or gateway device. If the numbers do not match, then one or more stations attached to the amplifier or gateway device are not available for service. The station or stations may be in the process of registering, or if the condition persists, there may be a configuration error.
	<i>Note</i> : When an amplifier is used for Sound Masking, the Up status indicator will not include a station count.
	<i>Note</i> : After an amplifier or gateway device is rebooted, it can take a few minutes for all associated stations to register with the Nyquist server (usually less than three minutes).
Description	Select Show to view the user-provided description of the amplifier or gateway device.
VLAN	Provides how the VLAN configuration is set. Options are:
Configuration	• Server : Allows you to configure the VLAN settings via the Nyquist server web interface. The configured setting will then be sent to the Nyquist appliance by the Nyquist server.
	• Network/Device : The Nyquist devices will either listen for VLAN configura- tion from DHCP (Network) or the VLAN settings can be configured via the Nyquist device's web interface (Device).
	• Disabled : VLAN is disabled and not used.
VLAN ID	Provides the VLAN for the amplifier or gateway device. The LAN ID parameters range from 2 through 4094 and pertain to the amplifier or gateway device's network interface (not to the ports or stations).
	<i>Note:</i> This field can only be changed when the Server option is used for VLAN Configuration .
VLAN Priority	Provides the priority for the port. Values range from 0 through 7.
	<i>Note:</i> This field can only be changed when the Server option is used for VLAN Configuration .
Web Username	Provides the username for logging into the amplifier or gateway device's web UI.
Firmware	Provides information about firmware that is loaded onto the amplifier or gate- way device.

Table 64. Amplifier and Gateway Devices Page

Number of Stations	Provides the number of stations associated to the amplifier. This number limits the number of associated stations that can be added to the amplifier. The num- ber is usually provided by the amplifier during device discovery so changing the number is not necessary. Do not change this number unless you are manu- ally adding the amplifier (i.e., not using device discovery) or have been instructed to change it.
Channels	Displays the channels configured on the amplifier via bridge switch positions.
Enable SIP TLS	Enables the use of TLS to secure SIP traffic for this amplifier or gateway device.
Enable SRTP	Enables encryption of voice traffic for this amplifier or gateway device.

Adding Amplifier and Gateway Devices

From the Add Amplifier and Gateway Devices page, you can add a new audio power amplifier to your Nyquist system.

Tip:	Amplifiers and gateway devices can also be added using the "Appliance Discovery Wizard", as described
	on page 124.

x Cancel Save Name: Name: NQ-A2060-Amplifier → MAC Address: Serial Number: VLAN Configuration: Network/Device →	
Name: () Device Type: () NQ-A2060-Amplifier - MAC Address: () Serial Number: () VLAN Configuration: () Network/Device -	
Device Type: () NQ-A2060-Amplifier ~ MAC Address: () Serial Number: () VLAN Configuration: () Network/Device ~	
NQ-A2060-Amplifier - MAC Address: () Serial Number: () VLAN Configuration: () Network/Device -	
MAC Address: () Serial Number: () VLAN Configuration: () Network/Device -	
Serial Number: () VLAN Configuration: () Network/Device -	
VLAN Configuration: 1	
VI AN ID: 0	
2	
VLAN Priority: (1) 0 - Best Effort -	
Web Username: 1	
admin	
Password: 1	
Show	
NyqUpdate-2.0.497.tar.gz	

Figure 83. Add Amplifier and Gateway Devices

To add an amplifier:

- 1 On the navigation bar, select **Amplifier and Gateway Devices**.
- 2 On the Amplifier and Gateway Devices page, select the **Add** icon.
- 3 Complete the parameters on the Add Amplifier and Gateway Devices page. (See *Table 65*.)
- 4 Select Save.

After you save the information, the Station Management page appears so that you can add stations and select the settings to be applied to them (see *"Using Station Management for Amplifiers and Gate-way Devices" on page 239*).

	Table 65. Add Amplifier and Gateway Devices Parameters
Name	Enter a name for the amplifier or gateway device.
Device Type	Select the type of device. Options are:
	NQ-A2060-Amplifier
	NQ-A2060-G2-Amplifier
	NQ-A2120-Amplifier
	NQ-A2120-G2-Amplifier
	NQ-A2300-Amplifier
	NQ-A2300-G2-Amplifier
	NQ-A4060-Amplifier
	NQ-A4060-G2-Amplifier
	NQ-A4120-Amplifier
	NQ-A4120-G2-Amplifier
	NQ-A4300-Amplifier
	NQ-A4300-G2-Amplifier
	NQ-GA400P-AoIP Gateway
	NQ-PA120 Public Address Mixer Amplifier
	NQ-PA240 Public Address Mixer Amplifier
	NQ-PA600 Public Address Mixer Amplifier
MAC Address	Enter the MAC address for the amplifier or gateway device.
Serial Number	Enter the serial number of the amplifier or gateway device.
VLAN	Select how the VLAN configuration is set. Options are:
Configuration	• Server : Allows you to configure the VLAN settings via the Nyquist server web interface. The configured setting will then be sent to the Nyquist appliance by the Nyquist server.
	 Network/Device: The Nyquist devices will either listen for VLAN configura- tion from DHCP (Network) or the VLAN settings can be configured via the Nyquist device's web interface (Device).
	Disabled: VLAN is disabled and not used.
VLAN ID	Select the VLAN for the amplifier or gateway device. The LAN ID parameters range from 2 through 4094 and pertain to the amplifier's network interface (not to the ports or stations).
	<i>Note</i> : This field can only be changed when the Server option is used for VLAN Configuration .
VLAN Priority	Select the priority for the port. Values range from 0 through 7.
	Note: This field can only be changed when the Server option is used for VLAN Configuration.

٦	Table 65. Add Amplifier and Gateway Devices Parameters
Web Username	When applicable, provides a username for logging into the web interface of the device hosting the station.
Web Password	Provide a password for logging into the device's web UI. Select Show to reveal
Web Password Confirmation	a previously set password.
Firmware	Provides information about firmware that is loaded onto the amplifier or gate- way device.
	A Nyquist appliance connected to the Nyquist network receives a configura- tion file from the Nyquist server that includes the latest firmware available from the server. If the firmware is later than the one installed on the appliance, an automatic firmware update occurs.
	To prevent an automatic update, leave this Firmware parameter empty.
Number of Stations	Select how many stations are associated with the device based on the number of ports.
Channels	Select the channels configured on the amplifier via the switch position.
Enable SIP TLS	Enables the use of TLS to secure SIP traffic for this amplifier or gateway.
	This is disabled by default.
Enable SRTP	Enables encryption of voice traffic for this amplifier or gateway.
	This is disabled by default.
Description	Provide a description of the device.

Editing Amplifier and Gateway Devices

The Edit Amplifier and Gateway Devices page allows you to change parameters for an amplifier or gateway device. You can also select the **Station Management** button to associate stations to the amplifier or gateway device.

To edit an amplifier or gateway device:

- 1 On the navigation bar, select **Amplifier and Gateway Devices**.
- 2 On the Amplifier and Gateway Devices page, select the **Edit** icon.
- 3 Complete the parameters on the Edit Amplifier and Gateway Devices page. (They are the same parameters found on the Add Amplifier and Gateway Devices page. See *Table 65, "Add Amplifier and Gateway Devices Parameters," on page 235.*)

4 Select Save.

Configuring Push-To-Talk for a Public Address Mixer Amplifier

Edit Push To Talk Configuration	0
Push To Talk Channel: 👔	
4	
Push To Talk Type: 🜖	
Zone-Page -	
PTT Audio Source for Mixer Output: (1)	
Analog -	
PTT Output: 1	
Line-Out -	
Push To Talk Zone: (1)	
Zone-5: Paging zone 1	
PTT Extension: ()	
0211 - 0211-PA240-LO *	
IP Address: (1)	
× Cancel 🕒 Save	

Figure 84. Push-To-Talk Configuration Page (PAMA)

To edit Push-To-Talk configuration for a Public Address Mixer/Amplifier:

- 1 On the navigation bar, select **Amplifier and Gateway Devices**.
- 2 For the public address mixer amplifier that you want to configure, in the **Manage** column, select **Configure PTT**.
- 3 Specify parameters from the Edit Push To Talk Configuration page. For details, see *Table 66, "PAMA Push-To-Talk Configuration Parameters," on page 238.*
- 4 Select Save.

Push To Talk Channel	Channel 4 is the only available PTT channel.
Push To Talk Type	Select the type of activity that is performed when the button is pressed on the microphone. Options are:
	Disabled
	Analog-Output
	All-Call-Page
	Emergency-All-Call-Page
	• Zone-Page
	Record-Zone-Page
	Multi-Site-All-Call-Page
	 Multi-Site-Emergency-All-Call-Page
	<i>Note</i> : For all selections other than Disabled , the DSP Router settings of the device are overridden to route the PTT microphone input signal (Analog 4) to the line output and speaker output channels (Line Out and Speaker Out).
	<i>Tip:</i> To prevent the PTT microphone signal from being sent to the network, select Analog-Output. All other settings (other than Disabled) will send the PTT microphone signal over the network.
PTT Audio Source for Mixer Output	<i>Note</i> : This field does not appear if Push To Talk Type is set to Disabled or Analog-Out- put .
inixer output	Specifies whether the PTT microphone signal is sent to the network out- put or both the analog and network outputs.
	If Analog is selected, the PTT microphone input is routed as specified in the PTT Output setting as well as being sent over the network.
	If Network is selected, the PTT microphone input is routed only through the network. Note that this could create a small but noticeable delay.
PTT Output	Specifies the amplifier output used for the PTT microphone signal if Push To Talk Type is Analog-Output or PTT Audio Source for Mixer Output is Analog .
	Options are:
	Disabled
	Line-Out
	• Speaker-Out
	• Both
Push To Talk Zone	<i>Note</i> : This field appears only if Push To Talk Type is set to Zone-Page or Record-Zone- Page .
	Select the zone to receive the page.

- **PTT Extension** The station extension to be displayed to call recipients for PTT calls from this station.
- IP Address Displays the IP address of the device, if known, and a Link button that allows you to start the device's UI. If the Nyquist server has not discovered the device's IP address, the Link button does not appear.

Using Station Management for Amplifiers and Gateway Devices

Depending on the **Device Type**, the Station Management screen for Amplifier and Gateway Devices can show Ports listed as **Channel A** to **Channel D** (NQ-A2XXX/A4XXX Amplifiers), **Speaker Out** and **Line Out** (NQ-PAXXX Amplifiers), or **Output 1** and **Output 2** (NQ-GA400P AoIP Gateway).

The number of ports that appear for an amplifier in the Station Management page depends on the number of ports allowed by the device type. For example, the A2120 Audio Power Amplifier will have only two ports appear on the Station Management page while the four-channel A4120 Audio Power Amplifier, will have four ports.

a Am	plifier D	evice (A2120) - 3	Station Manageme	ent
	Actions	Extension	Name	
Port A		0200	A2120 A	
Port B		0201	A2120 B	
			Done	

Figure 85. Station Management for Two-Channel Amplifier

If you select Station Management for a Public Address/Mixer Amplifier (NQ-PA120, NQ-PA240, or NQ-PA600), the Speaker Out and Line Out appear.

To use Station Management for amplifiers:

- 1 On the navigation bar, select **Amplifier and Gateway Devices**.
- 2 Select **Station Management** for the desired amplifier.

Note: The Station Management page for amplifiers automatically appears when you create a new amplifier. See *"Adding Amplifier and Gateway Devices" on page 233.*

- 3 If you want to delete a port:
 - a) Select the **Delete** icon next to the port.
 - b) When prompted, select **Delete**.

4 If you want to edit the station associated with a port, select the **Edit** icon next to the port and follow the steps for editing a station (see *"Editing Station Configuration Settings" on page 141*).

Warning If an amplifier has one station defined as type **Sound Masking**, then all stations for that amplifier should be defined as **Sound Masking**. For more information, see "Sound Masking Zones" on page 215.

5 Select **Done**.

Deleting Amplifier and Gateway Devices

You can delete an amplifier device through the Amplifier and Gateway Devices page.

To delete an amplifier:

- 1 On the navigation bar, select **Amplifier and Gateway Devices**.
- 2 On the Amplifier and Gateway Devices page, select the **Delete** icon next to the amplifier or gateway device that you want to delete.
- 3 When prompted, select **Delete**.

Managing Roles and Users

Nyquist uses roles to control system configuration, access, and use. When you create a user, you assign a role that determines what the user sees from the dashboard and what tasks the user can perform.

Nyquist provides four default roles. These roles can be edited or deleted by anyone assigned permissions to do so. Of the default roles, only the Admin role has the ability to add users and to add, edit, and delete roles.

Table 67. Default Roles

Admin	Has access to the entire system and can performall tasks.
OpTech	Can operate the system and view, but not change, system configurations.
Operator	Can operate the system, but cannot view or change system configura- tions.
User	Can only operate specific parts of the system.

Viewing Roles

The default roles of Admin and OpTech can view existing roles. If you are assigned one of these roles or a user-created role that allows it, you can assign View Roles permissions to other roles.

To view roles:

On the navigation bar, select Roles.

The Roles page appears. *Table 68 on page 242* describes the parameters that appear on this page.

a Role	es 🕂 0			Filter
	Permissions	Name 🍦	Label \Leftrightarrow	Description
🖉 🔳	۲	admin	Admin	Show
🖍 📋	۲	optech	OpTech	Show
2	۲	operator	Operator	Show
🖉 📋	۲	user	User	Show

Figure 86. Roles Page

Table 68. Roles Page Parameters

Permissions	When the icon is selected, displays the Edit Admin Permissions page where the permissions assigned to this role can be viewed or changed.
Name	Displays the nomenclature created for the role.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Label	Displays the role name that is used when creating a user.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Description	When the Show button is selected, displays a brief description of the role.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .

Adding a Role

If none of the default roles have the exact permissions that you want for a role, you can edit the permissions for a default role or create a new role. For example, only the Admin default role has the ability to create a new station and to add a new user. You could edit the permissions for an existing role or create a new role specifically for use when adding stations or users. (For information about adding stations, *see "Adding a Station" on page 171*.)

🔩 Add Role	0
Name:	
Label:	
Description:	
	<i>®</i>
X Cancel 🕒 Save	l de la companya de la

Figure 87. Add Role Page

Note: To perform this task, you must be logged in with a role that has permission to add other roles.

To add a role:

- 1 On the navigation bar, select **Roles**.
- 2 On the Roles page, select the **Add** icon.
- 3 On the Add Role page, add the name, label, and description for this role. (See *Table 68, "Roles Page Parameters," on page 242.*)
- 4 Select Save.
- 5 On the Roles page, select the **Permissions** icon for the role just added.
- 6 Set permissions for this role. (See "Assigning and Editing Permissions" on page 244.)
- 7 Select Save.

Editing a Role

You may want to change the names, labels, and descriptions assigned to a role for clarity purposes. For example, you could rename the default role "User" to "Agent." In some cases, you may want to change the permissions assigned to an existing role. In both of these scenarios, you would edit a role.

Note: To perform this task, you must be logged in with a role that has permission to edit other roles.

To edit a role:

- 1 On the navigation bar, select **Roles**.
- 2 On the Roles page, select the **Edit** icon next to the role that you want to edit.
- 3 On the Edit Role page, make any desired changes to the Name, Label, and Description fields. (See *Table 68, "Roles Page Parameters," on page 242.*)
- 4 Select Save.
- 5 On the Roles page, select the **Permissions** icon.
- 6 On the Edit Permissions page, make desired changes.
- 7 Select Save.

Assigning and Editing Permissions

Selecting the **Permissions** icon for a role displays the Edit Permissions page, which allows you to set parameters, such as the ability to edit or view Schedule Settings. Permission parameters differ depending upon the option. For example, permissions for the Dashboard and for most Dashboard features are limited to View, while available permissions for Schedule Announcements include Create, Delete, Edit, and View.

Edit Admin Permissions 🛛 👩	
Clear All Select All	
¥ Cancel ■ Save	
鐙 Dashboard	
Maps Panel	+ Create Celete ZEdit View
Calling/Paging Panel	@ New
O Directory Button	& View
O Dial Pad Button	@ View
O Prepend Page Button	@ View
O Routines Button	(® View
O Manage Check-In Button	 View
Multi-Site Calling/Paging Panel	@ View
Tones/Announcements Panel	(® View
O Display Message Button	 View
O Remove Message Button	@ View
Week Panel	@ View
Audio Distribution	+ Create 🗎 Delete 🖉 Edit 💌 View
Enable/Disable Audio Button	
E System Parameters	eck Server Status 🖌 Custom Configuration 🖌 Edit 🌈 Export Report 🖓 Restart Server 🖞 Shut Down 😂 Sort Menu 🕬 Mew

Figure 88. Edit Permissions Page

+ Create	Allows user to create a new item, such as a new user.
Delete	Allows user to delete an item.
Je Edit	Allows user to edit an item.
View	Allows user to view an item.
🖋 Manage	Allows user to manage items. This option pertains only to playlists.
≓ Import/Export	Allows user to import or export a system backupfile.
¢ [*] settings	Allows user to set parameters for system backup jobs.
Restore	Allows user to restore a system backup.
	Allows user to change the order of the navigation bar menu.
System Update	Allows user to import a system update.
 Check Internet Site Access 	Allows user to verify Nyquist server can access URLs required to run properly. For details, see "Check Internet Site Access" on page 41.
✓ Check Server Status	Allows user to check and display the status of the Nyquist server. For details, see "Check Server Status" on page 41.
Custom Configuration	Allows user to update Actions and Custom Variables, SNMP Configu- ration, and Syslog Configuration.
A Export Report	Allows user to export an Excel spreadsheet with configuration infor- mation. For details, see "Exporting a Report" on page 22.
C Restart Server	Allows user to restart the Nyquist server. For details, see "Restarting the Server" on page 27.
ථ Shut Down	Allows user to shut down the Nyquist server. For details, see "Shut- ting Down the Server" on page 40.

Table 69. Descriptions of Permission Buttons

Note: To perform this task, you must be logged in with a role that has permission to assign or edit permissions.

To assign or edit permissions:

- 1 On the navigation bar, select **Roles**.
- 2 On the Roles page, select the **Permissions** icon next to the role for which you are assigning or editing permissions.

- 3 On the Edit Permissions page, select the appropriate buttons to assign permissions to the role.
- 4 Select Save.

Deleting a Role

If a role is not being used by your organization or the Nyquist system, you can delete the role, provided that role is not associated with a user.

Note: A warning appears if you attempt to delete a role that is associated with a user.

To delete a role:

- 1 On the navigation bar, select **Roles**.
- 2 On the Roles page, select the **Delete** icon next to the role that you want to delete.
- 3 When prompted, select **Delete**.

Viewing Users

Users are personnel who are authorized to use Nyquist. When you create a user, you assign the user a role that determines what the user sees from the Dashboard of their web interface station and what tasks the user can perform on the Nyquist system. You can only create a user if you have been assigned the default Admin role or a custom role that provides permissions to create a user.

Le Us	SEIS +	Image: Selected									Filler	
0		Name	¢ Username ¢	Email	Туре	Role	Extension	Timeout (minutes)	Account Control #	Password Last Set	Password Reset On Next Login	÷.
0		Admin	admin	admin@bogen.com	LOCAL	Admin	0010	525600	None	Jan 19, 2024 4:14:57pm	No	
0		OpTech	optech	optech@bogen.com	LOCAL	OpTech	None	525600	None		No	
0		Operator	operator	operator@bogen.com	LOCAL	Operator	None	525600	None		No	
0		User	user	user@bogen.com	LOCAL	User	0050	525600	None	Apr 5, 2024 1:34:33pm	No	-1

Figure 89. Users Page

Tip: It can often be useful to create virtual users. For example, create a virtual user to represent a room or location, particularly if the location is used by more than one person. Or create one or more virtual users with which to execute Routines (see *"Using Routines" on page 416*), restricting the CoS permissions to only those necessary to execute the relevant Routines.

To view users:

- 1 On the navigation bar, select **Users**.
- 2 To filter the list of users, enter the desired text into the Filter field. All fields will be searched for the specified text value. For example, enter "Bogen" to find each user that contains the (case-insensi-tive) text "Bogen" within the displayed listing.

3 To view each user as a list of properties within a list of users, press the Toggle button adjacent to the Filter field. Press it again to return to the table view.

The following table describes the information displayed for each user.

	Table 70. User Page Parameters
Edit button	Opens the Edit User view for the user.
Delete button	Deletes the user.
🕒 Logout button	Logs this user out of any active web sessions on this E7000.
Name	Displays the name of the user.
Username	Displays the username used by this user to log onto the system.
Email	Displays the email address for the user.
Туре	Indicates whether the user account was created on the E7000 (LOCAL) or imported from an LDAP service (LDAP).
Role	Displays the role assigned to the user.
Extension	Displays the extension used by the user.
Timeout (minutes)	Displays the number of minutes of inactivity after which a session will be automatically logged out.
Account Control	Displays the LDAP account's UserAccountControl status.
	<i>Note:</i> This indicates the enabled status of the account as well as password expiration information.
Password Last Set	The date and time when the password was last modified.
Password Reset on Next Login	Displays Yes if the user will be forced to change their password the next time they login; otherwise displays No .
User Logging button	Opens the User Logging view (see "User Logging" on page 251).
Delete Selected button	Deletes all selected users.

Adding a User

When you add a user, you assign a role, which provides a set of permissions for the user. (See "Viewing Roles" on page 241.)

Username:	
	la
First Name:	
	la la
Last Name:	
	la.
Email:	
	la.
Role:	
User 🗸	
Extension:	
None	•
Password:	
h Show	
Password Reset On Next Login:	
No	
Timeout (minutes):	
60	

Figure 90. Add User Page

Note: You must have permissions to create a user before performing this procedure. (See "Assigning and Editing Permissions" on page 244.)

To add a user:

- 1 On the navigation bar, select **Users**.
- 2 On the Users page, select the **Add** icon.
- 3 Complete the parameters on the Add User page.
- 4 Select Save.

Understanding User Information

The following information parameters appear when adding or editing user information.

	Table 71. Add or Edit User Page Parameters						
Username	Provide the username used by this user to log onto the system.						
	Note: This value is read-only when editing an LDAP user account.						
	<i>Note</i> : The username field is case sensitive.						
First Name	Provide the first name of the user.						
	<i>Note:</i> This value is read-only when editing an LDAP user account.						
Last Name	Provide the last name of the user.						
	Note: This value is read-only when editing an LDAP user account.						
Email	Provide the email address of the user. This value must be unique among all users.						
	<i>Note:</i> This value is read-only when editing an LDAP user account.						
Туре	Displays whether the user account was created on the E7000 (LOCAL) or imported from an LDAP service (LDAP).						
(Edit User only)	<i>Note</i> : This value is read-only.						
Access Control	Displays the current access control settings for this user. Possible val- ues are:						
(LDAP users only)	 Enabled Enabled, password never expires Disabled Disabled, password never expires <i>Note:</i> This value is read-only.						
Password Last Set	Displays the date and time when the password was last modified.						
(Edit User only)	<i>Note:</i> This value is read-only.						
Role	Select the user's role from the drop-down menu.						
Extension	Select the Admin Web Interface station extension to be associated with this user from the drop-down menu.						
	Caution Users' extension associations must be unique. If multiple users are associated with the same extension, system behavior will be unpredictable.						

Table 71. Add or Edit User Page Parameters (Continued)

Password or Change Password	Enter the new password. All entered characters will be hidden for security purposes. Press the Show button to view the characters.		
(LOCAL users only)	<i>Note:</i> The password is case-sensitive and must contain uppercase letters, lowercase letters, digits, symbols, and a minimum of five characters.		
Password Reset on Next Login	If set to Yes , the user will be forced to reset their password the next time they login.		
	The default value is No .		
Timeout (minutes)	Specify the number of minutes of inactivity after which the user will be automatically logged off a web session (known as a <i>forced logout</i>). Valid values are 4 to 525600 (i.e., 365 days) or zero (0), which means never perform a forced logout.		
	The default value is 60 minutes.		
	<i>Note:</i> The manner in which a User account will be used can have a significant impact on the timeout value to be specified. For example, a short timeout might be best for an admin account used primarily for configuration purposes, while a long timeout (or no timeout) might be best for an account used to receive incoming intercom calls. If the User will be used for multiple purposes, it may be helpful to create a different User account for each purpose, particularly as only one active session is allowed per User account.		
	<i>Tip:</i> Moving the mouse while the two-minute timeout warning modal is		

Deleting a User

You should delete a user when they are no longer authorized to use the Nyquist system. For example, if a receptionist accepts a position at another site, the receptionist's user account should be deleted from your Nyquist system.

displayed will reset the timeout.

To delete a user:

- 1 On the navigation bar, select **Users**.
- 2 On the Users page, select the **Delete** icon next to the user that you want to delete.
- 3 When prompted to confirm, select **Delete**.

To delete multiple users:

- 1 On the navigation bar, select **Users**.
- 2 On the users page, select the check box for each user that you want to delete.
- 3 Select the **Delete Selected** button.
- 4 When prompted to confirm, select **Delete Selected**.

Editing User Information

If you have Admin permissions, you can change a user's information, including email address, pass-word, and role.

To edit a user's information:

- 1 On the navigation bar, select **Users**.
- 2 On the Users page, select the **Edit** icon next to the user whose information you want to change.
- 3 On the Edit User page, make the desired changes. (See Table 71, "Add or Edit User Page Parameters," on page 249.)
- 4 Select Save.

User Logging

Each time a user logs into or out of the E7000, an event is logged, including failed login attempts and automatic logouts.

User Logging Done 📀							
Log Type 🔶	Name 🔶	Username 🔶	Email 🔶	User Type	Role 🔶	Extension 🔶	Created
Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:53:32 pm
Failed Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:53:27 pm
Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:53:20 pm
Auto Logout	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:52:08 pm
Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:49:56 pm
Logout	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:49:51 pm
Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:49:00 pm
Failed Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:48:54 pm
Logout	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 02:48:49 pm
Login	Admin	admin	admin@bogen.com	LOCAL	Admin	123	Nov 11, 2022 11:37:54 am
showing 1 to 10 of 21 rows per page (1 2 3)							

Figure 91. User Logging Page

To view the user log:

- 1 On the navigation bar, select Users.
- 2 Select the **User Logging** button.

The following table describes the information displayed for each logging event.

	Table 72. User Logging Page Properties			
Log Type	 Displays the type of event. Valid values are: Login Failed Login Logout Auto Logout (i.e., session timeout) Forced Logout (i.e., Logout button on Users page) 			
Name	Displays the name of the user.			
Username	Displays the username of the user.			
Email	Displays the email address of the user.			
User Type	Indicates whether the user account was created on the E7000 (LOCAL) or imported from an LDAP service (LDAP).			
Role	Displays the user's assigned Role.			
Extension	Displays the user's assigned extension.			
Created	Displays the date and time of the event.			
Delete All	Deletes all User Logging events.			
Export All Generates and downloads a CSV file containing all User Logging The column names, as provided in the first row of the file, are:				
	 log_type user_type user_id role username email first_name last_name extension created 			
Refresh	Updates the page to show the latest logging events.			

Note: The information logged reflects the state of the user at the time of the event, such as the user's role, extension, email address, etc. Changes to these attributes will not be reflected in events prior to those changes.

Using Admin Groups

You can place Admin Stations into Admin Groups, which are used if incoming calls are not answered by the assigned Admin Station or the Day or Night Admin associated with the Admin Station. Admin Groups act as an always-answer feature by providing an alternate list of Admin Stations. If an incoming call is not answered by the assigned Admin Station within 30 seconds for normal calls or 15 seconds for emergency calls, all Admin Stations in the Admin Group will ring.

If Call Forwarding is enabled at the Admin Station, Nyquist tries the forwarded extension. If that station is busy or does not answer within 15 seconds, the call rolls over to the Admin Group.

In addition, if an emergency-level call receives no answer, the Admin Group will ring if the Day Admin or Night Admin does not answer.

You can assign Admin Stations to multiple Admin Groups. A Day or Night Admin can also be assigned to one or more Admin Groups.

Viewing Admin Groups

Through the Admin Groups page, you can view, add, edit, or delete Admin Groups.

:	Adn	nin Groups	+ 0		Filter	
		lcon	Name 🍦	Description	Admin Stations	
	Ê	ور	Classrooms	Show	Show	
	a	فر	Library	Show	Show	
		فر	Activity Areas	Show	Show	
-	_					

Figure 92. Admin Groups Page

To view Admin Groups:

On the navigation bar, select Admin Groups.

The following table describes the information that appears on the Admin Groups page:

Table 73. Admin Groups Page Parameters

lcon	Displays the icon that is associated with the Admin Group.
Name	Identifies the name of the Admin Group.
	<i>Note:</i> Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals (0–9), space, and the following special characters: ! @ ? , .

Τά	able 73. Admin Groups Page Parameters (Continued)
Description	Provides a description of the Admin Group when the Show icon is selected.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Admin Stations	Provides a list of the Admin Stations in the group when the Show icon is selected.

Editing an Admin Group

You can use the Edit Admin Group page to change the name, icon, and description of an Admin Group. You can also use this page to add or delete Admin Stations from the Admin Group.

lame:			
Activity Areas			
con:			
Sector Secto			
Admin Stations:			
× 102		Clear	Add All
Admin Group for Audito	prium, Gym, Pool,	, Courts	

Figure 93. Edit Admin Group Page

You can also add an Admin Station to an Admin Group when adding or editing a station. (See "Adding a Station" on page 171 and "Editing Station Configuration Settings" on page 141.)

Note: Nyquist does not display the Admin Group parameter when adding or editing an I/O Controller or Matrix Mixer Pre-Amp as a station.

To edit an Admin Group:

- 1 Select the **Edit** icon next to the group that you want to edit.
- 2 On the Edit Admin Group page, make desired changes.
- 3 After all changes have been made, select **Save**.

Та	able 74. Edit Admin Group Page Parameters
Name	Type the name of the Admin Group.
	Note: Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals (0–9), space, and the following special characters: ! @ \$ * ? , .
lcon	Use the drop-down menu to select the icon that you want associated with the Admin Group.
Admin Stations	Provide a list of the Admin Stations you want to have in this group. You can select Add All to select all Admin Stations, or you can select the Admin Stations list to view all available Admin Stations and select the ones you want to include in this group.
Description	Provide a description of the Admin Group.
	<i>Note:</i> Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: !@\$*?, .

Deleting an Admin Group

You cannot delete an Admin Group if it is associated with a station, an outside line, or a Day or Night Admin. If necessary, first edit a station, an outside line, or a Day or Night Admin to delete the station before attempting to delete the Admin Group. (*See "Editing Outside Lines" on page 111, "Setting System Parameters" on page 62*, or *"Editing Station Configuration Settings" on page 141*.)

To delete an Admin Group:

- 1 Select the **Delete** icon next to the group that you want to delete.
- 2 When prompted, select **Delete**.

Adding an Admin Group

You can create an Admin Group and assign Admin Stations to it. No limit exists for the number of Admin Groups that you can create, and an Admin Station can belong to multiple Admin Groups.

If you want to route 911 calls from an extension (station) to an Emergency Group, create an Admin Group called Emergency. Then, configure the station to use this group for its **911 Route**. (See *"Editing Station Configuration Settings" on page 141*.)

To add an Admin Group:

- 1 On the navigation bar, select **Admin Groups**.
- 2 On the Admin Groups page, select the **Add** icon.
- 3 Enter the parameters on the Add Admin Groups page.
- 4 Select Save.

Та	ble 75. Add Admin Groups Page Parameters
Name	Enter the name of the Admin Group.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
lcon	Select an icon associated with an Admin Group. Associating an icon to an Admin Group offers a visual key to the type of group.
Admin Stations	Provide a list of Admin Stations that are to be included in this Admin Group. Only Admin Station types, such as a Web Admin UI or an Admin Phone, can be selected.
Description	Provide a description of the Admin Group.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .

Managing Schedules

The Schedules feature allows you to set tones, announcements, and audio distribution to be played at specific times and in specific zones, set up holiday schedules, maintain calendar features, and schedule announcements, including recurring announcements. The Schedules feature also allows you to schedule the execution of Routines at specific dates and times and on recurring schedules.

Through the web-based UI, you can associate events (such as a tone that signals the end of visiting hours) to a schedule, select how a schedule appears on your dashboard, and edit event settings, which include:

- Event name
- Signal time
- Zone
- Tone
- Scheduled Audio
- Routines

Adding a School

Through the Schools page, you can select start and end dates for a schedule or choose to create a nonending schedule, select a name for the school, and select a color that appears for the school schedule on the dashboard.



Figure 94. Schools Page

You can then create one or more schedules and select the appropriate schedule for specific days of the week.

Manage S							
	Schedules 🚹						
		Name	ld			1	Description
🕗 🖸 🧧	Re	gular Day	1		Schedule for no	rmal release day	on Monday, Tuesday, Thursday, and Friday.
🗷 🖸 👩	E	arly Day	2			Schedule for early	y release day on Wednesday.
Image: Comparison of the second se	г	oet dav	3			Spe	ecial testing day
Showing 1 to 3 o Assign Sche Sunday:	of 3 rows edules: Monday:	Tuesday:	Wednes	sday: 1	Thursday:	Friday:	Saturday:
Showing 1 to 3 c Assign Sche Sunday: None -	of 3 rows edules: Monday: Regular Day +	Tuesday: Regular Day -	Wednes	sday: 1 Day -	Thursday: Regular Day •	Friday: Test day -	Saturday: None -
Showing 1 to 3 c Assign Sche Sunday: None - Start/End Da on Range: Start Date:	of 3 rows edules: Monday: Regular Day - ates:	Tuesday: Regular Day -	Wednes	sday: 1 Day -	Thursday: Regular Day •	Friday: Test day -	Saturday: None -

Figure 95. Creating a Schedule

To create a school:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the **Add** icon. Your School is created
- 4 If you want, rename Your School by selecting the **Edit** icon next to the school name, and then typing the new name in the Edit Site Name popup.

Note: Valid characters include uppercase letters (A-Z), lowercase letters (a-z), numerals (0-9), space, and the following special characters: **! @ \$ * ? - . ,** .

5 Select the arrow next to the school name and then select the appropriate settings for this school. (See *Table 76, "Schools Settings Page Parameters," on page 259.*)

Using School Settings

The Schools page provides parameters that can be added, viewed, and changed for a schedule. The following table describes these parameters:

	Table 76. Schools Settings Page Parameters
Manage Schedules	Create or edit one or more daily schedules, which can then be assigned to specific days of the week.
	<i>Note:</i> Each schedule is automatically assigned an identifier (Id), which can be referenced via the <i>\$scheduleid</i> variable from various actions and conditional statements.
Assign Schedules	For each day of the week, select the schedule that is to be used for that day from the drop-down menu.
Start/End Dates	Use the slider to set to On if you want to enter start and end dates. If set to Off , the schedule continues indefinitely.
Range Start Date	Note: This option appears only if Start/End Dates is set to On.
	Use the calendar to select the start date for this schedule. By default, today's date appears. When selecting a new Start Date , the date cannot be before the End Date .
Range End Date	Note: This option appears only if Start/End Dates is set to On.
	Use the calendar to select the end date for this schedule. By default, today's date appears. The End Date must be after the Start Date .
Calendar Color	Use the drop-down menu to select the color for this schedule that is used when the schedule appears on the dashboard's calendar view.

From the Schools page, you can also view, add, edit, or delete a schedule for a facility or view events for a schedule.

Renaming a School

You can rename a school to quickly identify the facility or school that the schedule is for.

-	Edit School Name					
New School	New School	٥	 Image: A set of the set of the	×		
🗂 Manage Schedule	25 💽					

Figure 96. Edit School Name

To rename a school:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the **Edit** icon next to the name of the school that you want to rename.
- 4 In the Edit School Name popup box, type the new name.

Note: Valid characters include uppercase letters (A-Z), lowercase letters (a-z), numerals (0-9), space, and the following special characters: **! @ \$ * ? - . ,** .

5 When done, select the **Check** icon.

Adding a Schedule

You can add multiple schedules for a site. For example, you may have different schedules set up for Tuesday and Thursday than you have for the rest of the week.

ے Add Schedule - ا	Administrative Offices	
Name:		
Description:		
🗙 Cancel 🖪 Save		

Figure 97. Add Schedule Page

To add a schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- 4 Select the Add icon next to Manage Schedules.
- 5 On the Add Schedule page, enter the **Name** and **Description** for the schedule.

Note: Valid characters include uppercase letters (A-Z), lowercase letters (a-z), numerals (0-9), space, and the following special characters: **! @ \$ * ? - . ,** .

6 Select Save.

Copying a Schedule

If you need to create a schedule that is similar to an existing schedule, whether from the same or different site, it may be easier to copy an existing schedule than to create one from scratch.

To copy a schedule:

- 1 On the navigation bar, expand Schedules.
- 2 Select Schools.
- 3 Select the down arrow next to the school name to expand it (if it is not already expanded).
- 4 Select the Copy Schedule icon for the schedule to be copied.
- 5 A popup is displayed. Specify the school to which the schedule will be copied.
- 6 Select Copy Schedule.
- 7 Select the **Edit** icon for the newly created schedule and modify as desired.

Replacing a Schedule

If you attempt to delete a schedule that is in use, you are provided a chance to replace the schedule with another. If you select to delete rather than replace, then all matching default schedules and calendar exceptions are set to **None**. (*See "Deleting a Schedule" on page 267*.)

To replace a schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- 4 Select the **Delete** icon for the schedule.
- 5 When prompted, select **Replace**.
- 6 When prompted, use the drop-down menu to select the replacement schedule.
- 7 Select Confirm Replace.

Reviewing and Editing a Schedule

Through the Schools page, you can select the start and end dates for the schedules, a name for the site, and a color that appears for the site schedule on the dashboard. You can then create one or more schedules and select the appropriate schedule for specific days of the week.

Any changes made to the Schools page affect the schedule going forward. For example, if you change the schedule for Tuesday and Thursday from Regular Day to Early Day, all Tuesdays and Thursdays until the End Date will use the Early Day schedule. If you want to change the schedule for days in a specific

week, then you use the Calendars feature to create an exception. (See "Using the Calendars Feature" on page 268.)

To review and edit a schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- 4 Make desired changes to the Schools settings. (See "Using School Settings" on page 258.)

Viewing Events for a Schedule

An event is the scheduled sounding of a tone or the playing of Scheduled Audio. You add events to a schedule. For example, you can schedule a tone to sound at 8 a.m. as an event, such as the start of a shift. You can add a second event that has the tone sound at 10 a.m. for a scheduled break.

Tip: This view allows you to view scheduled events, not past events that have already occurred. To view past events, look for entries with the Scheduler source and/or Scheduled Event type in the *Call Details* view (see *"Using the Call Details Feature" on page 354*). Each scheduled event's Source will be Scheduler, Type will be Scheduled Event, Status will be Start or Played, and Destination will indicate the scheduled event ID, event name, and target zone(s).

🕂 Bog	len High	School - Re	egular	⁻ Day - E	Events 🔽 🧧	Θ		
Done								Filter
	Name 🛔	Signal Time 👙	Zones	Tone 👙	Scheduled Audio	Display Event Name	ld ≑	Routines
	Event X	12:40:00 pm	Show	1-Second	None	Yes	1	Change volume, Display Test Alert
	Line in tone	1:14:00 pm	Show	1-Second	None	Yes	2	Display Test Alert

Figure 98. Events Page

To review events for a schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- Select the down arrow next to the school name.Schedules that are associated with the site appear on the Edit Settings page.
- 4 To view the events for a schedule, select the **Edit** icon for a schedule.

The Events page appears. *Table 77* describes the parameters for this page:

	Table 77. Events Page Parameters
Name	Displays the name for the event.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Signal Time	Displays the time for this event to start using the HH:MM:SS format.
Zones	Upon hovering the mouse over the Show button, the zones to be included in this event are shown.
Tone	Displays the desired tone for this event.
Scheduled Audio	Displays if the event includes Scheduled Audio, and if so, what playlist, Matrix Mixer Pre-Amp channel, or amplifier is used for this event.
Display Event Name	Displays if the event name will appear on the GA10PV displays associ- ated to the event zone or zones.
ld	The identifier for this event.
	<i>Note</i> : This value is accessible as \$eventid in Routines and GA10PV Display Messages.
Routines	Specifies the routine(s) that will start when the event starts.

Editing Name and Description for a Schedule

You may want to edit a schedule's name and description to make it more descriptive. For example, if you originally created a schedule called Wednesday for an early release day, you may want to rename it Early Release.

🛗 Edit Schedule - Bo	gen High School 🛛 😨
Name:	
Regular Day	
Description:	
na ² nisi nsis ai poĝen	
X Cancel B Save	

Figure 99. Edit Schedule Page

To edit a schedule's name and description:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- 4 Under Manage Schedules, select the **Edit** icon for the schedule.
- 5 On the Events page, select the **Edit** icon for the schedule.
- 6 On the Edit Schedule page, make the desired changes to the **Name** and **Description** fields.

Note: Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals (0–9), space, and the following special characters: **!** @ *** ? - . ,** .

7 Select Save.

Editing an Event

The Edit Event page allows you to change the parameters for events. For example, you may want to change the playlist for Scheduled Audio for the lunch period. Or, you might want to add or remove zones affected by an event.

Clear	Add Al

Figure 100. Edit Event Page

To edit an event:

- 1 On the navigation bar, expand Schedules.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- 4 Select the **Edit** icon for the schedule.
- 5 On the Events page for the schedule, select the **Edit** icon for the event that you want to edit.
- 6 On the Edit Event page, make the desired changes. (See *Table 78, "Event Settings Page Parameters,"* on page 266.)
- 7 Select Save.

Deleting an Event

You can delete an event from a schedule when the event is no longer needed or wanted. For example, suppose your site's schedule was set up to have warning bells that ring five minutes before a shift starts. If you decide to end the use of warning bells, you would delete each warning bell event from the schedule.

To delete an event:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- Select the **Edit** icon for the schedule.
 Events that are associated with the schedule appear on the Events page.
- 5 Select the **Delete** icon for the event that you want to delete from the schedule.
- 6 When prompted, select **Delete**.

Adding an Event

When a schedule is created, it has no events, which are specific times when tones play. After you create a schedule, you add events through the Add Event page.

To add an event to a schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the down arrow next to the school name.
- 4 Select the **Edit** icon for the schedule you want to add an event to.
- 5 Select the Add icon.
- 6 Complete the parameters on the Add Event page. (See Table 78 on page 266.)

7 When completed, select **Save**, or if you want to add another event to this schedule, select **Save and Create Another** and return to Step 6.

Understanding Event Settings

Event settings appear when adding or editing an event.

	Table 78. Event Settings Page Parameters
Name	Specifies the name for the event.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Signal Time	Specifies the time for this event to start using the HH:MM:SS format. If you want the event to start at 08:15:15, you would use the down arrows to make the appropriate selections in the Hour , Minute , and Second fields.
Zones	Specifies the zones to be included in this event.
	<i>Note:</i> You can select Add All to have all zones appear in the zone field, and then remove a zone by selecting the X for a zone. You can also delete zones by placing your cursor in the Zones field and pressing the Delete key.
	Caution It is possible for multiple zones to have one or more stations in common. If you schedule an event for zones that share one or more stations, there may be issues.
Tone	Select the desired tone for this event. If an audio distribution entry from the Scheduled Audio menu is selected, this field is not required.
	<i>Note:</i> If a tone is specified for this setting and the devices in the specified zones are unable to communicate with the Nyquist server at the scheduled time, the devices will still trigger this event for up to 72 hours after the last successful synchronization with the Nyquist server (which occurs at midnight). Instead of the specified Tone, however, it will play the Appliance Backup Scheduled Tone (see " <i>Edit System Parameters Page</i> " on <i>page 64</i>).
Scheduled Audio	Specifies if the event includes Scheduled Audio, and if so, what playlist, Matrix Mixer Pre-Amp channel, or amplifier is used for this event. You can also select to stop the Scheduled Audio by selecting Stop Playlist or Stop Line-Input .
	<i>Note:</i> When Stop Playlist is specified, the last playlist(s) that were started on the specified zone(s) will be stopped. If a playlist was started on multiple zones, all of those zones must be specified to stop the playlist.
	If an airable/SoundMachine source is selected, the Scheduled Audio list includes selections to start or stop the audio stream. This list only includes airable/SoundMachine selections that apply to the specific time zone. If the Audio Distribution zone selected includes a time zone and another zone type, such as Paging, that is not for time, the audio distri- bution does not appear in this Scheduled Audio list.

Table 78. Event Settings Page Parameters (Continued)	
Display Event Name	Specifies if the event name will appear on the GA10PV displays associ- ated to the event zone or zones.
	<i>Note:</i> If you schedule an event with Display Event Name enabled, the event remains on the display connected to the NQ-GA10PV until the next scheduled event replaces it. To clear the event name from the display, create another scheduled event with the Name set to No-Event .
Amplifiers/Matrix Mixers	Specifies the amplifiers or Matrix Mixer Pre-Amp and its associated sta- tion number.
	Note: This parameter appears only if Scheduled Audio is set to Start Line-Input.
Input Channel	Specifies the matrix channel being used for input.
	Note: This parameter appears only if Scheduled Audio is set to Start Line-Input.
Routines	Specifies one or more Routines to be executed when this event starts.
	<i>Note:</i> If a specified routine is disabled, it will not execute, but will not be removed from the trigger.

•

An event with **Scheduled Audio** set to **Stop Playlist**, **Stop Line-Input**, or **Stop <airable/SoundMachine source>** should be created for each Scheduled Audio start command to ensure the Scheduled Audio stops when you want. If an associated **Stop** event is not in the schedule, Scheduled Audio started by a scheduled event will not stop playing.

If you want to start Scheduled Audio without also playing a tone, set **Tone** to **No Tone**.

You can use the scheduling feature to schedule audio distribution using Scheduled Audio; when using Scheduled Audio in a scheduled event to schedule audio distribution, set **Tone** to **No Tone**. Zone numbers are not required.

If several overlapping scheduled events use Scheduled Audio and have overlapping zones defined, a scheduled Scheduled Audio event will not start the audio if an existing Scheduled Audio event is already playing to a zone defined in the scheduled event. Error messages will be displayed on the dashboard whenever overlapping zones prevent Scheduled Audio from starting. Ensure that scheduled events with Scheduled Audio do not use the same zones during the same time frames.

Deleting a Schedule

If you have the correct permissions, you can delete a schedule that is no longer being used. When you delete a schedule, you delete all associated schedules, ed events, and schedule exceptions.

To delete a schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schools.
- 3 Select the **Delete** icon next to the schedule that you want to delete.
- 4 When prompted, select **Delete**.
Using the Calendars Feature

Nyquist provides a calendar view of the schedule used for past days, the schedule for the current and future days, and the scheduled holidays. The view is for the current month, but you can use the **<Prev>** and **<Next>** buttons to display other months.

The Calendar view also provides access to the calendars of Facilities that are defined in the Facilities view (see *"Configuring Facilities" on page 119*). You can view and modify calendars of any Facilities that are configured to allow access via the Remote Calendar Control settings (see *Table 19, "Edit System Parameters Page," on page 64*).

Top View	-C4000-R3-01 Your Site	day Next >				
2020 sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
None	Schedule 1	Schedule 1	Schedule 1	Schedule 1	Schedule 1	None
8	9	10	11	12	13	14
None	Schedule 1	Schedule 1	Schedule 1	Schedule 1	Schedule 1	None
15	16	17	18	19	20	21
None	Schedule 1	Schedule 1	Schedule 1	Schedule 1	Schedule 1	None
22	23	24	25	26	27	28
None	Schedule 1	Schedule 1 V	Schedule 1 v	Schedule 1 v	Schedule 1 V	
29	30 Schedule 1 V					

Figure 101. Calendars Page

The Calendars feature also provides a quick way to change the schedule. For example, if you normally use an Early Release schedule for Wednesdays but want to use this schedule for Monday through Friday for the last week of the year, you can use the Calendars feature to create exceptions for your schedule.

To view or change a monthly calendar:

- 1 On the navigation bar, expand **Schedules**.
- 2 Under Schedules, select Calendars.
- 3 Select the **Facility** whose calendar you wish to view.

Note: If the **Remote Calendar Control** setting for the selected Facility does not allow access to your Nyquist server, an error will be displayed and your Facility selection will be rejected.

- Select either **Top View** or the tab that displays your site's name. 4
- 5 To change the schedule for the current or future dates, make sure you are the tab for your site and use the drop-down menu for the date or dates to select the replacement schedule.
- To view events scheduled for a date, make sure you are on the **Top View** tab and select the date. Events 6 for the schedule are detailed in the Schedule popup window that appears.
- 7 When done viewing events, select **Close**.

Schedule Popup Window Parameters

The Schedule popup window appears when viewing events for a date from either the monthly view (see "Using the Calendar's Feature" on page 268) or from the dashboard's Weekly Schedule panel (see "Viewing the Schedule for the Week" on page 392).

Schedule					
00 - Soon™ day November 13,	2018				
Time	Name	Zones	Tone	Scheduled Audio	
7:41:00 am	Start - CCM	Zone-1: Time Zone	1-Second		
7:42:00 am	Stop - CCM	Zone-1: Time Zone	1-Second		
9:59:00 am	Daily Meeting	Zone-1: Time Zone	Quad Beep	None	
10:56:00 am	test1	Zone-1: Time Zone	Hyenaaah	Disney World	
10:57:00 am		Zone-1: Time Zone	No Tone	Stop Playlist	
12:27:00 pm	caramel	Zone-1: Time Zone	Hyenaaah	None	
3:21:00 pm		Zone-1: Time Zone	7-Second	None	
		Z 1. T Z	7 Cocond	News	

Figure 102. Schedule Popup Window

The Schedule popup window displays the name, the day, and the date of the schedule. It also contains the following parameters:

	Table 79. Schedule Popup Window Parameters
Time	Identifies the time of the event start in HH:MM:SS format.
Name	Identifies the user-provided name for the event.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Zones	Identifies the zones and types of zones that are specified for this event.

Identifies the name of the tone used for this event.

Scheduled Audio Identifies a playlist, Matrix Mixer Pre-Amp channel, amplifier, or airable/SoundMachine source to use if the Scheduled Audio feature is used for this event. Otherwise, the option appears as **None**.

Using the Holidays Management Tool

Holidays, which can be a single day or a range of dates, often require changes in schedule assignments. The holidays management tool allows you to enter ranges of days when all schedules are turned off and to add these holidays to the calendar via the Schedules feature. You can also export a holiday schedule as a .csv file and import the holiday schedule file to another Nyquist server.

Holidays override other schedules that are set for a date range.

Viewing Holidays

Tone

Holidays affect the schedule of each facility managed by your Nyquist server. The Holidays page displays a list of all holidays that have been set up for the Nyquist system. Holidays take precedent over regular schedules. For example, suppose you configure Mondays to use a schedule called Regular that has tones sounding throughout the day to mark the ending and beginning of shift changes. If you set a holiday for Monday, May 28, then the holiday "overrules" the Regular schedule and tones do not sound during that day.

🛱 Hol	idays 🕂 😨			
Ехроп			Filter	
	Name	Start Date	End Date	\$
	Memorial Day	May 28, 2018	May 28, 2018	
	Independence Day	Jul 4, 2018	Jul 4, 2018	

Figure 103. Holidays Page

To view holidays:

- 1 On the navigation bar, expand Schedules.
- 2 Select Holidays.

A listing of holidays and the parameters associated with these holidays appears.

The following table describes these parameters:

	Table 80. Holiday Parameters
Name	Provides the name of the holiday.
Multiple Days	Note: Appears only when adding or editing a holiday.
	Indicates if the holiday includes multiple days (such as spring break). If No is selected, then the Start Date appears as Date and End Date does not appear.
Start Date	Provides the start date of the holiday.
	Note: For holidays that do not involve multiple days, this field appears as Date.
End Date	Provides the end date of the holiday.
	Note: For holidays that do not involve multiple days, this field does not appear.

The Holidays page also contains **Export** and **Import** buttons that allows you to easily capture holiday settings and import them to other Nyquist servers.

Adding a Holiday

You can create a holiday for any day that the schedule should be turned off, including state and federal holidays. Holidays automatically appear on the dashboard and on the Calendar views.

党 Add Holiday	0
Name:	
Multiple Days:]
Date:	
2017-06-19	
× Cancel 🖹 Save	

Figure 104. Add Holiday Page

To add a holiday:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Holidays.

- 3 On the Holidays page, select the **Add** icon.
- 4 Enter the parameters for the holiday. (See *Table 80, "Holiday Parameters," on page 271*.)
- 5 Select Save.

Deleting a Holiday

You may need to delete a holiday in cases such as when a manager's workday is rescheduled to a regular day to make up for an earlier site closure due to inclement weather.

To delete a holiday:

- 1 On the navigation bar, expand Schedules.
- 2 Select Holidays.
- 3 On the Holidays page, select the **Delete** icon next to the holiday that you want to delete.
- 4 When prompted, select **Delete**.

Editing a Holiday

You can edit a holiday if you need to change the name or start or end dates for the holiday.

To edit a holiday:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Holidays.
- 3 On the Holidays page, select the **Edit** icon next to the holiday that you want to edit.
- 4 On the Edit Holiday page, make the desired changes. Parameters for the holiday are described in *Table 80, "Holiday Parameters," on page 271*.
- 5 After all changes have been made, select **Save**.

Exporting Holidays

To aid in configuring multiple Nyquist servers or System Controllers that share the same holiday schedule, Nyquist allows you to export the holiday schedule to a CSV file.

To export the holiday schedule:

- 1 On the navigation bar, expand Schedules.
- 2 Select Holidays.
- 3 Select Export.

The holidays.csv file will be sent to your Downloads folder.

Importing Holidays

If you have exported a holiday schedule created at one Nyquist server or System Controller, you can import that schedule to another Nyquist server or System Controller.

You can also create a custom holiday CSV file using the following conventions:

- Create four columns with each column separated by commas.
- Insert a line return at the end of each row.
- Set the first column 0 because it will be replaced by an autogenerated value when the file is imported into the database.
- For first, second, and third columns, enclose the entries in double-quotation marks (").
- In the second column, provide the holiday name.
- Enter the start date in the third column using the format YYYY-MM-DD.
- Enter the end date in the fourth column using the format YYYY-MM-DD. For a one day holiday, the start and end dates will be the same.

To import a holiday schedule:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Holidays.
- 3 Select Import.
- 4 Select **Choose file** and navigate to select the CSV file that you want to import.
- 5 If you want to delete all existing holidays before importing the file, use the slider to select **Yes**.
- 6 Select Import.

Using the Schedule Announcements Feature

After an announcement has been created via the Audio feature, you can schedule it to play via the Schedules feature. For information about the Audio feature, refer to "Managing Audio" on page 285.

📣 Sc	🜒 Schedule Announcements 💽 🔞									
C Refre	sh 🛛 📣 Announcement	ts								
										Search
	Name	Туре	Description	Signal Date	Signal Time	Zone	Max Wait Seconds	Recurring Enabled	Recurrence Data	Playback
	Test announcement	Normal	Show	Recurring	Recurring	All Speakers	120	Yee	Show	► 0:00 / 0:03 4) E

Figure 105. Schedule Announcements Page

To view schedule announcements:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schedule Announcements.

The Schedule Announcements page appears. This page displays the following information about all scheduled announcements:

Tab	le 81. Schedule Announcements Page Parameters
Refresh button	Refreshes the list of scheduled Announcements.
Announcements button	Browses to the Announcements page (see "Viewing Announcements" on page 323).
Name	Displays the name of the announcement.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Туре	The type of announcement; either Normal or Emergency .
Description	Displays the description of the announcement.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Signal Date	Displays the date that the announcement is to play.
Signal Time	Displays the time the announcement is to play in HH:MM:SS format.
Zone	Displays the zone that is to receive this announcement.
Maximum Wait Seconds	Specifies the maximum number of seconds to wait for an active page or announcement to complete so the scheduled announcement can be played.
	The default is 120 seconds.
	If an Emergency All-Call is in progress at the time that a scheduled announcement should be played, the scheduled announcement will not be played due to the active Emergency All-Call. In this case, the sched- uled announcement will not wait for the Emergency All-Call to end and will be canceled.
	Note: Scheduled Announcements will not play during an active check-in process.
Recurring Enabled	<i>Note</i> : If an announcement is already playing, a recurring announcement will not play until its next scheduled occurrence.
	Indicates if the announcement is scheduled to reoccur.
Recurrence Data	Displays data for the recurring announcement, such as the start and end dates, when you roll over or select the Show button.
Playback	Allows you to manually play the announcement. Selecting the down arrow in this field also allows you to download and save the announce- ment.
Refresh	Press the Refresh button to refresh the list of Scheduled Announcements.

Adding a Schedule Announcement

On the Schedule Announcements page you can create a schedule announcement. When you schedule an announcement, you select the date and time the announcement plays, how many times it plays, and the zone that it plays in. Instead of selecting a single zone, you can select **All Speakers**.

Note: You must create an announcement before you can create a schedule announcement. (See "Adding an Announcement" on page 317.)

To add a schedule announcement:

Add Schedule Announcement
¥ Cancel ■ Save
Announcement: ()
Lockdown Alert (Emergency)
► 0:00 / 0:04 • :
2025-01-02
Signal Time: Hour: Minute: Second: 17 41 0 * Zone: ()
All Speakers
Maximum Wait Seconds: (1)
Recurring Enabled: 1
★ Cancel Save

Figure 106. Add Schedule Announcement Page

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schedule Announcements.
- 3 On the Schedule Announcements page, select the **Plus** icon.
- 4 On the Add Schedule Announcement page, complete the parameters.
- 5 Select Save.

Tab	le 82. Add Schedule Announcement Parameters
Announcement	Use the drop-down menu to select the announcement that you want to schedule.
Signal Date	Note: This field only appears if Recurring has been set to No .
	Use the calendar or type to select the date that the announcement is to play.
Signal Time	Note: This field only appears if Recurring has been set to No .
	Select the Hour , Minute , and Second from the corresponding dropdown menus.
Zone	Select either All Speakers or a specific zone that is to receive this announcement.
Maximum Wait Seconds	The maximum number of seconds to wait if there is already an active page preventing the scheduled announcement from playing. Valid values range from 0 to 86400.
	The default value is 120 seconds.
Recurring Enabled	Use the slider to indicate if the announcement will be scheduled to recur.
	<i>Note</i> : Disabling this setting erases any schedule settings. To temporarily disable a schedule, disable Recurring Schedule Enabled instead.

If **Recurring Enabled** is set to **Yes**, the following parameters will be displayed:

Table 83. Recurring Schedule Parameters (only if Recurring Enabled is set to Yes)

Recurrence Start Date	Use the calendar to select the start date for this recurring announcement.
Recurrence End Date	Use the calendar to select the end date for this recurring announcement.
	Note: This field only appears if No End Date is disabled.
No End Date	Use the slider to select Yes if you want this announcement to recur indefinitely.
Recurrence Second	Specify which second of the Recurrence Minutes at which to play the Announcement.
Recurrence Minutes	Specify one or more values to indicate at which minutes of the specified Recurrence Hours the Announcement will play.
	If unspecified, the default will be every minute of the hour.
Recurrence Hours	Specify one or more values to indicate at which hours of the specified Recurrence Days the Announcement will play.
	If unspecified, the default will be every hour of the day.

Recurrence Days	Specify one or more values to indicate on which days of the specified Recurrence Months the Announcement will play.
	If this and Recurrence Days of Week are both unspecified, the Announcement will play every day of the month.
Recurrence Months	Specify one or more values to indicate on which months of the year the Announcement will play.
	If unspecified, the default will be every month.
Recurrence Days of Week	Specify one or more values to indicate on which days of the week the Announcement will play.
	If this and Recurrence Days are both unspecified, the Announcement will play every day of the week.

Deleting a Schedule Announcement

To delete a schedule announcement:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schedule Announcements.

The Schedule Announcements page appears. This page displays information about all scheduled announcements.

- 3 Select the **Delete** icon next to the schedule that you want to delete.
- 4 When prompted, select **Delete**.

Editing a Schedule Announcement

From the Edit Schedule Announcement page, you can change the selected announcement, the date and time the announcement is set to play, and the zones in which the announcement is scheduled to play.

Note that if you change the zone for a Schedule Announcement that is currently playing, the announcement will play to both the original zone and to the new zone. To stop the announcement from playing to the original zone, you must use the stop announcement feature (see *"Managing Announcements via the Dashboard" on page 381*).

To edit an announcement:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schedule Announcements.
- 3 Select the **Edit** icon next to the schedule that you want to edit.
- 4 Make the desired changes. (See Table 82, "Add Schedule Announcement Parameters," on page 276.)

5 After making the desired changes, select Save.

Using the Schedule Routines Feature

Routines can be scheduled to execute at a future date/time, and can be scheduled to repeatedly execute using a recurring schedule.

Routines that will be scheduled for execution must have an **Extension** defined and must have **Use Caller's Extension** set to No.

Tip: Make sure that none of the routine's Actions or Conditions attempt to access variables that are only defined for API-initiated routines (e.g., \$apiParam1 or other Routines API-specific variables [see "Using the Routines API" on page 419]) or DTMF-initiated routines (e.g., \$cmdParam1 [see "Starting and Stopping a Routine from the Admin Phone" on page 417]). Routine database variables, however, can be accessed (see "Managing Routine Database Variables" on page 482).

To view Schedule Routines, and to schedule a Routine:

- 1 On the navigation bar, expand Schedules.
- 2 Select Schedule Routines.
- 3 To schedule a Routine for execution, select the Add 🕂 icon.

The Schedule Routines page appears.

🔀 Sch	edule Ro	utines 📑	•							
C Refrest	n 🔀 Routir	nes								
									Search	
	Name 🍦	Description	Execute Date 👙	Execute Time 👙	Parameter 1 🍦	Parameter 2 🌲	Zone	Recurring Enabled 🍦	Recurring Schedule Enabled \Rightarrow	Recurrence Data
	Test Routine	Show	Recurring	Recurring	None	None	All Speakers	Yes	Yes	Show

Figure 107. Schedule Routines

This page displays the following information for each scheduled routine:

	Table 84. Schedule Routines Properties			
Name	me Name of the Routine to be executed.			
Refresh button	Refreshes the list of scheduled Routines.			
Routines button	Browses to the Routines page (see "Viewing Routines" on page 437).			
Description	Displays the description of the routine.			
	<i>Note:</i> Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .			
Execute Date	Date on which Routine will execute.			

Table 84. Schedule Routines Properties

Execute Time	Time at which Routine will execute.
Parameter 1	Value to be passed to the Routine as \$schedParam1.
Parameter 2	Value to be passed to the Routine as \$schedParam2.
Zone	Either All Speakers or the specific zone associated with the Routine.
Recurring Enabled	If the Routine can be scheduled to recur, Yes , otherwise No .
	<i>Note:</i> Disabling this setting erases any schedule settings. To temporarily disable a schedule, disable Recurring Schedule Enabled instead.
Recurring Schedule Enabled	Indicates if the Recurring Schedule is enabled. Click this button to enable or disable the Recurring Schedule.
Recurrence Data	Displays data for the recurring routine, such as the start and end dates, when you roll over or select the Show button.

Add a Scheduled Routine

To schedule a Routine execution, select the Plus icon.

X Add Schedule Routine 🛛 🧿
X Cancel Save
Routine: 🚺
Simple routine
Execute Date: (1)
2025-01-02
17 ▼ 37 ▼ Parameter 1: 1 Parameter 2: 1
Zone: (1) All Speakers
Recurring Enabled: ()
X Cancel B Save

Figure 108. Add Schedule Routine

Table 85. Add Schedule Routine Parameters				
Routine	Use the drop-down menu to select the Routine that you want to sched- ule.			
	<i>Note:</i> Only Routines that have Extension set and have Use Caller's Extension set to No will be displayed.			
Execute Date	Note: This field only appears if Recurring Enabled has been set to No.			
	Use the calendar to select the date on which the Routine is to execute.			



Table	85. Add Schedule Routine Parameters (Continued)
Execute Time	Note: This field only appears if Recurring Enabled has been set to No.
	Select the Hour and Minute from the corresponding drop-down menus to specify the time at which the Routine is to execute.
	<i>Note:</i> Scheduled Routines will start at the beginning of the selected minute. If you want the actions in a Routine to start a few seconds after the beginning of the selected minute, you can insert a Pause action in the Routine to delay the execution of actions until the second that you want them to execute. For example, if you want the actions in a Routine to start at 12h:05m:15s, add a Pause action with Seconds equal to 15.
Parameter 1	The Parameter 1 and Parameter 2 values are made available to Routine
Parameter 2	Conditions and the following Routine actions via the \$schedParam1 and \$schedParam2 variables (see <i>Table 151, "Routine Action Type-Specific Parameters," on page 576</i> for details):
	Add-Announcement-Audio
	• Dash-Text
	Dash-Text-Delete
	• Display-Msg
	Display-Msg-Delete
	• Email
Zone	Select either All Speakers or a specific zone to associate with the Routine.
	The zone number is used by the following:
	 Dash-Text and Dash-Delete actions for Text field and Identifier field via \$zone variable.
	 Display-Msg and Display-Msg-Delete actions for Text field and Identifier field via \$zone variable.
	 Email action subject field and text field via the \$zone variable.
	• The zone number is also passed to Routines that are executed by the scheduled Routine, which is useful if the subsequently executed Routine includes a Feature-Wait action or other actions that use the \$zone variable.
Recurring Enabled	Use the slider to indicate if the Routine can be scheduled to recur.
	If Recurring Enabled is set to Yes , further parameters will be displayed to configure the recurring Routines, as described in <i>Table 86, "Recurring Scheduled Routine Parameters," on page 282.</i>
	If set to No , all current recurrence-related settings (see <i>Table 86, "Recurring Scheduled Routine Parameters," on page 282</i>) will be deleted.

If Recurring Enabled is set to Yes, the following parameters will be displayed:

Та	ble 86. Recurring Scheduled Routine Parameters
Recurring Schedule	If Yes , the scheduled Routine will execute at the scheduled time(s).
Enabled	If No , the Routine will not execute at the scheduled time(s).
Recurrence Start Date	Use the calendar to select the start date for this recurring Routine.
Recurrence End Date	Use the calendar to select the end date for this recurring Routine.
	Note: This field only appears if No End Date is disabled.
No End Date	Use the slider to select Yes if you want this Routine to recur indefinitely.
Recurrence Second	Specify which second of the Recurrence Minutes at which to execute the Routine.
Recurrence Minutes	Specify one or more values to indicate at which minutes of the specified Recurrence Hours the Routine will execute.
	If unspecified, the default will be every minute of the hour.
Recurrence Hours	Specify one or more values to indicate at which hours of the specified Recurrence Days the Routine will execute.
	If unspecified, the default will be every hour of the day.
Recurrence Days	Specify one or more values to indicate on which days of the specified Recurrence Months the Routine will execute.
	If this and Recurrence Days of Week are both unspecified, the Routine will execute every day of the month.
Recurrence Months	Specify one or more values to indicate on which months of the year the Routine will execute.
	If unspecified, the default will be every month.
Recurrence Days of Week	Specify one or more values to indicate on which days of the week the Routine will execute.
	If this and Recurrence Days are both unspecified, the Routine will exe- cute every day of the week.

Edit a Schedule Routine

To edit a Scheduled Routine:

- 1 On the navigation bar, expand **Schedules**.
- 2 Select Schedule Routines.
- 3 Select the **Edit** icon for the Schedule Routine.

- 4 On the Edit Schedule Routine page, make the desired changes. (See Table 84, "Schedule Routines Properties," on page 278 and Table 83, "Recurring Schedule Parameters (only if Recurring Enabled is set to Yes)," on page 276).
- 5 Select Save.

Schedule Routine Call Details Records

When a scheduled routine is executed, a Call Details record (see "Using the Call Details Feature" on page 354) is created in the following format:

Source	Destination	Туре	Status
<extension></extension>	Routine (<routine code="" dtmf="">)</routine>	Scheduled Routine	Executed

Table 87. Scheduled Routine Call Detail Record

Call Detail Records are created for Routines executed on a specific scheduled date/time and for each execution of a recurring schedule.

Retrieving First and Last Scheduled Events

You can retrieve XML from the E7000 that either provides the first and last events for today's schedule or shows that the active schedule for the day is a holiday. This information could be used to schedule the opening of facility doors before the first scheduled event and the closing of facility doors after the last scheduled event.

To retrieve this information:

1 In your browser, type the following:

http://<server>:8088/static/schedules-boundary.xml

2 Press Enter.

Alternatively, you can retrieve the XML programmatically or from a command prompt or script. Here are a couple simple examples:

Curl example:

curl.exe http://<server>:8088/static/schedules-boundary.xml

PowerShell example:

(Invoke-WebRequest -Uri http://<server>:8088/static/schedules-boundary.xml).Content

The XML returned will contain the schedule name, as well as the start and end event times, for the school. If your Nyquist server manages multiple schools, the schedule name, as well as the start and end event times, appear for each school (see *Figure 109*, *"Schedule Information for Multiple Schools," on page 284*). If the day has been scheduled as a holiday, the word "Holiday" appears in the XML file (see *Figure 110, "XML Output for a Holiday," on page 284*).

```
<?xml version="1.0" encoding="UTF-8"?>
<Schedules>
  <School>
    <Name>Bogen High School</Name>
    <Schedule>
      <Name>Regular Day</Name>
      <First-Event>8:40:00</First-Event>
      <Last-Event>14:50:00</Last-Event>
    </Schedule>
  </School>
  <School>
    <Name>Bogen Middle School</Name>
    <Schedule>
      <Name>Early Day</Name>
      <First-Event>8:40:00</First-Event>
      <Last-Event>12:30:00</Last-Event>
    </Schedule>
  </School>
  <School>
    <Name>Bogen Elementary School</Name>
    <Schedule>
      <Name>Regular Day</Name>
      <First-Event>8:30:00</First-Event>
      <Last-Event>14:30:00</Last-Event>
    </Schedule>
  </School>
</Schedules>
```

Figure 109. Schedule Information for Multiple Schools

```
<Schedules>

<Holiday>

<Name>New Year's Day</Name>

<Start-Date>2022-01-01</Start-Date>

<End-Date>2022-01-01</End-Date>

</Holiday>

</Schedules>
```

Figure 110. XML Output for a Holiday

Managing Audio

With Nyquist's audio file management feature, you can:

- Specify an audio program for distribution to stations or zones.
- Record and play tones and announcements to stations or zones.
- Manage recordings of telephone calls made to and from stations.

Audio programs for distribution to stations or zones can include line-input from the MMPA, Nyquist 2channel or 4-channel amplifiers, user-supplied songs or playlists, and Internet Radio Services. The Audio Distribution, tones, and announcement files added through the audio file management feature can be set through the Schedules feature to automatically play during specified times. (*See "Managing Schedules" on page 257.*) Through the Internet Radio Services, you can listen to live radio stations and add media catalogs and music services without updating devices or software.

Default tone and song files include white noise and pink noise that allows you to tune paging and audio distribution volumes.

Note: Before using the audio file management feature, make sure that stations and zones have been configured (see *"Managing Stations, Zones, and Queues" on page 127*) and that the station you are using to start announcements, tones, or Audio Distribution has the appropriate CoS parameters set (see *"Using CoS Configuration" on page 91*).

Audio Distribution

Suppose you want to use an audio source, such as a radio station accessed via the Internet, in a cafeteria but prevent that source from being played in a conference room. This feature, called Audio Distribution, can be turned on by zone (an area or group of stations) or stations (group of devices such as VoIP speakers). You can add the speakers, or stations, in the cafeteria to a zone that allows Audio Distribution while the speakers in a conference room would not be placed into that zone.

Audio Distribution involves creating a playlist or selecting an input source and specifying which zones hear the playlist or input source. Through the Scheduled Audio feature, Audio Distribution can be tied to a specific event in a schedule (see "Adding an Event" on page 265).

The following steps will guide you through setting up Audio Distribution:

- 1 Define audio sources by:
 - Adding songs and creating playlists (see "Managing Songs" on page 289 and "Managing Playlists" on page 294)
 - Adding airable Radio Station sources (see "Using Internet Radio Services" on page 299)
 - Adding SoundMachine sources (see "Adding a Source" on page 300)
 - Setting up appliances that will provide audio sources (see "Managing Line-Input Sources" on page 287)

- 2 On the Dashboard, add Audio Distributions that can be used by the system. Each Audio Distribution defines the audio source to use and the destinations (i.e., zones and/or stations) for the audio when played (see "Creating an Audio Distribution" on page 306).
- 3 Setup your Audio Distributions to play by:
 - Scheduling Audio Distribution via Schedules (see "Using the Schedule Announcements Feature" on page 273)
 - Starting Audio Distribution via Routines (see "Using Routines to Start Audio Distribution" on page 311)
 - Starting Audio Distribution via I/O Controller contact closure (see "Configuring I/O Controller Input Rules" on page 148)
 - Starting Audio Distribution manually using one of the following:
 - •Web Interface Dashboard (see "Using Audio Distribution" on page 392)
 - •NQ-T1100 or NQ-ZPMS Admin Phone (see "Customizing an NQ-T1100 IP Phone Color Touch Display" on page 189, "Customizing an NQ-ZPMS Zone Paging Microphone Station" on page 191, and "Using the Admin Phone" on page 314)



Figure 111. Audio Distribution Sources

Audio Distribution sources can include:

- Audio from two- or four-channel audio power amplifier's or MMPA's Line Inputs
- User-supplied music (songs and playlists)
- Internet Radio Services
 - airable stations
 - SoundMachine stations

Managing Line-Input Sources

Create an Audio Distribution				
Line-Input/Playlist/Source:				
A2120-G2-2CH (201) A4060 - G2 - 4CH (206) GA400P (198) PA600-TechDoc (212) 191-MMPA (191) 197 - GA40P3 (197)	Input Channel:			
	Close 🖺 Save			

Figure 112. Line-Input Sources

If your Nyquist system uses two-channel or four-channel audio power amplifiers or MMPAs, these stations will appear as sources for Line-Input when creating Audio Distribution.

Create an Audio Distribution				
Line-Input/Playlist/Source:				
Zones:				
Add Zones				
Stations: Add Stations Amplifiers/Matrix Mixers: MMPA (0117) •	Channel 1 (1) Channel 2 (2) Channel 3 (3) Channel 4 (4)			
Description:				
			11	
		Close	🖺 Save	

Figure 113. Available Channels for an MMPA

The available Input Channel selections can range from 1 or 2 for an amplifier or 1 to 4 for an MMPA.



Figure 114. Line Input for NQ-A4300 Audio Power Amplifier



Figure 115. Line Input for NQ-A4300-G2 Audio Power Amplifier

The first generation amplifiers and MMPAs must be configured at the device, using either XLR or Phoenix (but not both) as the input. The G2 amplifiers must be configured at the device, using either RCA or Phoenix (but not both) as the input.

The Amplifiers/Matrix Mixers and Input Channel selections are made when creating an audio distribution.

Managing Songs

The songs feature allows you to select songs that can be added to a playlist; the playlist can then be selected to play manually or during scheduled events such as lunch time. You upload a song similarly to how you upload an announcement file or tone. You can store songs on a USB flash drive; these songs can then be played via the playlists feature (see *"Playing Songs Directly from a USB Flash Drive" on page 291*).

By default, white noise and pink noise songs are provided to help tune the volume of an Audio Distribution zone. (See *"Tuning Volume with White or Pink Noise" on page 356.*)

Viewing the Song List

From the Songs page, you can add, edit, or delete a song. If you delete a song that is in a Playlist, the song is automatically removed from the Playlist.

								Filter
	Title ϕ	Artist	Album ÷	Track Number	Length	Genre	Year 👙	Playback
8	Come Together	Aerosmith	Aerosmith's Greatest Hits	9	03:46	Rock	1993	► 0:00/3:46 — • • :
8	Dream On	Aerosmith	Aerosmith's Greatest Hits	1	04:27	Rock	1993	► 0:00/4:27 — ④ E
8	Fins	Jimmy Buffett	Songs You Know By Heart	3/13	03:25	Rock	1985	► 0:00/3:25 — ④ :
Û	Pink Noise	Bogen Communications LLC	Test Tools	1	01:00	Tones	2018	► 0:00/1:00 - ● :
e	Shake Me Like A Monkey	Dave Matthews Band	Big Whiskey and the GrooGrux King	2/13	04:01	Rock	2009	► 0:00 /
8	White Noise	Bogen Communications LLC	Test Tools	2	01:00	Tones	2018	Playback speed

Figure 116. Songs Page

To view the song list:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Songs.

The following table describes the information provided about each song:

Table 88. Songs Page Parameters

Title	Displays the user-provided song title.		
Artist	Displays the name of the musician performing the song.		
Album	Displays the name of the album the song is from.		
Track NumberDisplays the track on the album for the song.			
Length	Provides the length of the song in seconds.		
Genre	Displays the music genre, or category, for the song.		
Year	Displays the year the song was recorded.		
Playback	Allows you to manually play the song. Selecting the Menu icon in this field also allows you to download and save the song, as well as specify the song's playback speed.		

Playing Songs Directly from a USB Flash Drive

You can use a USB flash drive as storage for songs that can be played via the playlists feature.

To add songs and create a playlist for a USB flash drive, you must create a root file on the USB flash drive called MusicLibrary.txt. This file can contain the following entries:

playlistname=<text entered by customer>
createplaylist=no
useexistingplaylist=yes

If **createplaylist=no** is found in MusicLibrary.txt, a playlist is not created for the imported files.

If **useexistingplaylist=yes** is used, new songs will be added to the playlist defined by the playlistname option.

The music files must be in the root directory of the USB flash drive. Valid formats for these files are mp3, wav, and aac.

The Nyquist server automatically mounts the USB flash drive, adds all songs found in the root directory to the songs list, and creates a playlist for the added songs. The default name for the playlist is **USB Music Library**.

If you want to see if a USB flash drive is plugged into the System Controller and mounted for use, you can use the **Check Server Status** feature from System Parameters to view a list of mounted USB drives (search for "USB Drives" in the "Disk Space" section of the Check Server Status report).

Note: If you use a USB flash drive as storage for songs on a playlist and the USB flash drive is removed from the USB drive, the meta-data for the songs and the playlist still resides in the Nyquist song list and playlist, but Audio Distribution cannot play. For this reason, we recommend never removing the flash drive from the computer.

Warning After you have inserted a USB flash drive into the System Controller, removing it may damage the contents stored on the USB flash drive. If you need to remove the USB flash drive from the System Controller, use **Shut Down**, found in System Parameters, to shutdown the Nyquist System Controller before removing the USB flash drive.

Adding Songs

You can add songs from your local computer or from removable media, such as a flash drive. You can add a song to playlists as part of the Add Song process or you can add a song to a playlist later through the **Playlists** menu.

You can select to add one song or multiple songs.

Nyquist can use any ID3 tag data and save that automatically. An ID3 tag acts as a container file within an MP3 audio file and commonly contains the title, artist name, album, track data, year, and genre.

Title:		
vrtist:		
vrtist:		
lbum:		
rack Number: 🚯		
/ear:		
ienre:		
Playlists:		
	Clear	Add All
Add song to playlists		

Figure 117. Add Song Page

To add a song file:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Songs.
- 3 On the Songs page, select the **Add** icon.

Note: If the imported song file contains metadata, Nyquist automatically fills in the Title, Artist, Album, Track Number, Year, and Genre after you press the **Save** button. If no metadata exists, the song **Title** is set to **Untitled** and the other parameters are left blank. Most MP3 files do contain metadata. You also can choose to not fill in the parameters.

- 4 On the Add Song page, complete the parameters. If you want to add multiple songs, ensure that you select **Yes** for **Multiple Songs**. Then, use the Shift or Control keys when selecting multiple files. Parameters do not appear when using the **Multiple Songs** option.
- 5 After completing all changes, select **Save**. The song or songs will be copied onto the Nyquist system.

Table 89. Add Song Page Parameters

Multiple Songs	Allows you to select multiple songs.
Title	Displays the user-provided song title.

Table 89. Add Song Page Parameters (Continued)
Displays the name of the musician performing the song.
Displays the name of the album the song is from.
Displays the track on the album for the song.
Displays the year the song was recorded.
Displays the music genre, or category, for the song.
Allows you to select the song that you want to upload.
Select the playlists that you want to add the song to. You can select mul- tiple playlists, select all playlists by selecting Add All , or use the Clear button to remove the playlists.
Select Choose file and navigate to select the file to upload. This option allows you to select files not only from your computer but also from a USB flash drive inserted in your computer.

Editing Song Information

Through the Edit Song page, you can edit the information that appears on the Songs page for a particular song or replace the downloaded file with another.

To edit the information associated with the song file:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Songs.
- 3 On the Songs page, select the **Edit** icon next to the song that you want to edit information for.
- 4 On the Edit Song page, make changes to the parameters (see Table 90 on page 293).
- 5 After completing all changes, select **Save**.

Table 90. Edit Song Page Parameters

Title	Displays the user-provided song title.
Artist	Displays the name of the musician performing the song.
Album	Displays the name of the album the song is from.
Track Number	Displays the track on the album for the song.
Year	Displays the year the song was recorded.
Genre	Displays the music genre, or category, for the song.
File Upload	Allows you to select the song that you want to upload.
Playlists	Allows you to add or remove the song from playlists.

Deleting a Song

Through the Songs page, you can delete a song from your Nyquist system. If you delete a song that is in a Playlist, the song is automatically removed from the Playlist.

To delete a song:

- 1 On the navigation bar, expand Audio.
- 2 Select Songs.
- 3 On the Songs page, select the **Delete** icon next to the song that you want to delete.
- 4 When prompted, select **Delete**.

Managing Playlists

You can create and manage playlists that contain multiple songs to use for scheduled events and dashboard Audio Distribution entries. You can select a playlist when creating an event. (See section *"Adding an Event" on page 265.*) Specifying the audio program for stations or zones is known as audio distribution.

Viewing Playlists

Through the Playlists page, you can view all playlists available to your Nyquist system and create, delete, and manage a playlist. With the Manage Playlist feature, you can add, delete, or change the order of a playlist's songs.

Play	lists +	0				
					Filter	
	Manage	Name	Description	Scheduled Audio Repeat	Scheduled Audio Sh	uffle
•	F	Spyro Gyra	Show	No	No	

Figure 118. Playlists Page

To view playlists:

- 1 On the navigation bar, expand **Audio**.
- 2 Select **Playlists**.

The Playlists page appears. The following table describes the information that appears on this page:

Table 91. Playlists Page Parameters

Manage	When selected, this option displays the songs that can be dragged and dropped to and from the playlist.
Name	Displays the user-provided name for the playlist. This field can contain a maximum of 40 characters.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Description	When Show is selected, the user-provided description of the play list appears. This field can contain a maximum of 256 characters.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Scheduled Audio Repeat	When enabled, the playlist audio will be repeated after all songs have been played. When disabled, Scheduled Audio will automatically stop after the last song has been played from the playlist. When disabled, a corresponding stop event is not needed when Scheduled Audio is started via the schedule.
	<i>Note:</i> When playlists are being used by the Audio Distribution feature, the Scheduled Audio options are ignored.
Scheduled Audio Shuffle	When enabled, the order in which the songs are played is shuffled. When disabled, the playlist songs will be played in the order that they appear in the playlist.
	<i>Note:</i> When playlists are being used by the Audio Distribution feature, the Scheduled Audio options are ignored.

Creating a Playlist

When you add a playlist, you first create the playlist container and then you use the Manage tool to add songs to the playlist. To add songs to a playlist, you must have access to songs that have been uploaded to your Nyquist server or are available on a USB flash drive inserted into the Nyquist server.

Name:				
Scheduled	Audio Repea	it:		
Yes				
Scheduled	Audio Shuffl	e:		
Yes				
Description	1:			

Figure 119. Add Playlist Page

To add a playlist:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Playlists.
- 3 Select the **Add** icon.
- 4 On the Add Playlist page, complete parameters for this playlist. (See *Table 92, "Add Playlist Parameters," on page 296.*)
- 5 Select Save.

Table 92. Add Playlist Parameters

Name	Displays the user-provided name for the playlist. This field can contain a maximum of 40 characters.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: $! @ $ * ? , .
Scheduled Audio Repeat	When enabled, the playlist audio will be repeated after all songs have been played. When disabled, Scheduled Audio will automatically stop after the last song has been played from the playlist. When disabled, a corresponding stop event is not needed when Scheduled Audio is started via the schedule.
	<i>Note:</i> When playlists are being used by the Audio Distribution feature, the Scheduled Audio options are ignored.

	Table 92. Add Playlist Parameters (Continued)
Scheduled Audio Shuffle	When enabled, the order in which the songs are played is shuffled. When disabled, the playlist songs will be played in the order that they appear in the playlist.
	<i>Note</i> : When playlists are being used by the Audio Distribution feature, the Scheduled Audio options are ignored.
Description	When Show is selected, the user-provided description of the playlist appears. This field can contain a maximum of 256 characters.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: $! @ $ * ? , .

Adding Songs to a Playlist

After you create a playlist, use the Manage tool to add songs to the playlist.

🗐 Manage Playlist 🛛 🧿	
Disney World	
V Cannal B) Save	
Songs	Playlist
⊕	🕂 Hakuna Matata 03:49
Everybody Told Me - Not Sure - 02:43	Supercalifragilisticexpialidocious 02:02
Frozen Mountain 03:33	Make A Man Out Of You 03:18
It's Still Rock & Roll to Me - Billy Joel - 02:57	You're Welcome Cover - Jordan Fisher ft Miranda Lin Manuel - 02-15
Maid with the Flaxen Hair - Richard Stoltzman/Slovak Radio Symphony - 02:50	Beauty and the Beast 02:12
Movin' Out (Anthony's Song) - Billy Joel - 03:30	Evermore 02:52
New York State of Mind - Billy Joel - 06:04	You're Welcome 02:44
Piano Man - Billy Joel - 05:38	Beauty and the Beast Instrumental Medley 04:31
Pink Noise - Bogen Communications, Inc 01:00	Beauty and The Beast Cover - Ariana Grande and John Legend - 04:01
She's Always a Woman - Billy Joel - 03:20	4 Kine The Girl - 02:43
The Longest Time - Billy Joel - 03:38	
The River of Dreams - Billy Joel - 04:07	Part of Your World 03:08
The Way You Look Tonight - Frank Sinatra - 03:20	A Whole New World 02:33
4. Listown Girl - Billy Joel - 03:17	
	Friend Like Me 02:25
We Didn't Start the Fire - Billy Joel - 04:48	I Won't Say I'm In Love 02:11
White Noise - Bogen Communications, Inc 01:00	
You May Be Right - Billy Joel - 04:13	

Figure 120. Manage Playlist Page

To add songs to a playlist:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Playlists.
- 3 On the Playlists page, select the **Manage** icon next to the playlist that you want to add songs to.
- 4 On the Manage Playlist page, drag and drop the song you want to add from the Songs field to the Playlist field.
- 5 After all desired songs have been added to the Playlist, select **Save**.

Changing Song Order in a Playlist

You can use the Manage tool to change the order of songs in a playlist.

To change the song order:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Playlists.
- **3** On the Playlists page, select the **Manage** icon next to the playlist for which you want to change song order.
- 4 On the Manage Playlist page, drag and drop the songs into the order that you want.
- 5 Select Save.

Deleting a Song from a Playlist

You can use the Manage tool to remove a song from a playlist.

To delete a song from a playlist:

- 1 On the navigation bar, expand **Audio**.
- 2 Select **Playlists**.
- 3 On the Playlists page, select the **Manage** icon next to the playlist.
- 4 Drag and drop the song from the Playlist field to the Songs field.
- 5 After all desired changes are completed, select **Save**.

Editing a Playlist

The **Edit** icon allows you to edit the parameters for a playlist. To change the order of songs in a playlist, see *"Adding Songs to a Playlist" on page 297*. To delete a song from a song list, see *"Deleting a Song from a Playlist" on page 298*.

To edit a playlist:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Playlists.
- 3 Select the **Edit** icon next to the playlist.
- 4 On the Edit Playlist page, make desired changes to the parameters. (For more information about the parameters, see *Table 92, "Add Playlist Parameters," on page 296*.)
- 5 Select Save.

Deleting a Playlist

You can delete a playlist provided the playlist is not being used with an I/O Controller Input or Output Rule.

To delete a playlist:

- 1 On the navigation bar, expand **Audio**.
- 2 Select **Playlists**.
- 3 Select the **Delete** icon next to the playlist.
- 4 When prompted, select **Delete**.

Using Internet Radio Services

Through the Internet Radio Services, you can access online content, such as music services and Internet radio, using airable and SoundMachine. With this service, you can listen to live radio stations and add media catalogs and music services without updating devices or software.

You can navigate through the catalog of radio stations by:

- Genre
- Language
- Location
- Quality
- Popularity

You can also search the catalog for particular artists or songs.

Use of the Internet Radio Services feature requires the Nyquist server to have Internet access. It also depends on the permissions assigned to the role with which you are associated.

4 Audio	♥ View
Announcements	+ Create Delete / Edit Moview
Emergency Announcements	🖻 Delete 🖉 Zdit
4) Normal Announcements	🖻 Delete 🖉 Z Edit
Playlists	+ Create Create Celete Celete Manage View
Necordings	Delete View
O Songs	+ Create Pelete / Edit View
් Tones	+ Create 🔒 Delete 🖉 Edit 💿 View
ন Internet Radio Services	+ Create Pelete Fdit View
E Credentials	+ Create R Delete Z Edit View

Figure 121. Internet Radio Services Permissions

For information about assigning permissions to roles, see "Assigning and Editing Permissions" on page 244.

Viewing Internet Radio Services

If you have **View** permission for the Internet Radio Services, you can view a list of Internet radio stations that can be accessed through your system as well as information about each station. Through the Internet Radio Services page, you can also select to manage credentials for services such as SoundMachine. (See "Managing Credentials" on page 303.)

۱ In	ternet Radio Services 🛙 🖾 Credentials 📀				
Source	êS + Add Source				
			Filte	r.	
	Station 4	Codec	Sample Rate	Mono/Stereo	Bit Rate
Û	SM Eagles	MP3			192kb/s
İ	LiveATC KBED Laurence G Hanscom Field Airport Tower	MP3	16000 Hz	Mono	24 kb/s
Û	Money Matters Boston	MP3	44100 Hz	Stereo	128 kb/s
Û	WBUR 909 FM	MP3	22050 Hz	Mono	48 kb/s

Figure 122. Internet Radio Services View

To view Internet Radio Services added to your system:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.

The following parameters appear for each source configured for your Nyquist system:

Table 93. Internet Radio Services

Station	Displays the icon, name, and description of the radio station.	
Codec	Displays how the streaming media is compressed and decompressed.	
Sample Rate	Displays the number of samples of audio carried per second.	
Mono/Stereo	Displays if the signal is being transmitted by a single channel (mono) or by two channels (stereo).	
Bit Rate	Displays the bit rate used to transmit the streaming media.	

Adding a Source

You can select to add an Internet radio source or a service, such as SoundMachine. The screen that appears when you select **Add Source** also allows you to manage credentials or sign up for SoundMachine.

Ninternet Radio Services	E Credentials
Sources	
Radio	
	Sign Up

Figure 123. Add Source Page

To add a source:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 On the Internet Radio Services window, select **Add Source**.
- 4 Select from the list of Sources.
- 5 If you select **Radio**, do the following:
 - a) Select how you want to select a source. Options are:

Table 94. Radio Source Parameters

Local stations	Select to view a list of stations near your location.	
Popular stations	Select to view stations considered to be the most popular.	
Trending	Select to view the stations that are gaining momentum.	
High quality	Select to view the stations with a high sound quality.	
New stations	Select to filter the list of stations by new stations added to Internet Radio Ser- vices.	
Filter	Select to filter the list of stations by Location , Language , or Genre .	
Search	Select to enter a search term.	

- b) When the list of stations that meet the selected criteria appears, select the station that you want.
- c) Select Add Source for each source (aac or mp3) that you want.
- 6 If you select **SoundMachine**, do the following:
 - a) Select how you want to open a source. Selections are:

Table 95. SoundMachine Parameters

- Genres Displays a list of genres, such as **Blues** and **Pop**, which you can select to drill down genre choice even further. Displays categories for stations, such as Country, which you can select to drill Stations down to select a specific album or song. **My Stations** Displays radio stations that you added through the SoundMachine website. Mixes Displays categories of stations that combine, or mix, music genres. Mixes can be created using your SoundMachine account and SoundMachine user interface. All Mixes that you create in your SoundMachine account will be available in the Mixes list. Mixes allow you to select albums and songs to include in the Mix. **Music Selection** Displays the Schedules that have been created through SoundMachine. (See "Using SoundMachine Music Selection Schedules" on page 305.) **Schedules** Schedules allow the playing of specific stations or mixes during specific times of the day. For example, you can play soft jazz music during morning hours and select a different genre mix for mid-day. When you create a Music Selection Schedule, you cannot have any empty time periods or Audio Distribution will stop when the empty time period is encountered. The Music Selection Schedules that you create appear as Line-Input/Playlist/Source selections for Audio Distribution. (See "Using Audio Distribution" on page 392.) Select to log out of SoundMachine. Logout
 - b) Drill down until you can select a specific album or song.
 - c) Select Add Source.

Deleting a Source

To delete a source:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 On the Internet Radio Services window, select the **Delete** icon next to the source that you want to delete.
- 4 When prompted, select **Delete**.

Managing Credentials

If you have been assigned permissions, you can view, add, edit, and delete login credentials needed to access the SoundMachine service.

For information about roles and permissions, see "Assigning and Editing Permissions" on page 244.

Viewing Credentials

The Credentials list allows a quick view of the users who have login credentials.

To view the Credentials list:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 Select Credentials.

The Credentials list displays the following information:

	Table 96. Credentials Parameters	
Name	Displays the name of the service, such as SoundMachine.	
Enabled	Indicates if the account is enabled for this service.	
Username	Provides the Username for the account.	

Adding Credentials

You can create a user account that allows a user to use an Internet Radio Service, such as SoundMachine. You can also use the Add Credential page to sign up for SoundMachine.

🛤 Add Credential 👩	
Name: () SOUNDMACHINE - Username: ()	SOUNDMACHINE Sound, Designed for Business
Password: ()	sign op
No Save	

Figure 124. Add Credential
To create an account:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 Select Credentials.
- 4 Select the Add icon.
- 5 Complete the following parameters:

Table 97. Add Credential Parameters

Name	Use the drop-down arrow to select the name of the service.
Username	Enter the username for this account.
Password	Enter the password for this account.
Enabled	Select Yes to enable this account.

Edit Credential

If you have the appropriate permissions, you can edit a user's credentials for accessing SoundMachine, including viewing or changing a user's password and enabling or disabling their use of the service.

Edit Credential Edit	0
Name: ()	
Username: 🚺	
]
Password: 🚺	
	Show Saved Password
Enabled: 🚺	
Yes	
🗙 Cancel 🕒 Save	

Figure 125. Edit Credential

To edit an account:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 Select Credentials.
- 4 Select the **Edit** icon next to the account that you want to edit.
- 5 Make the desired changes. (See *Table 98*.)

Table 98. Edit Credentials Parameters

Name	Use the drop-down arrow to select the name of the service.
Username	Enter the username for this account.
Password	Enter the password for this account.
	Select Show Saved Password to view an existing password for the account being edited.
Enabled	Select Yes to enable this account.

Delete Credentials

You can delete a user's credentials to access SoundMachine.

To delete an account:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 Select Credentials.
- 4 Select the **Delete** icon next to the account that you want to edit.
- 5 When prompted, select **Delete**.

SoundMachine Sign Up

You can sign up for SoundMachine via the Add Source (see "Adding a Source" on page 300) or Add Credential (see "Adding Credentials" on page 303) windows.

To sign up for SoundMachine:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Internet Radio Services.
- 3 Do one of the following:
 - Select Add Source.
 - Select Credentials and then select the Add icon.
- 4 Select Sign Up.
- 5 When the SoundMachine and BOGEN page appears, follow the on-screen instructions.

Using SoundMachine Music Selection Schedules

Schedules that you create using the SoundMachine web-based user interface appear as **Music Selection Schedules** in the Nyquist Admin Web UI. You can select a Music Selection Schedule to play as Audio Distribution. (See *"Using Audio Distribution" on page 392*.) When you create a Music Selection Schedule, you cannot have any empty time periods or Audio Distribution will stop when the empty time period is encountered.

You cannot name a Music Selection Schedule using all special characters; the name must contain at least one alpha or numeric character or the Music Selection Schedule will not appear.

Scheduled Audio takes priority over a Music Selection Schedule. For information about Scheduled Audio, refer to "Understanding Event Settings" on page 266.

Creating an Audio Distribution

udio Distrib	ution 🛨					
L	.ine-Input/Playlist/Source	DTMF Code	Zones	Stations	Description	
	Playlist 1	5	Show	Show	This is my description. This is my description	
	Playlist 2	6	Show	Show	This is my description. This is my description	

Figure 126. Audio Distribution Portion of Dashboard

To use the Audio Distribution feature, you must have the proper CoS configuration on your station. See *"Editing CoS Parameters for a Station" on page 95* if you need to change your station's CoS.

¢°	Cos	S Confiç	guration +	?				
		Name	Call in Level	Zone Paging	All-Call Paging	Emergency All-Call	Inter-Facility Call/Page	Audio Distribution
	a	Admin	Urgent+Emergency	Yes	Yes	Yes	Yes	Yes
	Ē	Station	Normal+Emergency	No	No	No	No	No
	ê	No Privs	Normal+Emergency	No	No	No	No	No
	a	Chrome	Normal+Emergency	Yes	Yes	No	No	No
	Û	tomtest	Normal+Emergency	Yes	Yes	Yes	Yes	Yes

Figure 127. Audio Distribution Set in CoS

You must also be assigned a Role that has permissions to create Audio Distribution.

₿ Dashboard	• View
Maps Panel	+ Create Create Create View
Calling/Paging Panel	View
O Directory Button	View
O Dial Pad Button	View
O Prepend Page Button	View
O Routines Button	View
O Manage Check-In Button	View
Multi-Site Calling/Paging Panel	View
Tones/Announcements Panel	View
O Display Message Button	View
O Remove Message Button	View
Week Panel	View
Audio Distribution	+ Create a Delete Fdit View
4) Enable/Disable Audio Button	@ View

Figure 128. Role Permissions for Audio Distribution

Line-Input/Playlist/Source:	
Line-Input -	
Zones:	
Add Zones	
Stations:	
Add Stations	
Amplifiers/Matrix Mixers:	Input Channel:
Description:	

Figure 129. Create an Audio Distribution

To create an Audio Distribution:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Select the Add icon next to Audio Distribution.
- 3 Complete the Create an Audio Distribution parameters (see *Table 99*).

Note: If you are using at least one Nyquist Matrix Mixer Pre-Amp, Line-Input appears as a Line-Input/Playlist/Source option.

- 4 Select the **Zones** and **Stations**.
- 5 If you select Line-Input as the Input Source/Playlist, select the Amplifiers/Matrix Mixers and Input Channel.
- 6 If you select a playlist and want to shuffle the song order, set **Shuffle** to **Yes**.
- 7 Select Save.
- 8 To end the playing of audio, select the **Stop** icon next to the playlist.

Table 99. Create an Audio Distribution Parameters

Line-Input/ Playlist/Source	Use the Line-Input/Playlist/Source drop-down menu to select the audio source.
	Audio sources can include a line-input from an MMPA or amplifier, available playlists previously created for your system, or Internet radio station sources.
Zones	Select All Speakers or a specific zone or zones where you want the audio to play.
Stations	Select the stations where you want the audio to play.
Amplifiers/Matrix Mixers	Select the Amplifier or Matrix Mixer to use as the audio source.
Input Channel	Select the Input Channel to be used as the audio source.
Shuffle	If you select a playlist and want to shuffle the song order, set Shuffle to Yes .
Description	Add a description for the Audio Distribution. For example, you may want to note that the audio is for lunchtime.

Starting and Stopping Audio Distribution

Starting and stopping Audio Distribution can be done manually (via the Nyquist web interface dashboard, the NQ-T1100 or NQ-ZPMS Admin Phone's Audio Distribution menu, or the Zone Control feature) or automatically (via scheduled events, NQ-E7010 I/O controller input-contact closure rules, or Routines).

A list of existing Audio Distributions appears on the dashboard. An existing Audio Distribution can be edited or deleted, provided it is not currently playing, by selecting the **Edit** or **Delete** icon next to the Audio Distribution.

Audio Dis	tribution	+				
	Line-Inpu	ut/Playlist/Source	Zones	Stations	Description	
	EEP	100FM - 100 Deep	Show	Show	hello	
	CEEP	100FM - 100 Deep	Show	Show		
	00	A2300 - 1 - 2CH - Ext: 0194 Ch: Channel 1 (1)	Show	Show		
	SM	ACOUSTIC POP	Show	Show		2
	SM	ACOUSTIC POP	Show	Show		
		Aedio Distribution VolPs	Show	Show		
		Audio Distribution AMPs 2Ch	Show	Show		

Figure 130. Audio Distribution Play Icon

To manually start and stop Audio Distribution:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Select the **Play** icon next to the Audio Distribution that you want to start.
- 3 If a non-blank **Audio Distribution Password** has been configured (see *Table 19, "Edit System Parameters Page," on page 64*), a keypad will be displayed and an audio prompt will request either the audio distribution password value or a confirmation (i.e., the digit 1).
- 4 The selected audio distribution will start.
- 5 To end the playing of audio, select the **Stop** icon next to the playlist.
- 6 If a non-blank **Audio Distribution Password** has been configured (see *Table 19, "Edit System Parameters Page," on page 64*), a keypad will be displayed and an audio prompt will request either the audio distribution password value or a confirmation (i.e., the digit 1).
- 7 The selected audio distribution will stop.

Name:					
Lunch Ti	ne Music				
Signal Tim	e:				
Hour:	Minute:	Second:	_		
11 •	30 💌	0	,		
Zones:					
×Zone-1	20: Zone 20 -	VoIPs			
× Zone-1	32: Zone 32 - /	Amplifiers 2	Ch	Clear	Add All
Tone: 1-Second Scheduled	Audio:	Ŧ			
Tone: 1-Second Scheduled None -	Audio:	•			
Tone: 1-Second Scheduled None - None	Audio:	¥			
Tone: 1-Second Scheduled None - None Start Li	Audio:	T			
Tone: 1-Second Scheduled None ← None Start Li Stop Lin	Audio: ne-Input ne-Input	•			
Tone: 1-Second Scheduled None - None Start Li Stop Lin Stop PI	Audio: le-Input le-Input aylist	*			
Tone: 1-Second Scheduled None → None Start Li Stop Pi Stop Pi Stop 10	Audio: Ie-Input Ie-Input aylist OFM - 100 De	• ep (Z: Zone	32 - Amp	bilifiers 2Ch)
Tone: 1-Second Scheduled None - None Start Li Stop Lin Stop PI Stop CI	Audio: ne-Input ne-Input aylist 0FM - 100 De ill (Z: Zone 20	▼ ep (Z: Zone) - VoIPs)	32 - Amp	lifiers 2Ch)
Tone: 1-Second Scheduled None → None Start Li Stop Pl Stop Pl Stop Cl Aedio C	Audio: ne-Input ne-Input aylist 0FM - 100 De ill (Z: Zone 20 istribution Vol	• ep (Z: Zone) - VolPs) Ps	32 - Amp	lifiers 2Ch)
Tone: 1-Second Scheduled None → None Start Li Stop Lin Stop 10 Stop 10 Stop Cl Aedio C Audio C	Audio: ne-Input ne-Input aylist 0FM - 100 De istribution Vol istribution AM	• ep (Z: Zone) - VoIPs) Ps Ps 2Ch	32 - Amp	lifiers 2Ch)
Tone: 1-Second Scheduled None → None Start Li Stop Li Stop Cl Stop Cl Aedio C Audio C	Audio: ne-Input ne-Input aylist 0FM - 100 De ill (Z: Zone 20 istribution Vol istribution AM istribution AM	• ep (Z: Zone) - VoIPs) Ps Ps 2Ch Ps 4Ch	32 - Amp	lifiers 2Ch)
Tone: 1-Second Scheduled None → None Start Li Stop Pl Stop Pl Stop Cl Aedio C Audio C Audio C	Audio: ne-Input ee-Input aylist 0FM - 100 De istribution Vol istribution AM istribution AM	v ep (Z: Zone) - VoIPs) Ps Ps 2Ch Ps 4Ch Bs	32 - Amp	lifiers 2Ch)

Figure 131. Adding Scheduled Audio

To automatically schedule audio as part of an event, follow the steps for creating an event, ensuring that you set the **Scheduled Audio** for the playlist, Matrix Mixer Pre-Amp channel, or amplifier to be used for this event. For more information, see "Adding an Event" on page 265.

You also can select to stop the Scheduled Audio by selecting Stop Playlist or Stop Line-Input.

If an airable/SoundMachine source is selected, the Scheduled Audio list includes selections to start or stop the audio stream. This list only includes airable/SoundMachine selections that apply to the specific zone. If the Audio Distribution zone selected includes a time zone and another zone type, such as Paging, that is not for time, the audio distribution does not appear in this **Scheduled Audio** list.

Automatically Starting a Routine When Audio Distribution is Started

Name: 🚺				
New Trigger				
Enabled: 🚺				
Yes				
Type: 🚺				
911				
l				
911	^			
Alarm				
All-Call				
Announcement				
Audio-Dist				
Audio-Disabled				

Figure 132. Adding Audio-Dist Trigger

The Routines feature lets you automatically start one or more actions using Audio Distribution (Audio-Dist) as a trigger. For example, maybe you want a bell or tone to sound in the kitchen when the lunch-time music begins, alerting kitchen staff that orders will soon be coming. To do this, you can create a routine, add an **Audio-Dist** trigger **Type**, and then create an action that plays a tone. See "Adding a Routine" on page 440 for more information about creating a routine.

Using Routines to Start Audio Distribution

Fedit Action -	Lunch Time Music 🛛 🔞
Name: 🚯	
New Action	
Enabled: 📵	
Yes	
Туре: 🚺	
No-Action	
Audio-Dist-Start Audio-Dist-Stop	•
Check-In	
Check-Intercom	
Dash-Delete	
Dash-Text	•
🗙 Cancel 🖺 Sav	e

Figure 133. Audio Distribution Actions

You can create a routine that uses an action of either **Audio-Dist-Start** to start audio distribution or **Audio-Dist-Stop** to stop audio distribution.

You can also allow third-party systems, such as access control systems, to start a routine via I/O Controller Input Contact closure, or you can remotely start a routine using the Routines API.

For more information about using routines, see "Using Routines" on page 416.

Other Features and Audio Distribution

Audio Distribution will be paused automatically by higher priority feature activation (for example, All-Call Page, Paging, Tones) and will automatically resume when the higher priority feature is finished.

Audio Distribution volume to all speakers can be changed by setting **Audio Distribution Cut Level** (dB), available in **System Parameters**. The Audio Distribution volume to zones can be changed by setting **Audio Distribution Cut Level (dB)** in **Edit Zone** or using the Zone Control feature (see *"Zone Control: Volume and Audio Distribution Panel" on page 339*). For information about editing a zone, see *"Editing Zone Configuration" on page 205*.

All Nyquist stations are preprogrammed to receive Audio Distribution to All Stations. To disable Audio Distribution to a specific station, change **Multicast Audio Distribution** to **No** on the Edit Station page (see *"Editing Station Configuration Settings" on page 141*).

Any Admin web UI user may stop the Audio Distribution if his or her station has the **Audio Distribution** CoS Configuration parameter enabled.

Scheduled Audio has a higher priority than Audio Distribution. If you are playing Audio Distribution and an event with Scheduled Audio interrupts, the Audio Distribution briefly plays between the tone and the Scheduled Audio.

A playlist will continue playing until manually stopped.

Audio Distribution Status

When you start Audio Distribution, a popup window appears letting you know that Audio Distribution was enabled.



Figure 134. Audio Distribution Enabled

A popup window also appears when you stop Audio Distribution.



Figure 135. Audio Distribution Disabled

When Audio Distribution is enabled, an informational message appears in the Messages window of the Admin Web UI dashboard, indicating the song that is currently playing and to which speakers (all or selected) and to which zones audio is playing.



Figure 136. Audio Distribution Status

In the **Audio Distribution** section of the dashboard, the **Stop** icon will be displayed next to an audio distribution that is playing. Selecting the **Stop** icon will stop the audio distribution.

In the **Audio Distribution** menu of NQ-T1100 and NQ-ZPMS Admin phones, audio distributions that are currently playing are prefixed with "(P)" to indicate that the audio distribution is playing.

Using the Admin Phone

If you are using a Nyquist NQ-T1100 or NQ-ZPMS VoIP Phone as an Admin Phone, you can start and stop a specified Audio Distribution or stop all Audio Distributions by selecting the phone's Audio Distribution menu.



Figure 137. NQ-T1100 Admin Phone Audio Distribution Display

102 🔁		10:
	Audio Distribution (entries marked (P) are playing; select entry to stop playing)	
	Stop ALL Audio Distribution 980*0	
	Beethoven [+] 987*4	
	WBUR 909 FM [All Speakers] 987*3	

Figure 138. NQ-ZPMS Admin Phone Audio Distribution Display

For more information, refer to the Nyquist NQ-T1100 or NQ-ZPMS's Admin Phone User Guide.

Using Announcements

Announcements are prerecorded audio files that can be scheduled to play during specific times and in specific zones, played manually via the dashboard or DTMF codes, or played via routine actions.

Announcements can be either normal announcements, such as prerecorded announcements about upcoming site events, or emergency announcements, such as prerecorded shelter-in-place announcements that can be played during such events as tornado warnings or active shooter scenarios.

Note: Permissions to edit or delete announcements are granted separately for Emergency Announcements versus Normal Announcements. For example, some users may need to modify daily announcements, but not emergency announcements. For details on modifying permissions for a role, see *"Assigning and Editing Permissions" on page 244.*

Announcements can also precede a page.

Through the Nyquist web-based UI, you can add, edit, delete, and play announcements.

Announcements, Facilities, Zones, and Priorities

You can select to play an announcement to a zone, to all speakers, or to one or more facilities. The Nyquist system also supports the simultaneous playing of multiple announcements to different zones.

However, there are some set rules and priorities that govern how and when announcements play. For example, announcements played via an I/O controller can be played to a selected zone but not to **All Speakers**.

When you attempt to play a non-emergency, or **Normal**, announcement to a zone, you will receive a busy signal if any of the following are true:

- An announcement, page, or recorded page is being played on the zone.
- An announcement is being played to **All Speakers**.
- An Alarm, Tone, All-Call, or Emergency All-Call is being played.

A **Normal** announcement plays to **All Speakers** only if all zones are idle and no higher level audio is playing. You will receive a busy signal if any of the following are true:

- A Normal or Emergency announcement is already playing to All Speakers.
- An announcement is already playing to a zone.
- A page or queued page is already playing to a zone.
- An Emergency-All-Call, All-Call, Alarm, or Tone is already playing.

If you attempt to play an emergency announcement to a zone or to **All Speakers**, you will receive a busy signal if any of the following are true:

- An emergency announcement is already playing to the zone or to All Speakers.
- An Emergency All-Call is already playing.

If you attempt to play an emergency announcement to a zone or to **All Speakers** that is already playing a non-emergency announcement, an alarm or tone, a page or queued page, or an All-Call, the emergency announcement takes priority. A currently playing non-emergency announcement, alarm or tone, page or queued page, or All-Call will stop playing.

An **Emergency** announcement can be played on a zone while a Normal announcement plays on a different zone. Multiple **Emergency** and **Normal** announcements can be played to different zones (but not to **All Speakers**).

Scheduled Announcement Rules

Scheduled announcements follow slightly different rules. When you schedule an announcement, you can set the Maximum Wait Seconds parameter to indicate how many seconds to wait for an active page or announcement to finish before giving up.

For example, if the Maximum Wait Seconds is set to 120 seconds, when the system attempts to play the announcement at the scheduled time, if a page or announcement is already actively using the Zone, the scheduled announcement will wait up to 120 seconds for the Zone to become idle. If the Zone becomes idle in less than 120 seconds, the system will play the announcement. If the Zone is still busy after 120 seconds, the scheduled announcement will not play.

Facility Announcement Priorities

When making announcements to remote facilities, there is the possibility that one or more facilities may be unable to make the announcement due to higher priority features that are currently executing at that facility.

When you attempt to play a non-emergency, or **Normal**, announcement to remote facilities, you will receive a busy signal for any of the following scenarios.

- The local facility is targeted and it is executing a higher priority feature.
- Only one remote facility is targeted and it is executing a higher priority feature.

For all other scenarios, you will hear "Announcement on" and any facilities that were unable to play the announcement will record a busy status in the Call Details Record. This implies that when the local facility and one or more remote facilities are targeted, the busy signal and "Announcement on" indicators reflect the status of the local facility only; the announcement may or may not have played at the remote facilities.

Setting Up Facility Announcements

For announcements that will be played across remote facilities, ensure that the announcement has been added to each remote facility and that each has the same DTMF Code.

Because remote facility announcements cannot be stopped the same way as local announcements, announcements configured for continuous play (i.e., "Times to Play" property equal to zero) should not be used as facility announcements.

Tip: If you wish to play an announcement continuously on the local facility, yet use the same announcement remotely via Facility Announcements, configure two versions of the announcement at each facility: one for continuous play (i.e., "Times to Play" equals zero) and one for non-continuous play (i.e., "Times to Play" is non-zero). Ensure the DTMF code for the non-continuous announcements have the same value at each facility. Only the non-continuous version of the announcement will be displayed for play to remote facilities.

Recording Announcements

To record an announcement:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Select the **Dial Pad** icon.
- 3 Dial *990 and press Send.
- 4 Follow the voice prompts to record your announcement.

Alternatively, the NQ-T1100 Admin Phone can be used by selecting **Record Announcement** in the phone's **Announce** menu, or the NQ-ZPMS Admin Phone can be used by selecting **Record Announcement** in the phone's **Announcements** menu.

After you finish recording an announcement, you can use the Announcements page to update the new announcement's name, DTMF code, and other parameters.

Note: When you record an announcement by dialing *990 or by selecting **Record Announcement** on the Admin phone's **Announce** menu, the initial DTMF code for the recorded and saved announcement will be set to the announcement's row ID. You can change the DTMF code after the announcement is saved by editing the announcement in the web interface **Announcements** view.

The saved announcement has **Play to Zone** set to blank (no zone selected). This means that when you play an announcement via an IP phone **Announcement** menu selection, you will be asked to enter a zone number (where 0 = All Speakers). You can define a permanent zone number for the saved announcement by updating **Play to Zone** after the recorded announcement has been saved.

Adding an Announcement

You can upload an announcement, which can be an audio recording, such as a message or tone. The announcement can be scheduled to play at certain times and in certain zones.

Through the Add Announcement page, you can also enter text to be converted into speech, provided your Nyquist license allows this option.

N Add Announcement	
File Upload Text-to-Speech	
Name:	
Type:	
Normal -	
DTMF Code:	
File Upload:	
Choose a file 🖆 Choose File	
Times to Play: 1 🚯	
- •	
Time Between Repeats (seconds): 1.0	
Play to Zone: 1	
·	
Description:	
	_//
🗙 Cancel 📳 Save	

Figure 139. Add Announcement Page

To upload an announcement file:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Announcements.
- 3 On the Announcements page, select the **Add** icon.
- 4 Complete the parameters on the Add Announcement page. (See *Table 100, "Add Announcement Page Parameters," on page 319.*)
- 5 Select Save.

Table 100. Add Announcement Page Parameters

File Upload / Text-to-Speech	Select whether this announcement will play an audio clip or use Text-to- Speech to convert the specified text into speech.		
Name	Provide a name for the announcement.		
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: $! @ $ * ? , .$		
Туре	Use the drop-down menu to select if the announcement is Normal or Emergency.		
DTMF Code	Provide a DTMF code for this announcement to use when manually start- ing the announcement from an Admin Phone. The number can have from 1 to 10 digits. You cannot assign the same DTMF code to multiple announcements.		
	<i>Note:</i> When you record an announcement by dialing *990 or by selecting Record Announcement on the Admin phone's Announce menu, the initial DTMF Code for the recorded and saved announcement will be set to the announcement's row ID. You can change the DTMF Code after the announcement is saved by editing the announcement in the web interface Announcements view.		
	<i>Note:</i> The saved announcement has Play to Zone set to blank (no zone selected). This means that when you play an announcement via an IP phone Announcement menu selection, you will be asked to enter a zone number (where 0 = All Speakers). You can define a permanent zone number for the saved announcement by updating Play to Zone after the recorded announcement has been saved.		
File Upload	Select Choose File , navigate to the audio file for this announcement, and then select the file. Nyquist supports both WAV and MP3 file formats.		
	Note: This option appears only if you have selected the File Upload tab.		
Times to Play	Select the number of times the announcement will play. Parameters are between 0 and 10.		
	<i>Note</i> : A setting of 0 results in the playing continuously until it is manually stopped via the dashboard or a Stop-Announcement routine action.		
	<i>Note:</i> Announcements configured for continuous playback should not be used with the Facility Announcement feature.		
Time Between Repeats (seconds)	Select the time in seconds between replaying of the announcement. You can select between 0.5 and 5.0 in 0.5 increments.		
Text-To-Speech	Type the text that you want converted to speech for this announcement. Ensure that the File Upload parameter is blank. The system will generate a .wav file.		
	Note: This option only appears if your Nyquist license allows this option.		

Tal	ble 100. Add Announcement Page Parameters (Continued)
Play to Zone	Select either All Speakers or a specific zone for this announcement to play.
	<i>Note:</i> If the Type for the station is set to Admin Web Interface , Admin Phone , IP Phone , Analog Phone , or Mobile Device and an Announcement Zone was set for the station, the Announcement Zone overrides the Play to Zone .
Description	Provide a description of the announcement.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: $! @ $ * ? , .$

Using SSML for Text-to-Speech Entries

You can use Speech Synthesis Markup Language (SSML), an XML-based markup language for speech synthesis applications, when typing text that you want converted to speech for announcements. You can use SSML formatting to insert pauses, adjust speech rate, adjust voice pitch, adjust output volume, add emphasis to speech, or spell words phonetically. The following table provides examples of SSML formats that can be used when adding announcements.

Insert Silence/Pauses	 This is not <break strength="none"></break> a pause. This is a <break strength="x-weak"></break> phrase break. This is a <break strength="weak"></break> phrase break. This is a <break strength="medium"></break> sentence break. This is a <break strength="strong"></break> paragraph break. This is a <break strength="x-strong"></break> paragraph break. This is a <break time="3s"></break> three second pause. This is a <break time="4500ms"></break> 4.5 second pause. This is a <break></break> sentence break.
Adjust Speech Rate	 I am now <prosody rate="x-slow">speaking at half speed.</prosody> I am now <prosody rate="slow">speaking at 2/3 speed.</prosody> I am now <prosody rate="medium">speaking at normal speed.</prosody> I am now <prosody rate="fast">speaking 33% faster.</prosody> I am now <prosody rate="x-fast">speaking twice as fast</prosody> I am now <prosody rate="default">speaking at normal speed.</prosody> I am now <prosody rate="default">speaking at normal speed.</prosody> I am now <prosody rate=".42">speaking at 42% of normal speed.</prosody>
	 I am now <prosody rate="2.8">speaking 2.8 times as fast</prosody> I am now <prosody rate="-0.3">speaking 30% more slowly.</prosody>

Table 101. SSML Formats for Text-to-Speech Entries

• I am now <prosody rate='+0.3'>speaking 30% faster.</prosody>

Table 101. SSML Formats for Text-to-Speech Entries (Continued)

Adjust Voice Pitch	 <prosody pitch="x-low">This is half-pitch</prosody>
	<pre>• <prosody pitch="low">This is 3/4 pitch.</prosody></pre>
	 <prosody pitch="medium">This is normal pitch.</prosody>
	 <prosody pitch="high">This is twice as high.</prosody>
	 <prosody pitch="x-high">This is three times as high.</prosody>
	 <prosody pitch="default">This is normal pitch.</prosody> <prosody pitch='-50%'>This is 50% lower.</prosody
	<pre>• <prosody pitch="+50%">This is 50% higher.</prosody></pre>
	 <prosody pitch="-6st">This is six semitones lower.</prosody>
	 <prosody pitch="+6st">This is six semitones higher.</prosody>
	 <prosody pitch="-25Hz">This has a pitch mean 25 Hertz lower.</prosody>
	 <prosody pitch="+25Hz">This has a pitch mean 25 Hertz higher.</prosody>
	 <prosody pitch="75Hz">This has a pitch mean of 75 Hertz.</prosody>
Adjust Output Volume	<pre>• <prosody volume="silent">This is silent.</prosody></pre>
	<pre>• <prosody volume="x-soft">This is 25% as loud.</prosody></pre>
	 <prosody volume="soft">This is 50% as loud.</prosody>
	 <prosody volume="medium">This is the default volume.</prosody>
	 <prosody volume="loud">This is 50% louder.</prosody>
	 <prosody volume="x-loud">This is 100% louder.</prosody>
	 <prosody volume="default">This is the default volume.</prosody>
	<pre>• <prosody volume="-33%">This is 33% softer.</prosody></pre>
	<pre>• <prosody volume="+33%">This is 33% louder.</prosody></pre>
	 <prosody volume="33%">This is 33% louder.</prosody>
	 <prosody volume="33">This is 33% of normal volume.</prosody>
Add Emphasis to	• This is <emphasis level="strong">stronger</emphasis> than the rest.
Speech	 This is <emphasis level="moderate">stronger</emphasis> than the rest.
	 This is <emphasis level="none">the same as </emphasis> than the rest.
Spell Words Phonetically	You say <phoneme ph="t ah0 m ey1 t ow0">tomato</phoneme> , I say <phoneme ph="t ah0 m aa1 t ow0">tomato</phoneme>

Viewing Announcements

Through the Announcements page, you can view a list of all announcements that are available for scheduling, delete an announcement, and select to edit or add an announcement.

4)	Ann	ouncemen	ts 💽	0							Filter
		Name (Type 🍵	DTMF Code	Creation Date/Time	Created By	Times to Play	Time Between Repeats (seconds)	Play to Zone	Description	Playback
	â	Lockdown Alert	Emergency	1	Aug 29, 2018 - 7:26am	0	Continuously	1.0	20	Show	► 0:00 / 0:04
	8	Weather Alert	Emergency	2	Aug 29, 2018 - 7:26am	0	Continuously	1.0	All Speakers	Show	► 0:00 / 0:06 ● ● ● E
	8	Noise	Normal	3	Sep 11, 2018 - 11:37am	038	Continuously	1.0	90	Show	► 0:00 / 0:08 ● ● ► ►
•	ß	Nef Anyo	Normal	4	Sep 11, 2018 - 11:41am	038	Continuously	1.0	20	Show	► 0:00 / 0:07

Figure	140.	Announcements	Page
		/	

To view a list of all announcements that are available for scheduling:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Announcements.

The following parameters appear for each announcement file:

Schedule Announcements	Browses to the Schedule Announcements page (see "Using the Schedule Announcements Feature" on page 273).		
Name	Displays the user-provided name of the announcement file.		
	<i>Note:</i> Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .		
Туре	Displays whether the announcement is a Normal or an Emergency announcement.		
DTMF Code	Displays the DTMF code used to manually start the announcement via the dashboard Dial Pad or IP phone keypad.		
Creation Date/Time	Displays when the announcement was created.		
Created By	Displays the extension that is to be considered the source of the announcement for CoS considerations.		
Times to Play	Displays the number of times the announcement will play. This number can range from 0 through 10.		
	<i>Note:</i> A setting of 0 results in the announcement playing continuously until it is manually stopped via the dashboard.		
	<i>Note</i> : Announcements configured for continuous playback should not be used with the Facility Announcement feature.		

	Table 102. Announcements Page Parameters
Times Between Repeats (seconds)	Displays the time in seconds before replaying the announcement.
Play to Zone	Displays either All Speakers or a specific zone for this announcement to play.
	<i>Note</i> : If the Type for the station is set to Admin Web Interface , Admin Phone , IP Phone , Analog Phone , or Mobile Device and an Announcement Zone was set for the station, the Announcement Zone overrides the Play to Zone .
Description	Provides a description of the announcement.
	<i>Note:</i> Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Playback	Allows you to preview the announcement. Selecting the Menu icon also allows you to download and save the announcement or adjust the pre- view playback speed.

Editing Announcements

From the Edit Announcement page, you can edit an audio file's parameters such as times to play.

To edit an announcement:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Announcements.
- 3 On the Announcements page, select the **Edit** icon next to the announcement that you want to edit.
- 4 Make the desired changes (see *Table 103 on page 324*).
- 5 Select Save.

Table 103. Edit Announcement Page Parameters

Name	Displays the user-provided name of the announcement file.
	<i>Note:</i> Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Туре	Indicates if the announcement is a Normal or an Emergency announcement.

Table 103. Edit Announcement Page Parameters (Continued)

DTMF Code	DTMF code for this announcement to use when manually starting the announcement from an Admin Phone. The number can have from 1 to 10 digits. You cannot assign the same DTMF code to multiple announcements.
	<i>Note:</i> When you record an announcement by dialing *990 or by selecting Record Announcement on the Admin phone's Announce menu, the initial DTMF Code for the recorded and saved announcement will be set to the announcement's row ID. You can change the DTMF Code after the announcement is saved by editing the announcement in the web interface Announcements view.
	The saved announcement has Play to Zone set to blank (no zone selected). This means that when you play an announcement via an IP phone Announcement menu selection, you will be asked to enter a zone number (where 0 = All Speakers). You can define a permanent zone number for the saved announcement by updating Play to Zone after the recorded announcement has been saved.
Created By	Displays the number for the station used to create or download the announcement.
	<i>Note</i> : This field cannot be edited and only indicates which station created the announce- ment.
Times to Play	Select the number of times the announcement will play. Parameters are between 0 and 10.
	<i>Note</i> : A setting of 0 results in the playing continuously until it is manually stopped via the dashboard.
	<i>Note:</i> Announcements configured for continuous playback should not be used with the Facility Announcement feature.
Times Between Repeats (seconds)	Select the time in seconds between replaying of the announcement. You can select between 0.5 and 5.0 in 0.5 increments.
Play to Zone	Select either All Speakers or a specific zone for this announcement to play. You can leave this field blank if you want the Nyquist server to prompt for a zone number to use whenever an announcement is started from an IP phone. This will allow callers to direct the announcement to any zone desired at the time it is played.
	<i>Note</i> : If the Type for the station is set to Admin Web Interface , Admin Phone , IP Phone , Analog Phone , or Mobile Device and an Announcement Zone was set for the station, the Announcement Zone overrides the Play to Zone .
Description	Provides a description of the announcement.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .

Deleting an Announcement

Note: You cannot delete an announcement that is used in a routine with an **Announcement** action **Type** (see *"Understanding Action Parameters" on page 450*).

To delete an announcement that is associated with a schedule, you must delete the schedule announcement first and then delete the announcement. To delete the schedule announcement, see *"Using the Schedule Announcements Feature" on page 273.*

To delete an announcement:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Announcements.
- 3 On the Announcements page, select the **Delete** icon next to the announcement that you want to delete.
- 4 When prompted, select **Delete**.

Creating Temporary Announcements from Routines

It is also possible to create and play an Announcement within a Routine. These announcements are known as Temporary Announcements because they are transient announcements that do not persist and are only usable within that Routine.

Creating a temporary announcement is quite simple. Within the Actions of a Routine, simply include three or more actions in the following sequence:

- 1 One **New-Announcement** action. This indicates the beginning of a temporary announcement.
- 2 One or more Add-Announcement-Audio actions. These actions specify the audio to be included in the announcement. Each one specifies one of the following Audio Source Types and the corresponding information:

Table 104. Add-Announcement-Audio audio sources		
Announcement	Specifies a predefined Announcement (see <i>"Viewing Announcements" on page 323</i>).	
Number	Specifies a number to be spoken. This includes whether to pronounce the number one digit at a time (e.g., a phone number) or as a number (e.g., a temperature) and whether or not to pronounce the fractional part of the number (i.e, to the right of the decimal point).	
Text-to-Speech	Specifies the text to be spoken using text-to-speech (TTS) technology. This text can optionally include SSML formatting (see "Using SSML for Text-to-Speech Entries" on page 320).	

3 One **Play-Announcement** action. This is the action that will actually pronounce the announcement.

4 To pronounce several announcements, the previous steps can be repeated multiple times within the same Routine.

For further details on these Announcement action types, see *Table 151, "Routine Action Type-Specific Parameters," on page 576.*

Managing Tones

Nyquist provides tones that can be used with events, such as schedules, or as audio indicators, such as alarms. You can use a provided tone, or you can upload an audio file, generate a customized tone, or use a line input channel as the tone source. White noise and pink noise tones are provided, which can be used to tune paging volumes for time-based zones. (See *"Tuning Volume with White or Pink Noise" on page 356*.)

Viewing Available Tones

Using the Tones page, you can view a list of available tones, delete user-provided tones, or select to add or edit a tone. You cannot delete a default tone, but you can prevent it from being viewed on the dashboard or on Admin Phones that have a tones/alarms menu; the hidden tone still appears on the Tones page.

								Filter
	Name	Type 🕴	Hide	DTMF Code	Length	Times to Play	Time Between Repeats (seconds)	Playback
2	1-Second	Normal	No	1	1	Continuously	1.0	► 0:00 / 0:01 → • F
2	2-Second	Normal	No	2	2	Continuously	1.0	► 0:00/0:02 → • :
	3-Second	Normal	No	3	3	Continuously	1.0	► 0:00/0:03
	4-Second	Normal	No	4	4	Continuously	1.0	► 0:00/0:04 → • :
	5-Second	Normal	No	5	5	Continuously	1.0	► 0:00/0:05 → • •
2	6-Second	Normal	No	6	6	Continuously	1.0	► 0:00/0:06 • • :
	7-Second	Normal	No	7	7	Continuously	1.0	► 0:00/0:07
	Chime	Normal	No	8	2	Continuously	1.0	► 0:00/0:01 → • :
	Quad Beep	Normal	No	9	1	Continuously	1.0	► 0:00/0:00
3	Siren 1	Alarm	No	10	1	Continuously	0.0	► 0:00 / 0:00 → ● :
2	Siren 2	Alarm	No	11	1	Continuously	0.0	

Figure 141. Tones Page

To view tones:

1 On the navigation bar, expand **Audio**.

2 Select Tones.

The following table describes the tones parameters that appear.

	Table 105. Tones Page Parameters
Name	Provides a name for the announcement file.
	<i>Note:</i> Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Туре	Displays the tone type as Normal or Alarm .
Hide	Specifies if the tone should be hidden from the dashboard view or Admin Phone menu.
DTMF Code	Provides the DTMF code used when manually activating the tone via dashboard dial pad or IP phone keypad.
Length	Time in seconds that the tone plays.
Times to Play	Displays the number of times the tone plays. Parameters are 0 to 10.
	<i>Note:</i> A setting of zero (0) results in the tone playing continuously until it is manually stopped via the dashboard.
Time Between Repeats (seconds)	Displays the time in seconds before the tone is replayed. You can select between 0.5 and 5.0 in 0.5 increments.
Playback	Allows the user to manually play the tone.
Selecting the Menu ic	on in this field displays the following options:
Download	Download and save the tone. This option is only available if the tone was uploaded or generated (see "Adding Tones" on page 328).

• Playback speed Adjust the playback speed during the manual playback.

Adding Tones

Nyquist provides three ways of adding a tone:

- Uploading a file that is located on your network, local computer, or removable media, such as a flash drive (see "Uploading Tones" on page 329).
- Generating a one-frequency tone that can be saved (see "Generating Tones" on page 330).
- Using a line-input channel from a two- or four-channel audio power amplifier or Matrix Mixer Pre-Amp which will provide a real-time tone (see *"Using Line Input for Tones" on page 333*).

In each scenario, you are adding a tone to your Nyquist system that can be used later via either a schedule (see *"Understanding Event Settings" on page 266*) or manual tone activation (see *"Managing Tones via the Dashboard" on page 380*).

Uploading Tones

🞜 Add Tone 🛛 🕢
Upload File Generate Tone Line Input
Name:
Type: Normal A Hide: 1 No Times to Play: 1 1 Time Between Repeats (seconds): 1.0
DTMF Code:
File Upload: Choose a file 🖆 Choose File
🗙 Cancel 🖺 Save

Figure 142. Add Tone – Upload File

To upload a tone:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Tones.
- 3 On the Tones page, select the **Add** icon.
- 4 On the Add Tone page, ensure **Upload File** is selected.
- 5 Complete the parameters (see *Table 106*).
- 6 Select Save.

т	able 106. Add Tone Page Parameters (Upload)
Name	Provide a name for this tone.
	<i>Note</i> : Valid characters include uppercase letters $(A-Z)$, lowercase letters $(a-z)$, numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Туре	Use the drop-down menu to select if the tone is Normal or Alarm .
Hide	Specify if the tone is to be hidden or displayed on the dashboard view.
Times to Play	Select the number of times the tone will play. Parameters are 0 through 10.
	<i>Note:</i> A setting of 0 results in the tone playing continuously until it is manually stopped via the dashboard.
Time Between Repeats (Seconds)	Select the time in seconds between replaying of the tone. You can select between 0.5 and 5.0 in 0.5 increments.
DTMF Code	Provide the DTMF code used when manually activating the tone via dash- board dial pad or IP phone keypad.
File Upload	Select Choose File , navigate to the audio file, and then select the file.

Generating Tones

Generating a one-frequency tone is another way to add a tone if you do not want to use the default tones or upload a tone from a network or removable media location.

🎜 Add Tone 🛛 😨
Upload File Generate Tone Line Input
Name:
Type: Normal A Hide: (1)
Frequency (Hz): () 550
Times to Play: 1 (1)
Time Between Repeats (seconds): 1.0
DTMF Code:
× Cancel Save

Figure 143. Add Tone – Generate Tone

To generate a tone:

- 1 On the navigation bar, expand **Audio**.
- 2 Select **Tones**.
- 3 On the Tones page, select the **Add** icon.
- 4 On the Add Tone page, select **Generate Tone**.
- 5 Complete the parameters (see *Table 107*).
- 6 Select Save.

Та	ble 107. Add Tone Page Parameters (Generate)
Name	Provide a name for this tone.
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .
Туре	Select if the announcement to follow is a normal or an emergency announcement.
Hide	Specify if the tone is to be hidden or displayed on the dashboard view.
Frequency (Hz)	Enter the frequency for the tone. You can select a frequency from 300 to 2000 Hz.
Duration (seconds)	Enter the time in seconds that the tone is to play.
Times to Play	Select the number of times the file will play. Parameters are 0 through 10.
	<i>Note:</i> A setting of 0 results in the file playing continuously until it is manually stopped via the dashboard.
Time Between Repeats (seconds)	Select the time in seconds between replaying of the file. You can select between 0.5 and 5.0 in 0.5 increments.
DTMF Code	Provide the DTMF code used when manually activating the tone via dash- board dial pad or IP phone keypad.

Using Line Input for Tones

Selecting Line Input from the Add Tone page allows you to select a two- or four-channel audio power amplifier channel or Matrix Mixer Pre-Amp channel to use as a real-time source for a tone.

Upload File	Generate Tone	Line Input
Name:		
Type: Normal A Hide: (1) No		
Length: (1) 0 DTMF Code:]	
Amplifiers/Mat	rix Mixers:	Input Channel:

Figure 144. Add Tone – Line Input

To add a line input tone:

- 1 On the navigation bar, expand **Audio**.
- 2 Select **Tones**.
- 3 On the Tones page, select the **Add** icon.
- 4 On the Add Tone page, select Line Input.
- 5 Complete the parameters (see *Table 108 on page 334*).
- 6 Select Save.

Table 108. Add Tone Page Parameters (Line Input)				
Name	Provide a name for this tone.			
	<i>Note</i> : Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals $(0-9)$, space, and the following special characters: ! @ \$ * ? , .			
Туре	Select if the announcement to follow is a normal or an emergency announcement.			
Hide	Specify if the tone is to be hidden or displayed on the dashboard view.			
Length	Enter the number of seconds for the tone to play. The length can range from 0 to 999999.			
	<i>Note:</i> A setting of 0 results in the file playing continuously until it is manually stopped via the dashboard.			
DTMF Code	Provide the DTMF code used when manually activating the tone via dash- board dial pad or IP phone keypad.			
Amplifiers/Matrix Mixers	Use the drop-down menu to select the two- or four-channel audio power amplifier or Matrix Mixer Pre-Amp and its associated station number.			
Input Channel	Specify the matrix channel being used for input.			

Editing Tones

You can edit parameters of existing tones, but which parameters can be changed depends on whether the tone is a default tone or a user-added tone. For example, you cannot change the **Name** for a default tone, but you can change that parameter for a tone that you added. Some parameters appear only for Line Input tones. You also cannot change the **Type** of a tone if it is used in a routine (see *"Understanding Trigger Parameters" on page 446* and *"Understanding Action Parameters" on page 450*).

ame:	Name:	
1-Second	Line Input	
pe:	Туре:	
Normal 🔺	Normal 🔺	
de: 1	Hide: 🚺	
No	No	
mes to Play: 0 🚯	DTMF Code:	
	28	
me Between Repeats (seconds): 1.0	Length: ()	
IMF Code:	120	
1	Amplifiers/Matrix Mixers:	Input Channel:
enath: 👩	071 - MMPA : 1 (071) -	Channel 1 (1) -
1		

Figure 145. Edit Tone Pages

To edit a tone:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Tones.
- 3 On the Tones page, select the **Edit** icon.
- 4 On the Edit Tone page, make changes to the parameters (see *Table 109 on page 335*).
- 5 After completing all changes, select **Save**.

Table 109. Edit Tone Page Parameters

Name	Displays the name for this tone.		
	Note: This parameter cannot be changed for default system Tones.		
	<i>Note:</i> Valid characters include uppercase letters (A–Z), lowercase letters (a–z), numerals (0–9), space, and the following special characters: ! @ $$ * ?, .$		
Туре	Use the drop-down menu to select if the tone is Normal or Alarm.		
Hide	Specifies if the tone is to be hidden from the dashboard view.		

Table 109. Edit Tone Page Parameters (Continued)					
Displays the number of times the tone will play. Parameters are 0 through 10.					
<i>Note:</i> A setting of 0 results in the tone playing continuously until it is manually stopped via the dashboard. This parameter does not appear for Line Input tones.					
Displays the time in seconds between replaying of the tone. You can select between 0.5 and 5.0 in 0.5 increments.					
Note: This parameter does not appear for Line Input tones.					
Provides the DTMF code used when manually activating the tone via dashboard dial pad or IP phone keypad.					
Provides the length of the tone.					
Note: This parameter cannot be changed except for Line Input tones.					
Select Choose File , navigate to the audio file, and then select the file if you want to choose a new file.					
Note: This parameter appears only for user-provided tones but not for Line Input tones.					
Specifies the two-channel or four-channel audio power amplifier or Matrix Mixer Pre-Amp and its associated station number.					
Note: This parameter appears only for Line Input tones.					
Specifies the matrix channel being used for input.					
Note: This parameter appears only for Line Input tones.					

Deleting a Tone

Note: You cannot delete a tone that is used in a routine with a **Tone** action **Type** or if the tone is used as an alarm in an **Alarm** action **Type** (see *"Understanding Action Parameters" on page 450*).

You can only delete user-added tones.

To delete a tone:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Tones.
- 3 On the Tones page, select the **Delete** icon next to the tone that you want to delete.
- 4 When prompted, select **Delete**.

Tone Operational Notes and Limitations

• The system supports playing multiple simultaneous tones, assuming the tones are playing to different zones. If a manual request to play a tone is made while a tone is playing to all Time-type zones, the requester will receive a busy signal and the tone will not be played.

- If a specific zone is not specified, the tone will play to all Time-type zones. In this case, if a queued page is playing in a Time-type zone, the queued page will be stopped and re-queued.
- If a specific zone is specified, the tone will play to the specified zone. In this case, if a queued page is playing in the specified zone, the queued page will be stopped and re-queued. If queued pages are playing in time type zones not equal to the specified zone, those queued pages will continue to play, along with the manual tone to the specified zone.
- If a specific zone is specified, the dashboard message will use the following format:

Tone (<station_extension> -> <zone_name>): <tone_name>

For example:

Tone (100 -> Library): Chime

Routine triggers that use the Tone or Scheduled-Tone trigger types do not include a zone filter, thus
tone-based routine triggers are activated whenever a tone is played to any zone. The routine trigger
does include a filter for the tone being played, so you can filter routine execution by the tone being
played.

Managing Recordings

If your Nyquist systems allow call recording, and one or more stations have been configured for recording telephone calls, then you can manage these recordings through Nyquist's audio file management feature.

For more information about configuring Nyquist for call recording, see "Using the Edit System Parameters Page" on page 62. For information about configuring a station for call recording, see Table 36, "Station Configuration Page Parameters," on page 129. Through the audio file management feature, you can play back an individual call, delete selected recordings, or delete all recordings.

 ♥ Recordings 						
Select	Source 🍦	Destination 🍦	Date/Time	Туре 🌲	Playback	
	777	832	Nov 07, 2024 11:56:02 am	Normal	► 0:00 / 0:03 • • :	A
	777	832	Nov 07, 2024 11:55:43 am	Normal	► 0:00 / 0:04 ◄ :	
	777	832	Nov 07, 2024 11:55:24 am	Normal	► 0:00 / 0:04 • E	
	777	832	Nov 07, 2024 11:55:03 am	Normal	► 0:00 / 0:03 — ● :	•
Showing 1 to 11 of 11 rows 50 rows per page						

Figure 146. Recordings Page

To manage recordings:

- 1 On the navigation bar, expand **Audio**.
- 2 Select Recordings.
- **3** To play back a call, select the **Play** button in the Playback column for the call that you want to hear.
- 4 To delete a selected call or multiple calls, select the check box in the Select column for each call that you want to delete, and then select **Delete Selected**.
- 5 To delete all calls, select **Select All**, and then select **Delete Selected**.

The Recordings page provides the following information for recorded calls:

Table 110. Recordings Page Parameters

Select	Allows you to use the check box to select a call for deletion.
Source	Identifies the extension or number that placed the call.
Destination	Identifies the extension that received the call.
Date/Time	Identifies the date and time that the call was received.
Туре	Identifies the type of call, such as Normal.
Playback	Allows you to play the recording.

Zone Control: Volume and Audio Distribution Panel

The Zone Control feature presents a simple user interface for controlling volume and audio distributions from any device that supports the Google Chrome, Microsoft Edge, or Apple Safari browser. Small devices such as touch-screen tablets can be used to operate Zone Control via the browser.

The Zone Control feature can be used to perform the following:

- Change volume of Audio Distributions and Paging Zones
- Start and stop Audio Distributions

In addition, it has its own configuration settings view. It has two display page views:

- Settings / Zone Filter view (see Figure 147, "Zone Control Settings and Zone Filter View," on page 340)
- Zone View, including an Audio Distribution view (see *Figure 148, "Zone Control Zone View," on page 342*).

Initial Setup and Settings

The Zone Control feature does not use the same login model as the Nyquist application. All users share the same password, specified as Zone Control Password in the System Parameters Page (see *Figure 27, "Edit Systems Parameters Page," on page 63*). The first time a user logs in, they will be directed to the Settings page for initial setup.

To perform the initial user setup:

1 Using a Chrome, Edge, or Safari web browser, enter:

https://<server>/zone-control/login

where <server> is replaced with the IP Address of your Nyquist server.

- 2 Enter a new username that has not previously been used.
- *Tip:* The username can correspond to an actual user, but if the Zone Control view is to be shared by multiple users, it could correspond to a group, or even a location (e.g., Lobby, Studio3, Library, etc.).
- 3 Enter the Zone Control Password (see *Figure 27, "Edit Systems Parameters Page," on page* 63).

Note: This password is intended to secure the feature in general, and is used by all Zone Control users. Be sure to use a password that can be safely shared with anyone that is to use the Zone Control feature.

- 4 You are then presented with the Zone Control Settings and Zone Filter view (see *Figure 147, "Zone Control Settings and Zone Filter View," on page 340*).
- 5 Select the desired settings, as described in *Figure 111, "Zone Control Settings," on page 341.*
- 6 Use the Zone Filters to select the zones that you wish to display on the Zone View. The Zone Filter section displays a list of all audio distribution zones. Each includes a checkbox to enable or disable its display in the Zone View. The list also includes "All Speakers" zone (which controls Audio Distri-
bution Cut Level in system settings). When an audio distribution zone is enabled, the audio distribution zone will be displayed on the Zone View.

- 7 If Display Paging Zones is enabled, you can select the Paging Zones that you wish to display on the Zone View. When a paging zone is enabled, the paging zone will be displayed on the Zone View.
- 8 When you are finished making changes to Settings and Zone Filters, press "Save".
- 9 The Zone View will then be displayed (see *Figure 148, "Zone Control Zone View," on page 342*).

BOGEN E7000 NYQUIST Zone	Control	Juliet 🔳 🖪
& Settings		
Station:	0020 -	
Display Audio Distributions:	Yes	
Display Paging Zones:	Yes	
Display Volume Cut Level:	Yes	
Display Zones Header:	Yes	
Display Audio Distributions Header:	Yes	
Audio All Speakers:	Yes	
Audio zone:	Yes	
¶⊄ Paging		
All Call:	Yes	
Emergency All Call:	Yes	
Paging zone:	Yes	

Figure 147. Zone Control Settings and Zone Filter View

	Table 111. Zone Control Settings				
Station	The Admin Web Interface Station to be associated with this Zone Con- trol login.				
	The Station selected will be used to determine the CoS settings to be used to grant audio distribution permissions (see <i>Table 23, "CoS Config-</i> <i>uration Page Parameters," on page 92</i>). The station extension will also appear in the Call Detail Records when an Audio Distribution is started or stopped.				
	<i>Tip:</i> You may want to create a custom Admin Web Station with limited access, which will then be used by Zone Control users. Keep in mind, however, that these Stations will appear in other feature lists throughout the Nyquist system (e.g., Dashboard's Audio Distribution list).				
	<i>Tip:</i> You can also create a custom Station for each Zone Control user. The advantage of this is that Call Detail Records entries can then track which users started and stopped Audio Distributions.				
Display Audio Distributions	When enabled, the Zone View will display available audio distributions for all zones that are selected in the Zone Filter. The audio distributions list is displayed under the related audio distribution zone.				
	When disabled, an audio icon (i.e., a musical note) will be displayed next to each audio zone. Selecting the icon will display a page that shows the audio distributions for that zone.				
Display Paging Zones	When enabled, the Zone Filter list will include Paging Zones, to allow selected Paging Zones to be displayed on the Zone View.				
	<i>Note</i> : When you change this setting, the Zone Filter list does not immediately display the available Paging Zones; you must Save the settings, then go back into the Settings page to view and update the Paging Zones in the Zone Filter list.				
Display Volume Cut Level (dB)	When enabled, the Zone View will display the numeric value for Cut Level to the right of each volume slider.				
Display Zones Header	When enabled, a header will be displayed on the top of the page that labels Zone columns (e.g. Name, Description, Cut Level (dB)).				
Display Audio Distributions Header	When enabled, a header will be displayed above each audio distribution list that labels the columns in the list (e.g. Line-Input/Playlist/Source, Zones, Description).				
	<i>Note:</i> The Zones column label is not displayed on the All Speakers zone because the audio is played to All Speakers, not to zones.				

Zone View

The Zone View can be used to control speaker volumes and audio distributions.

To display the Zone View:

- 1 Enter the following into a Chrome, Edge, or Safari browser: https://<server>/zone-control
- *Tip:* To create a shortcut to the Zone View, you can create a Map Object with an "Open URL" Action to open this link from the Dashboard.
- 2 If you are not already logged in, the Zone Control page will prompt you for a username and the Zone Control password.
- 3 After you have logged in, the Zone View is displayed (see *Figure 148, "Zone Control Zone View," on page 342*).

B	DGEN E70	DO NYQUIST Zone Contr	ol	Juliet	C 4	•
	Zones					
	Name	Description	Cut Level (dB)			
40	All Speakers	Cut volume for Audio Distribution.	•		+ -24	5
	All Call	Cut volume for All-Call audio.	•		+ -21	
5	Emergency All Call	Cut volume for Emergency- All-Call audio.	•		+ -21	
40	Audio zone				+ -24	5
1	Paging zone			•	+ -6	

Figure 148. Zone Control Zone View

Table 112. Zone Control buttons



	Zones : Press the Zones button to display the Zone View.
	Logout: Press the Logout button to log out of the Zone Controller.
[]	Audio : Press the Audio button to display the audio distributions that play to the selected Zone.

The Zone View displays the list of Zones that the user checked in the **Zone View Filter**.

Each listed Zone will include its name, a description, a volume slider, and an Audio icon (if **Display Audio Distributions** was disabled in the **Zone Control Settings**).

A zone's volume can be changed by simply sliding the volume control left or right for the desired zone. While using the slider, keep pressing the mouse or holding your finger down while sliding the volume left or right. When you lift up on the mouse or your finger, you will notice the volume change after a couple of seconds.

If you want to start or stop an Audio Distribution for a displayed zone, press the audio icon. After pressing the audio icon, a window will display a list of audio distributions that play to the selected Zone (see "Audio Distribution Window" on page 343). After the user presses start or stop for the desired audio distribution, the window closes and the Zone View is displayed.

If **Display Audio Distributions** is enabled under settings, you will see the available Audio Distributions displayed under each Zone, and can control (i.e., start and stop) the Audio Distribution from the Zone View.

Audio Distribution Window

The Audio Distribution window displays a list of Audio Distributions that play to the selected zone.

Each Audio Distribution in the list includes the start or stop button, a name, a zones list, and a description. The zones list works like the current Dashboard-based Audio Distribution zone list; it indicates when a distribution is being played to multiple zones.

Press the **Start** or **Stop** button for the desired Audio Distribution to start or stop.

After pressing **Start** or **Stop** for the desired audio distribution, the window closes and the Zone View is displayed.

Note: The Audio Distribution Window is only available when **Display Audio Distributions** is set to **No**. When **Display Audio Distributions** is set to **Yes**, the Audio Distribution selections are displayed on the Zones page.

Maintenance and Troubleshooting

This section provides detail instructions on several of the Nyquist features that are designed to help maintain and troubleshoot your system.

Backing Up Your Nyquist System and Files

You can create a full system backup of all configuration settings, back up only voice mail files, or back up only recordings. You can also schedule an automatic full system backup. Information backed up during a full system backup includes any custom alarm, tones, announcements, and music files. Phone calls and location recordings are not backed up.

You should do a system backup after a change is made to system configuration, including station and zone configuration. You should also do a system backup before updating your system to a new Nyquist release and export the backup.

You can set retention periods for each type of backup. (See "Setting System Parameters" on page 62.)

Check Server Status can be used to view how much disk space is currently being used by backups. On the System Parameters page, press **Check Server Status**, then scroll down to the "Disk space used by" section where you will find "backups," which indicates how much disk space is currently being used by backups.

Viewing System Backup Files

The System Backup/Restore page allows you to see all backup files available for restore.

S S	System Backup/Restore 🛛 🔞						
+ Cre	ate Backu	IP	tin Delete 🗇 Restore 🛛 j≡ Se	ttings 🔔 Export 🛃 Import			
Backup	Directory	y: /var/o	pt/nyquist/backups		Filter		
	Select	Кеер	Description	Date/Time	÷	Туре	\$
		No	User Created	Jun 20, 2017 - 4:05pm		RECORDINGS	
		No	User Created	Jun 20, 2017 - 4:05pm		VOICEMAIL	
		No	User Created	Jun 20, 2017 - 4:05pm		SYSTEM	
		No	Installation Created	Jun 16, 2017 - 11:14am		SYSTEM	

Figure 149. System Backup/Restore Page

To view system backup files:

On the navigation bar, select System Backup/Restore.

The following table describes the information that appears for each file:

	Table 113. Viewing Backup File Data
Select	Indicates if the file has been selected for restore, export, edit, or delete.
Кеер	Indicates if the backup file is to be kept even if older than the retention period. See <i>"Using the Edit System Parameters Page" on page 62</i> for information about setting retention periods of for system, recordings, or voicemail backups.
Description	Indicates if the backup was created by Nyquist or the user.
Date/Time	Provides the month, day, year, and time that the job was created.
Туре	Indicates what data was backed up. Options are System, Recordings, and Voicemail.

Creating a Backup File

You can manually create a backup of all system files, voicemail files, or recordings.



Figure 150. Create Backup Page

To create a backup file:

- 1 On the navigation bar, select **System Backup/Restore**.
- 2 On the System Backup/Restore page, select **Create Backup**.
- 3 On the Create Backup popup window, select one of the following options:
 - System
 - Voicemail
 - Recordings

The new backup file appears in the System Backup/Restore list.

Deleting a Backup File

You can delete a single backup file or select to delete multiple backup files. By default, Nyquist does not automatically purge a backup file, even if the file has passed its retention period (see "Using the Edit System Parameters Page" on page 62). However, you can select to delete any files; the system will warn you if you select to delete a file marked to keep.

To delete a backup file:

- 1 On the navigation bar, select **System Backup/Restore**.
- 2 On the System Backup/Restore page, select the backup file or files that you want to delete.
- 3 Select **Delete**.
- 4 When prompted, select **Delete**.

Editing System Backup/Restore Information

You can edit the description of user, system, and installation-created backup or restore files.

Гуре:		
VOICEMAIL		
)ate/Time:		
Jun 20, 2017 - 4:05pm		
Keep:		
No		
Description:		
User Created		

Figure 151. Edit System Backup/Restore Page

To edit the file's description:

- 1 On the navigation bar, select **System Backup/Restore**.
- 2 On the System Backup/Restore page, select the **Edit** icon next to the desired file.
- 3 Edit the description.
- 4 Select Save.

	Table 114. Edit System Backup/Restore Parameters
Туре	Displays the file type, such as FULL for a full backup. This parameter cannot be edited.
Date/Time	Displays the date and time that the file was created. This parameter cannot be edited.
Кеер	Select Yes if you want to have Nyquist keep the file even if the retention period has expired. Nyquist keeps at least one backup file even if the retention period has expired.
Description	Provides a system or user-provided description. By default, the description is User Created for user-created backup or restore files, System Created for backups automatically created based on specified settings, or Installation Created for backups created via the installation process

Editing Backup Settings

Backup settings allow you to schedule an automatic backup and set specific backup parameters for system backups, including the backup directory where the files will be stored.

∃≡ Edit Backup Settings 🛛 🕢
Backup Directory:
/var/opt/nyquist/backups
New Backup Directory:
Yes
Minute:
Not selecting a minute will default to 0.
Hour:
×1am
Not selecting an hour will default to 1am.
Day:
×1st
Not selecting a day will default to every day.
Month:
Select month
Not selecting a month will default to every month.
Day of Week:
Select day of week
Not selecting a day of week will default to every day of the week.
🗙 Cancel 🖺 Save

Figure 152. Edit Backup Settings Page

To edit backup settings:

- 1 On the navigation bar, select **System Backup/Restore**.
- 2 On the System Backup/Restore page, select **Settings**.
- 3 Make desired changes (see *Table 115*).
- 4 Select Save.

Table 115. Backup Settings Page Parameters

Backup Directory	Displays current path for backup file.	
New Backup Directory	Enter new path for backup directory, if applicable.	
Auto Backup	Indicates if the backup is to be automatically generated.	
Minute	Specifies the minute the backup job runs. If you do not select a minute, the system defaults to zero (0).	
Hour	Specifies the hour that the backup job runs. Selections are formatted with the hour and either "am" or "pm". The default setting is "1am".	
Day	Specifies the day of the month that the backup job runs. The system defaults to every day.	
Month	Specifies the month the job is to run. The system defaults to every month.	
Day of the Week	Specifies the day of the week that the job is to run. The system defaults to every day.	

Exporting a Backup File

You can export a backup file as a .gz file, which can be stored on the Admin Station or downloaded to removable media, such as a thumb drive, to be stored off site.

To export a backup file:

- 1 On the navigation bar, select **System Backup/Restore**.
- 2 On the System Backup/Restore page, select the backup file that you want to export.
- 3 Select Export.

Once saved, an icon with the downloaded report name appears in the lower left section of the web browser window, giving you the option to open the report. For Android devices, files are automatically downloaded and saved to the device's Download folder.

Important: We *strongly* recommend that you export your backups to external media to use in the event that a Nyquist drive fails. If the Nyquist drive fails, the backups stored on the Nyquist server will no longer be available, and externally stored backups will be the only backups available to use in recovering your system configurations and files.

Restoring a Backup File

You can restore the facility configuration to that saved during a system backup. You can also restore voicemail or recordings backups.

Note: System backups created by older versions of the Nyquist software are only compatible with the same Nyquist release or with Nyquist releases greater than or equal to E7000 release 6.0.0. This means that system backups created prior to release 6.0.0 can be restored on Nyquist systems currently running release 6.0.0 or greater. When a system backup from a previous release is used, the system backup configuration data will automatically be upgraded to the new release.

To restore a file:

- 1 On the navigation bar, select System Backup/Restore.
- 2 On the System Backup/Restore page, select the backup file that you want to restore.
- 3 Select Restore.
- 4 When prompted, select **Restore**.
- 5 A dialog box appears asking if you want to restore the License Activation Keys. If you have already activated the License Activation Keys on this E7000 (e.g., you are restoring to the same E7000 from which the backup was taken and the licenses are still active), select No. If not (e.g., you are restoring to a new E7000 and have not already activated the licenses), select Yes.

To cancel the restore operation, select Cancel.

- 6 If you did not cancel the restore operation, a dialog box appears notifying you that the restore is in progress. If the restore dialog box disappears and a login screen appears, log back into the system.
- 7 When the restore is completed, a new message appears on the dashboard to indicate the restore has completed.

Importing a Backup File

You can import a backup file that was previously exported. You can then select to restore this file.

To import a backup file:

- 1 On the navigation bar, select **System Backup/Restore**.
- 2 On the System Backup/Restore page, select Import.
- 3 Select **Choose file**, and then navigate to the backup file that you want to import.
- 4 Select Open.
- 5 Select Import.

Software Components List

The version numbers for several key software components that are installed and used by the Nyquist system are listed in the *Software Components* section of the **Check Server Status** report (see "Check Server Status" on page 41). The version numbers are dynamic and may change after the **Upgrade Debian Operating System Components** feature has been used (see "Upgrade Debian Operating System Components" on page 36).

The following is an example of the *Software Components* section of the report:

Software Components: Asterisk 18.20.2 apache2 Version: 2.4.62-1~deb12u1 bash Version: 5.2.15-2+b7 bind9 Version: 1:9.18.28-1~deb12u2 binutils Version: 2.40-2 curl Version: 7.88.1-10+deb12u8 dnsutils Version: 1:9.18.28-1~deb12u2 exim4 Version: 4.96-15+deb12u5 ffmpeg version 7.0.1 glibc Version: 2.36-9+deb12u8 isc-dhcp-server Version: 4.4.3-P1-2 Laravel Framework 9.52.16 libssh Version: 0.10.6-0+deb12u1 libssl Version: 1.1.1w-0+deb11u1 linux kernel 6.1.0-26-amd64 #1 SMP PREEMPT DYNAMIC Debian 6.1.112-1 (2024-09-30) x86 64 GNU/Linux lsyncd Version: 2.2.3-1+b1 mosquitto Version: 2.0.11-1.2+deb12u1 msmtp Version: 1.8.23-1 mysql Ver 15.1 Distrib 10.11.6-MariaDB nmap Version: 7.93+dfsg1-1 ntp Version: 1:4.2.8p15+dfsg-2~1.2.2+dfsg1-1+deb12u1 openssh Version: 1:9.2p1-2+deb12u3 openssl Version: 3.0.14-1~deb12u2 php Version: 8.2.24-1~deb12u1 php-ldap Version: 2:8.2+93 pjsip 2.13.1 rsync Version: 3.2.7-1 rsyslog Version: 8.2302.0-1 snmpd Version: 5.9.3+dfsg-2 sox Version: 14.4.2+git20190427-3.5 sudo Version: 1.9.13p3-1+deb12u1 systemd Version: 252.30-1~deb12u2 tar Version: 1.34+dfsg-1.2+deb12u1 tcpdump Version: 4.99.3-1 tftpd-hpa Version: 5.2+20150808-1.4 wget Version: 1.21.3-1+b2

Using System Log Files

A log file records either events or messages that occur when software runs and is used when troubleshooting the system. The following parts of the Nyquist system generate log files:

- Server: Provides access to the Debian Linux OS server log files.
- Nyquist E7000: Provides access to the Nyquist application log files.
- Web Server: Provides access to the web server log files.

From the web-based UI, system logs can be viewed directly or exported via download to your PC, Mac, or Android device and then copied to removable media or attached to an email to technical support.

File	Description
Server	
aptitude	Records information about packages installed or upgraded on the server.
auth.log	Contains system authorization information, including user logins and authentication methods that were used.
btmp	Contains information about failed login attempts.

Table 116. System Logs

Table 116. System Logs (Continued)

File	Description
daemon.log	Contains information logged by the various background daemons that run on the sys- tem.
debug	Contains errors and debug information.
dmesg	Contains kernel ring buffer information. When the system boots up, the screen displays information about the hardware devices that the kernel detects during the boot process. These messages are available in the kernel ring buffer, and whenever a new message comes, the old message gets overwritten.
dpkg.log	Contains information that is logged when a package is installed or removed using dpkg command.
faillog	Contains user failed login attempts.
fontconfig.log	Logs use of fontconfig program to configure or substitute fonts to other programs.
kern.log	Contains information logged by the kernel and recent login information for all users.
lastlog	Contains information on the last login of each user.
messages	Contains global system messages, including the messages that are logged during system startup. Items logged in the messages file include cron, daemon, kern, auth, and so on.
mysql.err	Contains a record of mysql errors that occur when the server is running.
mysql.log	Contains a general record of what mysql is doing (connect, disconnect, queries).
nyquist_af_alerts.log	Contains Automatic Failover alerts, used by Technical Support to help diagnose any issues.
nyquist_af_setup.log	Contains Automatic Failover setup information, used by Technical Support to help diag- nose any issues.
nyquist_af_status.log	Contains Automatic Failover status updates, which includes all server state transitions that have been performed (e.g., Secondary becomes Master, Primary placed into Standby mode, etc.).
nyquist_mysql_table_check	Contains status of Nyquist database tables after a Nyquist server reboot. All tables should display a status of OK. If a table shows anything other than OK, contact Bogen Technical Support for assistance.
syslog	Contains list of errors that occur when the server is running and server start and stop records.
user.log	Contains information about all user-level logs.
Nyquist E7000	
api_log	Contains a record of all commands received from 3rd-party systems to the Routines API v1.
api2_log	Contains a record of all commands received from 3rd-party systems to the Routines API v2.
checkin	Contains historical record of actions that occurred during a check-in. (See "Check-In Log and Call Detail Records" on page 520.)
	Contains events recorded for the Station Check-In process. These include times and data for Check-In Start, Stop, Reset, Done, Vacancy Add, Vacancy Delete, and individual stations' Check-in.
device_status	Record of station unavailability events recorded by Station Monitoring.

Table 116. System Logs (Continued)

File	Description
messages	Contains messages generated by Nyquist.
nyquist_routines.log	Contains records of Nyquist routine events (e.g., started and stopped) as well as messages logged via the Log-Text action or the logText(<text>) function from within a routine action condition's CODE segment (see "Routines Log" on page 479 for details).</text>
Web Server	
access.log	Contains access records for the web server.
error.log	Contains information about errors that the web server encountered when processing requests, such as when files are missing.
other_vhosts_access.log	Contains access records for vhosts that don't define their own logfiles.

Viewing System Log Files

You can view a specific log for the Linux server, Nyquist server, or web server.



Figure 153. System Logs

To view a log file:

- 1 On the navigation bar, select System Logs.
- 2 Use the drop-down menu of the desired server to select the specific log file that you want to view.

The file path and contents appear on the System Logs page.

Exporting a Log File

To export a log file:

- 1 On the navigation bar, select System Logs.
- 2 Use the drop-down menu of the desired server to select the log file that you want to export.

3 Select Export.

If the Save As dialog box appears, you can select where to download and save the log file; if not, it will be downloaded to the browser's configured download location.

For Android devices, files are automatically downloaded and saved to the device's Download folder.

Note: Exporting a log file does not remove it from the E7000. To remove log files, contact Tech Support.

Using the Call Details Feature

The Call Details feature allows you to view or print detail records of every call in a facility in a call log format. Calls include scheduled announcements, paging, and internally and externally placed or received telephone calls.

🔳 Call Deta	ls 🕜					
Delete All	xport					
« 1 2 »						
Source 💠	Destination 0	Туре	Start	End	Status	Duration
030	All	Announcement (1)	Sep 12, 2018 1:02:11 pm	Sep 12, 2018 1:02:14 pm	Played	00:00:03
030	60 - A2300 : 2 - Zone	Announcement (1)	Sep 12, 2018 12:58:44 pm	Sep 12, 2018 12:59:04 pm	Played	00:00:20
141	All	Announcement (3)	Sep 12, 2018 12:58:45 pm	Sep 12, 2018 12:58:50 pm	Played	00:00:00
030	60 - A2300 : 2 - Zone	Announcement (1)	Sep 12, 2018 12:58:20 pm	Sep 12, 2018 12:58:33 pm	Played	00:00:12
141	All	Announcement (3)	Sep 12, 2018 12:58:20 pm	Sep 12, 2018 12:58:25 pm	Played	00:00:00
030	60 - A2300 : 2 - Zone	Announcement (1)	Sep 12, 2018 12:57:56 pm	Sep 12, 2018 12:58:14 pm	Played	00:00:18
141	All	Announcement (3)	Sep 12, 2018 12:57:57 pm	Sep 12, 2018 12:58:02 pm	Played	00:00:00
030	60 - A2300 : 2 - Zone	Announcement (1)	Sep 12, 2018 12:57:01 pm	Sep 12, 2018 12:57:17 pm	Played	00:00:16
141	All	Announcement (3)	Sep 12, 2018 12:57:02 pm	Sep 12, 2018 12:57:07 pm	Played	00:00:00
038	Zones (60)	Audio Distribution	Sep 12, 2018 12:56:46 pm	Sep 12, 2018 12:56:53 pm	Started	00:00:00
030	60 - A2300 : 2 - Zone	Announcement (1)	Sep 12, 2018 12:56:07 pm	Sep 12, 2018 12:56:43 pm	Played	00:00:36
038	Some stations	Audio Distribution	Sep 12, 2018 12:56:25 pm	Sep 12, 2018 12:56:30 pm	Started	00:00:00
141	All	Announcement (3)	Sep 12, 2018 12:56:07 pm	Sep 12, 2018 12:56:12 pm	Played	00:00:00
038	60 - A2300 : 2 - Zone	Announcement (1)	Sep 12, 2018 12:55:20 pm	Sep 12, 2018 12:55:41 pm	Played	00:00:21
141	All	Announcement (3)	Sep 12, 2018 12:55:21 pm	Sep 12, 2018 12:55:26 pm	Played	00:00:00
030	20 - VoIP Zone (?)	Announcement (1)	Sep 12, 2018 12:54:18 pm	Sep 12, 2018 12:55:13 pm	Played	00:00:54
038	All	Tone Activation (2)	Sep 12, 2018 12:54:54 pm	Sep 12, 2018 12:54:56 pm	Busy	00:00:02
038	20 - VoIP Zone (?)	Announcement (2)	Sep 12, 2018 12:54:41 pm	Sep 12, 2018 12:54:45 pm	Busy, Not Played	00:00:04

Figure 154. Call Details Page

Viewing Call Details Records

To view the call details records for the facility:

On the navigation bar, select **Call Details**.

The following table describes the Call Details parameters:

Table 117. Call Details Page Parameters

Source	Provides the extension where the call originated or the station that recorded a page for page queuing.
Destination	Provides either the extension to which the call was directed, or the tar- get zone or facilities of the page or announcement. A Destination of None entered means that an invalid zone was entered, while All means all stations were targeted.
Туре	Provides the type of call, such as Emergency Call, Admin Call, Announcement, and so on.
Start	Provides the date and time that the call began.
End	Provides the date and time that the call ended.
Status	Provides information about whether the call was answered or not answered. For queued pages, the status could be:
	 Played: Page was successfully recorded and was played to the specified zone.
	• Queued : Page was successfully recorded and is queued for playing to the specified zone.
	 Not Recorded: Either zone was not defined or the user hung up without pressing # after the recording.
	• Timed Out : Page timed out and was not saved either because there was more than 60 seconds of silence or because the recording exceeded 60 minutes in length.
	• Requeued : Page message was interrupted while being played and was returned to the queue.
Duration	Provides the number of hours, minutes, and seconds that the call lasted.

Exporting and Printing a Call Log

To export and print a call details report:

- 1 On the navigation bar, select **Call Details**.
- 2 Select **Export**.

When the Save As dialog box appears, you can name the report and select where the report is to be downloaded or saved. The default name is call_details_<yyyymmddhhhmmss>.csv.

- 3 In the lower left corner of the browser, select the downloaded CSV file, open it (presumably using a spreadsheet application, such as Excel, or a text editor), and optionally print it. For example, if using Excel:
 - a) Open the Excel spreadsheet, select Page Layout, and set the desired parameters.
 - b) Select File, and then select Print.

Alternatively, you can use the following PowerShell commands to format and display the information from one or more downloaded files.

To display to a spreadsheet-like window, with filtering and sorting capabilities:

```
Import-Csv -Path "<filename1>.csv","<filename2>.csv" | Out-GridView
```

To display to the console in a table-like format:

```
Import-Csv -Path "<filename1>.csv","<filename2>.csv" | Format-Table *
```

For more information on Excel or PowerShell, refer to the Microsoft documentation or Microsoft Help.

Deleting All Call Records

To delete all call detail records:

- 1 On the navigation bar, select **Call Details**.
- 2 Select **Delete All**.
- 3 When prompted, select **Delete**.

Tuning Volume with White or Pink Noise

Nyquist provides white noise and pink noise files to help tune, or adjust, the volume of speakers in a zone.

White noise has equal energy for each frequency that the human ear can hear. Pink noise sounds less harsh than white noise because humans hear in octaves (the doubling of a frequency band). The energy in pink noise decreases by half as the frequency doubles, making the noise sound more balanced.

Both white and pink noise files are provided by default in Nyquist as both tones and songs. You can use the tone files as a tone generator to help adjust volume and frequency for pages in time-based zones. You can use the song files to help adjust volume and frequency in audio zones that play audio distribution.

Remember that when creating, editing, or viewing a zone, the **Type** identifies the zone as being able to receive paging, time, audio, or a combination of paging, time, or audio. (See *"Viewing Zone Informa-tion" on page 201*.)

To start a white noise or pink noise file as a tone, follow the steps listed in *"Managing Tones via the Dashboard" on page 380*, selecting either the White Noise or Pink Noise file.

To play a white noise or pink noise file to a zone that plays audio distribution, first create a playlist that contains the white or pink noise song (see "Creating a Playlist" on page 295) and then follow the steps listed in "Using Audio Distribution" on page 392 to start the audio distribution.

If the zone can receive a combination of paging, time, and audio, you should use both the tone files and the song files to tune the speaker volume.

Troubleshooting Common Issues

The following table provides some possible causes and solutions for common Nyquist issues.

lssue	Possible Cause	Possible Solution	
This web interface station is not connected to the server.	The Bogen root certifi- cate has not been installed correctly, or the browser has not refreshed the certificate informa- tion.	Follow the instructions for installing the Bogen certificate (see " <i>Client Require-</i> <i>ments</i> " on page 9). If the certificate has already been installed, use Ctrl+Shift+Del, clear the "Cookies and other site data," and retry. The browser may need to be restarted.	
		<i>Tip:</i> Accessing the application from an incognito browser session may provide more accurate validation of certificate issues.	
Day calls are not being routed to the proper Admin Station.	The system parameters that affect day calls being routed to an Admin Sta- tion may be incorrectly set.	On the navigation bar, select System Parameters , and then review the Day Start time. If the time is not properly set to when the Admin Station should receive the day calls, select the Edit icon and enter the correct time for Day Start.	
Night calls are not being routed to the proper Admin Station.	The system parameters that affect night calls being routed to an Admin Station may be incorrectly set.	On the navigation bar, select System Parameters , and then review the Night Start time. If the time is not properly set to when the Admin Station should receive the day calls, select the Edit icon and enter the correct time for Night Start.	

Table 118. Common Issues

Table 118. Common Issues

lssue	Possible Cause	Possible Solution
The Nyquist server is not getting the correct date and time.	Either the Network Time Server being used is incorrect or the server date and time is incorrect.	On the navigation bar, select System Parameters , and then review the parame- ters set for the NTP server and for the server date/time. Select the Edit icon and make any necessary changes.
A station is not able to ini- tiate non-emergency calls during the day.	The station may not have the correct CoS assigned to allow Normal+Emer- gency calls.	On the navigation bar, select CoS Config- uration . Note which configurations allow a Call in Level of Normal+Emergency. Next, select Stations , navigate to the station's extension number, and then use the slider to determine what the station's Day CoS is. If the station's Day CoS does not allow the correct Call in Level, select the Edit icon, and then select a CoS configuration that has the correct Call in Level.
The station is not receiv- ing Audio Distribution.	The station is on the Pag- ing Exclusion list.	Remove the station from the Paging Exclusion list. (See <i>"Excluding Stations from Paging" on page 195</i> .)
	The station is not a mem- ber of audio distribution zone.	Add the station to an audio distribution zone. (See <i>"Editing Zone Configuration" on page 205</i> .)
	The station's Multicast Audio Distribution parameter is disabled.	Enable the station's Multicast Audio Dis- tribution parameter. (See <i>"Editing Station</i> <i>Configuration Settings" on page 141</i> .)
	Multicast IP packets are being blocked or not routed.	Ensure that multicast IP packets are flow- ing between the Nyquist server and Nyquist stations.
When the button on the Digital Call Switch (DCS) is touched, the DCS's LED changes from solid blue to solid green as if a nor- mal call is being made. However, no call is made.	The DCS may be attached to a device that is not configured to support the Digital Call Switch & Speaker station Type .	Determine what Device Type the DCS is attached to and use the Stations list to determine if the Type is set as Digital Call Switch & Speaker . (See "Viewing Station Configuration Settings" on page 128.)

Dashboard Messages

The Admin web UI dashboard and the Admin Phone display error, warning, and information messages during Nyquist operations. Error and warning messages include notices that an operation failed and information about why the failure occurred. You can delete these messages using the Delete icon (if

shown), but you may want to note the error and pass the information about the error to system administrator or information technology personnel.

Informational messages often provide status about an operation or condition and are usually cleared automatically when an operation completes. The following table describes the informational messages that may appear:

Message	Meaning
Alarm (<extension>): <alarm-name></alarm-name></extension>	The listed extension is starting an alarm.
Tone (<extension>): <tone-name></tone-name></extension>	The listed extension is starting a tone.
Page (<extension>): Zone: <zone- number> - <zone-name></zone-name></zone- </extension>	The listed extension is starting a page for the listed zone.
Announcement (<extension>): <announcement-name></announcement-name></extension>	The listed extension is starting the listed announcement.
Emergency Announcement (<extension>): <e-announcement- name></e-announcement- </extension>	The listed extension is starting the listed emergency announcement.
All-Call (<extension>)</extension>	The listed extension is starting an All-Call page.
Emergency All-Call (<extension>)</extension>	The listed extension is starting an Emergency All-Call page.
Scheduled Announcement	A scheduled announcement is playing.
Multi-Site Emergency All-Call (<extension>)</extension>	The listed extension is starting a multiple site Emergency All-Call page.
Multi-Site All-Call (<extension>)</extension>	The listed extension is starting a multiple site All-Call page.
Multi-Site Page [<site(s)>] (<extension>)</extension></site(s)>	The listed extension is starting a page for the listed site(s).
Multi-Facility Announcement (<announcement>) [<site(s)>] (<extension>)</extension></site(s)></announcement>	The listed extension is starting the specified announce- ment DTMF code at the listed site(s).
Facility All-Call (<extension>) -> <facility-name></facility-name></extension>	The listed extension is starting a facility-wide All-Call page.
Audio Distribution: Playing <song-name> to Zone (<zone-number(s)>)</zone-number(s)></song-name>	The Audio Distribution feature is playing the listed song to the listed zone. The message may optionally include "and All Speakers" or "and selected stations."
Audio Enabled	Audio (paging, Scheduled Audio, audio distribution) is enabled. See <i>"Enabling and Disabling Audio" on page 395</i> for more information.

Table 119. Dashboard Informational Messages

Table 115. Dashboa	ina informational messages (continuea)
Message	Meaning
Audio Disabled	Audio (paging, Scheduled Audio, audio distribution) is disabled. See <i>"Enabling and Disabling Audio" on page 395</i> for more information.
System is running in demonstration mode	All Nyquist functions are enabled but the maximum sta- tion count is set to 6 and the maximum number of simul- taneous calls is set to 2.

Table 119. Dashboard Informational Messages (Continued)

User-created messages set up for I/O Controller rules also appear on the dashboard. See "Configuring I/O Controller Input Rules" on page 148 and "Configuring I/O Controller Output Rules" on page 150 for additional information.

User-created messages set up by Routines also appear on the dashboard. See the Dash-Text command in *Table 151, "Routine Action Type-Specific Parameters," on page 576* for additional information.

911 Call Errors

The following errors may occur when an extension attempts to place a 911 call:

- Call to 911 from <extension> failed due to no outbound lines available.
- Call to 911 from <extension> failed due to no 911 access.

The first message means that all outbound lines from the facility are currently busy. To prevent this error from occurring, set the **Bump on 911** system parameter to **Yes**. (See *"Using the System Parameters Page" on page 20*.) You also want to ensure that outside line access is enabled. (See *"Editing Outside Lines" on page 111*.)

If the second error message appears, then the station, or extension, attempting to make the 911 call does not have the 911 Route parameter and Outside Access parameters correctly set. (See *"Editing Station Configuration Settings" on page 141*.)

Maximum Concurrent Call Error

If you reach your maximum concurrent call limit, the following error message appears:

• Maximum concurrent calls reached. Contact Customer Service to increase maximum concurrent calls limit.

In this case, calls include telephone calls, pages, tones, alarms, and announcements.

To view the concurrent call limit set for your system:

- 1 From the navigation bar, select **System Parameters**.
- Select Product License.
 The Maximum Concurrent Calls Limit appears under Licensing Information.

The limit is based on your licensing setup and can only be changed by contacting Customer Service.

If you are using the Record Page feature, you must be below your concurrent calls limit by two calls for the page to play. Otherwise, the page remains in the queue.

Equipment Errors

The following table describes equipment error messages that may appear:

Table 120. Equipment-Related Errors **Error Message** Cause NOTICE: Server was restarted due to The server probably experienced a crash. Contact Technical error. Contact Technical Support. Support to ensure that the crash did not cause any issues. Note that the server may also restart during an install or upgrade. <date time> Extension <extension You may be experiencing connectivity issues that prevents the station from being registered with the Nyquist server. number> not available, check device You may want to reboot the device to see if that takes care status. of the problem. Line-Input busy (Matrix Mixer: You are attempting to use an input channel that is already in <mixer extension>. Channel: <mixer use. channel number> WARNING: I/O Controller - <name> If it is listed as unavailable, the device is not registered with (<controller extension>) is Unavailthe Nyquist server. able. WARNING: I/O Controller - <name> The server is unable to determine the state of the device. (<controller extension>) is Unknown. WARNING: I/O Controller - <name> The device is registered with the Nyquist server but cannot (<controller extension>) is Unreachbe reached (communication to device fails). This situation is able. probably due to a network or cable issue or the device is rebooting.

Facility Error Conditions

If you cannot reach a facility that is listed and enabled in the Facilities list, the following error messages appear on the Admin dashboard or the Bogen Admin IP phone:

- WARNING: Not registered with Facility: <Facility-Name>
- WARNING: Remote Facility not registered: <Facility-Name>
- WARNING: Remote facility not registered with this Facility: <Facility-Name>

Error messages also appear when multi-site and facility calls are initiated but cannot be completed due to issues with the remote facility.

To troubleshoot these error messages:

- 1 On the navigation bar, select **Facilities**.
- 2 Ensure the **Status** for the facility appears as **Enabled** and that the following facility parameters are correct:
- 3 Password
- 4 Name
- 5 Host (Host Name or IP address)
- 6 If parameters are incorrect, select the **Edit** icon for the facility and make the necessary changes. (See *"Editing a Facility" on page 121*.)

In addition to performing the troubleshooting steps through the Nyquist Admin Web UI, do the following:

- Check for network issues (Local Area Network (LAN), Wide Area Network (WAN), VLAN, ports) that are preventing facility servers from communicating with each other.
- Ensure that you can access and operate the remote Nyquist facility server by logging on to the Admin Web UI for that server and attempting to initiate a call or page.

Automatic Failover Messages

There are a number of messages that will be shown on the Dashboard to reflect changes to the Automatic Failover status. Each will be prefixed with an icon, date, time, and "Automatic Failover - ".

Some messages will only be shown while the user is logged into a server by the Primary or Secondary IP address, while others are only shown when logged into the server by Master IP address.

Tip: When accessed via the Master IP address, the Operation Commands section of the Automatic Failover page provides a direct link to the Primary and Secondary servers,

Table 121. Automatic Failover Dashboard Messages

Message	Туре	Server(s)
Lost contact with Primary node	Warning	Secondary Master
Lost contact with Secondary node	Warning	Primary Master

Message Type Server(s) Ethernet Port-A network failure, Primary node not providing service Warning Primary Ethernet Port-A network failure, Secondary node not available Warning Secondary Primary node not providing service Warning Primary Warning: Secondary node is starting service. Warning Secondary Master Please contact technical support and avoid making configuration changes. Warning: Secondary node is now providing service. Warning Secondary Master Please contact technical support and avoid making configuration changes. Primary node is starting service Information Primary Master Success Primary node is now providing service Primary Master Secondary node is now in slave mode Success Secondary Primary node is now in standby mode Warning Primary Secondary node is now in standby mode Warning Secondary

Table 121. Automatic Failover Dashboard Messages

Zone Overlap Messages

Zone overlap occurs when two or more target zones of a scheduled event include the same station (or stations).

• WARNING: Zone overlap exists in scheduled events. Use 'Check Server Status' to view overlap list.

Perform a **Check Server Status** operation (see "Check Server Status" on page 41) to determine which scheduled event references two or more target zones that include the same station. To fix this, either remove the shared station from all but one target zone, or remove the overlapping target zone(s) from the scheduled event.

Finding Nyquist System Controller's IP Address

If you do not know the IP address of the Nyquist System Controller (NQ-SYSCTRL), there are several ways to obtain it.

• If you have physical access to the Nyquist System Controller, you can obtain the IP address by attaching an HDMI monitor to the controller's HDMI port; the IP configuration should be displayed

on the screen. If it is not displayed, perform a hardware reset and wait for it to reboot (approximately one minute). The IP address (xxx.xxx.xxx) and subnet mask (yy) for each network adapter can be found within the displayed text as:

inet xxx.xxx.xxx.yy

- If the IP address was assigned to the Nyquist System Controller by your DHCP server, the IP address
 can usually be determined by interrogating your DHCP server. Look for a DHCP client name of
 debian or nq-sysctrl-003018xxxxxx or for the System Controller's MAC address, which is available
 on the chassis of the System Controller and begins with 00:30:18.
- The following PowerShell command can sometimes retrieve the IP address. Replace 00-30-18-xxxx-xx with your Nyquist System Controller's MAC address, which is available on the chassis of the System Controller.

Get-NetNeighbor -LinkLayerAddress 00-30-18-xx-xx-xx

 If you don't have access to the network switch or the facility DHCP server, it might be necessary to download and install an IP scanner (e.g., Advanced IP Scanner or nmap) on your client computer to scan the network and identify the IP address. Look for the associated MAC address or a host name of "JET" in the scan results.

Changing a System Controller's IP Address

If you need to change the IP address for the Nyquist System Controller, run the Setup Assistant to reconfigure network settings.

To change the System Controller's IP Address:

Warning If your system is currently configured to use the Automatic Failover feature, you must first disable the Automatic Failover feature before you change the Server's IP address. After you change the Server's IP address, you will need to reconfigure the Automatic Failover feature.

1 Type https://<address>/setup/network in the web browser's address bar. If you are configuring the System Controller for the first time, replace <address> with 192.168.1.10, otherwise use the previously configured IP address of the server.

Net	work	(Wi	rd	
The Sy with N to com Port A	ystem yquist imunic is also	Contro device ate wit used	has two different network ports. Port A and Port B. Port A is always used by the Nyquist serve to the Nyquist web interface. Port B is an optional port that when configured is always used by ternet based services. Port B is not used to communicate with Nyquist devices. If Port B is not he Nyquist Server to communicate with internet based services.	r to communicate r the Nyquist server t configured, then
1. Is P	ort A a	Static	Address or provided via a DHCP Server?	
Static	IP Addre	ess •		
What is	s the I	P Addr	for Port A?	
192	168	1	D	
What i	s the S	Subnet	sk for Port A?	
255	255	255		
What i	s the C	Satewa	pr Port A?	
2. Is P	ort B a	Static	Address, provided via a DHCP Server, or Not Used?	
DHCP	Server	•		
3. DNS	S Serv	ers: 👩		
Save a	and Res	et Netwo	lerfaces	

Figure 155. Network Wizard

2 Complete the wizard and select **Save and Reset Network Interfaces**.

Resetting the network interfaces will take several minutes. A progress bar will appear on the screen.

- 3 Log into your Nyquist server using the System Controller's new IP address.
- 4 On the System Parameters page, check the current value of Server IP Address to make sure it matches the new Server IP address. If it does not match, then change it to the new Server IP address.

Note: After using the Network Wizard to change the server's IP address (and/or Port-B IP address), if you have previously entered IP addresses into the **Additional IP Addresses and/or DNS names to include in the Server Certificate** field (on the System Parameters page) and you still need the server certificate to include those IP addresses, you will need to edit the System Parameters (see *"Setting System Parameters" on page 62*) and press the **Generate Server Certificate** button to re-create the certificate with the new server IP address and the additional IP addresses (see *Table 20, "System Tools," on page 73*).

Performing Tasks via the Dashboard

Note: This section is intended as a quick operations guide for personnel who use the Nyquist dashboard. For information about starting routines, refer to *"Using Routines" on page 416.* For information about managing check-in, refer to *"Manage Check-In" on page 510.* For further information about the Dashboard, refer to *"Accessing the Dashboard" on page 9.*

You can use the dashboard for most daily tasks, including, but not limited to:

- Starting intercom pages ("Starting Pages" on page 368)
- Recording intercom pages ("Record Page" on page 370)
- Starting and stopping alarms, tones, and announcements ("Managing Alarms via the Dashboard" on page 379) ("Managing Tones via the Dashboard" on page 380) ("Managing Announcements via the Dashboard" on page 381)
- Placing, answering, or disconnecting telephone calls ("Managing Calls via the Dashboard" on page 384)
- Using page exclusion ("Using Page Exclusion" on page 389)
- Viewing the schedules for the week ("Viewing the Schedule for the Week" on page 392)
- Performing audio distribution ("Using Audio Distribution" on page 392)
- Managing display messages ("Managing Display Messages" on page 485)
- Managing check-in (*"Manage Check-In" on page 510*)
- Starting routines ("Starting and Stopping a Routine from the Admin Web UI" on page 417)
- Control I/O Controller output contacts ("Manually Controlling Output Contacts" on page 397)

Which items appear on your dashboard depends on your assigned permissions and the station's CoS. (See "Managing Roles and Users" on page 241 and "Using CoS Configuration" on page 91.)



Figure 156. Nyquist Dashboard

Viewing Messages

The Dashboard displays a list of active messages about the system. These can include messages about system updates, device communications, weather alerts, or any of a number of other messages.



Figure 157. Dashboard Messages

To remove the message from the Dashboard, click the Delete icon next to the message. To remove all messages, restart the system (see *"Restarting the Server" on page 27*).

Weather Alert messages

When National Weather Service (NWS) alert notices are displayed, clicking the Information button to the right of any displayed alert notice will open a window entitled "National Weather Service Alerts," which displays the text of all active NWS alerts (see *Figure 158, "National Weather Service Alerts," on page 368*).

Note: The NWS Alerts text display feature depends on an executing Routine that generates NWS alerts using a Display-Msg action with the *\$alerts()* variable in the Display-Msg Text field (see *"NWS Alert Routines"* on page 526) and with the POST_DASH_PHONE_TEXT parameter included in the *\$alerts()* parameter list (see *"Setting Variables for the Display Message"* on page 535).

ALERT Severe Thunderstorm Warning (Severe,Observed,Immediate,Shelter) The National Weather Service in North Platte has issued a * Severe Thunderstorm Warning for East central Garden County in the Panhandle of Nebraska * Until 1145 AM MDT. * At 1104 AM MDT, a severe thunderstorm was located 7 miles southeast of Crescent Lake National Wildlife Refuge, or 16 miles north of Oshkosh, moving east at 15 mph. HAZARD60 mph wind gusts and quarter size hail. SOURCERadar indicated. IMPACTHail damage to vehicles is expected. Expect wind damage to roofs, siding, and trees. * Locations impacted include Adams Flats, Rackett, Dogtown Flats and Bourquim Hill. Instructions: For your protection move to an interior room on the lowest floor of a building. ALERT Special Weather Statement (Moderate,Observed,Expected) At 1054 AM MDT, a strong thunderstorm was located near Crescent Lake National Wildlife Refuge, or 18 miles north of Oshkosh, moving east at 30 mph. Penny size hail is possible with this storm. Locations impacted include Crescent Lake National Wildlife Refuge, Deer Lake, Adams Flats, Rackett, Bourquim Hill and Dogtown Flats.	National Weather Service Alerts	
Instructions: For your protection move to an interior room on the lowest floor of a building. ALERT Special Weather Statement (Moderate,Observed,Expected) At 1054 AM MDT, a strong thunderstorm was located near Crescent Lake National Wildlife Refuge, or 18 miles north of Oshkosh, moving east at 30 mph. Penny size hail is possible with this storm. Locations impacted include Crescent Lake National Wildlife Refuge, Deer Lake, Adams Flats, Rackett, Bourquim Hill and Dogtown Flats.	ALERT Severe Thunderstorm Warning (Severe,Observed,Immediate,Shelter) he National Weather Service in North Platte has issued a * Severe Thunderstorm Warning for East central Garden ounty in the Panhandle of Nebraska * Until 1145 AM MDT. * At 1104 AM MDT, a severe thunderstorm was located 7 iles southeast of Crescent Lake National Wildlife Refuge, or 16 miles north of Oshkosh, moving east at 15 mph. AZARD60 mph wind gusts and quarter size hail. SOURCERadar indicated. IMPACTHail damage to vehicles is xpected. Expect wind damage to roofs, siding, and trees. * Locations impacted include Adams Flats, Rackett, portown Flats and Bourquim Hill.	
	onstructions boarquin mill. nstructions: or your protection move to an interior room on the lowest floor of a building. ALERT Special Weather Statement (Moderate,Observed,Expected) t 1054 AM MDT, a strong thunderstorm was located near Crescent Lake National Wildlife Refuge, or 18 miles north of shkosh, moving east at 30 mph. Penny size hail is possible with this storm. Locations impacted include Crescent ake National Wildlife Refuge, Deer Lake, Adams Flats, Rackett, Bourquim Hill and Dogtown Flats.	

Figure 158. National Weather Service Alerts

Starting Pages

Depending on how your Nyquist system is set up, you can start Normal, All Call, and Emergency All Call pages for a specific zone, the entire facility, or multiple sites. You can also select an announcement to play before you make a page.

Single-Zone Paging



Figure 159. Paging Single Zone

To make a single-zone page via the dashboard:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Zone Page**.
- 3 On the Zone Page popup, select the zone that you want to page.

Note: You can sort the zones by Name or Number.

- 4 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 5 If prompted, enter 1 for confirmation.
- 6 If prompted, allow Nyquist to use the microphone associated with your station.

Warning If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.

- 7 After you hear the tone, speak into the microphone.
- 8 Select **End Call** to end the page.



Figure 160. End Call

Record Page

You can record a page to be added to a zone queue. (For information about queues, see "Viewing Queues" on page 213.) The maximum recording time for a page is 60 minutes; if the recording exceeds 60 minutes, it will time out and not be saved. If the recording is silent for 60 seconds, it will time out and not be saved.



Figure 161. Record Page

The pages in the zone's queue are played in the order that they are placed in the queue.

A live page started on a zone that is playing a recorded page will cause the recorded page to be terminated and sent back to the queue. The interrupted message will play again, from the beginning of the message, when the zone becomes idle. Multi-Site Emergency-All-Call, Multi-Site All-Call, Emergency All-Call, All-Call, Alarm, Tone, and Emergency Announcement will also interrupt any playing recorded zone messages. All re-queued interrupted messages will play again, from the beginning of the message, when the zones becomes idle.

Selecting **Disable Audio** will cause all recorded messages to stop. The messages will resume play from the beginning when audio is re-enabled.

To record a page for page queuing:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Record Page**.
- 3 On the Record Page popup, select the zone that you want to page.

Note: You can sort the zones by Name or Number.

- 4 Wait for the prompt (if system parameter **Enable Queued Paging Instruction Message** is set to Yes) or tone (if set to No) and then record your message.
- 5 Hang up to end the recording.

Note: Pressing any key terminates the recording without adding the page to the queue.

Prepend Page

You can prepend a page with a special announcement. For example, if you have a prerecorded weather alert announcement, you can prepend that announcement file so that it plays first as you prepare to make a page.

	Prepend Page	3	
Announcement: Weather Alert +			
Zones: Choose a Zone			
49 Send			
			Close

Figure 162. Prepend Page

To prepend a page:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Prepend Page**.

- 3 Select the Announcement for which you want to prepend a page.
- 4 On the Prepend Page popup, select the zone that you want to page.
- 5 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 6 If prompted, enter 1 for confirmation.
- 7 If prompted, allow Nyquist to use the microphone associated with your station.
- 8 After the prepend announcement ends, speak into the microphone.
- 9 Select **End Call** to end the page.

All Call Paging

All Call paging is a simultaneous page to all facility stations, unless the station has been excluded from pages. An All Call page takes higher priority over zone paging, queued zone paging, non-emergency announcements, and audio distribution. If a queued zone page is interrupted by an All Call page, the queued zone page will repeat after the All Call page is finished.



Figure 163. All Call

To start an All Call page:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **All Call**.
- 3 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 4 If prompted, enter 1 for confirmation.
- 5 If prompted, allow Nyquist to use the microphone associated with your station.

- **Warning** If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.
- 6 After you hear the tone, speak into the microphone.
- 7 Select **End Call** to end the page.

Emergency All Call Paging

An Emergency All Call page is a high priority page that is transmitted to all stations, even those stations that have been set up for page exclusion. Starting an Emergency All Call page will terminate all audio currently being played on the system (e.g. All-Call page, Zone paging, Announcements, Tones, Alarms, and Audio Distribution).

Note: Audio Distributions that are terminated by Emergency All Call pages are not resumed after the page is finished.



Figure 164. Emergency All Call

To start an Emergency All Call page:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Emergency All Call**.
- 3 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 4 If prompted, enter 1 for confirmation.

- 5 If prompted, allow Nyquist to use the microphone associated with your station.
- **Warning** If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.
- 6 After you hear the tone, speak into the microphone.
- 7 Select End Call to end the page.

Facility Paging

If your system is configured to use multiple facilities, you can start a Facility Page. For information about configuring facilities, see "Configuring Facilities" on page 119.



Figure 165. Facility Page

To start a facility page:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Multi-Site Calling/Paging, select Facility Page.
- 3 On the Facilities page, select one or more facilities that you want to page. Note that you can sort and filter the facilities by Name or Number.
- 4 Select All-Call or Emergency-All-Call, depending on whether you want to make a normal or emergency page.

Tip: As an alternative to the previous two steps, you can select the green announcement button for a specific facility to place an immediate non-emergency page to only that facility.

- 5 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 6 If prompted, enter 1 for confirmation.
- 7 If prompted, allow Nyquist to use the microphone associated with your station.

- **Warning** If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.
- 8 After you hear the tone, speak into the microphone.
- 9 Select **End Call** to end the page.

Multi-Site All Call Paging

If your station's CoS allows multi-site paging, you can start a Multi-Site All Call page. (*See "Using CoS Configuration" on page 91* for information about setting up CoS for multi-site paging.)



Figure 166. Multi-Site All Call

To start a Multi-Site All Call page:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Multi-Site Calling/Paging, select Multi-Site All Call.
- 3 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 4 If prompted, enter 1 for confirmation.
- 5 If prompted, allow Nyquist to use the microphone associated with your station.
- **Warning** If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.
- 6 After you hear the tone, speak into the microphone.
- 7 Select **End Call** to end the page.

Multi-Site Emergency All Call

If your station's CoS allows multi-site paging, you can start a Multi-Site Emergency All Call page. A Multi-Site Emergency All Call page has priority over any other pages. (*See "Using CoS Configuration" on page 91* for information about setting up CoS for multi-site paging.)



Figure 167. Multi-Site Emergency All Call

To start a Multi-Site Emergency All Call page:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Multi-Site Calling/Paging, select **Multi-Site Emergency All Call**.
- 3 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 4 If prompted, enter 1 for confirmation.
- 5 If prompted, allow Nyquist to use the microphone associated with your station.

- **Warning** If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.
- 6 When the Emergency page appears, select OK.
- 7 After you hear the tone, speak into the microphone.
- 8 Select End Call to end the page.

Backup Paging from an NQ-T1100 Admin Phone

NQ-T1100 Admin Phones include the ability to perform Paging even if the Nyquist Server is down (by using backup paging). This is a great feature if you are concerned about the Nyquist server being a single point of failure. When combined with the Backup Bell Schedule feature, in the unlikely event that the Nyquist server becomes unavailable, users will still be able to perform paging and receive bell tones.

When the user attempts to perform a Page but does not get a response from the Nyquist server, the user can perform a backup Page by using the following step on the NQ-T1100 Admin Phone.

- 1 Press the **Menu** button on the NQ-T1100 Admin Phone.
- 2 Press the **Features** button.
- 3 Scroll down the menu on the left side of the screen, then press the **Paging List** button.
- 4 Select the entry for Emergency-All-Call, All-Call, or a Paging Zone.
- 5 Press the **Paging** button, located on the bottom right of the display.

The NQ-T1100 will immediately start a Page to the selected Zone. A preannounce tone will not be played because backup paging does not support preannounce tones, but the caller will hear a tone to indicate that the Page has started.

The backup paging feature should *never* be your first choice for paging; it should *only* be used as a backup in the event that the Nyquist server is down.

The NQ-T1100 station needs to have the following CoS configured to initiate paging:

- Emergency All-Call
- All-Call Paging
- Zone Paging

Entries will only be available in the Paging List if the required CoS is enabled for the station.

How to disable the Nyquist Backup Paging feature

If you do not want the Nyquist Backup Paging feature enabled, you can add the following custom variable to the Actions and Custom Variables section of the Custom Configuration page to disable it:

backup_paging=disabled

When the feature is disable, it is disabled for all NQ-T1100 IP phones connected to the Nyquist system.

To re-enable the Backup Paging feature, use the following:

backup_paging=enabled

If you are using the NQ-T1100 web interface to manually configure the phone's paging list, you can use the following to instruct the Nyquist system to not make changes to your configuration:

backup_paging=custom

Inter-Facility Calling and Paging Passwords

Using the **Edit System Parameters** page (see *Table 19, "Edit System Parameters Page," on page 64*), you can configure the system to require that a password be entered for calling, paging, or making announcements to the local facility, remote facilities, or both. When starting pages or announcements at multiple facilities, if the local facility is included, it is quite possible for more than one password to be required—one for the local facility, one for the remote facilities—even though only one operation is being performed.

For example, both the All-Call (local) and Facility Page (remote) passwords may be required for a Multi-Site All Call Page operation. Similarly, the Emergency-All-Call (local) and Multi-Site-Emergency-All-Call (remote) passwords may be required for a Multi-Site Emergency All Call page.

To avoid this confusion, particularly when an emergency may be involved, the Nyquist system only requires one password to be entered in these scenarios. If only one of the two locations (i.e., local or remote) requires a password, the user will be prompted for that one. If both require a password, the user will be prompted for the remote facility operation (e.g., Facility Page or Multi-Site-Emergency-All-Call password), as operations on a remote facility are typically more restricted.

Tip: To prevent accidental remote facility paging, you should set Facility-Page Password and Multi-Site-Emergency-All-Call Password to 4-digit passwords in **Edit System Parameters** (see *Table 19, "Edit System Parameters Page," on page 64*).

Managing Alarms via the Dashboard

Alarms are audio files used to indicate a situation, such as a fire. When you elect to sound an alarm, only the tones with a type of Alarm appear in the selection list.

Alarm	
Filter by Name:	
Dual-tone Alarm	
Mono-tone Alarm	
Siren 1	
Siren 2	
	Close

Figure 168. Alarm Page

To start and stop an alarm:

- 1 On the navigation bar, select **Dashboard**.
- 2 Under Tones/Announcements, select Alarm.
- 3 On the Alarm page, select the alarm that you want to sound. The Alarm icon changes from a red bell to a red box.
- 4 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 5 If prompted, enter 1 for confirmation.
- 6 To end the alarm, select **Stop**.

Tip: To end an alarm started by a different station, select the Dashboard's (red square) **Alarm** icon.

Managing Tones via the Dashboard

Tones are similar to alarms, but are usually used to signal an announcement or time-based event. Starting a tone sends a tone to all zones with a **Type** of **Time** or a combination of **Time** and **Paging**, **Audio**, or both.

	Tone	
Filter by Name:	Zones: All Time Zones *	
7-S econd		•
Chime		
🗾 Quad Beep		
Pink Noise		
🗾 White Noise		
		Close

Figure 169. Tone Page

To start and stop a tone:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Tones/Announcements, select **Tone**.
- 3 Select the zone at which you want the tone to play, or select All Time Zones.

Note: The only zones that are available are those with a Type of Time.

4 On the Tone page, select the tone that you want to sound.

Only tones that have not been hidden appear. (*See "Managing Tones" on page 327* for information about hiding tones.)

Note: When a tone is started, the Tone icon on the Dashboard changes from a blue note to a red box to indicate that pressing the button will stop the Tone that is currently playing.

Note: A tone will play continuously if one of three conditions exist: its **Type** is **Alarm**, its **Times to Play** is set to zero (0) while using Line-Input as tone source, or its **Length** is set to zero (0).

- 5 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 6 If prompted, enter 1 for confirmation.

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A tone will stop playing automatically after it has reached its number of times to play. (See "Managing Tones" on page 327.)

Tip: To end a tone started by a different station, select the Dashboard's (red square) **Tone** icon.

Managing Announcements via the Dashboard

You can start previously recorded announcements from the dashboard and select the zone where the announcement will play.

	ļ	Announcement	
Filter by Name:	Zones:	All Speakers *	
Joke of the day			
Lockdown Alert			
NWS Alert			
Weather Alert			
			Close

Figure 170. Announcement Page

To start and stop an announcement:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Tones/Announcements, select Announcement.
- 3 On the Announcement page, Normal announcements display a blue icon and Emergency announcements display a red icon. Use the **Zones** drop-down menu to select the zone where the announcement will play and enter text in **Filter by Name** to search the list of announcements.
- 4 Select the announcement that you want to start.
- 5 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 6 If prompted, enter 1 for confirmation
- 7 To end the announcement, select **Stop** (or **Close**, if the **Dial Pad** is displayed).
- 8 You can also stop an announcement by performing the following steps:
 - a) Under Tones/Announcements, select Stop Announcement.
 - **b)** Follow screen prompts.

An announcement will end automatically after it has reached its number of times to play. (See "Using Announcements" on page 314.)

If multiple announcements are playing, you can select to stop a specific announcement or to stop all active announcements.

To stop an announcement when multiple announcements are running:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Tones/Announcements, select Stop Announcement.
- 3 On the Stop Announcement page, select the announcement that you want to stop or select Stop All Announcements.

Facility Announcement

If your system is configured with multiple facilities, you can use the Facility Announcement feature to play a predefined announcement at any one or more facilities.

Because the announcement will play simultaneously but independently at each facility, there are several behaviors of which the user should be aware:

- The announcement will *not* be synchronized across speakers from different facilities. If there are locations that are within hearing range of speakers from more than one facility, this could result in overlapping but unsynchronized audio playback.
- When playing announcements at remote facilities, the actual Announcement Audio to be played at each facility is determined by the DTMF code of the selected announcement. If a remote facility is configured with a different Announcement Audio for that DTMF code than that of the local facility, that facility will play a different audio announcement.
- Stopping the announcement through the Dashboard will only stop the audio for the current facility. To stop the announcement at other facilities, the user must log into the Dashboard of each facility and stop the announcement using the Stop Announcement button. For this reason, it is strongly recommended that announcements *not* be configured for continuous play (i.e., "Times to Play" equal to zero) if they will be used for multi-facility announcements.

2:		F	Facility Announcement	
Sort By:	Number	Name	Filter by Number:	
Announce	ement:	one	•	
	4	All F	acilities	
	₹	DEB	310-C4000-R3-01	
	F	DEB	310-E7000-R6-01	
¶ ⊅ St	tart Anr	nounce	ement	Close

Figure 171. Facility Announcement

To start a facility announcement:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Multi-Site Calling/Paging, select Facility Announcement.
- **3** Select the announcement that you want to play from the **Announcement** drop-down. The announcement type (Normal or Emergency) is displayed in parentheses.

Note: Announcements that are defined to play continuously are not available for a Facility Announcement.

- 4 Select one or more of the specified facilities at which the announcement is to be played. Selecting All Facilities will select all the facilities for you. Note that you can sort and filter the list of facilities by Name or Number.
- 5 Select the **Start Announcement** button.

Tip: As an alternative to the previous two steps, you can select the green announcement button next to a listed facility to immediately start the announcement at that one single facility.

- 6 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 7 If prompted, enter 1 for confirmation.

- **Warning** If you turn off the microphone on your computer, you cannot start audio distribution, tones, alarms, and so on. When attempting to make a call with the computer's microphone turned off, Nyquist automatically hangs up the call. If you make a second call, the dashboard displays a message that the phone is in use. Also, when the microphone is off and a bell tone comes in, Nyquist rings as opposed to auto answering.
- 8 If prompted, allow Nyquist to use the microphone associated with your station.

Note: See *"Facility Announcement Priorities" on page 316* for details on how to determine if the announcement was successfully played.

9 To end the announcement at the current facility, select Stop (or Close, if the Dial Pad is displayed).

Managing Calls via the Dashboard

Receiving Calls

Receiving calls via the Dashboard is simple. When a call to the Admin's extension is received, a pop-up will appear, displaying the calling station's name and extension and prompting the user to accept (**Answer**) or reject (**Busy**) the call. To accept the call, select **Answer** and begin talking.

Important: Calls can only be received when the Dashboard is displayed. If the web interface is displaying a different page, the caller will be notified that the callee is unavailable and given the option to leave a message.



Figure 172. Incoming Call to Admin Extension

When a call placed using a station's call-switch is received, the incoming call will be displayed on the Dashboard in the Incoming Call section, displaying the calling station's name and the call priority. To accept the call, press **Answer**; to reject it, press **Busy**.

Incoming Calls			
Action	Priority	Caller	
C Answer Busy	Normal	108 - Classroom	

Figure 173. Incoming Call from Call-Switch

Placing Calls

Nyquist provides two ways to place a call via the dashboard:

- Through the use of a directory
- Through the use of a dial pad

If you are calling a second-generation "Digital Call Switch & Speaker" station and no one answers the call (or the station is busy), you can request a callback (see "*Requesting a Callback*" on page 389 for details). The call recipient will see a flashing LED as a Callback Request Indicator (CRI) to indicate that a callback has been requested.

Note: The callback request feature is only available on a Nyquist system if the Enable Callback Request Indicator system parameter is enabled. A related parameter, Callback Request Indicator Expiration, specifies for how many hours an indicator will be displayed before it is automatically turned off (see *"Edit System Parameters Page" on page 64*).

Placing Call Using Directory

The Nyquist directory is a list of all stations that can receive calls. These can include computers with the Admin Web UI, telephones, VoIP speakers, or digital call switches and speakers.



Figure 174. Directory Page

To place a call using the directory:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Directory**.
- 3 On the Directory popup, select the extension that you want to call. Note that you can sort the list of extensions by extension number or name.
- 4 Select End Call to end the call.

Placing Call Using Dial Pad



Figure 175. Dial Pad

To place a call using the Dial Pad:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Dial Pad**.
- 3 Dial the extension or number that you want and select **Send**.

Tip: Select the **DTMF Codes** button to view documentation on the available DTMF codes (see "*Nyquist DTMF Feature Dialing Codes*" on page 562).

4 Select **End Call** to end the call.

To answer a call from another extension:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Select Answer.
- 3 Select End Call to end the call.

911 Dashboard Alerts

When an outbound 911 call is placed by any device in the system, a popup message dialog will be displayed on all Admin Web Interface dashboards, as shown in *Figure 176, "911 Alert," on page 387*.



Figure 176. 911 Alert

The Admin can monitor the 911 call by pressing the **Monitor** button. The popup message dialog will change to indicate that the call is being monitored, as shown in *Figure 177, "911 Monitor," on page 387.*



Figure 177. 911 Monitor

The Admin will be muted and can listen to the conversation. The Admin can press **Unmute** to join the call and be able to speak to the caller and callee.

Call Forwarding

Incoming call can be forwarded to a different station. Call forwarding can be enabled or disabled via the Dashboard or via the Admin Phone touch screen.

To enable or disable call forwarding via the Admin Phone, do **one** of the following:

- Touch Menu, touch Features, and touch Call Forward.
- Touch Directory, touch Features, and touch Call Forwarding.
- Touch Features and touch Call Forwarding.
- Pick up the handset and touch Forward.

See the NQ-T1100 Admin Phone User Guide for further details.

To enable or disable call forwarding from the Dashboard:

- 1 Ensure you are logged into the station whose incoming calls will be forwarded.
- 2 If not already on the dashboard, select **Dashboard** from the navigation bar.
- 3 Under Calling/Paging, select Call Forwarding.
- 4 Next to Forward To, select the station to which calls will be forwarded.
- 5 Select the desired forwarding operation:

Always Forward: Forward all incoming calls.

Busy Forward: Forward incoming calls received while the station is busy.

No Answer Forward: Forward incoming calls that are not answered within 15 seconds.

Busy or No Answer Forward: Forward incoming calls received while the station is busy or that are not answered within 15 seconds.

Cancel Forwarding: Stop forwarding incoming calls.

Current Forwarding Status: Play a voice announcement that identifies the current call forwarding status for the station.

An entry of type *Call Forward Setup* will be recorded to the Call Detail Records upon modifying the call forwarding settings (see *"Using the Call Details Feature" on page 354*).

Tip: If Call Forwarding is not working for a station, verify that the **Call Forwarding** CoS is enabled for that station.

Requesting a Callback

To request a callback, simply dial *7 after the call is auto-answered. If you place a call to a busy station that has a second-generation Digital Call Switch (DCS-G2), the system will ask you if you would like to initiate a callback request.

To cancel a callback request, call the station again and dial *8.

Tip: To request a callback without placing a call, dial *7<station-extension>. To cancel a request, dial *8<station-extension>.

Note: A callback request using *7<station-extension> can only be placed if the calling station's CoS has "Call Any Station" enabled and the called station has a Call-in Level of Normal+Emergency or Urgent+Emergency and is equipped with a DCS-G2.

Note: Stations placing intercom calls to remote facility stations are not able to activate the CRI feature for the remote station.

Note: Callback requests initiated by remote PBX-based callers are not supported.

Receiving and Returning a Callback

The station that receives a callback request will indicate that a callback request is pending by displaying a Callback Request Indicator (CRI)—flashing its LED once per second (the color will be the same as the station's current status).

When the station with an active callback request places a call using the call-switch, it will call the station that requested the callback.

If the station's CRI is active and the next call initiated from the station is an Emergency call, the CRI shall remain active after the Emergency Call is completed. It will also remain active if the station is restarted.

When returning a callback, if the requesting station does not answer within 60 seconds, the call will either be terminated (for a non-Admin Station) or the call will be forwarded to the caller's admin group (for an Admin Station), and the CRI deactivated.

Using Page Exclusion

You can exclude stations from paging except for alarms, emergency announcements, and emergency pages. Alarms, Emergency All-Call pages, Multi-Site Emergency All-Call pages, and Emergency Announcements to all speakers will be sent to and heard at the station even if that station is set to exclude paging. The following are not sent to the station: All-Call Page, Multi-site All-Call Page, Zone

Page, Facility Page, Facility Zone Page, Recorded Page, Prepended Page, Tones, Announcements (normal, emergency to zones), and Facility Announcements (normal, emergency to zones).

Ø Pa	aging Exclusions	+ Delete Selected
WARNIN Stations	IG: Adding or deleting a station n excluded from paging	may force the station to reboot
		Filter
	Extension	Name 🔶
	110	110-VoIPG2
	112	112-GA10PV
	212	212-PA600-SO

Figure 178. Paging Exclusions Page

To exclude a station from paging via the dashboard:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Page Exclusion.
- 3 Optionally, filter the displayed list of stations by extension or name.
- 4 Select one or more stations to be excluded. Click **Toggle All** to select (or deselect) the entire list of stations.
- 5 Select the **Add Exclusions** button to add the selected stations to the Page Exclusions list.



Figure 179. Add Paging Exclusion Page

Tip: You can also add or remove stations to or from the Paging Exclusion list using the Page-Exclusion Routine Action (see *Table 151, "Routine Action Type-Specific Parameters," on page 576*).

Warning Adding or deleting a station from the page exclusions list may force the station to reboot.

Deleting From Page Exclusion List

To delete an extension from the Page Exclusion list:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Page Exclusion.
- 3 Select one or more extensions to be deleted from the exclusion list.
 - a) Optionally, toggle the checkbox in the header row above the selection checkboxes to select (or deselect) the entire list of stations.
- 4 When all selections are ready, click **Delete Selected** to remove the selected extensions from the list.

Viewing the Schedule for the Week

From the dashboard, you can view this week's schedule or use the **Prev** and **Next** buttons to view the schedule for other weeks. If you select a specific schedule for a day, you can also view details of that schedule.

Schedule					
Magic Kingdom - EDITING Schedule Testing Autom Thursday August 23, 2018					
Time	Name	Zones	Tone	Scheduled Audio	
2:17:30 pm	Happily Ever After	Amp Time Zone	Triumphal Fanfare	Disney World	
2:18:00 pm	Magic Parade	Amp Time Zone	Caramel	Stop Playlist	
2:39:00 pm	Let the Magic Begin	A2120 - MONO, A2300 - 504, A2300 - 505, All Time Zone, Amp Time Zone, Time zone - 1, Zone 10	Triumphal Fanfare	Disney World	
2:39:49 pm	Closing Hours	A2120 - MONO, A2300 - 504, A2300 - 505, All Time Zone, Amp Time Zone, Time zone - 1, Zone 10	Caramel	O Stop Playlis	
				Close	

Figure 180. Schedule Popup Window

To view this week's schedule:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Scroll to the Weekly Schedule panel.
- **3** To view details of a schedule, select a schedule listed, or use the **Prev** or **Next** buttons to navigate to the desired schedule and select that schedule.

The Schedule popup window appears. (See "Schedule Popup Window Parameters" on page 269.)

4 Select **Close** when done viewing.

Using Audio Distribution

Audio distribution specifies an audio program for distribution to stations or zones. It involves creating a playlist or selecting an input source and specifying which zones or stations hear the playlist or input source. Through the Scheduled Audio feature, audio distribution can be tied to a specific event in a schedule. For information about the Scheduled Audio feature, *see "Understanding Event Settings" on page 266*.

Note: Before using the Audio Distribution feature, make sure that stations and zones have been configured and that the station you are using to start Audio Distribution has the appropriate Class of Service (CoS) parameters set.

Line-Input/Playlist/Source:	
Line-Input -	
Zones:	
Add Zones	
Stations:	
Add Stations	
Amplifiers/Matrix Mixers:	Input Channel:
Description:	

Figure 181. Create an Audio Distribution

Note: If an audio distribution playlist that has a station assigned to it is playing, you cannot play another audio distribution playlist with a station assigned.

To create an audio distribution:

1 If not already on your dashboard, select **Dashboard** from the navigation bar.

Note: If you are using at least one Nyquist Matrix Mixer Pre-Amp, Line-Input appears as a Input Source/Playlist option.

- 2 Select the **Add** icon in the Audio Distribution section.
- 3 Use the Line-Input/Playlist/Source drop-down menu to select the audio source. Audio sources can include a line-input from a Matrix Mixer Pre-Amp, available playlists previously created for your system, or Internet radio station sources.

Line-Input/Playlist/Source:



Figure 182. Audio Distribution Sources

- 4 Select the **Zones** and **Stations**.
- 5 If you select Line-Input as the Input Source/Playlist, select the Amplifiers/Matrix Mixers and Input Channel.
- 6 If you select a playlist and want to shuffle the song order, set **Shuffle** to **Yes**.
- 7 Select Save.
- 8 To end the playing of audio, select the **Stop** icon next to the playlist.

To start a previously created audio distribution:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Select the **Play** icon next to the audio distribution that you want to start.
- 3 If a non-blank **Audio Distribution Password** has been configured (see *Table 19, "Edit System Parameters Page," on page 64*), a keypad will be displayed and an audio prompt will request either the audio distribution password value or a confirmation (i.e., the digit 1).
- 4 The selected audio distribution will play.
- **5** To end the playing of audio, select the **Stop** icon next to the playlist.

An existing Audio Distribution can be edited or deleted, provided it is not currently playing or linked to a routine, by selecting the **Edit** or **Delete** icon next to the Audio Distribution.

When Audio Distribution is active, an informational message appears in the Messages window of the Admin Web UI dashboard indicating the audio that is currently playing, to which speakers (all or selected), and to which zones.

Audio distribution will be paused automatically by higher priority feature activation (for example, All-Call Page, Zone Paging, Announcements, Tones) and will automatically resume when the higher priority feature is finished.

Audio Distribution may also be started or stopped using Admin Phones. (Audio Distribution is available on the NQ-T1100 and NQ-ZPMS Admin Phones by selecting the Audio Distribution key and then selecting the desired Audio Distribution from the displayed menu.)

Audio Distribution volume to all speakers can be changed by setting **Audio Distribution Cut Level**, available in **System Parameters**. The Audio Distribution volume to zones can be changed by setting **Audio Distribution Cut Level** in **Edit Zone**. For information about editing a zone, see *"Editing Zone Configuration" on page 205*. Audio Distribution volume can also be changed using the Zone Control feature (see *"Zone Control: Volume and Audio Distribution Panel" on page 339*).

All Nyquist stations are preconfigured to receive Audio Distribution to All Speakers (stations). To disable Audio Distribution to All Speakers for a specific station, change **Audio Distribution to All Speakers** to **No** on the Edit Station page.

Any Admin Web Interface or Admin Phone user may start or stop an Audio Distribution if their station has the **Audio Distribution** CoS Configuration parameter enabled.

Audio Distributions continue playing until manually stopped or until stopped by a scheduled event, I/O Controller Input rule, or Routine.

If you use a USB flash drive as storage for songs on a playlist and the USB flash drive is removed from the USB drive, the metadata for the songs and the playlist still resides in the Nyquist song list and playlist, but audio distribution cannot play the songs. The USB flash drive must remain inserted into the system to provide the system access to the songs.

Audio Distribution can be started and stopped via routines. For information about starting or stopping audio distributions via a routine, see *"Using Routines" on page 416*.

Enabling and Disabling Audio

If a station's CoS has been set up to enable and disable audio, then **Enable Audio** and **Disable Audio** icons appear in the lower section of the dashboard. These icons allow a station to control audio for the system during events such as fire alarms. Selecting **Disable Audio** stops all audio output on the system—such as Scheduled Audio, audio distribution, and paging—and prevents future audio output until **Enable Audio** is selected. Alternatively, audio can be enabled or disabled from a Routine via the Enable-Audio or Disable-Audio actions.

If you select **Disable Audio**, you must select **Continue** when prompted to stop audio.

The Disable Emergency All-Call and Intercom when Audio Disabled system setting (see Table 19, "Edit System Parameters Page," on page 64) also affects the behavior of the **Disable Audio** feature. When set to "**Yes**", the system will also disable Emergency All-Call pages and intercom calls, otherwise these actions will still be allowed. The default value is "**No**."

When *Disable Emergency All-Call and Intercom when Audio Disabled is* set to "**Yes**", the following Nyquist features will be blocked:

- Incoming calls from PSTN-based callers
- Outgoing calls to PSTN-based numbers
- Outgoing calls to 911
- Incoming DISA calls
- Intercom call from station
- All-Call
- Emergency-All-Call
- Zone Page
- Record Zone Page
- Record Message
- Facility Zone Page
- Facility Intercom Call
- Alarms
- Tones
- Multi-site Emergency All-Call
- · Intercom calls to/from remote facilities
- Station monitoring (Spy)
- Audio Distribution
- Call to retrieve voicemail
- Playback Recorded Messages
- Start/Join Audio Conference

When a caller initiates one of the above features, they will hear the following message before the feature is blocked:

"Audio disabled due to fire alarm activation."

The following Nyquist features will be blocked without playing the message:

- Routine-based automatic outgoing call and announce
- Routine-based calls not initiated by an actual caller.
- Scheduled Announcements
- Scheduled Bells and Tones
- Scheduled Audio
- Zone pages from recorded pages (they get re-queued)
- Check-in

The following features are still enabled:

- Call Forwarding setup and status
- Change Bell Schedule (via DTMF or Admin phone menu)

Manually Controlling Output Contacts

If you are using the Nyquist I/O Controller to recognize third-party contact closures, you can manually control output contacts.

Prerequisites for using manual controls are (1) adding an I/O Controller as a station and (2) configuring a controller rule for at least one output contact with the Action set as Manual. (See "Configuring I/O Controller Output Rules" on page 150.)





Figure 184. Manual Control Buttons

Figure 183. Output Control Section

To manually control an output contact:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 In the Output Contact Control section, select the desired contact.

Note: If you have set up a rule with a duration of zero (0), then selecting the contact displays two buttons—one for opening and one for closing the circuit. If duration is set to a number other than zero (0), you can only close the circuit.

3 Select the button for the action that you want. The button labels are set in the rule for the output contact.

Using the Maps Feature

With the Maps feature, you can select rooms, buildings, or other defined areas, such as loading zones, from a graphic image to start intercom calls or pages. You can use the Maps view to display check-in status, listen to specific areas, and if the area has a camera, view video of the area. You can also create buttons to open a URL or execute a previously created routine.

To use the Maps feature, you must have the appropriate permissions ("Assigning Maps Panel Permissions" on page 400).

When setting maps up in a Nyquist system environment, you can import JPEG or PNG graphics of your facility, buildings, rooms, or objects, such as icons or landmarks. You can then set up various defined action objects. Action objects are interactive shapes on the map that allow the starting of intercom calls, zone pages, announcements, and even routines.

Each map can have an unlimited number of levels, each level having its own image, action items, and optionally more nested levels. For example, an office administrator could navigate to the map of a building, then the map of a specific floor in that building, and then the map of a specific room on the selected floor. For locations that are frequently called or paged, a defined action object can be placed as a button on a top level or sub-level view so that navigating through multiple levels of maps is not required to initiate a call or a page. The action object button can even be configured to be viewable on all levels, which makes that object visible at every nested level of the map.

In addition, Nyquist also supports the ability to create multiple top-level maps, such as for multi-site campuses. Each site can define its own map objects and restrict calls and paging to its own administrator, as well as having its own hierarchy of nested levels.

Tip: Although the Maps feature is designed to display buttons on a map, the map image is not strictly required. You may want to create one or more "maps" or map levels that only contain buttons and behave as custom control panels. For example, a map could contain buttons to activate one or more frequently used Routines, call frequently used extensions. or page a predefined subset of facilities. Several maps of this type could be used as a customized menu of virtual dashboards, even including links to switch between menus.

Maps Panel Overview



Figure 185. Maps Panel

When Maps is configured for a Nyquist system, you can view the Maps Panel from the Dashboard. In addition to the site map and defined action objects, various buttons and icons appear on the area above the graphic. These buttons can vary depending on the various parameters set for your system. Possible buttons and icons are as follows:





Select the **Maps** button to select which map you want to have appear on the Dashboard.

Stations

Select the **Stations** button to view which stations are allowed to add defined action objects or make other changes to the map. This icon does not appear if you are in **Live** mode.

Configuring Parameters for the Maps Feature

To use the Maps feature:

- You must have the correct Maps Panel permissions set.
- You must be associated to a station that has the necessary CoS configuration.
- The station Type for the associated station must be an Admin Web Interface or a Web Interface.
- You must select a map on the associated station.

Assigning Maps Panel Permissions

Importing graphics and creating defined action objects are restricted to users associated with roles with **Create** and **Edit** Maps Panel permissions. A user only requires **View** Maps Panel permissions to use the Maps feature for initiating pages and calls and viewing check-in status.

Note: To perform this task, you must be logged in with a role that has permission to assign or edit permissions.

To set Maps Panel Permissions:

- 1 On the navigation bar, select **Roles**.
- 2 On the Roles page, select the **Permissions** icon next to the role for which you are assigning or editing permissions.
- 3 On the Edit Permissions page, select the appropriate buttons to assign Maps Panel permissions to the role.
- 4 Select Save.

Setting CoS Configurations for the Station

The **All Call** and **Emergency All Call** buttons do not appear in the Maps panel section of the Dashboard if the correct CoS parameters are not set for the station. The ability to call any station or to initiate zone paging are also set for the station through **CoS Configuration**.



To set CoS Parameters for the Map Feature:

- 1 On the navigation bar, select **CoS Configuration**.
- 2 Select the **Add** icon.
- 3 Complete Parameters for the station.

For information about the settings, see Table 23, "CoS Configuration Page Parameters," on page 92.

4 After all changes are made, select Save.

Assigning the Default Map

Your Dashboard will not show the Maps Panel until you have selected at least one map for your station. You must assign the default map (Site) to the station first. You can then create a new map for your station.

To assign the default map:

- 1 On the navigation bar, select **Stations**.
- 2 If you are adding your station, select the **Add** icon and ensure that the **Type** is **Admin Web Interface** or **Web Interface**. Then, complete all of the options for your station.
- 3 If you are editing your station, select the **Edit** icon next to your station.
- 4 Scroll to the **Maps** parameter and select the default map.
- 5 Select Save.

Adding a Site Graphic

You can add a site graphic to your Nyquist system UI by uploading a PNG or JPEG file.

To add a graphic:

- 1 On the navigation bar, select Dashboard.
- 2 If the Site section is collapsed, expand it by clicking the down-arrow link.
- 3 Ensure the **Mode** is **Edit**.

Note: If you do not have create or edit permissions, the Mode button does not appear.

- 4 Select the **Edit** icon.
- 5 Enter the parameters (see Table 122, "Edit Image Parameters," on page 402).
- 6 Select **Choose file** and navigate to the desired file.

7 Select Save.

	Edit
Name:	
New Map	
Width:	
1300	
Height:	
750	
Image:	
No file selected	Choose file
	Close 🕒 Save

Figure 186. Edit Dialog Box

Table 122. Edit Image Parameters

Name	Enter a name for the image, such as the name of the site. The maximum character length for this parameter is 20.
Width	Enter the width for the image canvas. This width will be the canvas size for all views that appear when drilling down into the map.
Height	Enter the height for the image canvas. This height will be the canvas size for all views that appear when drilling down into the map.
Image	Displays the file name for the image. Select Choose file to navigate to the desired file.

Adding a Defined Action Object

After the top level graphic has been added, you can create defined action objects on the graphic map and then select image files to appear when the object is selected. For example, if your top level graphic is a site graphic that shows multiple buildings, you might want to make each building a defined action object. Each building could then have multiple defined action objects, such as multiple zones or stations.

Note: If you move a defined action object or button outside of the map's dimensions or too far to the edge of the map image, you may not be able to use or even see the button. In this situation, you must edit the map's dimensions to view the object or button and then move it to within the map image.



Figure 187. Defined Action Object

Note: Stations and zones must first be added to your Nyquist system before they can be added to a graphic as a defined action object.

To add a defined action object to a graphic:

- 1 From the dashboard, ensure the **Mode** is **Edit**.
- 2 Double-click the map. A rectangle appears.
- 3 Drag the rectangle to the desired location.
- 4 Resize the rectangle by selecting a point marked by circle and dragging the point. You can select circle outside the rectangle to rotate the image as needed.
- 5 Repeat steps 1–4 for each selectable object desired.

Assigning an Image to Defined Action Object

You can assign an image to a defined action object. For example, if the main image is of a site, you can add a defined action object for a building on the site graphic. The selectable object for the building can be assigned a graphic that depicts rooms inside the building.

To assign an image to a defined action object:

- 1 From the dashboard, ensure the **Mode** is **Edit**.
- 2 Select the arrow on the top right of the selectable object to "go into" the object.
- 3 Select the **Edit** icon next to the **Mode** button.
- 4 On the Edit screen that appears, provide a name for the object and then select **Choose file** and navigate to the location of the image file.
- 5 Select Save.

Editing a Defined Action Object

Editing a defined action object allows you to choose how the object appears on the Map panel and what action is assigned to the object.



Figure 188. Defined Action Object With Edit Icon (Left Corner)

To edit a defined action object:

- 1 From the dashboard, ensure the **Mode** is **Edit**.
- 2 Click the **Edit** icon on the selectable object.
- 3 Complete the Edit Map Object parameters (see *Table 123 on page 404*).
- 4 Select Save.

	Edit Map Object	
Name: 📵	Width: 🚯	
New	165	
Show Name: 📵	Height: 🚯	
Yes	56	
Туре: 🚺	Rotation: (1)	
Rectangle -	0	
Action: (1)	Camera URL: 🚯	
Call -		
Extension:	Color: (1)	
	▼ Blue ▼	
The Delete	Close	🖹 Save

Figure 189. Edit Map Object Dialog Box

Name	Enter a name for the selectable object. The name can have up to 40 characters.
Show Name	Select No if you do not want the name to appear on the map. The default is Yes .
View on All Levels	Select Yes if you want this object to appear on all levels of the current map.
	<i>Note</i> : This does not make the object appear on all maps, only on all levels of the current map.

Table 123. Edit Map Object Parameters

Table 123. Edit Map Object Parameters

Туре	Select Rectangle if you want the object to cover a building or site. Select Button if you want the object to become a button that is associated with an action. For more information about buttons, see "Creating a Defined Action Object Button" on page 407.
Action	Select what action is to be assigned to this object. Options are:
	• None: By default, no action is associated with the object.
	• Call : If you select this option, a drop-down menu appears so that you can select an Extension for the object. Extensions must have previously been associated to a Nyquist system station when stations were created.
	• Page : If you select this option, a drop-down menu appears so that you can select a Paging Zone for this option. Zones must have previously been created and stations added to the zones before a zone can be associated to a defined action object.
	• All Call: Creates a button to use for making an All Call page.
	 Emergency All Call: Creates a button to use for making an Emer- gency All Call page.
	 Multi-Site All Call: Creates a button to use for making a Multi-Site All Call page.
	• Multi-Site Emergency All Call : Creates a button to use for making a Multi-Site Emergency All Call page.
	• Facility All-Call Page: Creates a button to use for making a Facility All-Call Page. If this option is selected, you must also select a Facility.
	 Facility Zone Page: Creates a button to use for making a Facility Zone Page. If this option is selected, you must also select a Facility.
	• Facility Station Call: Creates a button to use for calling a specific sta- tion in a facility. If this option is selected, you must also select a Facil- ity and an Extension.
	• Open URL : Creates a button to use to open a URL. If this option is selected, you must also enter the web address or other web resource that you want the button to open in the URL field.

	Table 123. Edit Map Object Parameters
	 Execute Routine: Creates a button that starts a specified routine. If this option is selected, you must also select the specific Routine.
	 Select-Facility: Creates a button with a round, selectable control, displayed in the top left corner, which can be checked or unchecked by the operator to select the associated facility. This selection will later be used when a button with the Page-Selected-Facilities or Announce-Selected-Facilities action is clicked. If this action is selected, you must also specify the associated Facility.
	 Page-Selected-Facilities: Creates a button used for paging all the Facilities selected via the aforementioned Select-Facility action.
	 Announce-Selected-Facilities: Creates a button used for playing an announcement at all the Facilities selected via the Select-Facility action.
	 Page-Facilities: Creates a button used to page all of the specified Facilities. If this action is selected, you must specify one or more Facilities.
	 Announce-Facilities: Creates a button used to play an announce- ment at all the specified Facilities. If this action is selected, you must specify one or more Facilities.
Extension	Use the drop-down menu to select an extension. This option appears only if Action is set to Call , Page , or Facility Station Call .
Width	Enter the desired width in pixels. Width must be a number 70 or above.
Height	Enter the desired height in pixels. Height must be a number 30 or above.
Rotation	Enter the desired angle of the object in degrees. The available range is 0 to 359.
Facility (or Facilities)	Use the drop-down menu to select one (or more) of the displayed facili- ties. This option appears only if Action is set to Select-Facility, Page- Facilities, Announce-Facilities, Facility All-Call Page , Facility Zone Page , or Facility Station Call .
Announcement	Use the drop-down menu to select the announcement to play.
	This option appears only if Action is set to Announce-Facilities or Announce-Selected-Facilities .
Paging Zone	Select the zone in which to play the page.
	This option appears only if Action is set to Page .
Zone Number	Enter the zone number of the remote facility at which to play the page.
	This option appears only if Action is set to Facility Zone Page .
URL	Enter the full name of the URL that you want to open when this button is clicked. This option appears only if Action is set to Open URL .
Video URL	Enter the full name of the URL for a room camera.

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Table 123. Edit Map Object Parameters

RoutineSelect the routine that you want to execute when this button is selected.
This option appears only if Action is set to Execute Routine.

ColorUse the drop-down menu to select a color for this object. The default
color is Green. Other options are:

- Blue
- Brown
- Gray
- Orange
- Pink
- Purple
- Red
- White
- Yellow

Creating a Defined Action Object Button

Instead of associating a defined action object to a particular object on a map or a graphic, you can create a defined action object that serves as a button. For example, suppose you have layers of maps that include the buildings and each floor in a building, but you most frequently call one or two extensions. Rather than drilling down multiple maps or objects each time you call an extension, you can create a defined action object that is associated with that extension. The selectable object can be named for the extension and placed on the first level graphic.

Another reason for creating a defined action object that serves as a button would be if your Nyquist system server is managing multiple sites on a single campus. All Call and Emergency All Call pages would go to all stations on the Nyquist system. If you want to make a page to all stations of a single site in a multiple site campus, you can create a defined action object that starts a page to all stations in that site only.

Opening a URL

If you select **Open URL** as the **Action** for a defined action option button, you can use the button to open a specific web page or to reference a specific application, such as a video feed from a classroom. The full name, or path of the URL, must be entered in the URL field (see *Table 123, "Edit Map Object Parameters," on page 404*). For example, to access the main Bogen website, you would enter http://www.bogen.com/.

When the **Open URL** button is selected in **Live** mode, the web page opens a new tab in the browser.

Execute Routine

If you select **Execute Routine** as the **Action** for a defined action option button, you can use the button to manually start a routine.

Only routines that have been previously created, are **Enabled**, and have **Allow DTMF** set to **Yes** appear in the **Routine** list on the Edit Map Object popup (see *Table 123, "Edit Map Object Parameters," on page 404*). For information about enabling routines and the **Allow DTMF** option, see *Table 128, "Routines Parameters," on page 438*.

Starting Pages and Announcements via the Map Feature

Depending on the parameters set, you can start pages to an individual zone, start pages and announcements to multiple selected facilities, start All Call pages, or start Emergency All Call pages.

Zones must be created and stations added to the zones before the zones can be associated to a defined action object or paged via the Maps feature. For information about creating zones, see "Managing Stations, Zones, and Queues" on page 127.

Page an Individual Zone

If the **Action** for a defined action object is set to **Page**, then a **Page** icon appears in the left side of a defined action object.



Figure 190. Page Icon

To page an individual zone using the Maps feature:

- 1 From the dashboard, ensure the **Mode** is **Live**.
- 2 Click the **Page** icon on the defined action object.

Page or Play Announcement at Multiple Selected Facilities

There are two ways in which users can page or play an announcement at multiple selected facilities simultaneously via the map. One provides a button that will page or play an announcement at a pre-



defined list of facilities. The other allows the user to select one or more facilities on the map, then click a button to page or play an announcement at each of those facilities.



Figure 191. Paging or playing an announcement to multiple selected facilities

Page or play announcement at a predefined list of facilities

The map must have a map object button defined with the **Page-Facilities** or **Announce-Facilities** action and one or more selected facilities, which when clicked, will page or play an announcement at the specified facilities. In the example shown in *Figure 191*, two examples are shown as small brown buttons.

To start a Facility Page or Facility Announcement:

- 1 From the dashboard map, ensure the map's **Mode** is Live.
- 2 Select the **Page-Facilities** or **Announce-Facilities** button.
- 3 Follow subsequent audio instructions.

Page or play announcement at a user-selected list of facilities

The map must have at least two map objects defined:

• One or more map objects with the **Select-Facility** action, each of which corresponds to a specific facility. The user can select any number of these objects to specify which facilities will receive the



page or announcement. In the example shown in *Figure 191*, there are five of these map objects shown as blue and purple rectangles, each corresponding to a ship.

• One map object with the **Page-Select-Facilities** or **Announce-Select-Facilities** action, which when clicked will initiate a page or an announcement to the selected facilities. In *Figure 191*, two examples are shown as small green buttons.

To start a Selected Facilities Page or a Selected Facilities Announcement:

- 1 From the dashboard map, ensure the map's **Mode** is Live.
- 2 Select the circular icon in the top left corner of one or more map objects, which should then display a check mark in the circle.
- 3 Select the **Page-Select-Facilities** or the **Announce-Select-Facilities** button.
- 4 Follow subsequent audio instructions.

Start All Call or Emergency All Call Pages

CoS parameters must be set before you can create **All Call** and **Emergency All Call** buttons that will appear in the Maps panel section of the Dashboard. (See *"Setting CoS Configurations for the Station" on page 400*.)

An All Call page is made to all zones associated with your Nyquist system server unless a zone is excluded from paging. An Emergency All Call page is made to all zones associated with the Nyquist system server; page exclusion does not affect Emergency All Call pages.

If you are using the same server on a multiple site campus and do not want the pages to go to all sites, you can create a zone for all stations in an individual site.

To start an All Call or Emergency All Call page:

- 1 From the dashboard, ensure the **Mode** is **Live**.
- 2 Select either All Call or Emergency All Call.

Calling an Extension via the Maps Feature

If the **Action** for a defined action object is set to **Call**, then a **Call** icon appears in the left side of a defined action object.

Mode: Live	Maps
د Area 51	

Figure 192. Call Icon

To call an extension using the Maps feature:

- 1 From the dashboard, ensure the **Mode** is **Live**.
- 2 Click the **Call** icon on the defined action object.

If a Camera URL value was provided in the definition of the Map Object, a Camera icon appears on the action object (or in the hamburger menu of the object). Clicking this Camera icon will open a browser tab or window to the Camera URL.

To open the Camera URL using the Maps feature:

- 1 From the dashboard, ensure the **Mode** is **Live**.
- 2 Click the **Camera** icon on the defined action object.
- *Tip:* Although specifically intended for a camera, the Camera URL could be any URL. For non-camera URLs, however, you probably want to use an Open URL action Map Object to avoid confusion for users.
Using Maps for Check-In



Figure 193. Maps Check-In View

From the Maps view, you can monitor check-in or start a routine that starts or stops check-in.

To use Maps for check-in, the following conditions must be met:

- You have permissions configured to view maps (see "Assigning and Editing Permissions" on page 244).
- Your station Type is **Admin Web Interface** or **Web Interface** (see "Editing Station Configuration Settings" on page 141).
- Check-in has been configured for your system (see "Configuring Check-In" on page 515).
- You have an available map that shows the rooms or areas that you want to monitor (see "Adding a Site Graphic" on page 401).
- You have created a map object for each station that you want to monitor (see "Creating a Map Object for Check-In" on page 413).

To use a routine to start or stop check-in, the routine must have been previously created with either a trigger or an action Type of Check-In (see "Adding a Routine" on page 440).

Note: You can only listen in areas or rooms that allow two-way communications; in other words, the station in that room must be associated with a speaker with a microphone.

Creating a Map Object for Check-In

To create a map object for an area or room, first follow the steps for adding an action object to your map (see "Adding a Defined Action Object" on page 402).

To edit a defined action object:

- 1 From the dashboard, ensure the **Mode** is **Edit**.
- 2 Click the **Edit** icon on the selectable object.
- 3 Complete the Edit parameters, ensuring that **Action** is set as **Call**. (See *Table 123, "Edit Map Object Parameters," on page 404* for more information about the available parameters.
- 4 Select Save.

Note: You must create a defined action object for each room or area that you want to monitor.

Monitoring Check-In



Figure 194. Map Object in Live Mode

When a check-in is active, the Map panel changes to **Live** Mode and the Map objects for all stations being monitored will no longer show the **Edit** icon. Instead, you will see icons for Call, Listen, Video, and Information.

The **Listen** icon only works if the station is associated with a speaker that allows two-way communication. The **Video** icon only works with Map objects that have been configured with a Video URL (*Table 123, "Edit Map Object Parameters," on page 404*). If the Map object isn't large enough to display the icons, a hamburger menu (also known as a three-line menu or menu button) appears in the top right corner.



Figure 195. Map Object With Hamburger Menu

From the hamburger menu, you can select the desired action.

During a check-in, the colors on the station map objects will change to reflect what appears on the Check-In view:

Color	Status
Green	Checked in
Red	Not checked in
Gray	Check-in is not expected because the station is on either the vacant or excluded lists.

A vacant station can check in. The text **Was Vacant** will then appear in the button information.

Using Check-In Routines from Maps View

❸ Edit Trigger - E	mergency 🧿	
Name: 🚺		
New Trigger		
Enabled: 🚺		
Yes		
Туре: 🚺		
Check-In 🔻		
Check In: 📵		
Start		
Start		
Stop		
Done		
Reset		
Filisheu		
		li li
🗙 Cancel 🖪 Save		

Figure 196. Check-In Options for Trigger

Provided routines have been created for either trigger or action Check-In types, you can start a routine to do one of the following:

- Start check-in.
- Stop check-in.
- Change check-in status to **Done**.
- Reset check-in status of stations.

• Change check-in status to **Finished**.

Routines must be created in the Routines view and **Execute Routine** must be selected as the Map object's **Action** (see *"Execute Routine" on page 408*).

Deleting a Defined Action Object

If you have delete permission for the Maps feature, you can delete a defined action object.

To delete a defined action object:

- 1 From the dashboard, ensure the **Mode** is **Edit**.
- 2 Double-click the **Menu** icon in the defined action object that you want to delete.
- 3 Select **Delete**.
- 4 When prompted, select **Delete** again.

Deleting a Map

If you have delete permission for the Maps feature, you can delete a map. Deleting a map also deletes all associated objects and images.

To delete a map:

- 1 From the dashboard, ensure the **Mode** is **Edit**.
- 2 Select the **Delete** icon.
- **3** From the Delete Map prompt, select **Delete**.

Using Routines

A routine automatically starts a procedure, or sequence of actions, that the Nyquist system executes as the result of an input trigger (see *Table 22, "Failover Event Routine Triggers," on page 89* and *Table 153, "Routine Trigger Types and Parameters," on page 601*). Routines can support your crisis plans for situations such as school lockdown, weather events, or emergency evacuation.

Important: You should always run a test of a routine after creating or editing it.

A routine can be started manually via the Admin Phone or the Admin Web UI. A routine can also be automatically started:

- by an event, such as playing a specific announcement;
- via third-party switch contact closures recognized by the Nyquist I/O Controller;
- as a Scheduled Routine (see "Using the Schedule Routines Feature" on page 278);
- or via the optional (requires a license) Routines API that can be used by third-party systems, including fire systems, access control systems, and video security systems.

A routine that has **Allow DTMF** enabled does not need a trigger. However, most routines will have at least one associated trigger and one or more actions. For example, if an administrator manually triggers a lockdown routine, several actions could result, such as:

- Play a lockdown announcement.
- Display lockdown instructions on monitors connected to NQ-GA10PV devices.
- Close I/O controller output contacts to trigger third-party systems that lock doors.
- Initiate the check-in process.
- Start an emergency all call announcement.

To use the Routines feature, you must have the appropriate permissions (see "Assigning and Editing Permissions" on page 244) and the station being used to start the routine must have the CoS parameter **Execute Routines** enabled (see "Using CoS Configuration" on page 91).

Important: To initiate a routine from a web interface station, the station places a SIP call to the server. A microphone is required to initiate a SIP call, so a microphone must be connected to the station and enabled in the station's web browser to initiate a routine from the web interface, even if it will not be used.

To start a routine via the Routines API, you must enable **Allow API** for the routine.

You can import or export routines by selecting the appropriate button from the **Routines** view. When importing a routine, the routine file must have an SQL extension. See *"Exporting a Routine" on page 481* or *"Importing a Routine" on page 481* for more information.

Starting and Stopping a Routine from the Admin Web UI

You can manually start a Routine that has **Allow DTMF** enabled and stop a running Routine from the Admin Web UI.

To start a Routine from the Admin Web UI:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Routines**.
- 3 Select one of the listed routines.
- 4 If you must enter a password to complete this task, select **Dial Pad** and enter the 4-digit password.
- 5 If prompted, enter **1** for confirmation.
- 6 To end the routine, select **Stop**.

Tip: To pass parameters to a Routine (i.e., \$cmdParam1 and \$cmdParam2), use the Dial Pad and follow the same process used to start a routine from the Admin Phone (see *"Starting and Stopping a Routine from the Admin Phone" on page 417*). To pass different parameters to a Routine, use the Routines API (see *"Using the Routines API" on page 419*).

To stop a routine from the Admin Web UI:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Routines**.
- 3 Select Routines Manager.
- 4 Select the routine that you want to stop (icons for running routines are red).

Note: Stopping a routine does not reverse any actions that the routine has already started. You may need to clear the actions manually.

5 Select Yes.

Starting and Stopping a Routine from the Admin Phone

You can manually start a routine that has **Allow DTMF** enabled from an Admin Phone by doing one of the following:

Note: Parameters (and their preceding asterisks) are only required if the Routine uses them.

- Dial: *94<routine-DTMF-code>*<cmdParam1>*<cmdParam2>
- Dial: 0000094<routine-DTMF-code>*<cmdParam1>*<cmdParam2>
- Select the Routines menu from the Admin Phone and then select the routine that you want to start.

Note: Only routines with Allow DTMF enabled appear in the menu.

The variables \$cmdParam1 and \$cmdParam2 are available to CODE: segments of the Routine Action's Condition field. For example:

CODE: \$user_var[1] = \$cmdParam1; \$user_var[2] = \$cmdParam2;

Then you can use the <code>\$user_var[]</code> variables in Routine Action fields that support the use of the <code>\$user_var[]</code> variables (see *Table 133, "Variables, Definitions, and Availability," on page 458*).

Note: The \$cmdParam1 and \$cmdParam2 variables can only be accessed from an Action's Condition field. They are *not* related to \$apiParam1 and \$apiParam2, which cannot be specified via the DTMF code.

For example, the following will execute Routine 123, passing 60 as \$cmdParam1 and 120 as \$cmdParam2:

*94123*60*120

If you disconnect the call during a routine, the routine continues until finished. If the routine includes **Pause** actions, the call will not disconnect until all **Pause** actions have been executed.

A routine started from the Admin Phone may end with any of the following page commands, provided the Admin Phone has the appropriate CoS enabled:

- All-Call
- Emergency-All-Call
- Facility-Page
- Multi-Site-All-Call
- Multi-Site-Emergency-All-Call
- Zone-Page

You can stop a specific routine by dialing one of the following:

- *95<Routine-DTMF-Code>
- 0000095<Routine-DTMF-Code>

Note: If the **Allow DTMF** parameter for the specified routine is set to **No**, you will be prompted to enter the system password.

Using the Routines API

The Routines API is an HTTP-based interface accessible to any client capable of making a web request. Using this interface, you can remotely start a routine from a web browser, a custom script, an application, or even a command prompt. You can even allow a third-party system, such as an access control system, to start routines.

To execute a routine through the **Routines API**, there are a number of prerequisite conditions and configuration settings.

- □ The Bogen Root Certification Authority certificate must be installed on the client computer (i.e., the computer making the request). For details, see "Client Requirements" on page 9.
- □ The global **Enable Routines API** setting must be enabled on the Routines page (see "Viewing Routines" on page 437).
- □ The routine to be executed must have the **Allow API** parameter enabled (see *"Editing a Routine" on page 440*).
- □ The routine's station, set via its **Extension** setting, must meet the following conditions:
 - □ The **Type** setting must be "Admin Web Interface" or "Web Interface" (see "Editing Station Configuration Settings" on page 141).
 - □ The **Execute Routines** setting must be enabled for the **CoS Configuration** specified by the station's **Day CoS** and/or **Night CoS** settings (see "Using CoS Configuration" on page 91).
- □ The routine cannot end with a paging action or any call type action that requires a user to speak.

Invoking a Routine via the Routines API

There are two versions of the Routines API: v1 and v2. Both versions are supported, but there are important differences.

The primary function of the Routines API is to execute an existing Routine. A Routine can access variables specified by the API caller, but the capabilities and syntax used to retrieve variables from a v1 caller is different from that of a v2 caller. A routine designed for a v1 caller is limited to two variables— available as \$apiParam1 and \$apiParam2—while that of a v2 caller can access far more variables— \$apiParam1 through \$apiParam20 as well as custom variables.

Using the Routines API v2, the caller can override the properties of some Actions (see *Table 152*, *"Routine Action Parameter Overrides via Routines API v2," on page 597*) by specifying Routine parameter values via embedded JSON structures. In addition, some Actions (e.g., Add-Announcement-Audio and Display-Msg) can use image or audio files that are provided by the API caller, allowing extensive runtime customization of the Routine and its actions.

Both versions use the same authorization mechanism. The **Routines API Key** property, found on the **Edit System Parameters** page, is used as a passcode, authorizing the caller to perform the specified actions. The "Authorization" HTTP header of each web request must be a string, formatted as "Bearer <passcode>".

Important: The same API Key value is used by all clients of the **Routines API**, so if this value is changed, all clients must be updated.

Warning The Routines API Key is an application security passcode and should be kept confidential. If this key has been compromised—such as by making a non-secure request (i.e., using HTTP instead of HTTPS), thus exposing the key in an unencrypted format over the Internet—it should be considered unsafe and should be invalidated by generating a new key using the Routines API Key's **Reset** button on the *System Parameters Edit* page. All Routines API clients will subsequently need to use the new API Key value.

Routines API v2

Routines API v2 provides more functionality than Routines API v1. The routine to execute and its related data are specified via an HTTPS multipart-form POST submission.

The URL of a Routines API v2 web request uses the following form:

https://<server>/routine/api2

The routine to execute, its parameters, and image or audio files to be used by the Routine are passed as HTTP multipart form data (i.e., encoded with a Content-Type header of multipart/form-data), which is comprised of key/value pairs referred to as *parts*.

The multipart form must contain:

- a part named data, whose value is a JSON-encoded string (or a part named json, whose value is a file containing a JSON-encoded string),
- parts specifying the DTMF code and/or wait flag (which can optionally be specified in the data or json part instead),
- and one part for each image and audio file referenced by the Routine.

The parts are described in Table 124, "Routine API v2 request Form parts," on page 421.

Important: Although Routines API v2 routines are available via DTMF, it is impossible to access most of the functionality using DTMF alone (because DTMF cannot specify parameters or files), which can result in unexpected and incorrect behavior. We recommend disabling the **Allow DTMF** setting for any Routine using such functionality.

Part Description Type A JSON string (data) or a JSON file (json) that specifies the DTMF code of data string the routine to execute, whether or not to wait for the Routine to complete, (or json) (required) upload file aliases, and parameter and Action override values. Note: If the data and json parts are both specified, the results are unpredictable. For details, see Table 125, "Routines API v2 data part JSON elements," on page 423. Caution The size of the data or json part should never exceed 5 MB. Although image and audio files are enumerated in this part, the file contents are not included here; the contents are included in their own parts, each of which should not exceed 5 MB (5×10^6 bytes). Indicates the DTMF code (as a string) of the routine to execute. dtmf code string If the dtmf code JSON element of the data (or json) part is specified (see Table 125, "Routines API v2 data part JSON elements," on page 423), this part is optional. If both are specified, this part overrides the JSON element.. wait_flag string Indicates whether the call will ("1") execute synchronously and wait for the routine to complete before returning, or ("0") execute asynchronously and return immediately. If the wait flag JSON element of the data (or json) part is specified (see Table 125, "Routines API v2 data part JSON elements," on page 423), this part is optional. If both are specified, this part overrides the JSON element.

Table 124. Routine API v2 request Form parts

Table 124. Routine API v2 ree	quest Form parts (Continued)
	1

Part	Туре	Description					
<image/>	file	One <image/> part must be specified for each image file (PNG or JPG) to be uploaded with the request. The value should be specified as a file (e.g., using the @ prefix in curl) and the name should match the name of the corresponding property of the images element (see images in <i>Table 125, "Routines API v2 data part JSON elements," on page 423</i>).					
		Valid image formats include:					
		PNG (image/png)					
		• JPEG (image/jpeg)					
		An API request can include a cumulative maximum of 19 images and audio. For example, it can contain 19 images, or 10 images and 9 audio files.					
		The maximum size of each image file is 5 MB (5×10 ⁶ bytes).					
<audio></audio>	file	One <audio> part must be specified for each audio file (WAV or MP3) to be uploaded with the request. The value should be specified as a file (e.g., using the @ prefix in curl) and the name should match the name of the corresponding property of the audio element (see audio in <i>Table 125, "Routines API v2 data part JSON elements," on page 423</i>).</audio>					
		Valid audio formats include:					
		 WAV (audio/x-wav or application/octet-stream) 					
		• MP3 (audio/mpeg)					
		An API request can include a cumulative maximum of 19 images and audio. For example, it can contain 19 images, or 10 images and 9 audio files.					
		<i>Tip:</i> Audio files are automatically deleted from the server immediately after are used, which means they can only be used by one Action of a Rou an audio file must be used by multiple Actions within a Routine, inclusioname file multiple times (e.g., as audio1, audio2, etc.).					

The maximum size of each audio file is 5 MB (5×10^6 bytes).

The data or json part is a JSON string or file formatted as described in *Table 125, "Routines API v2 data part JSON elements," on page 423.*

Table 125. Routines API v2 data part JSON elements

Element	Description					
dtmf_code (optional)	If the dtmf_code form parameter is not specified (see <i>Table 124, "Rou-</i> <i>tine API v2 request Form parts," on page 421</i>), this element indicates the DTMF code (as a string) of the routine to execute.					
wait_flag (optional)	If the wait_flag form parameter is not specified (see <i>Table 124, "Rou-</i> <i>tine API v2 request Form parts," on page 421</i>), this element indicates whether the call will ("1") execute synchronously and wait for the routine to complete before returning, or ("0") execute asynchronously and return immediately.					
routineApiParams	An object containing one or more properties, each named apiPara (where <n> is an integer between 1 and 20) whose value is accessib from the routine's conditions and actions via the \$apiParam1 throu \$apiParam20 API parameter variables (see "Available Condition Val ables" on page 474 and "Using Variables in Display-Msg Text" on page 467).</n>					
	<i>Note</i> : The pa	rameters apiParam1 through apiParam9 do not include leading zeros.				
images	An object containing one property for each image to be uploaded in the request.					
	Each images property name must match the name of the corresponding <image/> part that specifies the actual image file (see <image/> in Table 124, "Routine API v2 request Form parts," on page 421). The name and value should be identical.					
	Each imag <imagenau logo, it ca field of the Image).</imagenau 	e is accessible from the Display-Msg routine action as me>. For example, if the part containing an image file is named n be referenced as logo in the Form Field Parameter Name e Display-Msg action (with Type specified as JSON-Uploaded -				
	Caution	Image parameter names must be unique across <i>all</i> Routines in the controller. For this reason, references to images files, such as image@1, are not exported (see <i>"Exporting a Routine" on page 481</i>) and must be manually updated after importing. Ensure that updated parameter names are unique across all Routines.				

Table 125. Routines API v2 data part JSON elements

Element

audio

Description

An object containing one property for each audio file to be uploaded in the request.

Each audio property name must match the name of the corresponding <audio> part that specifies the actual audio file (see <audio> in Table 124, "Routine API v2 request Form parts," on page 421). The name and value should be identical.

Each audio files is accessible from the Add-Announcement-Audio routine action as *< audioName >*. For example, if the part containing an audio file is named beep, it can be referenced as beep in the Form-Field Parameter Name field of the Add-Announcement-Audio action (when Audio Source Type is specified as JSON-Uploaded-File).

Caution Audio parameter names must be unique across *all* Routines in the controller. For this reason, references to audio files, such as audio01, are not exported (see "Exporting a Routine" on page 481) and must be manually updated after importing. Ensure that updated parameter names are unique across all Routines.

Table 125. Routines API v2 data part JSON elements

ElementDescription<actionType>ParamsAn array of objects, each of which corresponds to an Action within the
Routine whose name matches the name property of the object and spec-
ifies one or more Action parameters to be overridden when that Action
executes.

The name of the array indicates the Action Type of all items within the array (with hyphens removed and formatted in camelCase) with "Params" appended. For example, an array to override parameters of Display-Msg actions would be called displayMsgParams.

Multiple arrays can be specified, one for each Action Type in the routine.

This mechanism can be used to override parameters for the following Actions:

- Alarm
- Display-Msg
- Intercom-Call
- New-Announcement
- Output-Contact-Open
- Output-Contact-Close
- Tone

To view details about the parameters available for each action, see *Table 152, "Routine Action Parameter Overrides via Routines API v2," on page 597.*

Table 125. Routines API v2 data part JSON elements

Element Description				
<custom></custom>	Zero or more user-defined objects and optional properties, which can be referenced within a routine's actions or conditions as {{object}} or {{object.property}}, where object is the user-defined object and property indicates the property to be referenced.			
	Custom objects are available to the following Actions:			
	 Add-Announcement-Audio (TTS and json-uploaded-file) 			
	Dash-Text (text)			
	Display-Msg (text)			
	Email (subject and text)			
	Log-Text (text)			
	Webhook-Post (POST command)			
	For example, if the data element is defined as:			
	<pre>{ "dtmf_code": "12345", "wait_flag": "1", "message": "A user-defined string", "display": { "dashboard": "A property of a user-defined object" } }</pre>			

the message element can be referenced as {{message}} and the dashboard property of the display object can be referenced as {{display.dashboard}} in an action's Text field.

Executing API v2 Routines from a command prompt

Let's assume that we want to execute the Routine assigned to DTMF code 1111, which accepts an image to be used by one of the Actions. We will use the following form part, data:

```
{
    "dtmf_code": "1111",
    "wait_flag": "1",
    "images":
        {
            "circle": "circle"
        }
}
```

If we store the JSON string in a file, Request.json, we can initiate the Routine using curl and prefix the Request.json file with the "less than" symbol, <, which indicates that the contents of the file should be used for the data part:

```
curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F data=<Request.json -F
circle=@1920x1080circle.png https://<server>/routine/api2
```

Important: The < character indicates input redirection in both the Windows command prompt and most Linux command shells. To use it with curl.exe to indicate that the contents of a file should be passed as a form part (see https://curl.se/docs/manpage.html#-F), it must escaped. In the Windows Command Line, prefix it with the caret symbol, ^. In Linux shells, prefix it with a backslash, \. To be platform agnostic, this guide will use neither, which works in a PowerShell environment, whether Windows or Linux.

Note: PowerShell has (unfortunately) defined an alias called "curl" that maps to the Invoke-WebRequest method. To avoid it, either specify "curl.exe" or remove the alias by typing Remove-Alias -Name curl.

Tip: If the Bogen CA has not been installed in the current environment, curl's --insecure parameter can be used for testing, but should not be used for production.

Using PowerShell v7 or higher (earlier versions can access multipart forms, but it is more complicated), use the Get-Content cmdlet to retrieve the contents of the JSON file for the data part (all parts are provided to the Form parameter in a hashtable):

```
Invoke-RestMethod -Uri https://<server>/routine/api2 -Headers @{ Authorization = "Bearer <apikey>" } `
-Method Post `
```

```
-Form @{ data = (Get-Content -Path Request.json -Raw); circle = (Get-Item -Path 1920x1080circle.png) }
```

We can exclude the dtmf_code and/or wait_flag from the JSON file and specify one or both as form (-F) parameters with curl:

```
curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F dtmf_code=1111 -F wait_flag=1 -F
data=<Request.json -F circle=@1920x1080circle.png https://<server>/routine/api2
```

or as hashtable entries of the Invoke-RestMethod cmdlet's Form parameter in PowerShell:

```
Invoke-RestMethod -Uri https://<server>/routine/api2 -Headers @{ Authorization = "Bearer <apikey>" } `
-Method Post -Form @{ dtmf_code = "1111"; wait_flag = "1"; `
data = (Get-Content -Path Request.json -Raw); circle = (Get-Item -Path 1920x1080circle.png) }
```

Alternatively, the json part, a file reference, can be specified instead of the data part. Using curl, the json part must be specified by prefixing the JSON file with the @ symbol, which indicates that the file, including the file name (i.e., not just the file contents), should be sent for the json part.

```
curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F json=@Request.json -F
circle=@1920x1080circle.png https://<server>/routine/api2
```

In PowerShell, json can be specified as a FileInfo object, such as by using Get-Item:

```
Invoke-RestMethod -Uri https://<server>/routine/api2 -Headers @{ Authorization = "Bearer <apikey>" } `
-Method Post `
-Form @{ json = (Get-Item -Path Request.json); circle = (Get-Item -Path 1920x1080circle.png) }
```

The JSON text can also be provided as literal text instead of as a file. This is fairly simple using Power-Shell by surrounding the JSON text with single quotes:

```
Invoke-RestMethod -Uri https://<server>/routine/api2 -Headers @{ Authorization = "Bearer <apikey>" } `
-Method Post -Form @{ data = '{ "dtmf_code": "1111", "wait_flag": "1", "images": {"circle":"circle"} }'; `
circle = (Get-Item -Path 1920x1080circle.png) }
```

If executing curl in a shell that supports single-quotes, such as PowerShell or bash, simply wrap the JSON string in single-quotes:

```
curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F
data='{"dtmf_code":"1111","wait_flag":"1","images":{"circle":"circle"}}' -F circle=@1920x1080circle.png
https://<server>/routine/api2
```

The Windows Command Prompt, however, does not support single-quoted strings. All double quotes must be escaped:

```
curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F data="{ \"dtmf_code\":\"1111\",
\"wait_flag\":\"1\", \"images\": { \"circle\": \"circle\" } }" -F circle=@925x1040circle.png
https://<server>/routine/api2
```

Tip: Windows Command Prompt commands can be split across multiple lines by ending a line with a caret (^) and pressing Enter to continue on the next line. PowerShell uses the backtick character (`) similarly. This technique may be helpful when typing long commands.

For non-trivial JSON strings, escaping all double quotes can become onerous. As an alternative, the JSON string can be specified without escape characters using the echo command and redirecting to curl via either the json=@- or data=<- syntax to receive the redirected value from stdin (for details, see https://curl.se/docs/manpage.html#-F).

Note: Note that < is a special character within the Windows Command Prompt and must be escaped with a caret (^).

```
echo {"dtmf_code":"1111","wait_flag":"1","images":{"circle":"circle"}} | curl.exe --ssl-no-revoke -H
"Authorization: Bearer <apikey>" -F data=^<- -F circle=@1920x1080circle.png https://<server>/routine/api2
```

or

```
echo {"dtmf_code":"1111","wait_flag":"1","images":{"circle":"circle"}} | curl.exe --ssl-no-revoke -H
"Authorization: Bearer <apikey>" -F json=@- -F circle=@1920x1080circle.png https://<server>/routine/api2
```

The format of the data and json subparts are specified in *Table 125, "Routines API v2 data part JSON elements," on page 423.*

HTTP details of the json *part*

Unlike the data part, the multipart HTTP Content-Disposition header for the json part must include the filename parameter.

Content-Disposition: form-data; name="json"; filename="myfile.json"

With curl, this can accomplished by prefixing the name of the file containing the JSON-encoded data with the @ symbol, which indicates that a file is being sent, as in:

```
curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F json=@myfile.json
https://<server>/routine/api2
```

In PowerShell v7, define the j son part of the Form parameter as a FileInfo object using Get-Item, as in:

```
Invoke-RestMethod -Uri https://192.168.90.10/routine/api2 `
-Headers @{ Authorization = "Bearer <apikey>" } -Method Post `
-Form @{ json = (Get-Item -Path myfile.json) }
```

Routines API v2 Request Format

The following shows an example of a complex JSON object, which demonstrates several features of the v2 API.

```
{
  "dtmf_code": "12345",
  "wait_flag": "1",
  "images": {
    "image01": "image01",
    "image02": "image02"
  },
  'audio": {
    "beep": "beep",
    "alarm": "alarm"
  },
  "routineApiParams": {
    "apiParam1": "Display on NQ-GA10PV devices using $apiParam1 in Display-Msg action",
    "apiParam2": "Display on NQ-S1810WBC devices using $apiParam2 in Display-Msg action"
    "apiParam3": "Display on the Nyquist Dashboard using $apiParam3 in Dash-Text action",
    "apiParam4": "Include in Email message body text using $apiParam4 in Email action",
    "apiParam5": "Log this text in Log using $apiParam5 in Log-Text action",
    "apiParam20": "Up to 20 $apiParam variables can be used: $apiParam1 thru $apiParam20"
  },
  "displayMsgParams": [
    {
      "name": "WBC Message-01",
      "zones": "10"
      "stations": ""
      "priority": "4"
      "text": "LOCKDOWN"
      "displayTime": "60",
      "wbcFlasherPattern": "fast",
      "wbcFlasherCycles": "10",
      "wbcFlasherColor": "blue"
    },
    {
      "name": "Image upload",
      "deviceTypeFilter": "1",
      "priority": "6",
      "imageType": "full"
    }
  ],
  "displayText": {
    "ga10pvText1": "Lockdown initiated, follow all lockdown procedures",
    "wbcText1": "LOCKDOWN",
    "dashboard": "Lockdown initiated"
 }
}
```

This sample JSON object specifies:

- the DTMF code used to initiate the routine (dtmf_code);
- the wait flag, which indicates whether or not to execute the routine synchronously (wait_flag);
- lists of images and audio files that can be referenced by actions within the routine (images and audio);
- a list of apiParam# variable definitions (routineApiParams);
- parameter overrides for the "WBC Message-01" and "Image upload" Display-Msg actions (displayMsgParams);

and a custom object (displayText), the properties of which can be referenced within the routine's actions.

The properties of the routineApiParams object can be referenced from an Action's Condition and Text properties as \$apiParam<n>, such as \$apiParam10.

Important: The properties of the routineApiParams object are the only properties from the JSON object that can be used in a Condition property.

The parameters of a Routine's Action can be overridden by declaring an array within the JSON string with a name matching the camel case version of the Action type (i.e., remove all spaces and hyphens and capitalize the first letter of each word other than the first) with "Params" appended. Each object within the array indicates an Action name and the parameters to override for that Action. For example, to override the **Zone** parameter of the New-Announcement action named "Add my announcement," specify an object with name set to "Add my announcement" in the newAnnouncementParams array and define the zone action parameter as "Zone1":

```
{
  "dtmf_code": "12345",
  "wait_flag": "1",
  "newAnnouncementParams": [
     {
        "name": "Add my announcement",
        "zone": "Zone1"
     }
 ]
}
```

Image and audio files are passed to the Routines API as parts of the multipart/form-data HTTP request. Each is added to the request as a form part (at the same level as the data or json part described in *Table 125*), the name of which must match the name of the corresponding item in the image or audio object specified within the data or json part. For example, if the name of the form part is image01, the json.images (or data.images) element must contain the item: "image01": "image01".

```
{
    "dtmf_code": "12345",
    "wait_flag": "1",
    "images":
        {
            "image01": "image01",
        },
        "audio":
        {
            "audio01": "audio01",
        }
}
```

Tip: Image and audio files are automatically deleted from the server immediately after they are used. As a result, they can only be used by one Action of a Routine. If an image or audio file must be used by multiple Actions within a Routine, include the same file multiple times (e.g., as image01 and image02).

An audio or image file can be referenced within an Action by selecting **JSON-Uploaded-File** for **Audio Source Type** (for an Add Announcement action)—or by selecting **JSON-Uploaded-Image** for **Message Type** (for a Display-Msg action)—and specifying the audio or image in the **Form Field Parameter** **Name** property as <audioName> or <imageName>. For the previous example, we would specify image01 and audio01.

Important: The maximum size of each image or audio file is 5 MB (5×10⁶ bytes).

Custom properties can be defined within the JSON object and referenced from an Action's Text property as {{<property>}}, such as {{displayText}}. Nested properties can also be defined and referenced as {{<property>.<subproperty>}}, such as {{messages.wbcText1}}

```
{
  "dtmf_code": "12345",
  "wait_flag": "1",
  "displayText": "Welcome back",
  "messages":
    {
        wbcText1": "Greetings",
    }
}
```

Example Routine and Routines API v2 invocation

Let's look at an example of a Routine designed to be invoked via the Routines API v2. The Actions and settings for this Routine and its Actions are summarized as follows.

	Setting	Value
Routine	-	
	Name	Routines API v2 Test
	Extension	(any)
	Enabled	Yes
	Allow DTMF	No
	Allow API	Yes
	DTMF Code	12345
Display-Msg		
	Name	Display Image
	Туре	Display-Msg
	Message Type	JSON-Uploaded-Image
	Device Type Filter	GA10PV and WBC
	Form Field Parameter Name	logo
Display-Msg		
	Name	Display WBC Message
	Туре	Display-Msg
	Message Type	Text
	Device Type Filter	GA10PV and WBC
	Text	Today's message is:
Wakksak Dest		{{displayText.text}}
webnook-Post	Name	Post message
	Type	Webbook-Post
	Webbook POST Command	curl -d "{{displayText text}}"
	Webhook FOST Command	https://bogen.reguestcatcher.com
New-Announcem	ent	
	Name	Create announcement

	Setting	Value
	Туре	New-Announcement
Add-Announcement-	Audio	
	Name	Add announcement
	Туре	Add-Announcement-Audio
	Audio Source Type	JSON-Uploaded-File
	Form Field Parameter Name	announcement
Play-Announcement		
	Name	Play the announcement
	Condition	\$apiParam3 == "Play"

The Routine includes a Display-Msg action called "Display Image" with a **Message Type** of JSON-Uploaded-Image and **Form Field Parameter Name** of logo, which will display the image specified by the logo part of the request.

The second Display-Msg is action called "Display WBC Message" with a **Message Type** of Text and a **Text** parameter of "*Today*'s message is: {{displayText.wbcText}}", which will display the caller-specified text, displayText.wbcText.

This Routine's final Actions will create a new announcement with New-Announcement, add the callerspecified announcement audio file to the announcement with Add-Announcement-Audio, and play the announcement (if \$apiParam3 has a value of "Play") with Play-Announcement.

We now create a JSON file named DTMF12345.json that will be used to invoke the API:

```
{
  "dtmf_code": "12345",
  "wait_flag": "1",
  "images": {
    "logo": "logo",
  },
  "audio": {
    "announcement": "announcement"
  },
  "routineApiParams": {
    "apiParam3": "Play"
  "displayMsgParams": [
    {
      "name": "Display WBC Message",
      "wbcFlasherPattern": "fast",
"wbcFlasherCycles": "10",
      "wbcFlasherColor": "blue"
    }
  ],
  "displayText": {
    "text": "Hello world",
  }
}
```

This JSON file includes the images.logo element referenced in the "Display Image" Display-Msg action as logo and the audio file referenced as announcement in the Add-Announcement action. It also overrides the WBC flasher settings (i.e., pattern, cycles, and color) of the Display-Msg action named "Display WBC Message", sets the apiParam3 parameter to "Play", and defines the custom object displayText with its text property set to "Hello world." To initiate the Routine, send a POST command to https://<server>/routine/api2 that includes the form field, data, whose value is the contents of the MyTest.json file (defined above). The POST command includes another form field, logo, whose value is the image file that will replace the Routine's references to logo with the CompanyLogo.png file.

Using curl:

curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F data=<DTMF12345.json -F logo=@CompanyLogo.png -F announcement=@Hello.mp3 https://<server>/routine/api2

Note: In the curl syntax, the @ symbol before the file name indicates that the subsequent value is a file name, and that the file (including the file name) should be sent as the value of the named form field. The < symbol before the file name indicates that only the contents of the file should be sent. For a more complete description, see the "-*F*, --*form* <*name*=*content*>" section of https://curl.se/docs/manpage.html.

Using PowerShell v7+:

```
Invoke-RestMethod -Uri https://<server>/routine/api2 -Headers @{ Authorization = "Bearer <apikey>" } `
-Method Post -Form @{ data = (Get-Content -Path DTMF12345.json -Raw); `
logo = (Get-Item -Path CompanyLogo.png); announcement = (Get-Item -Path Hello.mp3) }
```

The Routine will be activated on the E7000. It will display the CompanyLogo.png image, display the message "*Today's message is: Hello World*" while quickly flashing the WBC's blue LED 10 times, post the message "*Hello World*" to a webhook, and play the Hello.mp3 audio file as an announcement.

Note: The status returned by a Routines API call only indicates if the API was able to initiate the Routine; it does not indicate if the Routine executed successfully or encountered errors. The api2_log and nyquist_routines.log System Log files (see *Table 116, "System Logs," on page 351*) may be helpful when troubleshooting Routines API v2 calls.

Tip: One way to easily view the actual content of the HTTP request is to initialize a subdomain at https://requestcatcher.com; browse to that subdomain; POST requests to https://subdomain>.requestcatcher.com/<tag> from curl, PowerShell, or your application (<tag> will display in the output to help identify the request); and select the received request to examine the HTTP content.

Dynamically Modifying I/O Controller Contacts via Routines API v2

Using the Routines API v2, it is possible to programmatically enable or disable any I/O Controller contacts. Simply define a Routine that includes the Output-Contact-Open and/or Output-Contact-Close actions, then activate it via the Routines API v2 and override the IO Controller, Output Contacts, and/or Duration for one or both Actions via the outputContactOpenParams and/or outputContactCloseParams JSON structures.

As an example, let's define a Routine that includes both Output-Contact-* Actions.

	Setting	Value			
Routine	•				
	Name	Manipulate IO Controller			
	Extension	(any)			
	Enabled	Yes			
	Allow API	Yes			
	DTMF Code	1010			
Output-Contact-C	Open				
	Name	Open contacts			
	Туре	Output-Contact-Open			
	IO Controller	API-Specified			
	Output Contacts	API-Specified			
Output-Contact-C	Close				
	Name	Close contacts			
	Туре	Output-Contact-Close			
	IO Controller	API-Specified			
	Output Contacts	API-Specified			
	Duration	0			

This Routine includes an Output-Contact-Open action and an Output-Contact-Close action. The caller can specify which switches to open and which to close via the outputContactOpenParams.output-Contacts and outputContactCloseParams.outputContacts elements of the JSON structure, as shown in the following OpenCloseIOPorts.json file.

```
{
  "dtmf_code": "1010",
  "wait_flag": "1",
  "outputContactOpenParams": [
    {
      "name": "Open contacts",
      "ioController": "332",
      "outputContacts": "4"
   }
  ],
  "outputContactCloseParams": [
    {
      "name": "Close contacts",
      "ioController": "332",
      "outputContacts": "1,2,3",
      "duration": "0"
    }
 ]
}
```

This indicates that contact 4 of I/O Controller 332 will be opened, and contacts 1, 2, and 3 will be closed. (If we only want to open or close contacts, we only need to include the appropriate elements.)

The following curl command will initiate this Routine, opening and closing the specified contacts:

curl.exe --ssl-no-revoke -H "Authorization: Bearer <apikey>" -F data=<OpenCloseIOPorts.json
https://<server>/routine/api2

The following PowerShell v7 command will do the same:

Routines API v1

Important: The Routines API v1 has been extended by the Routines API v2, but is supported for backward compatibility. We recommend using the v2 API for new development.

A routine can be invoked through the Routines API v1 by sending an HTTPS GET command to the server. The specific routine to execute and several parameters are passed as part of the URL (i.e., as query parameters).

The URL of a Routines API v1 web request must take the following form:

https://<server>/routine/api/<dtmf-code>/0/<wait-flag>/<p1>/<p2>

The hostname and path parameters are:

- <server>: The Nyquist server's IP address.
- <dtmf-code>: The DTMF code of the Routine to be executed.
- <wait-flag>: Can be 1 (ON) or 0 (OFF). A value of 1 returns to the caller after the routine finishes (i.e., a synchronous call), while a value of 0 returns immediately after the routine starts (i.e., an asynchronous call).
- <p1>: A value that will replace the \$apiParam1 variable in an action field.
- <p2>: A value that will replace the \$apiParam2 variable in an action field.

The parameters <p1> and <p2> are passed through the URL to the routine. That routine can reference these values by using the variables \$apiParam1 and \$apiParam2 within specific fields of the Routine Actions (as well as within Routine Action Condition fields). See *Table 126, "Routine Actions and Routines API parameters," on page 436* and *Table 151, "Routine Action Type-Specific Parameters," on page 576* for details about which fields of which Routine Actions can use the \$apiParam1 and \$apiParam2 variables.

Note: Values must be provided for both <p1> and <p2>. If either or both parameters will not be used, specify a value or values of "0" (zero).

To invoke a routine, submit an HTTPS web request to the server formatted as described in *"Invoking a Routine via the Routines API" on page 419*. For example, to execute a routine associated with DTMF code 3333 on server 192.168.0.1 with a Routines API Key of 1ed163a71c6695f42035ebade76f1968 and passing 'abc' and 'xyz' as parameters p1 and p2, either of the following examples would work.

Example 1 (curl): At a command prompt, execute the following curl command:

```
curl.exe --ssl-no-revoke -H "Accept: application/json" -H "Content-Type: application/json" -H
"Authorization: Bearer 1ed163a71c6695f42035ebade76f1968"
https://192.168.90.1/routine/api/3333/0/1/abc/xyz
Response text:
```

{"status":"success", "message":"Test routine. p1 = abc, p2 = xyz"}

Example 2 (PowerShell): At a PowerShell prompt, execute the following command:

Invoke-RestMethod -Uri https://192.168.90.1/routine/api/3333/0/1/abc/xyz -Method Get `
-Headers @{ Authorization = "Bearer 1ed163a71c6695f42035ebade76f1968" }
Response object:
status message
.....
success Test routine. p1 = abc, p2 = xyz

Tip: These examples can be useful for testing a newly developed Routine. They allow you to execute it from a command line without having to initiate the actual trigger. The Routines button on the Dashboard can also be used for testing, but does not provide the ability to specify parameters.

Important: Be aware that the variables available to the Routine when invoked through the Routines API may be different than when invoked through a trigger.

The status returned by a Routines API call only indicates if the API was able to initiate the Routine; it does not indicate if the Routine executed successfully or encountered errors. The api_log and nyquist_routines.log System Log files (see *Table 116, "System Logs," on page 351*) can be used for troubleshooting Routines API v1 errors.

For backward compatibility with earlier product releases, a Routine can also be initiated by specifying the password of the user associated with the Routine's extension as a path parameter (instead of providing using the following URL format:

https://<server>/routine/api/<dtmf-code>/<password>/<wait-flag>

This technique makes it possible to initiate a Routine using a browser. Note that this format does not support the <p1> or <p2> path parameters, and it is undefined which user's password is required if more than one user is associated with the Routine's extension.

Although this request format is still supported, it is not recommended, as it is significantly less secure and risks exposure of the user's login password.

Routine Action	Routine Action field(s) able to use \$apiParam1 and \$apiParam2
Add-Announcement-Audio	Number Text-To-Speech
Change-Volume	Cut Level
Dash-Delete	Identifier

Table 126. Routine Actions and Routines API parameters

Routine Action	Routine Action field(s) able to use \$apiParam1 and \$apiParam2
Dash-Text	Identifier
	Text
Display-Msg	Identifier
	Text
Display-Msg-Delete	Identifier
Email	Subject
	Text
Log-Text	Text to log
Webhook-Post	POST command

 Table 126. Routine Actions and Routines API parameters (Continued)

Viewing Routines

Selecting **Routines** from the navigation bar allows you to view and edit existing routines and to create new routines.

🗴 Routines 🕂 👩											
Le Export La Import La Import											
Filter											
			Name 🔶	Extension	Enabled 🝦	Use Caller's Extension		DTMF Code 👙	Allow API 👙	Allow Multiple	Description
		9 1	Show Schdy weather	832	Yes	No	Yes	12303	Yes	No	Show
		0 1	NWS alert on ZPMS	832	Yes	No	Yes	832	Yes	No	Show

Figure 197. Routines

To view existing routines:

1 On the navigation bar, select **Routines**.

The Routines page includes several functions available at the top of the page, as described in *"Routines page commands"* on page 438:

Table 127. Routines page commands

Export button	Exports the selected Routines to an SQL file that can subsequently be imported to another System Controller (see <i>"Exporting a Routine" on page 481</i>).
Import button	Imports one or more Routines from a selected SQL file that was previously exported from this or another System Controller (<i>"Importing a Routine" on page 481</i>).
Manage Routines Database Variables button	Navigates to the Manage Routines Database Variables page (see "Manag- ing Routine Database Variables" on page 482).
Schedule Routines button	Navigates to the <i>Schedule Routines</i> page (see <i>"Using the Schedule Rou-tines Feature" on page 278</i>).
Enable Routines API	Toggle button that enables or disables ability of clients to activate rou- tines by using a Routines API web request (see <i>"Invoking a Routine via</i> <i>the Routines API" on page 419</i>).
	<i>Note</i> : This is a system-wide setting, not specific to a routine.

The Routines page displays the following parameters for each routine:

Table 128. Routines Parameters

Triggers button	Click to select or add Triggers that will start the routine.
Actions button	Click to select or add Actions that will occur as part of the routine.
Name	Specifies the routine's name.
Extension	Specifies the station extension to use when granting CoS permissions and displaying Caller ID (e.g., the \$caller variable).
	If Use Caller's Extension is specified, this field must be blank.
	Note: Either Extension, Use Caller's Extension, or Allow API must be specified.
	<i>Note:</i> If Extension is specified, the \$caller variable will equal the Extension value, unless the Routine was triggered by another extension, such as via the Intercom-Call trigger, in which case \$caller will equal the extension of the caller that placed the intercom call.
Enabled	Specifies if the routine is enabled. Routine is disabled by default.

Table 128. Routines Parameters

Use Caller's Extension	Specifies that the caller's extension is to be used for granting CoS permission and displaying Caller ID. This option may be appropriate when a routine is expected to be executed by a caller dialing a DTMF code or when a routine trigger is associated with an event that involves a caller (for example, All-Call Zone Page) who has sufficient CoS permissions to execute the routine's actions.						
	If either Extension or Allow API is specified, this field must not be set. This field is enabled by default.						
	Note: Either Extension, Use Callers Extension, or Allow API must be specified.						
Allow DTMF	Specifies if the routine can be manually started by dialing the routine's DTMF code from an Admin Phone. This field is disabled by default.						
	<i>Tip:</i> It is typically safest to set Allow DTMF to No if Allow API is set to Yes and the Routines API v2 is being used to activate it, because \$apiParam1 and \$apiParam2 (i.e., Routines API v1 variables) are the only parameters that can be set via DTMF.						
DTMF Code	Specifies the number to use when manually starting the routine from an Admin Phone or via the Routines API. The number can have from 1 to 10 digits. You cannot assign the same DTMF code to multiple routines.						
	A DTMF code is required if either Allow DTMF or Allow API is enabled.						
Allow API	Specifies if the routine can be executed via the Routines API (see "Using the Routines API" on page 419).						
	Note: Either Extension, Use Callers Extension, or Allow API must be specified.						
Allow Multiple	Specifies if multiple instances of the routine can run at the same time. This field is disabled by default.						
	When disabled, the system allows only one instance of the routine to execute at a time, regardless of how many times the routine might be triggered while already executing.						
Routine Passcode	Specifies an optional four-digit passcode that, if specified, must be entered by the user at the keypad before the Routine can be executed.						
	Important: This passcode is ignored when the Routine is executed via the Routines API.						

Description A description of the routine.

You can also select the **Triggers** button to select or add triggers to start the routine or select the **Actions** button to select or add **Actions** that will occur as part of the routine.

Adding a Routine

Adding a routine creates a **New Routine** on the Routines page. By default, this new routine is not enabled. It also has no **Triggers** or **Actions**.

To add a routine:

- 1 On the navigation bar, select **Routines**.
- 2 On the Routines page, select the **Add** icon.

The Edit Routine page appears (see "Editing a Routine" on page 440).

Note: When a Routine is added, edited, or deleted, all Admin phones will automatically be rebooted to update their **Routines** menu.

Editing a Routine

The Edit Routine page allows you to set other parameters for the routine (see *Table 128, "Routines Parameters," on page 438*).

ズ Edit Routine
Name: (1)
New Routine
Extension: 🚯
None 💌
Enabled: 1
Use Caller's Extension: () Yes
Allow DTMF: (1)
DTMF Code: ()
Allow API: (1) No
Allow Multiple: (1)
Routine Passcode: ()
Description: (1)
★ Cancel B Save

Figure 198. Edit Routine

To edit a routine:

- 1 On the navigation bar, select **Routines**.
- 2 On the Routines page, select the **Edit** icon.
- 3 Complete the changes for the parameters on the Edit Routines page (see *Table 128, "Routines Parameters," on page 438*).
- 4 Select Save.

Cloning a Routine

To clone a routine:

1 On the navigation bar, select Routines.

- 2 On the Routines page, select the Clone icon next to the routine that you want to clone.
- 3 A copy of the selected routine will be created with the following modifications:
 - The name will have " clone" appended to it.
 - The DTMF code will be blank.
 - The Enabled flag will be set to No (i.e., disabled).
- 4 Modify the cloned routine as desired.

Deleting a Routine

To delete a routine:

- 1 On the navigation bar, select **Routines**.
- 2 On the Routines page, select the **Delete** icon next to the routine that you want to delete.
- 3 When prompted, select **Delete**.

Creating and Executing Multi-Site Routines

You can create a routine to be started on one or more remote sites, such as a lockdown routine to be started at all sites in a district.

To create such a routine, you would select the **Routine** action **Type** (see "Actions" on page 447 and "Understanding Action Parameters" on page 450). You can select to execute the action on the local facility, a specific facility, or all facilities. If you want to execute the routine on multiple, but not all, facilities, you must create a separate action for each facility (using **Routine** action **Type**).

When you select a specific facility, you can enter the DTMF code of the routine. A routine with that DTMF code must exist on that facility.

Routines that are triggered by another site will not execute calling or paging type actions. Also, the receiving facility must have **Use Caller Extension** disabled.

Note: There will be a one-second delay between execution of one **Routine** action and another **Routine** action. So, if you execute a multi-site routine for 10 sites, there will be 10-second delay between when the routine starts on the first facility and when it starts on the tenth facility. To eliminate this delay, you can select **All Facilities** and then ensure that a routine with the specified DTMF does not exist on the sites that you do not want to run the routine. If **All Facilities** is selected, the remote routines start at the same time.

Call Detail Records

Call Detail Records (CDRs) are created when a routine is started. When started on a local facility, the **Destination** field will show **Local Facility** and the **Type** field will show **Start Routine (<routine-DTMF-code>)**.

When a routine is started on a selected remote facility, the CDR will show the remote facility name in the **Destination** field and **Start Remote Routine (<routine-DTMF-code>)** in the **Type** field.

When a routine is started on all facilities, the CDR will show **All Facilities** in the **Destination** field and **Start Remote Routine (<routine-DTMF-code>)** in the **Type** field.

For more information about view CDRs, see "Viewing Call Details Records" on page 354.

Triggers

A trigger is an event that starts a routine. By default, when you create a routine, it has no trigger or actions.

A trigger can have up to two parameters. For example, you can create a trigger that uses a specific Announcement. The first parameter would be the **Announcement Type** (Number) and the second parameter would be the **Announcement**.

Viewing Triggers for a Routine

⊖ Trig	igers - NWS alert on Z	PMS [832] 🕂	0			
Done	Actions					
					Search	
	Name 🌻	Enabled 🗘	Туре 🌲	Parameter 1 🛛 🍦	Parameter 2 🍦	Description
	NWS reboot trigger	No	Reboot	None	None	Show

Figure 199. Triggers

To view triggers for a routine:

- 1 On the navigation bar, select **Routines**.
- 2 Select **Triggers** for the routine that you want to view triggers for.

If a trigger has been added for the selected routine, information about the trigger appears (see *Table 129, "Triggers," on page 445*).

From the Triggers page, you can also add a trigger or select the **Actions** button to add actions that the selected routine will perform.

3 Select **Done** when finished viewing.

Adding a Trigger

Table 129. Triggers

Name	Displays the user-provided name for the trigger.
Enabled	Specifies if the trigger is enabled. When enabled, the trigger will cause the routine to begin when the trigger event occurs.
Туре	Displays the system event that triggers the routine.
	For the list of trigger types and their descriptions, see <i>Figure 22, "Failover Event Routine Triggers," on page 89</i> and <i>Figure 153, "Routine Trigger Types and Parame-ters," on page 601</i> .
Parameter 1	Displays the first parameter for the specified trigger if required. For example, if a trigger involves the closing of a contact on an I/O Controller, Parameter 1 is the name of the I/O Controller. For more information about Parameter 1 options, see <i>"Understanding Trigger Parameters" on page 446</i> .
Parameter 2	Displays the second parameter for the specified trigger if required. For example, if a trigger involves the closing of a contact on an I/O Controller, Parameter 2 is the specific contact or contacts of the device. For more information about Parameter 2 options, see <i>"Understanding Trigger Parameters" on page 446</i> .
Description	Displays the description entered by the user for the selected trigger.

One or more triggers (i.e., events that start a routine) can be added to a routine. When adding a trigger, you can set up to two parameters for the trigger (see *"Understanding Trigger Parameters" on page 446*).

To add a trigger:

- 1 On the navigation bar, select **Routines**.
- 2 Select **Triggers** for the routine that you want to add a trigger for.
- **3** Select the **Add** icon.

The Edit Trigger page appears.

- 4 Complete the parameters for the new trigger (see "Editing a Trigger" on page 445).
- 5 Select Save.

Editing a Trigger

The Edit Trigger page allows you to set the parameters for the trigger.

Name: 🚯		
Fire Alarm Activated		
Enabled: 🕦		
Yes		
уре: 🕦		
Input-Contact-Closed *		
D Controller: 🕦		
0116 - 0116 - IO CTRL 👻		
nput Contacts: 🚯		
× Contact 1		
Description: ()		
Fire Alarm switch pulled		

Figure 200. Edit Trigger

To edit a trigger:

- 1 On the navigation bar, select **Routines**.
- 2 Select **Triggers** for the routine that you want to edit a trigger for.
- 3 Select the **Edit** icon.
- 4 Complete parameters for the trigger. (See *Table 129*, "*Triggers*," on page 445.)
- 5 Select Save.

Deleting a Trigger

To delete a trigger:

- 1 On the navigation bar, select **Routines**.
- 2 Select the Delete icon next to the trigger that you want to delete.
- 3 When prompted, select **Delete**.

Understanding Trigger Parameters

Each trigger can have a maximum of two parameters, depending on the selected trigger Type.

When viewing triggers, the parameters appear as **Parameter 1** and **Parameter 2**. On the *Edit Trigger* page, however, the parameter names and available selections change based on the **Type**. For example, if **Alarm** is selected as **Type**, a field called **Alarm** appears with a drop-down menu that shows all of the tones whose **Type** is set to **Alarm** on the Tones page (see "Viewing Available Tones" on page 327).

For some **Announcement Types**, additional information is needed. For instance, if you select **Normal-Zone** as the **Announcement Type** on the Edit Trigger page, the **Zone** field appears. From the **Zone** field, you can select **All Speakers**, **Any Zone**, or a specific zone.

Some triggers have no parameters. For example, if you select **Emerg-All-Call** for **Type**, no parameters are applicable.

For detailed descriptions of the available trigger types and their associated parameters, see "Routine Trigger Types and Parameters" on page 601.

Actions

An action is an activity or task that the system performs as the result of a trigger starting a routine. For example, a routine that uses a selected tone for the trigger could have audio distribution start as the action.

Viewing Actions for a Routine

Actions - N Done Triggers	WS alert on ZPI	MS [832]	+ 0								
	Name 👙	Enabled \$	Type 🌲	Condition	Parameter 1 👙	Parameter 2 👙	Parameter 3 🍦	Parameter 4 🌲	Execute Order 🍦	Search	Description
+ 🔼 🖸 🔳	Play chime	Yes	Tone	Show	Chime	Zone-1:Zone1	Duration: 2	None	1	Wait-Until-Done	Show
+ 🖊 🖸 🔋	Display NWS alert	Yes	Display-Msg	Show	Zones: All Displays	Identifier: NWS Alert	None	Show	2	None	Show



To view actions for a routine:

- 1 On the navigation bar, select **Routines**.
- 2 Select **Actions** for the routine that you want to view actions for.

If an action has been added for the selected routine, information about the action appears (see *Table 130, "Actions," on page 447*).

From the Actions page, you can also add an action or select the **Triggers** button to add triggers that the selected routine will perform.

3 Select **Done** when finished viewing.

Table 130. Actions

Name Displays Name of the action.

Enabled Move the slider to **Yes** to enable this action.
Table 130. Actions (Continued)

Туре

Displays the type of action. Type can be one of the following:

<i>Note:</i> Depending on the Type, additional parameters may be set (see "Understanding Action Parameters" on page 450).	 Add-Announcement-Audio Alarm All-Call Announcement Audio-Dist-Start (Audio Distribution Start) Audio-Dist-Stop (Audio Distribution Stop) Call-And-Announce Change-Setting Change-Volume Change-WBC-Setting Check-In Check-In Check-intercom Dash-Delete (Dashboard Text Delete) Dash-Text (Dashboard Text) Display-Msg (display NQ-GA10PV or NQ-S1810WBC message) Display-Msg-Delete (delete NQ-GA10PV or NQ-S1810WBC message) Enable-Audio Email Emergency-Call Emerg-All-Call (Emergency All-Call) Facility-Announcement 	 Facility-Page Feature-Wait Goto Intercom-Call Intercom-WaitLog-Text Multi-Site-All-Call Multi-Site-E-All-Call New-Announcement No-Action Output-Contact-Close Output-Contact-Open Page-Exclusion Pause Play-Announcement Play-Ringtone Ring-Wait Routine Routine-Enable SM-Disable-Zone SM-Scheduled-Ramp SM-Set-Output-Gain Stop-Announcement Tone Urgent-Call Webhook-Post Zone-Page 	
Parameter 1	Displays the first parameter for the specified action type if required. For example, if Routine is selected as action Type , then the DTMF Code for the routine appears as Parameter 1.		
Parameter 2	Displays the second parameter for the specified action type if required. For example, if Routine is selected as the action Type , then either Local or a specific facility appears as Parameter 2.		
Parameter 3	Displays the third parameter for the specified action type if required.		
Parameter 4	Displays the fourth parameter for the specified action type if required.		
Execute Order	Displays the order that the action should be executed.		
Finish Delay	Specifies if the routine should wait until this action is completed before start- ing the next action.		
Description	Displays the user-provided description for the action.		

Adding an Action

One or more actions can be added to a routine. When adding an action, you can set up to four parameters for the action (see "Understanding Action Parameters" on page 450).

To add a trigger:

1 On the navigation bar, select **Routines**.

- 2 Select **Actions** for the routine that you want to add an action for.
- **3** Select the **Add** icon.

The Edit Action page appears.

- 4 Complete the parameters for the new action (see *Table 130, "Actions," on page 447*).
- 5 Select Save.

Editing an Action

The Edit Action page allows you to set the parameters for the action.

√ame: 🚯			
Show Dash Text			
inabled: () Yes			
iype: 🚺			
Routine	•		
acility: 📵			
Facility3	•		
6 inish Delay: () No-Delay	¥		
)escription: 🚯		 	
dash text			

Figure 202. Edit Action

To edit an action:

- 1 On the navigation bar, select **Routines**.
- 2 Select **Actions** for the routine that you want to edit an action for.
- **3** Select the **Add** icon.

The Edit Action page appears.

4 Complete the parameters for the action (see *Table 130, "Actions," on page 447*).

Cloning an Action

If an action is used more than once in a routine, you might want to clone the action rather than create a new action. Cloning an action creates a duplicate of the selected action and places the duplicate at the end of the action list.

You can edit a cloned action if you want to change any of the parameters.

To clone an action:

- 1 On the navigation bar, select **Routines**.
- 2 Select **Actions** for the routine that has the action you want to clone.
- 3 Select the **Clone** button (**C**) for the action that you want to duplicate.

Understanding Action Parameters

In the list of Actions for a Routine, the parameters appear as **Parameter 1**, **Parameter 2**, **Parameter 3**, and **Parameter 4**. If the Action uses more than four parameters, **Parameter 4** will display a **Show** button that allows you to view the remaining parameters.

On the Edit Action page, however, the parameter names and available selections change based on the **Type**. For example, if **Alarm** is selected as **Type**, a field called **Alarm** appears with a drop-down menu that shows all of the tones with **Type** set to **Alarm** on the Tones page (see *"Viewing Available Tones" on page 327*). With this type of action, you can also set the **Duration**, which appears on the Actions page as **Parameter 3**. Parameters 2 and 4 are not used for this type of action, but you can set a **Finish Delay**, which establishes if the routine should wait until this action is completed before starting the next action.

Some actions have no parameters. For example, if you select **All-Call** for **Type**, no parameters are applicable.

Important: Each action can be made conditional, which means that it will only execute if its defined condition evaluates to true. To make an action conditional, enter a PHP expression in the **Condition** field for that action.

For more details about conditional actions, see "Condition Statements" on page 467.

For details about the available action Types and their applicable parameters, see "Routine Action Types" on page 575.

Using Email Action to Send Text Message

You can use the **Email** action **Type** to send a situation-specific message to an email address outside the Nyquist system and to send a text message to a cellphone. For text messages, the cellular server provider receives the email message and converts it to text.

The following table provides formats to use in the **Send Email To** field when creating or editing an **Email** action **Type** for some of the major cellular carriers:

Cellular Carrier	Email Address Format
AT&T	<phone number="">@txt.att.net (SMS)</phone>
	<phone number="">@mms.att.net (MMS)</phone>
Boost Mobile	<phone number="">@sms.myboostmobile.com (SMS)</phone>
	<phone_number>@myboostmobile.com (MMS)</phone_number>
C-Spire	<phone number="">@cspire1.com</phone>
Consumer Cellular	<phone number="">@mailmymobile.net</phone>
Cricket	<phone_number>@sms.cricketwireless.net (SMS)</phone_number>
	<phone number="">@mms.cricketwireless.net (MMS)</phone>
Google Fi (Project Fi)	<phone number="">@msg.fi.google.com (SMS & MMS)</phone>
Metro PCS	<phone number="">@mymetropcs.com (SMS & MMS)</phone>
Page Plus	<phone number="">@vtext.com</phone>
Republic Wireless	<phone number="">@text.republicwireless.com (SMS)</phone>
S. Cellular	<phone number="">@email.uscc.net (SMS)</phone>
	<phone number="">@mms.uscc.net (MMS)</phone>
Sprint	<phone number="">@messaging.sprintpcs.com (SMS)</phone>
	<phone number="">@pm.sprint.com (MMS)</phone>
T-Mobile	<phone number="">@tmomail.net (SMS and MMS)</phone>
Ting	<phone number="">@message.ting.com</phone>
Tracfone	<phone number="">@mmst5.tracfone.com (MMS)</phone>
Verizon	<phone number="">@vtext.com (SMS)</phone>
	<phone number="">@vzwpix.com (MMS)</phone>

Table 131. Email Address Formats for Cellular Carriers

 Table 131. Email Address Formats for Cellular Carriers (Continued)

Cellular Carrier	Email Address Format	
Virgin Mobile	<phone number="">@vmobl.com (SMS)</phone>	
	<phone number="">@vmpix.com (MMS)</phone>	
Xfinity Mobile	<phone number="">@vtext.com (SMS)</phone>	
	<phone number="">@mypixmessages.com (MMS)</phone>	

Tip: For other cellular carriers or to verify the email format (i.e., these may change over time), see the carrier's website. There are free services available (e.g., https://freecarrierlookup.com) that can help identify the carrier used by a cellular phone number.

How Actions Impact Other Actions

When creating a routine, you must take into account how an action impacts other actions in the routine. For example, if you want an announcement to play after an alarm, you want to ensure that the alarm ends before the announcement begins. Otherwise, the announcement may not be heard. In this scenario, you would want to ensure that the action to play an announcement waits until the alarm ends.

Check-Intercom, Intercom-Wait, Ring-Wait Action Types

If a routine's trigger **Type** is **Intercom-Call**, the routine's action **Type** could be **Check-Intercom**, **Intercom-Wait**, or **Ring-Wait**. Each of these action types depends on the status of the **Callers** – parameter 1 for the trigger (see *"Understanding Trigger Parameters" on page 446*).

The **Check-Intercom** action **Type** checks to see if the trigger caller is on an active intercom call. If the trigger caller is on an active intercom call, the routine executes subsequent actions. If the trigger caller is not on an active intercom call, the routine terminates and remaining actions will not be executed. You may want a routine to execute a **Check-Intercom** action **Type** before executing **Intercom-Wait** to ensure that the trigger caller is on an active intercom call.

The **Intercom-Wait** action **Type** waits for the trigger caller's call to finish. After the call finishes, the routine executes subsequent actions. If the call finishes before **Intercom-Wait** action **Type** is executed, the routine executes subsequent actions without delay.

The **Ring-Wait** action **Type** waits for the trigger caller's ringing to finish. After the ringing stage of a call ends, the routine executes subsequent actions. If the call is answered before the **Ring-Wait** action **Type** executes, the routine executes subsequent actions without delay.

A sample scenario using these three actions is a routine that is executed by the Intercom-Call trigger Type. The routine contains actions to be performed to indicate a ringing call The routine waits for the ring to finish (Ring-Wait action Type). When the ring finishes, the routine executes additional actions and then checks to see if the call was answered (Check-Intercom action Type). If the call was not answered (no active intercom call), the routine terminates. Otherwise, it executes additional actions

before waiting for the call to finish (Intercom-Wait action Type), and then when the call is finished, the routine executes the remaining actions.

Note: The check and wait actions described in this section are always related to the caller that triggered the routine. The routine settings for **Extension** and **Use Caller's Extension** are not related to these wait actions; the check and wait actions will always be evaluated based on the trigger caller regardless of the routine's **Extension** or **User Caller's Extension** settings.

Check-In Action Type with Check-In Set to Wait

When the routine includes a **Check-In** action **Type** and **Check-In** (parameter 1) is **Wait**, the routine pauses the execution of subsequent actions until the check-in process is no longer active. When the check-in process is **Finished** or you select **Stop**, **Finish**, or **Reset**, the routine resumes executing actions that follow a finished Check-In process such as: announcing Check-In completed to Admin Station speakers or displaying Check-in completion messages on web interface dashboards or GA10PV displays.

Check-In action **Type** with **Check-In** set to **Wait** does not differentiate between the Check-in process moving to the **Finished** state or having been manually stopped or finished.

Note: If you want to execute routine Actions after all stations have checked in (**Check-In** status is **Done**), create a routine with trigger **Type** set to **Check-In** and **Parameter 1** set to **Done**.

For more information about the Check-In process, see "Manage Check-In" on page 510.

Feature-Wait Action Type with 911

You may want to include the **Feature-Wait** action **Type** in a routine that is triggered by a 911 call to pause subsequent actions until the 911 call ends. In this scenario, set **Feature Wait** (parameter 1 of the **Feature-Wait** action **Type**) to **911**.

After the 911 call ends, the routine executes subsequent actions. The **911** trigger **Type** can execute routines when any caller dials 911, so multiple routines (one for each active 911 call) could execute.

Feature-Wait Action Type with Alarm

If you want to pause subsequent routine actions until the alarm finishes playing, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Alarm**. If no alarm is playing when the **Feature Wait** action executes, the routine does not wait for an alarm. Instead, it continues executing subsequent actions.

If you want to ensure that the routine includes an active alarm, use **Alarm** as the trigger **Type** (see *"Understanding Trigger Parameters" on page 446*).

If you do not need the routine to wait until the alarm finishes, you can still use **Feature-Wait** as the action **Type** and **Alarm** as **Feature Wait** and set **Maximum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Announcement

If you want all active Normal and Emergency announcements to complete before continue with subsequent routine actions, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Announcement**.

This action will not allow you to specify which announcement type or which announcement to wait for. The **Announcement** trigger **Type** does allow you to specify an announcement type or number (see *"Understanding Trigger Parameters" on page 446*). However, if the routine uses **Feature-Wait** action **Type** with **Feature Wait** set to **Announcement** and multiple announcements start, then the routine will pause until all announcements have completed.

Feature-Wait Action Type with All-Call

If you want a routine to pause until an active All-Call page completes, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **All-Call**.

If no All-Call page is playing when the **Feature Wait** action executes, the routine does not wait for an All-Call page. Instead, it continues executing subsequent actions.

If you want to ensure that the routine includes an All-Call page, use **All-Call** as the trigger **Type**.

If you do not need the routine to wait until the All-Call page finishes, you can still use **Feature-Wait** as the action **Type** and **All-Call** as **Feature Wait** and set **Maximum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Disable-Audio

If you want a routine to pause until audio is re-enabled, use the Feature-Wait action Type with Feature Wait (parameter 1) set to Disable-Audio.

If audio is enabled when the **Feature Wait** action executes, the routine does not wait for audio to be disabled. Instead, it continues executing subsequent actions.

Feature-Wait Action Type with Emerg-All-Call

If you want a routine to pause until an active Emergency All-Call page completes, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Emerg-All-Call**.

If no Emergency-All-Call page is playing when the **Feature Wait** action executes, the routine does not wait for an Emergency-All-Call page. Instead, it continues executing subsequent actions.

If you want to ensure that the routine includes an Emergency-All-Call page, use **Emerg-All-Call** as the trigger **Type**.

If you do not need the routine to wait until the Emergency-All-Call page finishes, you can still use **Fea-ture-Wait** as the action **Type** and **Emerg-All-Call** as **Feature Wait** and set **Maximum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Facility-Page

You can use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Facility-Page** in a routine that is triggered by a facility page. The routine will pause subsequent actions until the facility page completes. If no facility page is playing when the Feature Wait action executes, the routine does not wait for a facility page. Instead, it continues executing subsequent actions.

Note: Only routines with the trigger **Type** set to **Facility Page** can use this action.

If you do not need the routine to wait until the facility page finishes, you can still use **Feature-Wait** as the action **Type** and **Facility Page** as **Feature Wait** and set **Maximum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Multi-Site-All-Call

If you want a routine to pause until a Multi-Site-All-Call page completes, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Multi-Site-All-Call**.

If no Multi-Site-All-Call page is playing when the **Feature Wait** action executes, the routine does not wait for a Multi-Site-All-Call page. Instead, it continues executing subsequent actions.

If you want to ensure that the routine includes a Multi-Site-All-Call page, use **Multi-Site-All-Call** as the trigger **Type**.

This action will only wait on a Nyquist system that starts the Multi-Site-All-Call. Remote sites that are included in a Multi-Site-All-Call only see a playing All-Call; they do not see it as a Multi-Site call. In this case, this action will have no effect.

If you do not need the routine to wait until the Multi-Site-All-Call page finishes, you can still use **Feature-Wait** as the action **Type** and **Multi-Site-All-Call** as **Feature Wait** and set **Maximum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Multi-Site-E-All-Call

If you want a routine to pause until a Multi-Site Emergency All-Call page completes, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Multi-Site-E-All-Call**.

If no Multi-Site Emergency All-Call page is playing when the **Feature Wait** action executes, the routine does not wait for a Multi-Site Emergency All-Call page. Instead, it continues executing subsequent actions.

If you want to ensure that the routine includes a Multi-Site Emergency All-Call page, use **Multi-Site-E-All-Call** as the trigger **Type**.

This action will only wait on a Nyquist system that starts the Multi-Site Emergency All-Call. Remote sites that are included in a Multi-Site Emergency All-Call only see a playing Emergency-All-Call; they do not see it as a Multi-Site Emergency All-Call. In this case, this action will have no effect.

If you do not need the routine to wait until the Multi-Site-Emergency-All-Call page finishes, you can still use **Feature-Wait** as the action **Type** and **Multi-Site-E-All-Call** as **Feature Wait** and set **Maxi-mum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Tone

If you want a routine to pause until a tone finishes, use the **Feature-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Tone**.

If no tone is playing when the **Feature Wait** action executes, the routine does not wait for a tone to start. Instead, it continues executing subsequent actions.

If you want to ensure that the routine includes the playing of a tone, use **Tone** as the trigger **Type**.

If you do not need the routine to wait until the tone finishes, you can still use **Feature-Wait** as the action **Type** and **Tone** as **Feature Wait** and set **Maximum Wait Time** (action parameter 2) to the desired amount of time to wait.

Feature-Wait Action Type with Zone

If you want all zone pages to complete before continuing with subsequent routine actions, use the **Fea-ture-Wait** action **Type** with **Feature Wait** (parameter 1) set to **Zone**.

This action will not allow you to specify a zone. The **Announcement** trigger **Type** does allow you to specify a zone (see *"Understanding Trigger Parameters" on page 446*). However, if multiple routines triggered by a zone page use **Feature-Wait** action **Type** with **Feature Wait** set to **Zone** and multiple zone pages start, then all routines triggered by the start of a zone page will pause until the multiple zone pages have completed.

Zones and Stations Parameters for Deleting Display Messages

If you set Parameter 1 of **Display-Msg-Delete** action **Type** to **PARAM**, the options used for Zones and Stations determine which messages, if any, a routine automatically deletes from the dashboard and NG-GA10PV video displays. For example, if you leave **Zones** blank and set **Stations** to All, then messages that have no zones defined but do have stations defined will be deleted.

The following table describes how the combination of **Zones** and **Stations** settings are used to select messages for deletion:

Zones	Stations	Messages Selected for Deletion
<black></black>	<black></black>	No messages
<black></black>	All	Messages that have no zones defined and any stations defined
Any	<blank></blank>	Messages that have any zones defined and no stations defined
Any	All	All Messages
Selected zone or zones	<blank></blank>	Messages that have specified zones defined and no sta- tions defined
Selected zone or zones	All	Messages that have specified zones defined and any sta- tions defined (including none)
Selected zone or zones	Selected station or stations	Messages that have specified zones defined and specified stations defined
<black></black>	Selected station or stations	Messages that have no zones defined and specified sta- tions defined
Any	Selected station or stations	Messages that have any zones defined (including none) and specified stations defined

Table 132. Selecting Messages for Deleting

Using Variables for Dashboard, NQ-GA10PV, and NQ-S1810WBC Text Parameters

You can add variables to text messages for the Admin Web UI dashboard, the video display connected to the NQ-GA10PV, the NQ-S1810WBC LED display, and email messages. When a trigger starts a routine that includes a text message for display, the variable is replaced. For example, if the routine uses the variable \$date1, that variable is replaced by the current date in the format YYYY-MM-DD when the routine is started.

The availability of specific variables is based on the trigger that started the routine (see *Table 133*, *"Variables, Definitions, and Availability," on page 458*).

When using variables, be sure to allow enough room for the message text, including the new text replaced by the variable. For dashboard messages, the maximum text that can be displayed is 255 characters per message. The character limit for the NQ-GA10PV display is 4096 characters, but the actual limit will vary due to font style and size. The NQ-S1810WBC LED display can display up to 64 characters, which will display as uppercase and will horizontally scroll text that exceeds the display width. You should test your message display to ensure it fits into the available space.

Note: These variables are available for text messages and related fields. Within the condition statement of a routine action, there are other variables available, as described in *Table 137, "Conditional Statement Variables," on page 475.*

		5
Variable	Definition	Available for Routines Triggered by:
\$alerts(?,?)	When used in the Text field of a Display-Msg ,	Always available
	NWS alerts will display on the video connected to the NQ-GA10PV (see "Setting Variables for the Display Message" on page 535).	<i>Note</i> : The Reboot trigger is rec- ommended to ensure the rou- tine is always running.
\$apiParam1	Used only by the Routines API v1, these param-	Routines API v1
\$apiParam2	eters can be specified as part of the Routines API URL and referenced by the Routine Action. For details, see <i>"Routines API v1" on page 435</i> .	
\$apiParam1 : \$apiParam20	Used only by the Routines API v2, these parameters can be specified within the data or json multipart form subpart and referenced by the Routine Actions and Conditions. For details, see <i>"Routines API v2" on page 420</i> .	Routines API v2
\$autobgcolor	When appended to the end of text, the mes- sage's background color automatically appears as red for Emergency-Call, yellow for Urgent- Call, or the font color set in Display-Msg action for Intercom-Call.	Emergency-CallIntercom-CallUrgent-Call
	<i>Note</i> : Use only \$autobgcolor or \$autofontcolor, but not both.	
\$autofontcolor	When appended to the end of text, the mes- sage's font color automatically appears as red for Emergency-Call, yellow for Urgent-Call, or the font color set in Display-Msg action for Intercom-Call.	Emergency-CallIntercom-CallUrgent-Call
	<i>Note:</i> Use only \$autobgcolor or \$autofontcolor, but not both.	

Variable	Definition	Available for Routines Triggered by:
\$autopriority(E,U,N)	When appended to the end of text field, the message's priority is changed where E is replaced by the priority for Emergency calls, U is replaced by the priority for Urgent calls, and N is replaced by the priority for Normal calls.	Emergency-CallIntercom-CallUrgent-Call
	For example, \$autopriority(5,4,3) will set Emer- gency-Call–triggered Dash-Msg to priority 5, Urgent-Call–triggered Dash-Msg to priority 4, and Intercom-Call–triggered Dash-Msg to prior- ity 4. If the (E,U,N) parameters are not present, the priorities will be 4,3,2.	
\$auto_resize(N)	When used in the Text field of a Display-Msg , automatically resizes the display message by decreasing the font size, if needed, to better fit the message to the screen, but will keep the font size to at least N (see "Setting Variables for the Display Message" on page 535).	Always available
\$caller	Extension number of caller that triggered execu- tion of the routine; when calls are placed from outside the system, displays the phone number of the caller.	 Alarm All-Call Announcement Check-In Disable-Audio Enabled-Audio Emergency-Call Emerg-All-Call Facility-Page Incoming-Call Intercom-Call Multi-Site-All-Call Multi-Site-E-All-Call Night-Ring PBX-Incoming-Call Tone Urgent-Call Zone-Page

Variable	Definition	Available for Routines Triggered by:
\$called	Extension number of called station.	Emergency-Call
		Intercom-Call
		PBX-Incoming-Call
		Urgent-Call
\$calltypechar	Replaced by E for Emergency-Call, U for Urgent-	Emergency-Call
	Call, or left blank for Intercom-Call.	Intercom-Call
		Urgent-Call
\$calltypelong	Replaced by Emergency for Emergency-Call,	Emergency-Call
	Urgent for Urgent-Call, or left blank for Inter- com-Call.	Intercom-Call
		Urgent-Call
\$calltypeshort	Replaced by Emerg for Emergency-Call, Urg for Urgent-Call, or left blank for Intercom-Call.	Emergency-Call
		Intercom-Call
		Urgent-Call
\$contact	I/O Controller's input contact number that trig- gered execution of the routine.	 Input-Contact-Closed
		Input-Contact-Opened
\$cputemp	Current temperature (in °C) of the CPU core with the highest temperature.	All triggered routines that include one of the follow-ing actions:
		• Dash-Text
		• Display-Msg
		• Email
\$date1	Current date in YYYY-MM-DD format	Always available
\$date2	Current date in MM-DD-YYYY format	Always available
\$date3	Current date in DD-MM-YYYY format	Always available

		-
Variable	Definition	Available for Routines Triggered by:
\$deviceMacAddr	MAC address for Nyquist appliance that went into protection mode.	The following actions of the Amp-Protection-Mode trigger:
		 Display-Msg
		Dash-Text
		• Email
		• Log-Text
		Also available in the CODE: segments of the action's Condition statement.
\$deviceName	Name of Nyquist appliance that went into pro- tection mode.	The following actions of the Amp-Protection-Mode trigger:
		• Display-Msg
		Dash-Text
		• Email
		• Log-Text
		Also available in the CODE: segments of the action's Condition statement.
\$df-avail	Available disk space of the Nyquist server dis- played in either M for megabytes or G for giga- bytes.	All triggered routines that include one of the follow- ing actions:
		Dash-Text
		• Display-Msg
		• Email
\$eventid	Scheduled Event ID (integer)	Scheduled-Event
\$eventname	Scheduled Event Name	Scheduled-Event
\$facility	Name of facility that is being paged or for which	Facility-Page
	the current status is being provided	Facility Status Down
\$namecalled	Station name for caller that triggered execution	Emergency-Call
	of the routine	Intercom-Call
		PBX-Incoming-Call

• Urgent-Call

Variable	Definition	Austlahla far Dautinaa
variable	Definition	Triggered by:
\$namecaller	Called station's name	• Alarm
		All-Call
		Announcement
		Check-In
		Disable-Audio
		Enabled-Audio
		Emergency-Call
		Emerg-All-Call
		Facility Page
		Intercom-Call
		• Multi-Site-All-Call
		• Multi-Site-E-All-Call
		Night-Ring
		PBX-Incoming-Call
		• Tone
		Urgent-Call
		Zone-Page
\$nwsAlertEvent \$nwsAlertSeverity	The event, severity, certainty, urgency, and response of the NWS alert.	The following actions of the NWS-Alert trigger:
\$nwsAlertCertainty		Add-Announcement-
		Audio (with <i>Text-to-</i>
snwsAlertUrgency		Dash-Text
\$nwsAlertResponse		Dash-Delete
		 Dasil-Delete Display-Msg
		 Display-Msg Display Msg Doloto
		Email

- Log-Text
- Webhook-Post

Variable	Definition	Available for Routines Triggered by:
\$schedParam1	Used only by the Schedule Routines, these	Schedule Routines only:
\$schedParam2	parameters can be specified via the Schedule Routine's Parameter 1 and Parameter 2 properties and referenced by the Routine Action	 Add-Announcement- Audio
	(as well as Action Conditional CODE: segments).	Dash-Text
	For details, see "Using the Schedule Routines	Dash-Text-Delete
	Feature" on page 278.	 Display-Msg
		 Display-Msg-Delete
		• Email
		Also available in the CODE: segments of the Action's Condition statement.
\$schedulename	Activated schedule name	Schedule-Activated
\$station	Station, such as the I/O Controller, that triggered execution of the routine or for which the current status is being provided	 Input-Contact-Closed
		 Input-Contact-Opened
		Station-Status-Up
		Station-Status-Down
\$time1	Current time in 12-hour format	Always available
\$time2	Current time in 24-hour format	Always available
\$toneid	Tone's identifier	Scheduled-Tone
\$tonename	Tone's name	Scheduled-Tone
\$uptime	Indicates how long the Nyquist server has been running, since the last reboot (e.g., "up 4 hours, 44 minutes")	All triggered routines that include one of the follow- ing actions:
		• Dash-Text

- Display-Msg
- Email

Variable	Definition	Available for Routines Triggered by:	
\$user_var[110]	The values in this general-purpose array can be set and referenced within the Routine Condition CODE: segments and Actions of a single Routine.	Routine Action Condition fields can access this general purpose array. In addition, the following	
	<i>Note:</i> The scope and lifetime of this variable corresponds to the execution of all actions and conditions of the current routine. If you need values to persist and be accessi-	routine actions can access them via Text, Identifier, and Subject fields:	
	ble across multiple executions or between different routines, you can store the values in database variables	• Dash-Text	
	(see "Managing Routine Database Variables" on page 482).	Display-Msg	
		• Email	
		 Add-Announcement-Audio (TTS field) 	
		 Webhook-Post (POST Command field) 	
\$weather	Displays current weather conditions as provided by the OpenWeather API service.	All triggered routines tha include one of the follow	
	For details, see "The \$weather variable and the	ing actions:	
	OpenWeather API" on page 464.	 Display-Msg 	
	<i>Tip:</i> If you want the weather to display at all times, use the Reboot trigger to display it upon startup.		
\$zone	Announcement zone or page zone that trig-	Announcement	
	gered execution of the routine	• Zone-Page	
{{object.property}}	Custom objects can be defined with the json structure of a Routines API v2 call and referenced within the Actions.	Routines API v2	
	For details, see "Routines API v2" on page 420.		

The \$weather variable and the OpenWeather API

The \$weather variable, if used in a Display-Msg action message, will be replaced by the current weather conditions and displayed using the following format:

Temperature: # F (feels like #) Humidity: #% Condition: <text description> Wind: <direction> # mph (gusts to #)

To use the \$weather variable, you must first acquire a free OpenWeather API key. For details on acquiring and using an API key, visit https://openweathermap.org/appid.

Important: This feature requires Internet access and the Nyquist system must be able to access http://api.openweathermap.org. The Check Internet Site Access tests will verify this (see "Check Internet Site Access" on page 41).

To enable the \$weather variable, use the **Custom Configuration** button in *System Parameters* (see *"Custom Configuration" on page 42*) to set the following two variables in the *Actions and Custom Variables* section:

- weather_api_key
- weather_zipcode

In the Actions and Custom Variables text editor, uncomment the #weather_api_key= and #weather_zipcode= lines (i.e., remove the # symbols) and append your API key and the relevant ZIP code (respectively) after the equal signs. The weather_api_key specifies an API key from your OpenWeather account. The weather_zipcode indicates the 5-digit ZIP code whose weather conditions are to be retrieved. Note that this must be set, even if you intend to override the ZIP code using the weather_zipcode_##### parameter.

Tip: Due to the length of many OpenWeather descriptions, you may want to format the message using a smaller font size. For example, the following will display the text at 70% of normal size:

\$weather

Override the forecast location

The target ZIP code specified by the weather_zipcode can be overridden in a Display-Msg action by specifying the weather_zipcode_##### parameter after the \$weather variable, where ##### is the target ZIP code. For example:

\$weather weather_zipcode_12345

The Display-Msg action can also specify the forecast location via coordinates (i.e., latitude and longitude) instead of by ZIP code by specifying the weather_latlon_<latitude>, <longitude># parameter after the \$weather variable. For example:

\$weather weather_latlon_42.833261,-74.058015#

These overrides allows you to display the weather conditions for multiple and/or alternate locations.

Tip: To display weather conditions for multiple locations at once, you should define a separate Action for each location, as only one location is allowed per Action.

Unit of measurement (Fahrenheit or Celsius)

Temperatures are displayed in degrees Fahrenheit by default. To display temperatures in degrees Celsius, specify weather_units_metric after the \$weather variable. For example:

\$weather weather_units_metric

or

\$weather weather_latlon_42.833261,-74.058015# weather_units_metric

Update frequency

When using the \$weather variable in a Display-Msg routine action, you will usually want to execute the Display-Msg action in a loop (e.g., by using the Goto action) and pause between executions (e.g., by using the Pause action). The length of the pause should be based on how timely you wish the information to be, while taking into consideration the access limits imposed by your OpenWeatherMap subscription.

As of this Nyquist release, a free OpenWeatherMap account allows 60 calls per minute with a monthly cap of 1,000,000 calls (paid subscriptions allow more). Executing the Display-Msg action once per minute is well within the limit and should not negatively impact Nyquist performance. We do not recommend executing the Display-Msg action more frequently than once every 15 seconds, especially if the GA10PV is being used to play audio distribution.

Tip: OpenWeather recommends calling their API no more than once every 10 minutes per location, as their forecast data is updated no more than once every 10 minutes.

Note: If you initiate a long-running routine like this via the Routines API, you will probably want to set the URL's <delay_flag> value to zero ("0") so the call will not block indefinitely, waiting for the routine to complete.

Using Variables in Dashboard and NQ-GA10PV Identifiers

You can use one or more variables in the **Identifier** field of **Display-Msg**, **Display-Msg-Delete**, **Dash-Text**, and **Dash-Delete** action types (see *Table 151*, *"Routine Action Type-Specific Parameters," on page 576* for the specific variables available). The value of the Identifier will be determined by the values of the specified variables.

An **Identifier** can have a maximum character length of 255 characters. When using variables, be sure the specified value, including the expanded values of the variables, does not exceed this maximum character length.

Tip: If you would like to verify the actual value of an Identifier that includes variables, you can create a LogText action, specifying the same value as used for **Identifier**, and view the resulting value in the System Logs (nyquist_routines.log). Keep in mind that the LogText message allows more characters, removes single and double quotes, and does not allow the \$date# and \$time# variables.

Using Variables in Display-Msg Text

Note: This section describes variables that are only available for use in the **Display-Msg** action type, and *only* if the routine trigger is **Intercom-Call**, **Urgent-Call**, or **Emergency-Call**.

The following variables can only be used in the **Text** field of the **Display-Msg** action type:

- \$calltypechar
- \$calltypeshort
- \$calltypelong
- \$autobgcolor
- \$autofontcolor
- \$autopriority(E,U,N)

These variables allow you to set the priority and appearance of the NQ-GA10PV and NQ-S1810WBC display messages for emergency, urgent, or intercom calls. For more information about these variables, see *"Using Variables for Dashboard, NQ-GA10PV, and NQ-S1810WBC Text Parameters" on page 457.*

Reordering Actions

You can reorder actions in a routine but should exercise care. Some actions must be the last action in a routine (see "Understanding Action Parameters" on page 450).

To reorder an action:

- 1 On the navigation bar, select **Routines**.
- 2 Select Actions for the routine that you want to reorder actions for.
- 3 Click the Move icon (↔) next to the action that you want to move and drag the action to the desired location.

Condition Statements

An action's **Condition** property can be used to specify conditional execution of the Routine Action based on the supplied conditional statement. If the Condition field is not specified (i.e., left blank), the routine action will always be executed. If a condition is specified, the action will only be executed if the condition evaluates to true.

Conditional statement syntax must adhere to the PHP 7.4 programming language while using existing Nyquist variables, functions, and valid conditional logic. The Nyquist system will not attempt to validate the statement syntax or the provided conditional logic, so please ensure that you thoroughly test your conditional statements.



Simple Conditions

A conditional statement can be a simple boolean PHP conditional statement, which evaluates to either true or false. The statement can include PHP and Nyquist variables (see "Available Condition Variables" on page 474) and functions (see "Condition Statement Functions" on page 470).

Simple Condition Examples

The following condition for an action will cause the action to execute only if the caller is 105:

\$caller == "105"

The following condition for an action will cause the action to execute only if the caller is 105 and the called is 200:

```
($caller == "105") && ($called == "200")
```

The following condition for an action will cause the action to execute only if the caller is 100 or 101 and the called is 200 or 201:

```
(($caller == "100") || ($caller == "101")) && (($called == "200" || ($called == "201"))
```

The following condition for an action will cause the action to execute only if the caller starts with 10 (e.g. 100, 101, 102):

```
strpos($caller,"10") === 0
```

The following condition for an action will cause the action to execute only if the zone number is 123:

```
$zonenumber == "123"
```

The following condition for an action will cause the action to execute only if zone number is 4444 and its name is "Gym":

\$zone == "Zone 4444 - Gym"

The following condition for an action will cause the action to execute only if the current time is between 8 a.m. and 5 p.m.:

((\$curtime > "08:00:00") && (\$curtime < "17:00:00"))

The following condition for an action will cause the action to execute only on Monday through Friday:

(\$weekday != "Sat") && (\$weekday != "Sun")

The following condition for an action will cause the action to execute only if any Nyquist CPU core has a temperature higher than 85 C:

\$cputemp > 85

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Advanced Conditions

Advanced conditions begin with one of the following (including the colon):

- STOP:
- CODE:

Conditions that begin with STOP: will cause the Routine to stop executing actions and terminate if the condition is true.

For example, the following condition will cause the Routine to stop if today is Saturday or Sunday:

STOP:(\$weekday == "Sat") || (\$weekday == "Sun");

Conditions that begin with CODE: will execute the provided code, which may assign values to user variables (which are accessible within the current routine) or database variables (which are accessible within *any* routine). If you also want the current action to execute, the following statement must be included:

\$DOACTION=true;

If \$DOACTION=true is not included (or is not executed), the default behavior is to not execute the action.

A return; statement in the CODE: section can be used to exit the code section before all statements have been executed.

The Dash-Text, Display-Msg, Email, and Webhook-Post actions have access to ten user-supplied variables—<code>\$user_var[1]</code> through <code>\$user_var[10]</code>—which can be set with Action conditions.

The CODE: section can also be used to branch to ("go to") a specified action, using the \$gotoActionName variable. For example, the following statement will cause a Routine to go to the Action named "Display Msg 2":

CODE:\$gotoActionName = "Display Msg 2";

If you also want the current action to execute, use:

CODE:\$DOACTION=true; \$gotoActionName = "Display Msg 2";

After branching to—and executing—the specified action, the Routine will continue executing the actions that follow the one specified by \$gotoActionName.

The \$gotoActionName variable can be used to go to Actions that either follow *or precede* the current action. This enables loops within the actions of a Routine.

Caution If you create a loop within the routine by setting \$gotoActionName to a preceding action of the routine, be aware that the routine may execute indefinitely (i.e., an infinite loop).

If you plan to use the \$gotoActionName feature, make sure that all Action's have unique names. If more than one action has the same name, the first one found after the current action will be executed.

If you set \$gotoActionName to a name that does not exist, the Routine will be terminated. This could be an issue if you accidentally specify the wrong name, but it can also be useful if you need to stop the



Routine based on conditions determined by your CODE: section. If you intend to use \$gotoActionName to terminate a Routine, you could set \$gotoActionName to "TERMINATE" or "STOP" and make sure you don't have an Action with that name.

Routines can be repeated (looped) by setting \$gotoActionName to the first Action in the Routine. Routines can also be repeated by using a Goto Action to the name of the first Action in the Routine.

Instead of using the \$gotoActionName variable, you can also use the Goto Action to branch to the name of the Action specified in the Goto Action. Goto Actions can also be conditionally executed based on the associated Condition. The \$gotoActionName variable is typically used in CODE: sections for advanced use-case scenarios where the Goto Action would not be sufficient.

Advanced Condition Examples

The following condition for an action will cause the Routine to stop if the condition is true:

STOP:\$caller == "105"

The STOP: keyword tells the system that you want to stop the Routine if the condition is true. When the Routine is stopped, subsequent actions will not be executed, and the Routine will be terminated.

The following condition for an action, if true, will set a user variable and cause the action to be executed:

CODE:if (\$caller == "105") { \$user_var[1] = "Bogen"; \$DOACTION=true; }

The *suser_var[1]* variable can be used in the current or subsequent actions of type Dash-Text, Display-Msg, or Email (in the action Text fields and the Subject field for Email).

The following condition for an action will evaluate the \$cputemp variable and set a user variable for use in a Dash-Text, Display-Msg, or Email action:

```
CODE:if ($cputemp > 85) { $user_var[1] = "CPU Temperature getting too hot: $cputemp"; } else {
$user_var[1] = "CPU Temperature is normal: $cputemp"; } $DOACTION=true;
```

Whitespace and comments can be used in the CODE: section to make it easier to read the code. For example, the above code could be the following instead:

```
CODE:
if ($cputemp > 85) {
    $user_var[1] = "CPU Temperature getting too hot: $cputemp";
} else {
    $user_var[1] = "CPU Temperature is normal: $cputemp";
}
$DOACTION=true;
```

Condition Statement Functions

There are several utility functions provided that are available within the condition statements of the Routine Actions.

Database Variable Functions

The database variable functions enable you to share data between the condition statements of any number of routines by storing key/value pairs in the Routines database.

	Table 134. Routine Database Variable Functions				
Name	Description				
dbPut(<key>,<value>)</value></key>	Stores the string <value> to a database, which can subsequently be retrieved using the <key> string. <key> is a variable-length string with a maximum of 64 characters. <value> is a variable-length string with a maximum of 4095 characters.</value></key></key></value>				
	For example:				
	dbPut("Test", "This is a test");				
	will store "This is a test" in a row referenced by "Test".				
	Subsequent execution of dbPut() can be used to update the row; for example, dbPut("Test", "Update my test string") will update the value referenced by "Test" to the new value "Update my test string".				
dbGet(<key>)</key>	Retrieves the string value referenced by the <key> string.</key>				
	For example, after executing:				
	<pre>\$value = dbGet("Test");</pre>				
	the <pre>\$value</pre> variable will be set to "This is a test", the value referenced by "Test".				
	<i>Tip:</i> To make the retrieved data available outside of the condition statements (e.g., for display by a Dash-Text or Display-Msg action) copy the retrieved value to the \$user_var array. For example:				
	<pre>\$user_var[1] = dbGet("Test");</pre>				
	This value can then be accessed (within the currently executing routine) via the \$user_var[1] variable.				
dbDelete(<key>)</key>	Deletes the key/value pair referenced by the <key> string.</key>				
	Example:				
	<pre>\$dbDelete("Test");</pre>				
	Will delete the database variable referenced by the "Test" key.				
dbTruncate()	Deletes all database variables stored in the Routine database.				
	Warning This operation cannot be reversed.				

The routine database variable functions provide the ability to create named values (i.e., key/value pairs) that can be accessed from the condition statements of routines. This is similar to the functionality pro-

vided by the *suser_var* array, but allows values to be shared not only between the actions of one execution of a single routine, as with the *suser_var* array, but between multiple executions of all routines. It also provides named values, which makes for more readable code than indexed values, and a virtually unlimited number of values that can be stored.

Unlike the *\$user_var* array, however, database variables cannot be programmatically accessed outside of condition statements (e.g., within the Text property of the Display-Msg action). If you want to access these values, however, simply assign the value of the database variable to an element of the *\$user_var* array within a condition statement and then access the value from *\$user_var* array outside of the condition statement.

Tip: Database variables can also be viewed, created, modified, and deleted via the *Routines Database Variables* view, accessible via the **Manage Routines Database Variables** button of the *Routines* page (see "Managing Routine Database Variables" on page 482). They can also be imported and exported to and from a CSV (comma-separated value) file, which allows the values to be defined and/or modified in an editor, script, or application (see "Importing and Exporting Database Variables" on page 483). This can be used for troubleshooting, maintenance, or even as a way to define and modify custom configuration settings for your routines.

As described in *Table 134*, dbPut(<key>) stores a value for <key>, dbGet(<key>) gets the stored value for <key>, dbDelete(<key>) deletes the value associated with <key>, and dbTruncate() deletes all key/value pairs in the database.

Example:

The following CODE segment can be added to a Routine Action Condition of a Routine that is triggered by All-Call to track the number of All-Call pages placed by the Nyquist system:

```
CODE:

$count = dbGet("All-Call Count");

if ($count == "") $count = 0;

$count++;

dbPut("All-Call Count", $count);

dbPut("Latest All-Call","$pDate2 - $pTime1");
```

The counter can then be viewed on the Routines Database Variables page. The Routine Action can be any action type, including No-Action, if you want to keep track of All-Call pages without performing any other actions.

Page Exclusion

The isPageExcluded() function indicates whether a specified station extension is currently excluded from receiving pages.

Table 135. Page Exclusion Function

Name	Description
isPageExcluded(" <station>")</station>	Accepts a station extension string as a parameter and returns one (1) to indicate the station is currently excluded from receiving pages or zero (0) to indicate it is not excluded.

Example:

```
CODE:
if ( !isPageExcluded("104") ) {
$DOACTION=true;
} else {
$DOACTION=false
}
```

Logging Functions

Routine condition statements can log entries to the nyquist_routines.log file (see "Routines Log" on page 479) by calling the logText(<text>) function from within a routine action condition's CODE segment. The <text> value can be a string literal (e.g., "Problem detected") or a previously set variable (e.g., \$loggingMessage).

Table 136. Routine Logging Functions

Name Description

logText(<text>) Logs the specified <text> value to the nyquist_routines.log file.

Note: This function mirrors the capabilities of the Log-Text action, as described in *"Routine Action Types" on page 575.*

The logText() function logs the user-supplied text to the log file in the following format:

```
<date time> <pid> [<routine-name>] <text>
```

where <date time> is replaced with the date and time at which the log entry was created, <pid> is replaced with the routine's process ID (to facilitate correlation of log entries), <routine-name> is replaced with the routine's name, and <text> is replaced with the user-supplied text.

For example, the following action condition CODE segment will cause a nyquist_routines.log log entry to be created with the text "<date time> <pid> [<routine-name] This is a test".

```
CODE:
logText("This is a test");
$DOACTION=true;
```

Note: The *poaction=true* statement has nothing to do with the logging. It is included to make sure the routine action is executed.

Example using a variable:

CODE:				
<pre>\$logText =</pre>	"This	is	а	test";
<pre>logText(\$log</pre>	gText));		
\$DOACTION=t	rue;			

- *Tip:* Any variable available in a CODE segment (limited by trigger type) can be used when creating the text to be logged. For details, see *Table 133, "Variables, Definitions, and Availability," on page 458.*
- *Tip:* It is best practice to avoid using parentheses or quotation characters in the <text> string to be logged, as these can cause syntax errors.
- **Important:** To protect the Nyquist system from running out of disk space, the system will only allow the user to log up to 500 MB of log messages per day before refusing to log additional messages. The Routines feature will continue logging Routine start/finish entries without a limit; only user-generated messages are limited. This user limit provides enough log-ging capacity for approximately 6200 bytes of log data per second during an entire day. The Routines log files are rotated every day, while making the last 31 days available. If the log files reached their maximum capacity every day for 31 days in a row, the maximum total storage used would be 16 GB; but it is very likely that the actual space used would be far less because rotated log files are compressed.

Available Condition Variables

The following variables are available for use in the conditional statement. Their availability depends on the trigger that started the Routine (and, in some cases, the Action being executed).

Important: Condition statements use PHP syntax (for a PHP tutorial, see https://www.w3schools.com/php/default.asp). PHP variable names are case-sensitive, so ensure all variables use the appropriate uppercase and lowercase letters.

Note: Remember that these variables can be used *only* within an action's condition statement. For variables that can be used within other fields (e.g., Text, Text to Log, etc.), see *Table 133, "Variables, Definitions, and Availability," on page 458.*

Table 137. Conditional Statement Variables

Trigger

All Triggers

Variables

\$caller

Station extension or DID Caller ID Number

\$callerName

\$called

Station extension

\$calledName

\$cputemp

Current temperature (in °C) of the CPU core with the highest temperature.

\$curtime

Current time in 24-hour format: HH:MM:SS

\$DOACTION

In a CODE: segment, setting this variable to true indicates that the current action should be executed, otherwise the current action will not be executed (default is false, don't execute). When using a CODE: segment, you must include the \$DOACTION variable to indicate if the current Action should be executed or not.

If \$gotoActionName is also set, and \$DOACTION is set to true, the current Action will be executed before branching to the eventAction specified by \$gotoActionName.

\$gotoActionName

Assigning the name of an Action to this variable will cause the Routine to branch to that Action.

\$origCaller

Station extension or DID Caller ID Number

\$schedParam1 and \$schedParam2

Parameters passed via a Schedule Routine.

\$trigger

Trigger type name in all lowercase characters, e.g. "facility-page"

	Table 137. Conditional Statement Variables					
Trigger	Variables					
	\$user_var[110]					
	The values in this general purpose array can be set and/or referenced within the Routine Condition CODE: segments and Actions of the current Routine.					
	<i>Tip:</i> The database variable functions (see "Database Variable Functions" on page 471) can also be used within conditional statements and provide similar functionality to the \$user_var array, but allow values to be accessible across routines. Unlike the \$user_var array, however, the database variable functions cannot be used outside of action condition statements.					
	To use the database variables from within an Action's Text property, for example, assign the value to an element of the \$user_var array (e.g., \$user_var[1]=dbGet("key1")) and reference that \$user_var element within the Text field.					
	\$weekday					
	Three-letter textual representation of current day: "Mon", "Tue", "Wed", "Thu", "Fri", "Sat", "Sun"					
Actions:	\$ga10pvExt					
• Display-Msg	This variable can be assigned an integer value to specify the station extension of the NQ-GA10PV or NQ-S1810WBC station on which the message should be displayed.					
Actions:	<pre>\$autoDeleteDisplayMsgsUponExit</pre>					
Display-Msg	Setting this variable to true causes Display Messages created by the Routine to be removed when the Routine exits.					
	<pre>\$autoDeleteDashMsgsUponExit</pre>					
	Setting this variable to true causes Dashboard Messages to be removed when the Routine exits.					
	\$mergeDelete					
	Setting this variable to true merges Display-Msg-Delete and subsequent Display-Msg actions into one operation to improve performance for GA10PV displays. See "Merging Display Message Delete with new Display Message Create" on page 479 for a detailed explanation.					
Routines API v1	\$apiParam1					
	\$apiParam2					
	Query parameters specified in the URL of a Routines API v1 call. See <i>"Routines API v1" on page 435</i> for further details.					

	Table 137. Conditional Statement Variables				
Trigger	Variables				
Routines API v2	\$apiParam1, \$apiParam2,, \$apiParam20				
	Up to 20 parameter values—specified via the routineApiParams element of the API call's data or json element—can be referenced as \$apiParam1 through \$apiParam20.				
	See "Routines API v2" on page 420 for further details.				
Alarm	\$alarmDtmfCode				
	\$alarmName				
Amp-Protection-Mode	\$deviceMacAddr				
	\$deviceName				
Announcement	\$announceType				
	"Emergency", "Normal"				
	\$announceDtmfCode				
	\$zoneNumber				
	\$zoneName				
	Format for regular playlist, sound machine and radio: Zone <zone-number> - <zone-name></zone-name></zone-number>				
	Format for Line-Input: <amplifier matrix-mixer="" name=""> - Ext: <ext-number> Ch: Channel <# (#)></ext-number></amplifier>				
	Note: There must be two spaces before "- Ext:"				
Audio-Dist	\$audioDistCmd				
	"start" or "stop"				
	<pre>\$audioDistName</pre>				
Facility-Page	<pre>\$facilityPageNumber</pre>				
Facility-Status-Down	<pre>\$facilityName</pre>				
Facility-Status-Up	<i>Note:</i> The Facility-Page trigger will be fired once for each paged facility. The local facil- ity, however, will fire the All-Call trigger instead of Facility-Page,				
Input-Contact-Closed	<pre>\$ioContactStation</pre>				
Input-Contact-Opened	<pre>\$ioContactNumber</pre>				
	<pre>\$ioContactAction</pre>				
	"Closed" or "Opened"				
NWS-Alert	\$nwsAlertEvent				
	<pre>\$nwsAlertSeverity</pre>				
	<pre>\$nwsAlertCertainty</pre>				
	<pre>\$nwsAlertUrgency</pre>				
	<pre>\$nwsAlertResponse</pre>				
	Note: See "Alert Filters Configuration" on page 522 for possible values of these variables.				

	Table 137. Conditional Statement Variables				
Trigger	Variables				
Sched-Event	<pre>\$eventId</pre>				
	\$eventName				
Schedule-Activated	<pre>\$scheduleId</pre>				
	<pre>\$scheduleName</pre>				
	Schedule's name or "Holiday" for any holiday				
Scheduled-Routine	<pre>\$schedParam1</pre>				
	<pre>\$schedParam2</pre>				
	<pre>\$zoneNumber (if Zone provided)</pre>				
	<pre>\$zoneName (if Zone provided)</pre>				
Scheduled-Tone	<pre>\$toneDtmfCode</pre>				
Tone	<pre>\$toneName</pre>				
Station-Status-Down	\$station				
Station-Status-Up	Station extension				
	<pre>\$stationStatus</pre>				
	"Down" or "Up"				
Zone-Page	\$zoneName				
	Format: "Zone <zone-number> - <zone-name>"</zone-name></zone-number>				
	\$zoneNumber				

When doing comparisons with variables that contain station extension numbers (e.g. \$caller, \$station), make sure to surround the numeric constants with quotes. For example, when comparing \$caller to 105, use the following statement:

```
$caller == "105"
```

This is important because if station extension numbers begin with one or more zeros, numeric comparisons will not work properly. For example, when comparing \$caller to 0105, use the following statement:

\$caller == "0105"

Automatic Deletion of GA10PV Display Messages and Web Interface Dashboard Messages Upon Exit

The following variables can be set to true in a CODE: section to cause Display Messages or Dashboard Messages created by the Routine to be automatically deleted upon the Routines exit:

\$autoDeleteDisplayMsgsUponExit
\$autoDeleteDashMsgsUponExit

For example, in a CODE: section, including the following statement will cause all Display Messages created by the Routine to be automatically deleted upon routine exit:

CODE:\$autoDeleteDisplayMsgsUponExit=true;

Using a <Parameter#> to change the target GA10PV Display

When a routine is executed via DTMF dialing, one of the supplied parameters can be used to change the target GA10PV Display for a Display-Msg Routine Action.

In the Condition field of a Display-Msg routine action, a CODE: segment can be used to change the GA10PV Display to a GA10PV extension specified in <Parameter1> or <Parameter2> of the dialed DTMF digits.

For example, if the user dials, *94<routine-DTMF-code>*105, the following CODE: segment, placed in the Condition field of a Display-Msg Action, will cause the GA10PV with extension 105 to be used:

CODE: \$ga10pvExt=\$cmdParam1; \$DOACTION=true;

Merging Display Message Delete with new Display Message Create

If your routine is executing in a loop and contains actions that create a new display message on a GA10PV, waits for some time or event, deletes the display message, and then immediately creates a new display message, you can use the conditional variable *smergeDelete* to have the Display-Msg-Delete and subsequent Display-Msg create actions merged to prevent the GA10PV from being noti-fied/updated twice. Using this variable in this way will help improve performance for GA10PV displays, especially if audio is being played to the GA10PV.

To use the *mergeDelete* conditional variable, add the following to the **Conditional** field for the Display-Msg-Delete action:

CODE:\$mergeDelete=TRUE;\$DOACTION=TRUE;

Note: When you use *mergeDelete*, make sure you have a Display-Msg action that will be immediately executed after the Display-Msg-Delete, otherwise you may notice that the deleted message is not being removed from the GA10PV display. The deleted message will be removed as soon as the new display message is created. Proper testing of your routine can ensure that you get the intended results.

Routines Log

The Routines feature logs the start and finish of routines to the nyquist_routines.log log file (see *Table 116, "System Logs," on page 351*) using the following format:

<date time> <pid> [<routine-name>] <status> (<routine-initiator>)

where <date time> is replaced with the date and time for the status event, <pid> is replaced with the routine's process ID (to facilitate correlation of log entries), <routine-name> is replaced with the routine's name, <routine-initiator> is replaced with the routine trigger type that started the routine, and <status> is replaced with either Started, Not started, Finished, Stopped, Or Exited (see below for more details).

When routines are started, a log entry is added to the nyquist_routines.log file using the following format:

<date time> <pid> [<routine-name>] Started (<routine-initiator>)

In this and other entries, the value of <routine-initiator> is based on how the routine was initiated.

- In most cases, <routine-initiator> is replaced with the name of the trigger that started the routine.
- If a routine is started via the routines API, <routine-initiator> is set to "API".
- If a routine is started via Dashboard or IP Phone via DTMF, <routine-initiator> is set to "DTMF/System".
- If a routine is started by the Nyquist system, <routine-initiator> is set to "DTMF/System".
- If a routine is started by a reboot trigger, <routine-initiator> is set to "reboot".

When routines finish, a log entry is added to the nyquist_routines.log file using the following format:

<date time> <pid> [<routine-name>] Finished (<routine-initiator>)

If a routine finishes but no Actions were enabled, a log entry is added to the nyquist_routines.log file using the following format:

<date time> <pid> [<routine-name>] Finished - no actions (<routine-initiator>)

When a routine is terminated, a log entry is added to the nyquist_routines.log file using the following format:

<date time> <pid> [<routine-name>] Exited - terminated (<routine-initiator>)

Routines may be terminated by the user via the Web Interface dashboard Routines Manager or when the Nyquist system is restarted by the user.

If a routine fails to start, a log entry is added to the nyquist_routines.log file using the following format:

<date time> <pid> [<routine-name>] Not started - disabled (<trigger-type>)
<date time> <pid> [<routine-name>] Not started - already running (<trigger-type>)

where <trigger-type> is replaced with the Routine Trigger type that attempted to start the Routine.

If a routine receives an invalid parameter value, a log entry is added to the nyquist_routines.log file. Invalid parameter *names*, however, are simply ignored by the API and are not logged.

If a routine using <code>\$alerts()</code> with <code>REPEAT_#</code> is disabled by the user or by another routine while it is already running, a log entry is added to the <code>nyquist_routines.log</code> file using the following format:

<date time> <pid> [<routine-name>] Stopped - disabled (<routine-initiator>)



If a routine is terminated due to a CODE segment error, the following entry will be logged:

<date time> <pid> [<routine-name>] Exited - terminated due to CODE segment error (<routine-initiator>)

Exporting a Routine

You can export routines to share with Bogen Technical Support for debugging issues or to later import them to other servers.

To export a routine:

- 1 On the navigation bar, select **Routines**.
- 2 Select the routine or routines that you want to export.
- 3 Select **Export**.

The SQL files (one file for each exported routine) will be saved to the **Downloads** folder on the server and can then be copied to a shared directory or to removable media.

Important: To export multiple routines at once, you may first need to configure your browser to allow pop-ups and redirects in the Nyquist server's site settings.

To allow pop-ups for this server:

- 1 Click the lock icon to the left of the server address in the browser URL bar.
- 2 On Chrome, select **Site Settings**.
- 3 Set "Pop-ups and redirects" to Allow.

Importing a Routine

You can import a routine that was created from other Nyquist server to your Nyquist server.

Note: After importing a routine, you must ensure that parameters are correct for the server since the server that created the routine will not have the same station, zone, or audio files as the server to which you are importing the routine. Imported routines must be enabled and the DTMF code will need to be changed if the same code is already being used on the server.

Caution Form Field Parameter Name values that reference image files (i.e., Display-Msg actions with JSON-Uploaded-Image message types) are not exported or imported. Manually specify this value for all relevant Actions after importing any Routine that uses this feature.

To import a routine:

- 1 On the navigation bar, select Routines.
- 2 Select Import.

- **3** From the Import popup window that appears, select **Choose file**.
- 4 Use the browser window to select the routine that you want to import.
- 5 Select Import.

Managing Routine Database Variables

The E7000 provides database variables that can be accessed within Routine Action condition statements (see "Condition Statement Functions" on page 470). You can view, insert, delete, or modify these database variables, not only through Nyquist functions, but also via the web interface.

To view the database variables:

- 1 On the navigation bar, select **Routines**.
- 2 Select Manage Routines Database Variables
- 3 The key, value, and most recent routine to access each variable are displayed.

ſ	Routi	nes Data	abase Variable	S Done 🕂 🧿	
	🌲 Export	🛓 Import	Delete Selected		
			Routine 🔶	Key 🌲	Value
				character test	This is a test, in which "curly quotes" and commas are being tested. ${}^{1\!\!\!\!/}_{-\!\!\!\!\!/} a_{1\!\!\!/} a_{1\!\!\!/}$
		8	Test Routine	key1	D minor
		8		skit intro	And now, for something completely different.

Figure 203. Routines Database Variables

To add a database variable:

- 1 On the navigation bar, select **Routines**.
- 2 Select Manage Routines Database Variables
- 3 Click Add.
- 4 Enter a unique Key name (maximum of 64 characters) and a Value (maximum of 4095 characters).
- 5 Click **Save**.

	Add I	Routin	es Dat	abase	Variat	ole 🕜	A State of S
K	ey: 🚺						
Va	alue: 🚺						
					1		
	× Cancel	P Sa	ve				

Figure 204. Add Routines Database Variable

To edit a database variable:

- 1 On the navigation bar, select **Routines**.
- 2 Select Manage Routines Database Variables
- 3 Click the **Edit** button next to the variable to be edited.
- 4 Update the Key and/or Value for the variable.
- 5 Click Save.

To delete one or more database variables:

- 1 On the navigation bar, select **Routines**.
- 2 Select Manage Routines Database Variables
- 3 Click the **Delete** button for a specific variable, or
- 4 Select one or more variables (via checkboxes) to delete.
- 5 Click **Delete Selected** and confirm the deletion.

Importing and Exporting Database Variables

Database variables are backed up and restored as part of the normal system backups (see "Backing Up Your Nyquist System and Files" on page 344); however, it can sometimes be helpful to export and import database variables to and from a CSV (comma-separated value) text file, such as to transfer variables between systems or to create and/or edit variables in another application (e.g., a spreadsheet).


To export the current database variables:

- 1 On the navigation bar, select **Routines**.
- 2 Select Manage Routines Database Variables
- 3 Select (via checkboxes) one or more variables to export.
- 4 Click the **Export** button
- 5 The routine_db.csv file will be downloaded to your browser's download directory.

Each row of the exported CSV file contains four comma-separated columns:

- For future use. When importing, this column should always contain a zero (0).
- Routine ID (enclosed in double quotes)

In an exported file, this may contain the routine ID that last accessed the variable. When importing, this column can contain a "0" (zero) or the previously exported value.

- Variable name (enclosed in double quotes)
- Variable value (enclosed in double quotes)

To import database variables from a CSV file:

- 1 On the navigation bar, select **Routines**.
- 2 Select Manage Routines Database Variables
- 3 Click the **Import** button
- 4 On the Import Routines Database Variables page:
 - a) Click the Choose file button and select the CSV file to import.
 - b) If you want to delete all existing database variables before importing, set **Delete all data before importing** to Yes.
 - c) Select whether you want to **Replace** or **Ignore** keys that already exist, whether defined prior to importing or defined multiple times within the CSV file.
 - d) Press the Import button.
- 5 The database variables defined in the CSV will be imported into the database and will be displayed on the *Routines Database Variables* page.

Managing Display Messages

It is possible to send messages and images to NQ-GA10PV devices and messages to NQ-S1810WBC devices, either manually or through a triggered Routine. Messages containing text and sent manually can be defined and sent as needed. To send messages using triggered Routines, and to define messages that can be used at a later time, you can create *message templates*. If a message is to include an image, whether to be sent immediately or within a template, you must first define a *message image*, which can then be used in the message or message template.

The **Display Message** option allows you to create impromptu messages that will display on NQ-S1810WBC devices and monitors connected to NQ-GA10PV devices in a selected zone, in multiple zones, or to specific devices. When creating the message, you can set several options, including when and how long the message is displayed and the appearance of the message. You can also remove messages from the message queue.



Figure 205. Example of Message with Fullscreen Priority

The station's **Display Configuration** option controls the overall appearance of the display (e.g., what type of clock appears, whether an event or the date appears, and the background color of the screen). For information about setting the display configuration for an NQ-GA10PV, see "Configuring Intercom HDMI Module Display Options" on page 162.

The **Message Templates** option allows you to create and save messages in advance, which can be easily sent later. Sending a **Message Template** simply fills in a form with the saved message data. You must specify the zone and/or stations where the message will appear, override any other properties from the **Message Template** (if desired), and send it.

Saved **Message Templates** can also be used in **Routines** (see "Using Routines" on page 416), which allows messages to be sent automatically in response to various system events. When used this way, the Routine definition specifies the zone and/or stations where the message will appear and can optionally override other template properties.

Note: This discussion refers to GA10PV Display Messages, not the Messages section shown at the top of the Dashboard. For information on these Dashboard Messages, see "Dashboard Messages" on page 358.

Message Priorities and Precedence

Multiple simultaneous messages can be displayed on an NQ-GA10PV, while the NQ-S1810WBC can only display one at a time. It is possible, however, to queue up more messages than can be displayed at a time. To determine which messages to display first, we need to determine a message's precedence. Messages with a higher precedence are displayed before messages with lower precedence, and can even override and interrupt a lower precedence message.

Note: The term *priority*, as used here, refers to a numeric value assigned to a message. The term *precedence* refers to the determination of which message will be displayed over another message after evaluation of the assigned message priorities and other related factors, as described below.

There are several factors that affect the precedence and display of a message.

The first factor is the message **Priority**. This is a number from zero (0) through six (6), where zero is the lowest priority and six the highest.

The second factor is the **Image Priority**, which applies only to Image type messages, and is applied when two messages have the same message priority. This is either **Text Over Image** or **Image Over Text**. The first implies that text messages have precedence over this image message, while the second implies this image message has precedence over text messages.

The third factor does not actually affect the precedence, but is relevant in that it determines where an image is displayed, which can affect whether or not other messages can be seen. The **Image Type** of a message can be either **Right**, **Left**, or **Full Screen**. **Right** and **Left** specify on which half of the screen the image will be displayed, while **Full Screen** specifies that the image will cover the entire screen. Since text messages display on the right side of the screen, an image displayed on the left side can show both messages simultaneously, while an image displayed on the right side or full screen will be subject to the precedence rules.

Message Precedence Rules

The following set of rules determine which messages have precedence and how they are to be displayed:

- Text messages are sorted in descending order by priority, and then in the order they were sent.
- If two messages of the same type (**Image** or **Text**) have the same priority, the newer one has precedence.
- If an image message and a text message have the same priority, the Image message's **Image Prior**ity property determines which has precedence:
 - Text Over Image: Text message has precedence.
 - **Image Over Text**: Image message has precedence.
- **Full Screen** image messages take precedence over everything except another Full Screen image message, for which normal rules of precedence are applied.

- Priority 5 (Exclusive) messages always display alone, which prevents all lower precedence messages from being displayed.
- For Analog Clock view:
 - An image message can display simultaneously on the left while another message is displayed on the right. Multiple image messages are prioritized according to normal rules. If there are no image messages displayed on the left, the clock will be displayed.
 - Image messages displayed on the right along with text messages based on normal rules of precedence.
- For multi-column and Digital Clock views:
 - Only Text or Full Screen image messages are displayed.

Note: Even when a message is not visible, usually due to a higher priority message being displayed, its expiration timer is still ticking, so it may display for shorter than the intended duration or not at all.

Creating a Display Message via the Dashboard

Dis	splay Message
Name: 📵	Priority: 🚯
	0 (Lowest) -
ldentifier: 🚯	GA10PV Background Color: 🚯
	rgb(0,255,0)
Message Type: 🟮	GA10PV Font: 🚯
Text -	Liberation Sans -
Device Type Filter: 1	GA10PV Font Size: 1
GA10PV and WBC -	70
Text: 1	GA10PV Font Color: (1)
	rgb(0,0,0)
	GA10PV Font Styles: 1
Right click text area for more options	Add Styles
Expiration Mode: ()	WBC Flasher Pattern: (1)
Display Time Manually Removed Date/Time	No Change -
Display Time (seconds): 1	WBC Number of Flasher Pattern Cycles: 🚯
60	0
Zones: ()	WBC Flasher Color: 1
Add Zones	Blue -
Stations: (1)	
Add Stations	
	Close Soud Good and Source

Figure 206. Display Message

Note: You also can add display messages through routine actions (see "Adding an Action" on page 448.)

To create a display message:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Tones/Announcements, select Display Message.
- 3 On the Display Message page, complete the options for the new message.
- 4 To save the message as a Message Template and send it immediately, select **Send and Save**. The **Name** field must be specified to save a message.

Note: When saved as a Message Templates, an **Expiration Mode** of **Date/Time** will be converted to a **Display Time** of 60 seconds and an **Expiration Mode** of **Manually Removed** will be converted to a **Display Time** of zero (0) seconds.

5 To send the message immediately without saving it, select **Send**.

Note: The options set through the Display Message page are for the message only. If you want to change how the clock, date, or other display features appear, you must set configuration options for the NQ-GA10PV station (see "Configuring Intercom HDMI Module Display Options" on page 162).

Table 138. Display Message Options

Specifies a name for this message. This is used if the message is to be saved.			
Used to identify the message so it can be deleted by a Routine action.			
Select the type of message to be sent:			
Text: A text message will be displayed.			
Image: An image will be displayed.			
<i>Note:</i> Selecting Image disables the Priority "5 (Exclusive)" option, sets Priority to "0 (Lowest)," sets Device Type Filter to "GA10PV Only," and disables NQ-S1810WBC (WBC) options.			
Select the device type(s) to which the message will be sent.			
Valid values are:			
GA10PV and WBC			
GA10PV Only			

WBC Only

	Table 138. Display Message Options (Continued)					
Text	Type the message that is to appear on the display monitor.					
	You can format text using basic HTML tags, such as:					
	• bold 					
	 <i>italic</i> 					
	<u><u>underline</u></u>					
	 styled text 					
	<i>Note</i> : Be aware that entering a new line, even within HTML tags, will create a new line in the final message.					
	Important: For further details about the Text field, including how to display images within a Text-type Display Message, see <i>Table 142</i> , <i>"Add/Edit Message Template Parameters," on page 504</i> .					
Expiration Mode	Select the mode for setting the message's expiration. Options are:					
	• Display Time : Uses Display Time (seconds) to set the expiration.					
	• Manually Removed : Sets the expiration time to Never. You must use the Remove Message button to remove a message from the message queue, or the message can be removed by a Routine Action using the display message Identifier .					
	• Date/Time : By default, the current date and time appear in the Date/Time field.					
Display Time (seconds)	Appears only if Expiration Mode is set to Display Time . Sets the length of time for the message to be displayed before it expires. The specified value can range from 1 to 99999 seconds.					
Expiration Date/Time	Appears only if Expiration Mode is set to Date/Time . By default, is set to the current date and time. To change the date, select the calendar and pick the date and time.					
Zones	Select the zone or zones. Messages will be sent to the display devices in the selected zones.					
Stations	The message is sent to the specified stations and any stations that belong to the specified zones.					

	Table 138. Display Message Options (Continued)
Priority	Select the message priority, which can range from 0 (Lowest) to 6 (Fullscreen).
	Priority 6 (Fullscreen) is the highest priority, and when a message is assigned this priority, only the messages with this priority appear on the display with the Scheduled Event Name and Date being temporarily removed.
	If Priority 5 (Exclusive) is selected, the Scheduled Event Name and Date remain on the display, but all other messages with lower priorities are removed.
	Note: Priority 5 (Exclusive) is disabled for Image messages and enabled for Text messages.
Image Type	If the Type field was set to Image , select one of the following values to specify how the image will be displayed:
	• Full Screen (1920x1080): Image will be displayed full screen.
	• Left (925x1040): Image will be displayed on the left side of the screen.
	• Right (925x1040) : Image will be displayed on the right side of the screen.
Image Priority	Select the image priority for this message, which determines precedence when an Image message and Text message have the same message priority:
	Text Over Image: Text message will be given precedence.
	 Image Over Text: Image message will be given precedence.
Message Image	The name of the saved Message Image to be displayed. For more information, see "Create or Edit a Message Image" on page 501.
	<i>Tip:</i> The predefined Solid-Black image can be used to clear the device's screen,
	<i>Note:</i> The dimensions of this image (which are displayed in parentheses after the image name) must match the dimensions implied by the Image Type . The list of images can contain <i>any</i> valid Image Type (i.e., 1920×1080 or 925×1040), but the specified image must match the selected Image Type size before saving the message template.
GA10PV	Select the color for the message background. You can select a color by:
Background	Using the color picker
Color	 Entering a hex color (for example: #000000, for black)
	• Entering an RGB color (for example: rgb(0,0,0) for black)
	• Entering a color alias name (for example: red, blue, etc.)
	For more information, see "Using Color in Display Messages" on page 492.

	Table 138. D	isplay Message Options (Continued)				
GA10PV Font	Select the dowr desired font for	arrow to view a list of available fonts and then select the the message text. Available fonts are:				
	Comic-Relie	f				
	Courier-P	rime				
	Gelasio					
	Liberation S	ans				
	Linux Liberti	ne				
GA10PV Font Size	Enter the desired font size.					
GA10PV Font Color	Select the color	for the message text.				
	You can select a	a color by:				
	Using the col	or picker				
	Entering a he	Entering a hex color (for example: #000000, for black)				
	 Entering an RGB color (for example: rgb(0,0,0) for black) 					
	Entering a color alias name (for example: red, blue, etc.)					
	For more information, see "Using Color in Display Messages" on page 492.					
GA10PV Font Styles	Place your cursor in the Add Styles box to select Bold or Italic . Otherwise, the Font Style remains at Regular.					
WBC Flasher	Specifies the on/off pattern the flasher will display.					
Pattern	Valid values are:					
	No Change:	The message will not cause the selected flasher to change from its current flasher setting.				
	• Off:	The selected flasher will be turned off unless a higher priority message is using the flasher. When the flasher is turned off, it will remain off until another message is sent with a new flasher setting.				
	• Slow:	The selected flasher will blink at a rate of once per second for the duration of the message.				
	• Fast:	The selected flasher will blink at a rate of twice per second for the duration of the message.				
	• Double:	Flash two (2) times within one second with a 1-second pause and repeat.				
	• Triple:	Flash three (3) times within 1.5 seconds with a 1-second pause and repeat.				
	• Quad:	Flash four (4) times within two seconds with a 1-second pause and repeat.				

WBC Number of	Specifies the number of times that the flasher pattern will repeat.				
Flasher Pattern	Valid values are 1 through 65536 or specify zero (0) to flash continuously for				
Cycles	the duration of the message.				
WBC Flasher	Specifies the color of the LED flasher. Valid values are:				
Color	• Amber				
	• Blue				
	• Green				

Table 138. Display Message Options (Continued)

- Orange
- Red
- Violet
- White
- Yellow

Using Color in Display Messages

You can select colors for display messages three different ways:

- Background, text, and time colors via GA10PV **Display Configuration** (see "Configuring Intercom HDMI Module Display Options" on page 162)
- Background and font colors for individual messages by selecting **Display Message** from the dashboard (see "Creating a Display Message via the Dashboard" on page 487)
- Background and font colors for individual messages via the **Display-Msg** routine action **Type** (see *Table 151, "Routine Action Type-Specific Parameters," on page 576*).

You can select colors by:

- Using the color picker
- Entering a hex color (for example: #000000, for black)
- Entering an RGB color (for example: rgb(0,0,0) for black)
- Entering a color alias name (for example: red, blue, etc.)

When you enter a color alias name, the corresponding hex color code appears in the text portion of the color field and the swatch (color box) portion changes to the selected color. When entering a color

alias, you cannot use spaces, and the system only accepts the default color alias listed in the following table:

Color Alias	Corresponding	Color Alias	Corresponding
	Hex Code		Hex Code
aliceblue	f0f8ff	antiquewhite	faebd7
aqua	00ffff	aquamarine	7fffd4
azure	f0ffff	beige	f5f5dc
bisque	ffe4c4	black	000000
blanchedalmond	ffebcd	blue	0000ff
blueviolet	8a2be2	brown	a52a2a
burlywood	deb887	cadetblue	5f9ea0
chartreuse	7fff00	chocolate	d2691e
coral	ff7f50	cornflowerblue	6495ed
cornsilk	fff8dc	crimson	dc143c
cyan	00ffff	darkblue	00008b
darkcyan	008b8b	darkgoldenrod	b8860b
darkgray	a9a9a9	darkgreen	006400
darkkhaki	bdb76b	darkmagenta	8b008b
darkolivegreen	556b2f	darkorange	ff8c00
darkorchid	9932cc	darkred	8b0000
darksalmon	e9967a	darkseagreen	8fbc8f
darkslateblue	483d8b	darkslategray	2f4f4f
darkturquoise	00ced1	darkviolet	9400d3
deeppink	ff1493	deepskyblue	00bfff
dimgray	696969	dodgerblue	1e90ff
firebrick	b22222	floralwhite	fffaf0
forestgreen	228b22	fuchsia	ff00ff
gainsboro	dcdcdc	ghostwhite	f8f8ff
gold	ffd700	goldenrod	daa520
gray	808080	green	00ff00
greenyellow	adff2f	honeydew	f0fff0
hotpink	ff69b4	indianred	cd5c5c
indigo	4b0082	ivory	ffff0
khaki	f0e68c	lavender	e6e6fa
lavenderblush	fff0f5	lawngreen	7cfc00
lemonchiffon	fffacd	lightblue	add8e6
lightcoral	f08080	lightcyan	e0ffff
lightgoldenrodyellow	fafad2	lightgreen	90ee90
lightgrey	d3d3d3	lightpink	ffb6c1
lightsalmon	ffa07a	lightseagreen	20b2aa
lightskyblue	87cefa	lightslategray	778899
lightsteelblue	b0c4de	lightyellow	ffffe0
lime	00ff00	limegreen	32cd32

Table 139. Default Color Alias

Color Alias	Corresponding	Color Alias	Corresponding
	Hex Code		Hex Code
linen	faf0e6	magenta	ff00ff
maroon	800000	mediumaquamarine	66cdaa
mediumblue	0000cd	mediumorchid	ba55d3
mediumpurple	9370d8	mediumseagreen	3cb371
mediumslateblue	7b68ee	mediumspringgreen	00fa9a
mediumturquoise	48d1cc	mediumvioletred	c71585
midnightblue	191970	mintcream	f5fffa
mistyrose	ffe4e1	moccasin	ffe4b5
navajowhite	ffdead	navy	000080
oldlace	fdf5e6	olive	808000
olivedrab	6b8e23	orange	ffa500
orangered	ff4500	orchid	da70d6
palegoldenrod	eee8aa	palegreen	98fb98
paleturquoise	afeeee	palevioletred	d87093
papayawhip	ffefd5	peachpuff	ffdab9
peru	cd853f	pink	ffc0cb
plum	dda0dd	powderblue	b0e0e6
purple	800080	red	ff0000
rosybrown	bc8f8f	royalblue	4169e1
saddlebrown	8b4513	salmon	fa8072
sandybrown	f4a460	seagreen	2e8b57
seashell	fff5ee	sienna	a0522d
silver	c0c0c0	skyblue	87ceeb
slateblue	6a5acd	slategray	708090
snow	fffafa	springgreen	00ff7f
steelblue	4682b4	tan	d2b48c
teal	008080	thistle	d8bfd8
tomato	ff6347	transparent	transparent
turquoise	40e0d0	violet	ee82ee
wheat	f5deb3	white	fffff
whitesmoke	f5f5f5	yellow	ffff00
yellowgreen	9acd32		

Removing Display Messages via the Dashboard

The **Remove Message** window allows you to remove one or more messages from the display message queue. It can also expire a message that was created using **Manually Removed** as the **Expiration Mode**.

Remove Message										
Ident	fier	Priority	Туре	image Name	Creator	Expires	Text	Zones	Stations	Device Typ
Schd	yWeather	0	Text	None	010	Mar 1, 2024 2:30:01pm	Show	Show	Show	GA10PV ar WBC
									_	
C Refresh								Close	💼 Delete	e Sele

Figure 207. Remove Message

To remove one or more messages via the Remove Message button:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Select the **Remove Message** button from the *Tones/Announcements* section.
- 3 Select one or more messages to be removed.
- 4 Select the **Delete Selected** button.
- 5 Optionally select **Refresh** to update the list of pending messages.
- 6 Optionally repeat the previous steps to remove more messages.
- 7 Select **Close** to close the window.

Tip: Removing all messages from the NQ-GA10PV does not necessarily clear the display, which may still show other messages and a clock. To completely clear the display and ensure that it will not display a message or the clock (i.e., completely black), show the **Solid-Black** image at the highest priority.

Table 140. Remove Message

Identifier	Indicates the identifier of the message, by which the message can be deleted by a Routine action.
Priority	Indicates the message priority, which can range from 0 (Lowest) to 6 (Fullscreen).
Туре	Indicates the type of message:
	Text: A text message will be displayed.
	Image: An image will be displayed.
Image Name	Indicates the name of the Message Image being displayed, or None if the Type is Text .
Creator	Displays the extension of the user that displayed this message.

Table 140. Remove Message

Expires	Displays the date and time when the message will expire.				
Text	Displays the message that appears on the display monitor.				
Zones	Displays the zones within which the message has been sent.				
Stations	Indicates the sta	ations at which the message is displayed.			
Device Type Filter	Indicates the de	vice type(s) to which the message has been sent.			
	Valid values are:				
	• GA10PV and	• GA10PV and WBC			
	GA10PV Onl	У			
	WBC Only				
Flasher	Indicates the fla S1810WBC devi	sher pattern, pattern cycles, and flasher color displayed on NQ- ces.			
	Flasher Pattern	I			
	Specifies the on	/off pattern the flasher will display.			
	Valid values are				
	 No Change: The message will not cause the selected flasher to change from its current flasher setting. 				
	• Off:	The selected flasher will be turned off unless a higher priority message is using the flasher. When the flasher is turned off, it will remain off until another message is sent with a new flasher setting.			
	• Slow:	The selected flasher will blink at a rate of once per second for the duration of the message.			
	• Fast:	The selected flasher will blink at a rate of twice per second for the duration of the message.			
	• Double : Flash two (2) times within one second with a 1-second pause and repeat.				
	• Triple:	Flash three (3) times within 1.5 seconds with a 1-second pause and repeat.			
	• Quad:	Flash four (4) times within two seconds with a 1-second pause and repeat.			
	Pattern Cycles Specifies the number of times that the flasher pattern will repeat.				

Valid values are 1 through 65536 or specify zero (0) to flash continuously for the duration of the message.

Table 140. Remove Message

Flasher Color

Specifies the color of the LED flasher. Valid values are:

- Amber
- Blue
- Green
- Orange
- Red
- Violet
- White
- Yellow

Refresh Refreshes the list of current messages.

Delete Selected Removes the selected messages from the devices on which they are displayed.

Removing an Event Name from a Display

If you create a scheduled event with **Display Event Name** enabled, the event remains on the display that is connected to an NQ-GA10PV until the next scheduled event replaces it.

To clear the event name from the display, create another scheduled event with the **Name** set to **No-Event**.

For information on creating scheduled events, see "Adding an Event" on page 265.

Viewing Message Templates

The **Message Templates** page allows you to quickly view saved message details; create a message to be added to the database; and edit, delete, or send a message. Messages appearing on the **Message Templates** page also include messages that were started using the **Send and Save** button on the Display Message popup (see "Creating a Display Message via the Dashboard" on page 487).

B M	essa	ge Templates	• 0									
									f	Filter		
		Name	Identifier ≬	Туре	Text	Priority #	Duration (Background Color	Font	Font Size	Font Cold	
2 [1	Full, lowest, text-image		Image	Show	0	60	rgb (0,255,0)	Liberation San	is 70	rgb(0,0,0	
2	1	Small, p3, left, text-image		Image	Show	3	60	rgb (0,255,0)	Liberation San	is 70	rgb(0,0,0	
	1	Small, right, p4, toi		Image	Show	4	60	rgb (0,255,0)	Liberation San	is 70	rgb (0,0,0	
2	4	Test template		Text	Show	0	30	rgb (0,255,0)	Liberation San	s 70	rgb(0,0,0	

Figure 208. Message Templates

To view saved message templates:

1 From the navigation bar, select **Messages** then **Message Templates**.

The **Message Templates** page displays the following fields for each saved message:

	Table 141. Message Templates							
Edit button	Edits the message template.							
Delete button	Deletes the message template.							
Send button	Displays the Display Message page, from which a message can be sent (see <i>"Display Message Options" on page 488</i> for further details).							
	<i>Note:</i> The Display Message page will be initialized with the settings from the selected message template and can be modified for the message to be sent, but the template will not be altered unless the Send and Save button is selected.							
Name	Specifies a name for this message.							
Identifier	Used to identify the message so it can be deleted by a Routine action.							
Message Type	Displays the type of message:							
	• Text : A text message will be displayed.							
	Image: An image will be displayed.							
Text	Place the mouse over the Show icon to view the text message that is to appear on the display monitor. For Image messages, this does nothing.							
Priority	Displays the message priority, which can range from 0 (Lowest) to 6 (Fullscreen).							
	Priority 6 (Fullscreen) is the highest priority, and when a message is assigned this priority, only the messages with this priority appear on the display with the Scheduled Event Name and Date being temporarily removed.							
	If Priority 5 (Exclusive) is selected, the Scheduled Event Name and Date remain on the display, but all other messages with lower priorities are removed.							
	Note: Priority 5 (Exclusive) is disabled for Image messages and enabled for Text messages.							

Table 141. Message Templates

Duration	Sets the length of time in seconds for the message to be displayed before it expires. Time can range from 1 to 99999.						
Background Color	Displays the color for the message background. For more information, see "Using Color in Display Messages" on page 492.						
Font	Specifies the font for the message text.						
Font Size	Specifies the font size for the message text.						
Font Color	Displays the color for the message text.						
	For more information, see "Using Color in Display Messages" on page 492.						
Font Styles	Displays the style (bold, italic) for the text. If blank, the message will use the regular style.						
Image Type	If the Type field was set to Image, displays one of the following values to spec- ify how the image will be displayed:						
	• Full : Image will be displayed full screen. This value is also shown for text message templates.						
	• Left: Image will be displayed on the left side of the screen.						
	• Right : Image will be displayed on the right side of the screen.						
Message Image	For text message templates, " None " is shown. For image templates, the Name of the saved Message Image to be displayed.						
	<i>Tip:</i> The predefined Solid-Black image can be used to clear the device's screen,						
Image Priority	Displays the image priority for this message, which determines precedence when an Image message and Text message have the same message priority:						
	Text Over Image: Text message will be given precedence.						
	 Image Over Text: Image message will be given precedence. 						

Viewing Message Images

The **Message Images** page allows you to quickly view message image details; view the full-sized message image (by clicking on the thumbnail); add a message image to the database; edit or delete a message image; or copy the URL of a message image to the clipboard.

🎦 Messa	ge Images 💽			Fil	ilter	
	Name $rightarrow Variable Vari$	Thumbnail \Leftrightarrow	Туре	Width		\$
2 🗈 🖸	Bogen logo	BÖGEN	PNG	1920	1080	
2 🗈 🖸	Solid-Black		PNG	1920	1080	
2 🗎 🖸	Warning sign		PNG	925	1040	

Figure 209. Message Images

To view saved message images:

- 1 From the navigation bar, select **Messages** then **Message Images**.
- *Tip:* The **Solid-Black** image is available by default. This is a 1920×1080 black PNG image that can be used to "turn off" an NQ-GA10PV display, such that it will not display a message or the clock (i.e., completely black).

The **Message Images** page displays the following fields for each saved image:

Figure 210. Message Images properties

Edit button	Edits the message image.
Delete button	Deletes the message image.
Copy URL button	Copies the image URL to the clipboard.
Name	Name of the message image.
Thumbnail	Displays a thumbnail of the message image. Placing the mouse over the image will display a URL at which the image can be accessed from the Nyquist server. When clicked, the full image is displayed in a new browser tab.
Туре	Format of the image. Allowed image formats include:
	• PNG
	• JPEG
Width	Image width (in pixels).
Height	lmage height (in pixels).

Creating a Message Template via the Message Templates Page

You can create messages in advance which can be easily selected for use when needed. Selecting a saved message fills in a form with the message data. Information about which zones or stations will receive the message, though, is not included in this form. You specify the zone or station when you send the message.

These saved messages can also be used in Routines (see "Using the Routines API" on page 419).

Create or Edit a Message Image

If the message is to display an image, you must first define one or more Message Images. An image can be used by one or more message templates, or even by an ad-hoc Display Message command.

Add Message I	mage 👩
Name:	
English labrador puppy	l)
Image Upload:	
English lab puppy.jpg	🗁 Choose Image
★ Cancel 🖪 Save	

Figure 211. Add Message Image

To create (or edit) a message image:

- 1 On the navigation bar, select **Messages**, then **Message Images**.
- 2 Select the Add icon (or the Edit icon next to an existing Message Image).
- 3 Assign a name for this image.
- 4 Select the **Choose Image** button and select an image file to upload.

Note: An image to be used in a message must be in the PNG or JPEG format. The PNG format has the advantage of supporting transparency, which allows the background to display through the image.

Note: If this image will be used as part of an Image-type message (as opposed to being embedded as an HTML element in a Text-type message), the image must have dimensions of either 925x1040 or 1920x1080, depending on whether it will be used full screen (1920x1080) or half screen (925x1040).

5 Select Save.

Create or Edit a Message Template

A Message Template predefines a message and all of its properties so that it can easily be sent at a later time, whether manually or from a triggered Action in a Routine.

Add Message Template 🛛 🔞
Name:
Identifier: 🚯
Message Type: 🚯
Text -
Device Type Filter: (1)
GA10PV and WBC -
Text: 1
h
Right click text area for more options
Priority: 🚺
0 (Lowest) ▼
Display Time (seconds): (1)
60
GA10PV Background Color: 1
rgb(0,255,0)
GA10PV Font: 1
Liberation Sans -
GA10PV Font Size: ()
70
GA10PV Font Color:
rgb(0,0,0)
GA10PV Font Styles:
Add Styles
No Change •
WBC Number of Flasher Pattern Cycles:
0
WBC Flasher Color: (1)
Blue -
★ Cancel Save

Figure 212. Add Message Template

To create (or edit) a message template:

- 1 On the navigation bar, select **Messages**, then **Message Templates**.
- 2 Select the Add icon (or the Edit icon next to an existing Message Template).

- 3 Provide a descriptive **Name** for the image.
- 4 Complete the options on the **Add Message Template** page.
- 5 Select Save.

Note: You can edit saved messages, but if the message is called by a routine, it won't be dynamically updated when the routine starts.

Tab	le 142. Add/Edit Message Template Parameters
Name	Specifies a name for this message. This is used if the message is to be saved.
Identifier	Used to identify the message so it can be deleted by a Routine action.
Message Type	Select the type of message to be sent:
	Text: A text message will be displayed.
	Image: An image will be displayed.
	<i>Note:</i> Selecting Image disables the Priority "5 (Exclusive)" option, sets Priority to "0 (Lowest)," sets Device Type Filter to "GA10PV Only," and disables NQ-S1810WBC (WBC) options.
	This value will determine which of several following parameters will be displayed.
Device Type Filter	Select the device type(s) to which the message will be sent:
	GA10PV and WBC
	GA10PV Only

• WBC Only

Table 142. Add/Edit Message Template Parameters

Type the message that is to appear on the display monitor.

Tip: Click and drag the bottom-right corner to adjust the size of the edit box.

You can format text using basic HTML tags, such as:

- bold
- <i>italic</i>
- <u>>underline</u>>
- styled text

Note: Be aware that entering a new line, even within HTML tags, will create a new line in the final message.

As shown in the example, above, HTML elements can also include CSS style definitions to modify their positioning and appearance. (For details on CSS, see https://www.w3schools.com/css.)

You can also use the HTML tag to display an image. For example:

<img src="https://bogen.com/themes/bogen/logo.png" width="250"
height="48">

An image displayed using this mechanism is not restricted to the standard image sizes to which Image-type messages are restricted, but may require more detailed specification of attributes and style to ensure it appears correctly on the screen.

Note: If the HTML tag is used, verify that the GA10PV devices on which this message will be displayed has network/internet access to the specified URL.

Tip: You can easily append an HTML tag for a previously uploaded Message Image to the message (see "Create or Edit a Message Image" on page 501) by right-clicking the text box, selecting an image from the list of defined Message Images, and clicking the **Insert Image** button. You can edit the generated HTML tag to adjust the displayed image's appearance as needed.

Text

Tab	le 142. Add/Edit Message Template Parameters					
Priority	Select the message priority, which can range from 0 (Lowest) to 6 (Fullscreen).					
	Priority 6 (Fullscreen) is the highest priority, and when a message is assigned this priority, only the messages with this priority appear on the display with the Scheduled Event Name and Date being temporarily removed.					
	If Priority 5 (Exclusive) is selected, the Scheduled Event Name and Date remain on the display, but all other messages with lower priorities are removed.					
	<i>Note:</i> Priority 5 (Exclusive) is disabled for Image messages and enabled for Text messages.					
Display Time (seconds)	Sets the length of time for the message to be displayed before it expires. This value can range from 0 to 99999 seconds. A value of zero (0) indicates that the message will display indefinitely (i.e., until the device has been restarted or the message is removed by a Display-Msg-Delete action or via the Dashboard's Remove Message button).					
Image Type	Select the image type to specify the image dimensions and how the image will be displayed:					
	• Full Screen (1920x1080): Image will be displayed full screen.					
	 Left (925x1040): Image will be displayed on the left side of the screen. 					
	 Right (925x1040): Image will be displayed on the right side of the screen. 					
Image Priority	Select the image priority for this message, which determines precedence when an Image message and Text message have the same message pri- ority:					
	• Text Over Image : Text message will be given precedence.					
	Image Over Text: Image message will be given precedence.					
Message Image	Select the image to be displayed for this message from the list of Mes sage Images.					
	<i>Tip:</i> The predefined Solid-Black image can be used to clear the device's screen,					
	<i>Note</i> : The dimensions of this image (which are displayed in parentheses after the image name) must match the dimensions implied by the Image Type . The list of images is restricted to those with dimensions compatible with <i>any</i> valid Image Type (i.e.,					

1920×1080 or 925×1040), but must match the selected **Image Type** size before saving the message template.

Table 142. Add/Edit Message Template Parameters

GA10PV Background	Select the color for the message background. You can select a color by:							
Color	Using the color picker							
	Entering a hex color (for example: #000000, for black)							
	• Entering an RGB color (for example: rgb(0,0,0) for black)							
	 Entering a color alias name (for example: red, blue, etc.) For more information, see "Using Color in Display Messages" on page 492. 							
GA10PV Font	Select the down arrow to view a list of available fonts and then select the desired font for the message text. Available fonts are:							
	Comic-Relief							
	Courier-Prime							
	Gelasio							
	Liberation Sans							
	Linux Libertine							
GA10PV Font Size	Enter the desired font size.							
GA10PV Font Color	Select the color for the message text.							
	You can select a color by:							
	Using the color picker							
	 Entering a hex color (for example: #000000, for black) 							
	• Entering an RGB color (for example: rgb(0,0,0) for black)							
	 Entering a color alias name (for example: red, blue, etc.) 							
	For more information, see <i>"Using Color in Display Messages" on page 492</i> .							
GA10PV Font Styles	Place your cursor in the Add Styles box to select Bold or Italic . Other- wise, the Font Style remains at Regular.							

Table 142. Add/Edit Message Template Parameters									
WBC Flasher Pattern	Specifies the on	/off pattern the flasher will display.							
	Valid values are:								
	No Change:	The message will not cause the selected flasher to change from its current flasher setting.							
	• Off:	The selected flasher will be turned off unless a higher priority message is using the flasher. When the flasher is turned off, it will remain off until another message is sent with a new flasher setting.							
	• Slow:	The selected flasher will blink at a rate of once per second for the duration of the message.							
	• Fast:	The selected flasher will blink at a rate of twice per second for the duration of the message.							
	• Double:	Flash two (2) times within one second with a 1-second pause and repeat.							
	• Triple:	Flash three (3) times within 1.5 seconds with a 1-second pause and repeat.							
	• Quad:	Flash four (4) times within two seconds with a 1-second pause and repeat.							
WBC Number of Flasher	Specifies the number of times that the flasher pattern will repeat.								
Pattern Cycles	Valid values are 1 through 65536 or specify zero (0) to flash cor for the duration of the message.								
WBC Flasher Color	Specifies the color of the LED flasher. Valid values are:								
	• Amber								
	• Blue								
	• Green								
	Orange								
	Red								
	• Violet								
	• White								

• Yellow

Displaying a Message from the Message Templates Page

You can display a message based on a previously created Message Template from the **Message Templates** page.

To display a message based on a previously created Message Template:

1 On the navigation bar, select **Messages**, then **Message Templates**.

- 2 Select the Send icon next to the Message Template on which you want the new message to be based.
- 3 On the **Display Message** popup, select the zones or stations at which you want the message to be displayed.

Note: The selected zones and station will not be saved.

- 4 Make changes to the message options as needed (see *Table 138, "Display Message Options," on page 488*).
- 5 Select Send, or if you have made changes and want those changes to be saved to the Message Template, select Send and Save.

Deleting a Saved Message Template

To delete a saved Message Template:

- 1 On the navigation bar, select **Message Templates**.
- 2 Select the **Delete** icon next to the Message Template that you want to delete.
- 3 When prompted, select **Delete**.

Manage Check-In

A check-in event is a request for a person at each station (other than those explicitly or implicitly excluded) to report in, typically to indicate that they are aware of a current situation and/or are safe.

Examples of check-in events include:

- Weather-related shelter in place
- Safety-related lockdown
- Fire evacuation (staff member performs check-in to indicate room has been evacuated)
- Room occupancy (staff member checks room in with start of each class period)

Manage Check-In allows you to quickly obtain the check-in status of specific areas within a facility such as classrooms, offices, or break rooms—during a check-in event. During a check-in event, users check in by initiating a Normal call to their assigned Admin Station, such as the front office, using either their Nyquist phone (by dialing zero), a digital or analog call switch associated with their intercom speaker or station, or any other station whose **Check-in as Station Extension** is assigned to their assigned station (see *Table 36, "Station Configuration Page Parameters," on page 129*).

During check-in, a Normal call initiated by a station to the Admin Station places the station in checkedin status. Subsequent calls made following a check-in are processed as Normal calls to the Admin Station.

You can also elect to enable audio feedback that tells the staff member they have successfully checked in.

Calls placed to perform **Manage Check-In** are not applied towards the system's Current Call Count. Urgent and Emergency calls can still be placed by stations and are not included as part of Manage Check-In.

As long as Privacy Mode is not enabled and a room's device allows two-way transmission, you can select to use Spy Mode to listen to the room (see *"Using Spy Mode"* on page 515).

Managing Check-In Status

For administrators, the Manage Check-In feature provides a color-coded view of which rooms have checked in, which rooms or stations are not part of the check-in process, and which should check-in but have not yet done so.

Note: You can also use the Maps feature to view check-in status. For more information, see "Using Maps for Check-In" on page 412.

Manage Configure Enabled: Yes	Image Check-in Image Checked-in: Configure Step Finish Finish Enabled: Two Status: <u>Active</u> Checked-in: <u>7</u> Vacant: <u>1</u> Started: <u>Nov 13, 2019 1:21:37am</u> Stopped: <u>Not Yet</u>														
Oisplay Options:	- Show Vacant:	Show Exclud	0125 6	Name: No Sho	w Not Checked-in (Only: No	Q 0203 ft	Q 0204 ft	Q 0205 ft	Q 0206 A	Q 0207 A	Q 0210 ft	Q 0211 f	Q 0212 A	Q 0213 A
0.0247	0.0212	0 0210	0 0220 0	0 0221 0	0 0222 0	0 0222 0	0 0224 0	0 0225 0	0 0225 0	0 0227 6	Vacant	0 0220	0 0220 0	0 0221 0	0 0222 0
40 0217 0	40 0210 0	40 0210 0	40 0220 0	40 0221 0	10 0222 0	10 0223 0	40 0224 0	0220 0	40 0220 0	40 0227 0	40 0220 0	10 0225 0	40 0200 0	40 0231 0	40 0232 0
G 0236 🕄	GP 0237 🚯	GP 0238 🚯	GP 0239 🚯	GP 0240 🚯	GP 0241 🚯	GP 0242 🚯	GP 0243 🚯	GP 0244 🚯	GP 0245 🚯	GP 0246 🚯	GP 0247 🚯	G 0308 🚯	G 0309 🚯	GP 0310 🚯	ଦ 0311 ()
କ 0315 (GO 0316 🚯	Q 0317 ()	G 0318 🚯	🖓 0319 ()	G 0320 🚯	G 0321 🚯	O 0322 🚯	G 0323 🚯	G 0324 🚯	G 0325 🚯	G 0326 🚯	O 0327 🚯	G 0328 🚯	🖓 0329 🚯	🖓 0330 🚯

Figure 213. Manage Check-In

To view check-in status:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.

A separate tab appears so that you can toggle the dashboard and Manage Check-In views.

The status of each station appears in a color-coded box. *Table 143, "Color-coded Check-In Status," on page 511* explains the use of colors to describe status:

Table 143. Color-coded Check-In Status

Color	Status
Green	Checked in
Red	Not checked in
Gray	Check-in is not expected because the station is either on the vacant or excluded lists.

You also can select the following **Display Options**:

Table 144. Check-In Display Options

Show Vacant	When enabled, stations in the Vacancy List appear in the color-coded display.
Show Excluded	When enabled, stations in the Exclusion List appear in the color-coded display.
Show Name	When enabled, the station's name appears along with the station's extension number. Displaying the name is useful if you are not sure where a station is located when only the extension number is displayed.
Show Not	Note: Show Vacant and Show Excluded options are disabled when this option is selected.
Checked In Only	When enabled, only the stations that have not checked in are listed. This option may be preferable if a large number of stations are managed by your Nyquist server, and you want to quickly view which stations have not checked in.

Additional information that appears on the Manage Check-In window includes:

- Status of check-in process such as Active
- Number of stations that have checked in

- Number of stations that have not yet checked in
- Number of vacant stations
- Date and time check-in started
- If check-in has been manually stopped or is done.

Manage Check-in also allows you to use Spy Mode on a station or room, provided the privacy feature has not been activated and the station device allows two-way transmission.

Stations typically excluded from the check-in process would include stations assigned to hallway speakers or amplifiers or areas that were scheduled to be vacant when the check-in procedure began. For more information, see *"Managing Exclusion and Vacancy Lists" on page 517*.

View Check-In Status on NQ-GA10PV display

You can also display Check-In status on NQ-GA10PV displays, which will indicate the start and stop time for the Check-In process as well as the check-in status for each station. For information, see "Configuring Intercom HDMI Module Display Options" on page 162.

Started: 12:05:21pm	0100	0101
Elapsed: 56m 52s	Admin Web UI	Web Interface
0102	0103	0104
Admin 2	WBC	GA10PV
0400	0401	0402
0400	0401	0402
0403 0403		

Figure 214. Check-In Status on NQ-GA10PV display

Starting Check-In

You can manually start the Check-In procedure from the Admin Web UI. Check-In can also be started via the Routines feature (see *"Using Routines" on page 416*.)

Check-In does not play any audio instruction announcements or send any text instructions to web interface stations or GA10PV display stations. If you want audio instruction announcements or text instructions on web interface stations or GA10PV display stations, set up a routine that includes audio instructions in an announcement or text instructions to be sent to web interface dashboards and

GA10PV displays. The routine can be triggered by a Check-in **Start**, or the Check-in can be started by the routine.



Figure 215. Manage Check-In When Idle

To manually start Check-In:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.
- 3 On the Manage Check-In page, select **Start**.

When Check-In starts, the **Start** button changes to a **Stop** button and the red squares that represent occupied rooms or areas begin changing to green squares as staff members begin checking in.

Station Check-In

During Check-In, a Normal call placed by a station to the Admin Station marks the calling station, or the station assigned to it's **Check-in as Station Extension** setting, as Checked-in.

After a station has successfully checked in, additional Normal calls will go through as normal calls to the Admin station. Stations can still place Urgent or Emergency calls during the Check-in process, even if the station has not checked in.

If audio prompt feedback is enabled and a station checks in, the caller hears a confirmation prompt. If audio feedback is disabled, stations checking in with digital call switches will still see a ringing status (flashing green) for about two seconds while checking in. Stations checking in with IP phones will notice a call lasting about two seconds before automatic hang up.

A **VoIP Speaker Only** station that does not have a call switch can still participate in the check-in process if an I/O controller Input contact is connected to a switch present in the room that contains the **VoIP Speaker Only** station. In this case, the I/O controller Input contact closure can trigger a Routine that performs a check-in.

In this scenario, the Routine's Trigger **Type** is set to **Input-Contact-Closed** (see "Understanding Trigger Parameters" on page 446) and the Routine's Action **Type** is set to **Check-In** with **Station** set to the VoIP Speaker Only station extension (see "Understanding Action Parameters" on page 450).

If a station is configured (via the Call-In Level of its CoS configuration) to only place Emergency calls, the station cannot participate in the check-in process. Station's configured with a Call-In Level of **Emergency-Only** will, upon initiation of the check-in process, be automatically added to the Check-In Exclusion List (see *"Managing Exclusion and Vacancy Lists" on page 517*). If you wish to include the station in the check-in process, the station's CoS Call-In Level configuration should be changed to **Normal+Emergency** or **Urgent+Emergency** (see *"Editing CoS Parameters for a Station" on page 95*).

Ending the Check-In Process

There are two different ways to end the check-in process: *stop or finish. Finish* implies that every station has checked in. *Stop* implies that someone decided to cancel the check-in process before every station had checked in.

After all stations included in the check-in process have checked in, the check-in Status will automatically change to **Done.** Since stations that were not expected to check in may do so, the check-in is not considered complete until you explicitly set the status to **Finish**.

The behavioral difference between *finishing* and *stopping* a check-in is largely determined by how you configure your system. You can define different Actions for your system to perform for the Check-In trigger based on the Stop or Finish values of the Check In property. The primary built-in differences are:

- The elapsed time for the check-in process is calculated after the process is *finished*.
- *Stopping* sets check-in Status to Idle and updates Stopped time, while *finish-ing* sets check-in Status to Finished and updates Finished time.

Completing the Check-In

You can complete an active check-in process by selecting the **Stop** or **Finish** button on the Station Check-In view. An active check-in process can also be stopped or finished via a Routine action by using the **Check-In** Action **Type** with the **Check In** option set to **Stop** or **Finish** (see "Understanding Action Parameters" on page 450).

Stopping or finishing the check-in will trigger those routines that use **Check-In** as the trigger **Type** and either **Stop** or **Finish** as **Check-In** (see "Understanding Trigger Parameters" on page 446 for more information).

After the check-in process has been stopped or finished, all Normal station calls resume as normal calls to the Admin Station, and the check-in process **Status** becomes either **Idle** (if stopped) or **Finished** (if finished).

Resetting the Check-In Process

Once a check-in process has completed, the check-in status should *always* be reset, typically via the **Reset** button on the *Manage Check-In* view. This will clear all check-in statuses, allow non-Admin–to– Admin Station calls to resume, and restore all GA10PV displays back to their normal operational states. Until reset, the GA10PV displays will show check-in statuses.

You can also reset the check-in process with a Routine action. When resetting check-in via a routine, the Action **Type** is **Check-In** and the **Check In** option is **Reset** (see "Understanding Action Parameters" on page 450).

Using Spy Mode

You can use Spy Mode to listen to a station as long as Privacy Mode is not enabled and the station device allows two-way transmission.

This feature adds a step toward verifying that the room's occupants are safe.



Figure 216. Listen In, or Spy Mode, Button

To activate Spy Mode:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.
- 3 On the Manage Check-In page, select the **Listen In** icon for the station you want to monitor.

To activate Spy Mode using a DTMF code (regardless of Check-In process):

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select **Dial Pad**.
- 3 When the dial pad appears, dial 978{station-extension}.

Note: Spy Mode monitoring cannot be used on a station that has been set to Privacy Mode.

Configuring Check-In

To use the check-in process, the user must have appropriate permissions assigned (see "Assigning and Editing Permissions" on page 244).

Enabled:		
Yes		
Enable Audio Prompts and Confirmation Messages:		
Yes		
Automatically Stop Audio Distribution:		
Automatically Stop Audio Distribution: Yes Vacancy List: × 0030 - 0030 - Web Admin	Clear	Add All
Automatically Stop Audio Distribution: Yes Vacancy List: ×0030 - 0030 - Web Admin Exclusion List:	Clear	Add All
Automatically Stop Audio Distribution: Yes Vacancy List: × 0030 - 0030 - Web Admin Exclusion List: × 0010 - Admin Web UI × 0050 - 0050 - Web Admin	Clear	Add All

Figure 217. Configure Check-in

To configure check-in options:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.
- 3 On the Manage Check-In page, select **Configure**.
- 4 Complete the configuration options (see *Table 145, "Check-In Configuration Options," on page 516*).
- 5 Select Save.

Table 145. Check-In Configuration Options

Enabled	Specifies if Manage Check-In can be used. If Disabled , you can configure Manage Check-In options but you cannot start the check-in process.
Enable Audio	Specifies if audio files will be used as part of Manage Check-In.
Prompts and Confirmation Messages	When enabled, audio prompts and audio feedback play at stations when the stations perform check-in. If disabled, no audio prompts or audio feedback are played on the station.
	When feedback is disabled, stations checking in with digital call switches will see a ringing status (flashing green) for about two seconds while checking in. Stations checking in with IP phones will notice a call lasting about two seconds.

Automatically Stop Audio Distribution	When enabled, all currently playing audio distributions will be stopped when a check-in process is started.
Vacancy List	Specifies the stations to be added to the Vacancy List (see "Managing Exclusion and Vacancy Lists" on page 517).
Exclusion List	Specifies the stations to be added to the Exclusion List (see "Managing Exclusion and Vacancy Lists" on page 517).
	<i>Note:</i> Stations configured with a Call-In Level of Emergency-Only (via the station's CoS configuration) will automatically be added to the Exclusion List upon initiation of the check-in process.

Table 145. Check-In Configuration Options

Managing Exclusion and Vacancy Lists

A station added to the Vacancy List and a station added to the Exclusion List both appear gray on the Admin Station's Check-In page if the Check-In page is configured to display these lists (see "Configuring Check-In" on page 515). The difference between the two lists, though, is that stations on the Exclusion List should always be excluded from the check-in process. Those on the Vacancy List are stations (rooms or areas) that normally would be checking in, but may be vacant when the check-in process is started.

A station on the vacancy list can still check in. This could occur during an emergency situation where a normally vacant room becomes the closest temporary shelter. An occupant could perform a check-in to let administrators know that the room is occupied and secure.

Excluded stations should include stations not physically located in a room, such as speakers located in a hallway; and stations assigned to appliances, such as power amplifiers and MMPAs. Stations that have **Check-in as Station Extension** assigned to another station (see *Table 36, "Station Configuration Page Parameters," on page 129*) are automatically added to the exclusion list and are only removed from the list when they are unassigned.

Stations whose CoS is configured as *Emergency-Only* at the time the Check-In process is initiated (based on the Station's currently active CoS configuration) will be automatically added to the Check-in Exclusion List. These stations will appear in the checkin log with a status of **Exclude Add (Auto)** and will remain in the Check-in Exclusion list until the **Reset** button is pressed (stations manually added to the Exclusion list remain in that list until explicitly removed).

You can add or delete a station to or from the Exclusion or Vacancy Lists by:

- Using Manage Check-In via the Admin Web UI
- Using the **Routines** feature

To add a station to the Exclusion List via the Admin Web UI:

1 If not already on your dashboard, select **Dashboard** from the navigation bar.

- 2 Under Calling/Paging, select Manage Check-In.
- 3 On the Manage Check-In page, select **Configure**.
- 4 Add desired station or stations to the Exclusion List.
- 5 Select Save.

To add a station to the Exclusion List via a routine:

- 1 Add or edit a routine that has **Check-In** as an **Action Type** (see "Actions" on page 447).
- 2 For Check In, select Exclude-Add.
- 3 For **Stations**, select the stations that you want to exclude from Manage Check-In.
- 4 Select Save.

To remove a station from the Exclusion List via the Admin Web UI:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.
- 3 On the Manage Check-In page, select **Configure**.
- 4 Remove the desired station or stations from the Exclusion List.
- 5 Select Save.

To remove a station from the Exclusion List via a routine:

- 1 Edit a routine that has **Check-In** as an **Action Type** (see "Actions" on page 447).
- 2 For Check In, select Exclude-Delete.
- 3 For **Stations**, select the stations that you want to remove from Manage Check-In Exclusion List.
- 4 Select Save.

To add a station to the Vacancy List via the Admin Web UI:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.
- 3 On the Manage Check-In page, select **Configure**.
- 4 Add desired station or stations to the Exclusion List.
- 5 Select Save.

To add a station to the Vacancy List via a routine:

- 1 Add or edit a routine that has **Check-In** as an **Action Type** (see "Actions" on page 447).
- 2 For Check In, select Vacancy-Add.
- 3 For **Stations**, select the stations that are expected to be vacant.
- 4 Select Save.

To delete a station from the Vacancy List via the Admin Web UI:

- 1 If not already on your dashboard, select **Dashboard** from the navigation bar.
- 2 Under Calling/Paging, select Manage Check-In.

- 3 On the Manage Check-In page, select **Configure**.
- 4 Select the stations that you want to remove from the Vacancy List.
- 5 Select **Save**.

To delete a station from the Vacancy List via a routine:

- 1 Edit a routine that has Check-In as an Action Type (see "Actions" on page 447).
- 2 For Check In, select Vacancy-Delete.
- 3 For **Stations**, select the stations you want to remove from the Vacancy List.
- 4 Select Save.

Check-In Routine Actions and Triggers

You will typically define Routines that perform check-in actions (see the Check-In action in *Table 151*, *"Routine Action Type-Specific Parameters," on page 576*) and/or that are triggered by check-in events (see the Check-In trigger in *Table 153, "Routine Trigger Types and Parameters," on page 601*). This allows a great deal of flexibility and customization over the various check-in processes and types of check-in scenarios that you will implement.

Creating and Using Multiple Check-In Routines

You can create check-in routines for multiple purposes and to ensure that the vacancy and exclusion lists are accurate.

You should create separate routines for drills and each type of emergency check-in. For example, a fire drill could use audio explaining that it was a drill and would not include an actual 911 call, while a rou-tine used for evacuation during an actual fire would probably include a 911 call.

Tip: In the drill scenario, the word "drill" should appear in the name.

If you want to create routines for accurate exclusion and vacancy lists, use descriptive names such as "Fire Drill Period 1." Each routine should include a **Check-In** action **Type** that uses **Vacancy-Add** and a separate **Check-In** action **Type** that uses **Vacancy-Delete**.
Fedit Action - Routine 3 🛛 🥑	
Name: ()	
Add Vacancy	
Enabled: (3) Yes	
Type: 🚯	
Check-In *	
Check In: 🚯	
Vacancy-Add *	
Stations: 1	
×030 - Web User ×101 - VoIP SPKR ×400 - Admin Phone Clear	dd All
Finish Delay: ()	
No-Delay 💌	
Description: ()	
	70)
X Cancel 🖺 Save	

Figure 218. Example of Check-In Routine Action

Check-In Log and Call Detail Records

Manage Check-In writes data to a log file (see *"Using System Log Files" on page 351*) and creates a Call Detail Record (see *"Viewing Call Details Records" on page 354*). You can export and print the check-in log file using the **Export** button (see *"Exporting and Printing a Call Log" on page 355*). You can also copy the displayed log file information and paste it into another application.

Each logged event starts with a date and time stamp, followed by the station extension that created the event, and ending with optional event-related information. For example:

2022-04-11 15:40:22 - 100 Start

The following event types are logged:

- Start
- Check-in
- Stop
- Reset
- Done

- Vacancy Add
- Vacancy Delete
- Exclude Add
- Exclude Delete

The **Done** event includes the elapsed time for the Check-in process (amount of time between Check-in **Start** and **Done**). The extension will always be 000 because this event is created by the system and not a specific station. For example:

2022-04-11 15:43:32 - 000 Done (elapsed time: 0h:3m:10s)

On the Call Detail Records, the detail record **Type** is set to **Check in** when a station checks in.

Managing Weather Alerts

The National Weather Service (NWS) provides an Alerts Web Service to issue watches, warnings, advisories, and other alerts (for details, see https://www.weather.gov/documentation/services-webalerts) for both weather-related and non-weather-related events. The E7000 can subscribe to this service and respond to these alerts by displaying the alerts, issuing announcements, or other custom actions.

Administrators can configure Alert Filters, which specify which events will be displayed and which Announcement will be made for each alert type. The events can be further filtered by event Severity, Certainty, Urgency, and Response criteria. Events that occur and meet the specified criteria can be displayed on NQ-GA10PV, NQ-T1100, and NQ-ZPMS devices; play an Announcement; or trigger a custom Routine Action.

Note: The Nyquist server must have an Internet connection and access to the necessary websites (see *"Whitelisted Web Addresses" on page 1*) to detect and respond to NWS alerts..

To display NWS events:

- 1 Determine which NWS alerts you want to monitor and enable filters for those alerts based on an alert's Event Type, Severity, Certainty, Urgency, and Response criteria (see "Alert Filters Configuration" on page 522).
- 2 Create a Routine to handle NWS alerts.

The recommended method is via the *NWS Alert* page (see "*NWS Alert Routines*" on page 526), which provides a graphical interface to the NWS Alert options.

Alternatively, a Routine can be explicitly created containing a Display-Msg action that displays the \$alerts variable. This method is more complex to create and maintain, but may allow greater flexibility for advanced processing (see *"Display NWS Alerts Using a Routine" on page 534*).

Alert Filters Configuration

The Common Alerting Protocol (CAP) is an international standard format for emergency alerting and public warning. It is designed for all hazards related to weather events, earthquakes, tsunami, volcanoes, public health, power outages, and many other emergencies.

CAP elements and values are used when configuring alert filters for your Nyquist system. Further details regarding CAP and the data it provides can be found at:

https://docs.oasis-open.org/emergency/cap/v1.2/CAP-v1.2-os.html

Note: You must have **Edit** permissions to enable and set Alert Filters Configuration. For more information, refer to "Assigning and Editing Permissions" on page 244.

The Alert Filters Configuration page allows administrators to specify which alerts the E7000 will monitor and which Announcements will be played when they occur.

A Alert Filters Configuration												
Save All Severity, Certainty, Urgency, and Response Buttons: Yes No Severity Certainty												
Event Type	Enabled Yes No	Action Type	Announcement	Extreme Yes No	Severe Yes No	Moderate Yes No	Minor Yes No	Unknown Yes No	Notset Yes No	Observed Yes No	Likely Yes No	
911 Telephone Outage	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	^
Administrative Message	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Air Quality Alert	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Air Stagnation Advisory	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Arroyo And Small Stream Flood Advisory	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Ashfall Advisory	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Ashfall Warning	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Avalanche Advisory	Yes	display-msg	None 🗸	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
4	Vac			Voc	Vec	Voc	Voc	Voc	Vec	Voc	Vac	+

Figure 219. Alert Filters Configuration

Events can be filtered not only by the Event Type (i.e., what happened), but also by the alert conditions: Severity, Certainty, Urgency, and Response. If all of an arriving alert's conditions are enabled (i.e., set to **Yes**), the alert will be detected. In other words, if any of the conditions of an arriving alert are disabled (i.e., set to **No**), the alert will be ignored.

The **Announcement** to play for a detected alerts can be configured for each Event Type, but it will only play if the NWS Alert Routine's **Announcement by Event** option is set to **Yes** (see *Table 148, "Add/Edit NWS Alert options," on page 528*) or the ANNOUNCEMENT_BY_EVENT option of the \$alerts variable is specified (see "ANNOUNCEMENT_BY_EVENT" on page 538).

If the **Announcement** for an Event Type is unspecified, the Announcement to play when an alert of that type is detected can be specified for the NWS Alert Routine via its **Event Announcement Default** setting or the ANNOUNCEMENT_DEFAULT_DTMF_<dtmf-code> option of the \$alerts variable (see *"ANNOUNCEMENT_DEFAULT_DTMF_<dtmf-code>" on page 538*). A Routine can also override Event Type-specific Announcements completely by specifying an Announcement to play for all enabled events via the NWS Alert Routine's **Announcement** setting (see *Table 148, "Add/Edit NWS Alert options," on page 528*) or the ANNOUNCEMENT_DTMF_<dtmf-code> option of the \$alerts variable (see *"ANNOUNCEMENT_DTMF_<dtmf-code>" on page 538*).

To configure alert filters:

- 1 On the navigation bar, select **Alert Filters**.
- 2 For each Event Type (i.e., weather watch, warning, advisory, etc.), indicate that you want to display alert events by toggling the Enabled column button to Yes. Toggle it to No to disable the Event Type.

To enable or disable all Event Types, select the Yes or No button in the Enabled header.

3 For each **Event Type**, indicate which **Announcement**, if any, that you want to play for this alert event if the ANNOUNCEMENT_BY_EVENT parameter (see *"ANNOUNCEMENT_BY_EVENT" on*

page 538) or **Announcement by Event** (see *Table 148, "Add/Edit NWS Alert options," on page 528*) is enabled.

Important: Although the Announcement to play is specified here, it will not actually play unless a Routine is monitoring the alerts.

4 For each enabled Event Type, specify Yes for the Severity, Certainty, Urgency, and Response values of alert events that you want to display. If an alert matches *any* of the specified criteria, it will be displayed.

To enable or disable an alert type for *all* **Event Types**, select **Yes** or **No** for that alert type (e.g., Extreme, Severe, Moderate, etc.). To enable or disable *all* alert types for *all* **Event Types**, select **Yes** or **No** for **Save All Severity, Certainty, Urgency, and Response Buttons**.

See "CAP Elements and Values" on page 525 for descriptions of the CAP elements (e.g., Severity, Certainty, Urgency, and Response).

For descriptions of weather-related event types, refer to the following website:

https://www.weather.gov/lwx/WarningsDefined

For descriptions of non-weather-related event types, refer to the following website:

https://www.weather.gov/meg/nonwxrelatedemergmesg



Figure 220. Sample Alert With Elements Defined

Elements and their values are described in the following table:

Table 146. CAP Elements and Values

Element	Available Values
Severity	Extreme: Extraordinary threat to life or property.
Denotes the severity of	Severe: Significant threat to life or property.
the event.	Moderate: Possible threat to life or property.
	Minor: Minimal to no known threat to life or property.
	Unknown: Severity unknown.
	Notset: Severity was not provided in the alert received by the NWS.
Certainty	Observed: Determined to have occurred or to be ongoing.
Denotes the certainty	Likely: Probability is greater than or equal to 50%.
of the event.	Possible: Probability is less than 50%.
	Unlikely: Not expected to occur.
	Unknown: Certainty unknown.
	Notset: Certainty was not provided in the alert received by the NWS.
Urgency	Immediate: Responsive action should be taken immediately.
Denotes the urgency of the event.	Expected: Responsive action should be taken soon (within next hour).
	Future: Responsive action should be taken in the near future.
	Past: Responsive action is no longer required.
	Unknown: Urgency unknown.
	Notset: Urgency was not provided in the alert received by the NWS.
Response	Shelter: Take shelter in place or per instruction.
Denotes the action	Evacuate: Relocate as instructed in the instruction.
target audience.	Prepare: Make preparations per the instruction.
	Execute: Execute a preplanned activity identified in instruction.
	Avoid: Avoid the subject event as per the instruction.
	Monitor: Attend to information sources as described in instruction.
	Assess: Evaluate the information in this message.
	Allclear: The subject event no longer poses a threat or concern and any follow-on action is described in the instructions.
	None: No action is recommended.
	Notset: Response was not provided in the alert received by the NWS.

Note: The Severity, Certainty Urgency, and Response values only appear in the Alert message if the INCLUDES_CODES option is included in the \$alerts parameters list (see "Setting Variables for the Display Message" on page 535).

NWS Alert Routines

To receive National Weather Service (NWS) alerts, a Routine must be created with a Display-Msg Action that includes the \$alerts variable and its properties in the Action's Text field. Designing this Routine and configuring the \$alerts variable (as described in *"Display NWS Alerts Using a Routine" on page 534* and *"Setting Variables for the Display Message" on page 535*) can be fairly involved and potentially error-prone.

To simplify this process, the E7000 provides the *NWS Alerts* page, which provides a simplified mechanism for creating, configuring, and manipulating Routines to handle NWS alerts.

Tip: NWS Alert Routines can be configured using either the *NWS Alerts* page or the *Routines* page. Unless the extended functionality of a Routine is required, we strongly recommend using the *NWS Alerts* page. It simplifies many of the interdependencies between various alert settings and helps minimize configuration and runtime errors.

View NWS Alert Routines

To view a list of existing NWS Alert Routines:

- 1 On the navigation bar, select NWS Alerts.
- 2 From the *NWS Alerts* page, NWS Alert Routines can be monitored, created, enabled, disabled, started, stopped, or edited, and the Routines that handle the alerts can be edited.

NWS	S Alerts 🕂 🔞					
				Search		
Status 🌲	Actions	Name 🍦	Receive Alerts By	\$	Description	n 🍦
•	0 🗖 🖉 💼 ≍	Local campus NWS Alert	Auto Find County			
•	0 🕨 🖉 💼 ≍	Remote campus NWS Alert	County Code: [AKC013] Alaska - Aleutians	East		

Figure 221. View NWS Alerts

Table 147. NWS Alerts parameters

Status	A green circle indicates that the associated Routine is executing, while a red circle indicates that the associated Routine is not executing.
Actions	Several buttons that perform operations on the NWS Alert Routine.

Table 147. NWS Alerts parameters

Enable/Disable	Enables or disables the Routine associated with this NWS Alert Routine.	
Start/Stop	Starts or stops the Routine associated with this NWS Alert Routine.	
Edit Alert	Edits this NWS Alert Routine, which displays the <i>Edit NWS Alert</i> page (see <i>"Add or Edit an NWS Alert Routine" on page 527</i>).	
Delete Alert	Deletes the Routine associated with this NWS Alert.	
	Warning Before deleting, ensure that it is safe to delete all actions, triggers, and other settings associated with this Routine.	
Edit Routine	Edits the Routine associated with this NWS Alert (see <i>"Editing a Routine" on page 440</i>).	
Name	The name of the Routine associated with this NWS Alert.	
Receive Alerts By	Indicates the Receive Alerts By setting for the NWS Alert.	
Description	Indicates the Description of the Routine associated with this NWS Alert.	

Add or Edit an NWS Alert Routine

To create or edit an NWS Alert Routine:

- 1 On the navigation bar, select **NWS Alerts**.
- 2 Select the Add button to create a new NWS Alert Routine, or select the Edit button in the Actions column of an existing NWS Alert Routine.
- 3 The Add NWS Alert or Edit NWS Alert page will be displayed (see Figure 222, "Add NWS Alert," on page 528).
- 4 Specify the options for the NWS Alert Routine, as described in *Table 148, "Add/Edit NWS Alert options," on page 528.*
- 5 Select the **Configure Display Options** button to configure the display options for the NWS Alert Routine (see *Table 149, "NWS Alert Display Options," on page 532*).
- 6 When all settings have been configured, select the **Save NWS Alert** button.

Note: As an alternative, a standard Routine can be created to monitor and display NWS Alerts. For details, see *"Display NWS Alerts Using a Routine"* on page 534.

NWS Alert Settings 🚯	Announcement Settings ()
Name: 1	Announcement By Event: 1
New NWS Alert	No
Extension: (1)	Event Announcement Default: 🚯
None *	None *
Enabled: 🚯	Announcement: ()
No	None •
Description: 🚯	Announcement Zone: ()
	All Speakers *
	Play Once: 🚯
	No
NWS Alert Options 🚯	Play Skip: 🚺
	Enter Integer
Configure Display Options	Play Stop: ()
Receive Alerts By: (1)	Enter Integer
County Code Auto Find County Lat/Long Alert DEMO	
County Code: 1	Execute Routines (1)
[AKC013] Alaska - Aleutians East	* Routine Alert: 0
Include Alert Category Codes:	None
	Routine Alert Once: (1)
Include County Code: 1	No
	Routine No Alert: 🚯
	None
Auto Compress:	Routine No Alert Once: (1)
	No
Alart Chaok Interval:	
60	
Lindate Cached County Code:	
No	
Post Dashboard and Phone Text:	
No	

Figure 222. Add NWS Alert

The following table describes the options available when configuring an NWS Alert.

·	able 140. Add/ Edit NWS Alert Options
Name	Specify a name for the NWS Alert.
Extension	Specify the user extension to be used for granting permissions.
Enabled	Enable or disable the NWS Alert.
	Valid values are Yes or No .
Description	Specify a description of the NWS Alert.
Configure Display Options	This button displays the Display Options popup (see "NWS Alert Display Options" on page 532), which provides options regarding how to display the alert on NQ-S1810WBC and/or NQ-GA10PV devices.

Table 148. Add/Edit NWS Alert options

Table 148. Add/Edit NWS Alert options (Continued)				
Receive Alerts By	Specifies how the system will determine which zones will be moni- tored for NWS alerts.			
	County Code: Zone specified by County Code.			
	Auto Find County: The Nyquist server will automatically deter- mine the zone. If this is used, For details, see "AUTO_FIND- _COUNTY" on page 539.			
	Lat/Long: The zone is specified by latitude and longitude.			
	Alert DEMO: A simulated demonstration alert will be sent			
County Code	Select which county code (i.e., location code) will be monitored for NWS alerts.			
	For details, see " <location-code>" on page 537.</location-code>			
	<i>Note:</i> This parameter is only available if Receive Alerts By is set to County Code .			
Latitude	Specify the geographic coordinates (as latitude and longitude) that will be monitored for NWS alerts.			
Longitude	For details, see "LATLON: <latitude>_<longitude>" on page 542.</longitude></latitude>			
	<i>Tip:</i> Right-clicking a location on Google Maps or Bing Maps shows the coordinates for that location. Clicking the coordinates copies the coordinates to the clipboard.			
	<i>Note:</i> These parameters are only available if Receive Alerts By is set to Lat/Long .			
Alert DEMO	Select the demonstration alert to use for generating test alerts.			
	For details, see "Demonstration Alerts" on page 538.			
	<i>Note:</i> This parameter is only available if Receive Alerts By is set to Alert DEMO .			
Include Alert Category Codes	Specifies whether or not to include Severity, Certainty, Urgency, and Response codes in the header of each weather alert.			
	Valid values are Yes or No .			
	For details, see "INCLUDE_CODES" on page 540.			
Include County Code	Specifies whether or not to include the county code in each weather alert.			
	Valid values are Yes or No .			
	For details, see "INCLUDE_COUNTY" on page 541.			
Include Instructions	Specifies whether or not instructions that are included as part of the alert are displayed.			
	Valid values are Yes or No .			
	For details, see "INCLUDE_INSTRUCTIONS" on page 541.			

Table 148. Add/Edit NWS Alert options (Continued)				
Auto Compress	If the number of lines in the alert message exceeds this number, the message will be compressed by replacing end-of-line characters with spaces.			
	For details, see "AUTO_COMPRESS_ <integer>" on page 540.</integer>			
Alert Check Interval	Specifies the interval, in seconds, before the system repeats the pro- cess and checks for another alert.			
	This must be an integer with a value of 30 or higher.			
	For details, see "REPEAT_ <integer>" on page 545.</integer>			
Update Cached County Code	If Yes , the E7000 updates the cached value of the county code to the value determined by the system when Receive Alerts By was set to Auto Find County .			
	Valid values are Yes or No .			
	For details, see "UPDATE_CACHE" on page 547.			
Post Dashboard and Phone Text	Specifies whether or not single-line NWS weather alert notices will be displayed on the Nyquist Dashboard and NQ-T1100 devices, and full-text notices will be viewable on the NQ-T1100 and NQ-ZPMS devices.			
	Valid values are Yes or No .			
	For details, see "POST_DASH_PHONE_TEXT" on page 543.			
Announcement by Event	If Yes , the system will play the announcement associated with the alert event's Event Type (see "Alert Filters Configuration" on page 522).			
	If this option is Yes , the Announcement option will be unavailable.			
	Valid values are Yes or No .			
	For details, see "ANNOUNCEMENT_BY_EVENT" on page 538.			
Event Announcement Default	Specifies which Announcement to play if an Announcement is not configured for the alert's Event Type.			
	For details, see "ANNOUNCEMENT_DEFAULT_DTMF_ <dtmf-code>" on page 538.</dtmf-code>			
Announcement	Specifies the Announcement to play for all alert events.			
	If this option is specified, Announcement by Event and Event Announcement Default are unavailable.			
	For details, see "ANNOUNCEMENT_DTMF_ <dtmf-code>" on page 538.</dtmf-code>			

Table 148. Add/Edit NWS Alert options (Continued)				
Announcement Zone	The paging zone to which alert announcements will be played.			
	If Defined by Announcement is selected, the announcement will play to the zone specified in the <i>Alert Filters Configuration</i> for the event's Event Type (see "Alert Filters Configuration" on page 522).			
	Caution Unless Event Announcement Default is defined, Defined by Announcement requires that Play to Zone be defined (see Table 100, "Add Announcement Page Parameters," on page 319) for every Announcement specified for any Event Type of the Alert Filters Configuration.			
	If All Speakers is selected, the announcement will play to all speakers.			
	If a specific zone is selected, the announcement will play to speak- ers in the selected zone.			
	For details, see "ANNOUNCEMENT_ZONE_ <zone>" on page 539.</zone>			
Play Once	If Announcement is specified, setting Play Once to Yes indicates that the alert Announcement will only play once, when the alert event first occurs.			
	Valid values are Yes or No .			
	For details, see "PLAY_ONCE" on page 542.			
Play Skip	If Announcement is specified and Alert Check Interval is non- zero, setting Play Skip to an integer, <i>n</i> , indicates that the alert Announcement will be skipped <i>n</i> intervals for each interval that it plays.			
	For details, see "PLAY_SKIP_ <integer>" on page 543.</integer>			
Play Stop	If Announcement is specified and Alert Check Interval is non- zero, setting Play Stop to an integer, <i>n</i> , indicates that the Announcement should only play <i>n</i> times before stopping.			
	For details, see "PLAY_STOP_ <integer>" on page 543.</integer>			
Routine Alert	Executes the specified Routine when an alert event is received.			
	For details, see "ROUTINE_ALERT_DTMF_ <dtmf-code>" on page 546.</dtmf-code>			
Routine Alert Once	If Routine Alert is specified, the Routine will only be executed once during the alert event's lifetime.			
	Valid values are Yes or No .			
	For details, see "ROUTINE_ALERT_ONCE" on page 546.			

Table 148. Add/Edit NWS Alert options (Continued)

Routine No Alert	Executes the specified when <i>no</i> alert event has been received.
	For details, see "ROUTINE_NOALERT_DTMF_ <dtmf-code>" on page 546.</dtmf-code>
Routine No Alert Once	If Routine No Alert is specified, the Routine will only be executed once when no alert events are present.
	Valid values are Yes or No .
	For details, see "ROUTINE_NOALERT_ONCE" on page 547.

When the **Configure Display Options** button is selected, the following options regarding how to display the alert on NQ-S1810WBC and/or NQ-GA10PV devices are displayed:

Table 149. NWS Alert Display Options

Device Type Filter Select the device type(s) to which the message will be sent. This determines which display options will be available.

Valid values are:

- GA10PV and WBC
- GA10PV Only
- WBC Only

Display TimeSets the length of time for the message to be displayed before it expires. The
specified value can range from 1 to 99999 seconds.

- **Zones** Messages will be displayed on devices in the selected zones.
- **Stations** The messages will be sent to the specified stations and any stations that belong to the specified Zones.
- PrioritySelect the message priority, which can range from 0 (Lowest) to 6
(Fullscreen).

Priority **6 (Fullscreen)** is the highest priority, and when a message is assigned this priority, only the messages with this priority appear on the display with the Scheduled Event Name and Date being temporarily removed.

If Priority **5 (Exclusive)** is selected, the Scheduled Event Name and Date remain on the display, but all other messages with lower priorities are removed.

Note: Priority 5 (Exclusive) is disabled for Image messages and enabled for Text messages.

Table 149. NWS Alert Display Options

GA10PV	Select the color for the message background. You can select a color by:
Background	Using the color picker
Color	• Entering a hex color (for example: #000000, for black)
	• Entering an RGB color (for example: rgb(0,0,0) for black)
	Entering a color alias name (for example: red, blue, etc.)
	For more information, see "Using Color in Display Messages" on page 492.
GA10PV Font	Select the down arrow to view a list of available fonts and then select the desired font for the message text. Available fonts are:
	Comic-Relief
	Courier-Prime
	Gelasio
	Liberation Sans
	Linux Libertine
GA10PV Font Size	Specify the desired font size.
GA10PV Auto Resize Font	Specify the minimum point size to which the font will be resized to fit the NWS Alert on the screen.
GA10PV Font Color	Select the color for the message text.
	You can select a color by:
	Using the color picker
	 Entering a hex color (for example: #000000, for black)
	• Entering an RGB color (for example: rgb(0,0,0) for black)
	Entering a color alias name (for example: red, blue, etc.)
	For more information, see "Using Color in Display Messages" on page 492.
GA10PV Font Styles	Place your cursor in the Add Styles box to select Bold and/or Italic . Other- wise, the Font Style remains at Regular.

Table 149. NWS Alert Display Options

WBC Flasher Specifies the on/off pattern the flasher will display.

Valid values are:

Pattern

Color

- **No Change**: The message will not cause the selected flasher to change from its current flasher setting.
- Off: The selected flasher will be turned off unless a higher priority message is using the flasher. When the flasher is turned off, it will remain off until another message is sent with a new flasher setting.
- **Slow**: The selected flasher will blink at a rate of once per second for the duration of the message.
- **Fast**: The selected flasher will blink at a rate of twice per second for the duration of the message.
- **Double**: Flash two (2) times within one second with a 1-second pause and repeat.
- **Triple**: Flash three (3) times within 1.5 seconds with a 1-second pause and repeat.
- **Quad**: Flash four (4) times within two seconds with a 1-second pause and repeat.

WBC Number of Specifies the number of times that the flasher pattern will repeat.

Flasher PatternValid values are 1 through 65536 or specify zero (0) to flash continuously for
the duration of the message.

WBC Flasher Specifies the color of the LED flasher. Valid values are:

- Amber
 - Blue
 - Green
 - Orange
 - Red
 - Violet
 - White
 - Yellow

Display NWS Alerts Using a Routine

An NWS Alert Routine ("View NWS Alert Routines" on page 526) is actually an optimized view of a regular Routine that monitors and displays NWS alerts. Although an NWS Alert Routine is much easier to create and maintain, using a regular Routine and explicitly configuring how NWS alerts will be handled can sometimes provide extra flexibility. To display NWS events using a standard Routine:

- 1 Decide which alerts you want to monitor and enable filters for those Event Types, filtering them by various criteria, such as the events' severity, certainty, urgency, and response (see "Alert Filters Configuration" on page 522).
- 2 Create a routine (see "Adding a Routine" on page 440).
- 3 Set the routine's Allow Multiple field to No (default).
- 4 *Optional*: If you will be using the Dashboard's **Routines** button to test this routine, set **Allow DTMF** to **Yes** and assign a value to **DTMF Code**.
- 5 Create an action for the routine that uses **Display-Msg** for the action **Type** (see "Actions" on page 447). Ensure the **Text** for the **Display-Msg** action contains the *salerts()* variable, and specify its properties to customize which alerts you want to display, how they will be formatted, and how the alerts will be monitored (see "Setting Variables for the Display Message" on page 535).
 For example:

For example:

\$alerts(FLC095,INCLUDE_CODES,AUT0_COMPRESS_15,REPEAT_60)

6 Create a trigger of type **Reboot** to start the routine.

Note: The **Reboot** trigger type may not seem intuitive, but the *trigger* is what starts the *monitoring* of NWS events, not the NWS event itself. Other trigger types can be used, but **Reboot** best ensures the system is always monitoring for NWS events.

Tip: To test your Alerts routine, use a demonstration alert code (see "Demonstration Alerts" on page 538) for the \$alerts variable's <location-code> parameter (see "Setting Variables for the Display Message" on page 535) and execute the routine using the Dashboard's Routines button. To initiate the routine this way, **Allow DTMF** must be enabled for the routine. Be sure to change the <location-code> back to its normal value after testing is complete.

Setting Variables for the Display Message

You can use the following variables in the **Text** field of a **Display-Msg** to have NWS alerts automatically appear on the video display connected to the NQ-GA10PV:

• \$auto_resize

Indicates that the font will be automatically resized (to a specified minimum) as needed to fit the NWS alert on the screen.

• \$alerts

Specifies the details of how to respond to an NWS alert, such as: for which county to receive alerts, what information to display, what announcement to play, and more.

\$auto_resize Parameters

The <code>\$auto_resize</code> variable must be immediately followed by a number in parentheses, for example, <code>\$auto_resize(20)</code>. In this example, Nyquist automatically resizes the display message by decreasing the font size, if needed, to better fit the message to the screen, but will keep the font size to at least 20.

The font size will automatically resize to 20 if the Alert message has these following parameters:

- Priority is smaller than 6.
- Text length is longer than 1500 characters.
- The text has more than 500 capital letter characters.

The font size also automatically resizes to 20, if needed, even if the <code>\$auto_resize</code> variable is not specified.

\$alerts Parameters

The *salerts* variable is immediately followed by one or more parameters in parentheses, as in the following example:

\$alerts(FLC095,INCLUDE_CODES,AUT0_COMPRESS_15,REPEAT_60)

The first parameter should specify the location, either as a location code (see "<location-code>" on page 537), coordinates (see "LATLON:<latitude>_<longitude>" on page 542), auto-find location (see "AUTO_FIND_COUNTY" on page 539), or as a demonstration location for testing (see "Demonstration Alerts" on page 538).

When designing a Routine to process alerts, it is important to understand how alerts are detected and processed. It can be helpful to think of \$alerts as a function which waits for the arrival of an event and then processes the event by displaying text, playing announcements, etc. The next time the \$alerts function is called (i.e., either the Action is executed again or the REPEAT_<integer> parameter was specified with the \$alerts variable, causing it to execute repeatedly), it again waits for an event to arrive and repeats the process. If the previous alert is still pending, the previously processed event can be detected and processed again. If the REPEAT_<integer> parameter is specified, several other parameters can be specified to minimize or prevent duplicate processing of the same alert:

- PLAY_ONCE
- PLAY_SKIP_<integer>
- PLAY_STOP_<integer>
- REPEAT_ONCE
- ROUTINE_ALERT_ONCE
- ROUTINE_NOALERT_ONCE

The available parameters are described in the following sections.

<location-code>

Displays weather alerts for the zone that corresponds to the specified UGC code, as described in the NWS Common Alerting (CAP) documentation:

https://vlab.noaa.gov/web/nws-common-alerting-protocol/cap-documentation#geocode

The UGC code is a 6-character value that can be specified using either county zone (ssCnnn) or public zone (ssZnnn) formats. (Specific Area Message Encoding [SAME] codes are not supported.)

For example, the UGC code for Orange County, Florida is can be specified as either FLC095 (county zone) or FLZ045 (public zone).

\$alerts(FLC095,...)
\$alerts(FLZ045,...)

Available UGC codes can be found at:

https://alerts.weather.gov

Tip: The NWS API is a web service that can be used to retrieve weather data. The following PowerShell command uses this API to retrieve a sortable, filterable list of all available UGC zones:

(Invoke-RestMethod -Uri 'https://api.weather.gov/zones').features.properties |
Where-Object type -In 'county','public' | Select-Object state,name,type,id | Out-GridView

An alternate (though less accurate) method to determine which UGC code to use is to enable the AUTO_FIND_COUNTY parameter, which attempts to use the IP address of the E7000 to determine the approximate coordinates and thus the UGC code to use (see "AUTO_FIND_COUNTY" on page 539 and "UPDATE_CACHE" on page 547).

Important

Bogen recommends the use of the LATLON variable, which specifies the alert location via latitude and longitude coordinates (see "LATLON:<latitude>_<longitude>" on page 542), over the <location-code> or AUTO_FIND_COUNTY. This is to ensure receipt of all relevant alerts for the specified location.

The following document explains how NWS uses different methodologies to geolocate watch, warning, and advisory alerts and how use of zone-based codes can potentially result in missed alerts.

https://www.weather.gov/media/documentation/docs/NWS_Geolocation.pdf

Specifying a latitude/longitude point or a county-based code (ssCnnn) ensures all county- and zone-based alerts are received, while a zone-based code (ssZnnn) may not include all county-based alerts.

Demonstration Alerts

Several demonstration/sample Alerts are available for demonstrations or testing. These samples represent typical alerts sent by the NWS for various alert types.

You can access these by replacing <location-code>, LATLON:<lat>_<long>, Or AUTO_FIND_COUNTY with ALERT_DEMO<integer>, where <integer> is replaced with a number between 1 and 20 (for example, ALERT_DEMO1 Or ALERT_DEMO20). Bogen recommends that you test each demonstration alert to help you get familiar with the alert format, the available \$alerts options, and font sizing.

ANNOUNCEMENT_BY_EVENT

Whenever an alert is active, the system will play the announcement associated with the **Event Type**, as defined in the *Alert Filters Configuration* view (see "Alert Filters Configuration" on page 522).

If ANNOUNCEMENT_ZONE_<zone> is defined, the announcement will be played to the specified zone; if not, it will be played to the zone specified by the Announcement associated with the **Event Type**.

ANNOUNCEMENT_DEFAULT_DTMF_<dtmf-code>

When combined with ANNOUNCEMENT_BY_EVENT, this defines the default announcement to use if the **Announcement** for the current alert **Event Type** is set to **None**. This parameter should usually be included in combination with ANNOUNCEMENT_BY_EVENT; if not, alerts that occur with **Event Type** set to **None** will not play any announcement.

Example:

\$alerts(FLC127,INCLUDE_CODES,INCLUDE_COUNTY,AUTO_COMPRESS_25,ANNOUNCEMENT_BY_EV ENT,ANNOUNCEMENT_DEFAULT_DTMF_411,ANNOUNCEMENT_ZONE_10,PLAY_SKIP_59,POST_DASH_P HONE_TEXT,REPEAT_60) \$auto_resize(20)

ANNOUNCEMENT_DTMF_<dtmf-code>

Plays the announcement with the DTMF code specified by <dtmf-code>. For example, including ANNOUNCEMENT_DTMF_12 will cause the routine action to play the announcement that has a DTMF code equal to 12. When specifying an ANNOUNCEMENT_DTMF_<dtmf-code>, the <dtmf-code> is replaced by the desired announcement's DTMF code.

The announcement to be played must have **Play To Zone** set to the desired playback zone, or the ANNOUNCEMENT_ZONE_<zone> variable must be included to specify the zone to play to. If **Play To Zone** is not set and ANNOUNCEMENT_ZONE_<zone> is not included, the announcement will not play

The announcement will only be played if an actual alert exists and the alert text is sent to a GA10PV display. If an alert does not exist when the action executes, the announcement will not be played.

If the *salerts()* variable contains a REPEAT_<integer> parameter, the announcement's **Times to Play** should be considered, because the REPEAT_<integer> parameter will automatically cause the announcement to repeat at the interval specified by the REPEAT_<integer> parameter. If **Times to Play** is set to

zero (0), meaning continuous, the user will need to manually stop the Announcement once it has started.

The extension of a routine that includes the \$alerts() variable and ANNOUNCEMENT_DTMF_<dtmf-code>
parameter must have permission to start announcements.

Note: A generic National Weather Service alert announcement entitled "NWS Alert" is available for use. Under the Announcements view, look for the "NWS Alert" announcement and use the DTMF code associated with it.

Warning If you change the DTMF code of an announcement that is used in a Routine Action via the \$alerts() ANNOUNCEMENT_DTMF_<dtmf-code> parameter, you will need to manually update the DTMF code for the ANNOUNCEMENT_DTMF_<dtmf-code> parameter. Nyquist will not automatically make the change.

ANNOUNCEMENT_ZONE_<zone>

Indicates the zone to which the announcement will be played—where <zone> specifies a valid zone number—when either the ANNOUNCEMENT_DTMF_<dtmf-code> or ANNOUNCEMENT_BY_EVENT variable has been specified. If ANNOUNCEMENT_ZONE_<zone> is not specified, the announcement will be played to All Speakers.

Note: This parameter is only applicable when using the ANNOUNCEMENT_DTMF_<dtmf-code> or ANNOUNCE-MENT_BY_EVENT parameters.

Important: If ANNOUNCEMENT_ZONE_<zone> is not specified, the announcement will be played to the zone specified in the *Alert Filters Configuration* for the event's Event Type (see "Alert Filters Configuration" on page 522). Unless ANNOUNCEMENT_DEFAULT_DTMF_<dtmf-code> is specified, this requires that **Play to Zone** must be defined for every Announcement specified for an Event Type of the Alert Filters Configuration.

AUTO_FIND_COUNTY

Automatically discovers the county code (see "<location-code>" on page 537) associated with the Nyquist server's public IP address.

Important: The E7000 will only discover the county code once, then cache it for subsequent operations. To force it to rediscover the county code, use the UPDATE_CACHE option (see *"UPDATE_CACHE" on page 547*).

- **Caution** This option is approximate and is not recommended if the server's physical location is in a different county from your facility, if your server resides in the cloud, or if you are tracking alerts for multiple facilities and those facilities are not in the same county. Instead, find and use your county code.
- *Tip:* The value of the cached county code can be viewed in the output of **Check Server Status** (see "Check Server Status" on page 41).

AUTO_COMPRESS_<integer>

Automatically compresses the display message if the number of lines in the message exceeds the <integer> value. For example, AUTO_COMPRESS_15 will cause messages that contain more than 15 lines to be compressed by removing end-of-line characters (lines will run together, separated by a space instead of end-of-line). The resulting message will perhaps be more difficult to read than the original. Use this option if you want to ensure that messages will fit on the screen. You may need to experiment to determine a suitable value for <integer>. You can combine this option with the \$auto_resize variable.

Note: Font sizes are set in the Display Message options (see "*Creating a Display Message via the Dashboard*" on page 487). For weather alerts, the following settings are recommended for the Liberation Sans font:

- 30: When not using the AUTO_COMPRESS_<integer> option of the \$alerts variable and not using the \$auto_resize variable. A font size of 30 will ensure that the actual lines from the NWS will fit on each line displayed.
- 65: When using AUTO_COMPRESS_15 and \$auto_resize(25) variable.
- 40: When using AUTO_COMPRESS_25 and \$auto_resize(25) variable.
- 70: When using AUTO_COMPRESS_<integer> and \$auto_resize variable with display message priority of 6.

Tip: If you are not going to use NQ-GA10PV displays to view NWS Alerts, then do not include the AUTO_COMPRESS_# parameter in the Display-Msg action \$alerts() parameter list. Inclusion of the AUTO_COMPRESS_# parameter is designed to help fit alerts onto the NQ-GA10PV message display when the alerts contain a lot of text, but as a result of compression, they will also display compressed in the National Weather Service Alerts window of the Nyquist dashboard display and on the NQ-T1100 or NQ-ZPMS NWS Alerts display. If your primary method for viewing alert details is via NQ-GA10PV displays, then inclusion of the AUTO_COMPRESS_# parameter is recommended.

INCLUDE_CODES

Displays the Severity, Certainty, Urgency, and Response codes on the Alerts header for each alert (see *Figure 220, "Sample Alert With Elements Defined," on page 524*).

Note: This parameter is also applicable to the NQ-T1100, NQ-ZPMS, and dashboard when using the POST_DASH_PHONE_TEXT parameter.

INCLUDE_COUNTY

Displays the county code on the Alerts headers. This is useful if you have several Alert-related routines that use different county codes.

Note: This parameter is also applicable to the NQ-T1100, NQ-ZPMS, and dashboard when using the POST_DASH_PHONE_TEXT parameter.

INCLUDE_INSTRUCTIONS

Displays instructions that came with the weather alerts. If you want to display the exact instructions provided by the NWS, then add the INCLUDE_INSTRUCTIONS option. Instructions are usually obvious (like seek shelter, stay indoors, stay hydrated). However, instructions can be verbose and, while they can provide valuable information, verbose instructions could cause the messages to be too large to display properly.



Figure 223. How Parameters Affect Display

A sample alert string is:

\$alerts(FLC095,INCLUDE_COUNTY,INCLUDE_CODES,INCLUDE_INSTRUCTIONS,REPEAT_60)

This sample alert string will display alerts for county FLC095 (Orange County, Florida) every 60 seconds including alert instructions and the Severity, Certainty, Urgency, and Response codes (see *Figure 223*, *"How Parameters Affect Display," on page 541*).

LATLON: <latitude>_<longitude>

Displays weather alerts for the specified coordinates (i.e., latitude and longitude). The coordinates are specified as two decimal numbers separated by an underscore character.

\$alerts(LATLON:<latitude>_<longitude>, ...)

For example, to specify coordinates 28.6064, -81.2210:

\$alerts(LATLON:28.6064_-81.2210, ...)

Tip: Right-clicking a location on Google Maps or Bing Maps shows the coordinates for that location. Clicking the coordinates copies the coordinates to the clipboard.

Tip: The approximate coordinates (latitude and longitude) of the E7000 can often be determined by specifying the its IP address into a location service, such as https://ipapi.co. Be aware that these coordinates are not guaranteed to correspond to the exact location of the E7000.

If the INCLUDE_COUNTY option has been specified (see "INCLUDE_COUNTY" on page 541), use the ZONE_DISPLAY_NAME option (see "ZONE_DISPLAY_NAME_<text_to_display>" on page 547) to specify what name to display (e.g., a city or county) in place of the coordinates.

Note: The location code variable can optionally be used instead of the latitude and longitude coordinates to specify the alert location (see "<*location-code*>" on page 537), but use of latitude and longitude coordinates is strongly recommended.

PLAY_ONCE

Because the REPEAT_<integer> parameter will cause the announcement to repeat until an alert is no longer active, you can include PLAY_ONCE in the \$alerts() parameter list if you want the announcement to play only once, when the alert first appears.

Note: This parameter is only applicable when using the ANNOUNCEMENT_DTMF_<dtmf-code> parameter.

Caution If PLAY_ONCE is included and an existing alert is immediately replaced by a new alert during a repeat cycle, the announcement will not play for the new alert. At least one repeat cycle must have no alerts present before the play count is reset and subsequent announcements are allowed to play.

PLAY_SKIP_<integer>

Because the REPEAT_<integer> parameter will cause the announcement to repeat during each repeat cycle until an alert no is longer active, you can include PLAY_SKIP_<integer> in the \$alerts() parameter list if you only want the announcement to repeat periodically during an alert. When PLAY_SKIP_<integer> is included, the announcement playback will be skipped the number of times specified by <integer>. For example, if PLAY_SKIP_4 is included in the parameter list, the announcement will be played every five minutes (by skipping the announcement playback four times).

Note: This parameter is only applicable when using the ANNOUNCEMENT_DTMF_<dtmf-code> parameter.

Caution If PLAY_SKIP_<integer> is included and an existing alert is immediately replaced by a new alert during a repeat cycle, the announcement will not immediately play for the new alert. The announcement will play after the specified number of skips has transpired.

PLAY_STOP_<integer>

While an alert is pending and an ANNOUNCEMENT_DTMF_<integer> is specified, the PLAY_STOP_<integer> parameter can be used to control how many times the announcement is played while an alert is still pending. The <integer> specifies how many times to play before stopping. Since alerts can last several hours, this parameter can be used to control how many times to play the announcement during the alert before stopping.

Note: This parameter is only applicable when using the ANNOUNCEMENT_DTMF_<dtmf-code> parameter.

Caution If an existing alert is immediately replaced by a new alert during a repeat cycle, the announcement will not start playing again until at least one repeat cycle has no alerts present.

POST_DASH_PHONE_TEXT

Single-line NWS weather alert notices can be posted on the Nyquist Dashboard and NQ-T1100 Admin phones, and full-text NWS weather alert notices can be viewed on the NQ-T1100 Admin Phone and NQ-ZPMS Zone Paging Microphone Station screens.

To activate this feature, include the POST_DASH_PHONE_TEXT parameter in the <code>\$alerts()</code> parameter list of a routine's Display-Msg action.

Tip: This feature can be used even if you do not have a NQ-GA10PV or NQ-T1100 device in your network (e.g., to display weather alert notices to the Dashboard). When configuring the Display-Msg action, set the Zones field to "All Displays."

If the POST_DASH_PHONE_TEXT parameter is included in the *salerts()* variable parameter list, a single-line alert notice will be displayed on the Nyquist Dashboard (for admin users) and on NQ-ZPMS and NQ-T1100 Admin phone idle screens whenever there is an active alert.

The Nyquist Dashboard notice will include date/time, "--- ALERT ---", alert type, and optionally the county and codes (based on inclusion of INCLUDE_COUNTY and INCLUDE_CODES parameters in \$alerts() parameter list).

The Admin Phone notice will omit the date/time and "--- ALERT ---" text to conserve space.

Important: The POST_DASH_PHONE_TEXT parameter requires the use of the REPEAT_## parameter. Without it, the weather alert will not be displayed on NQ-T1100 or NQ-ZPMS devices and dashboards.

The following is an example of a Dashboard notice using the POST_DASH_PHONE_TEXT parameter:

2021-04-22 10:15:20 --- ALERT --- Tornado Warning

The next example was achieved by adding INCLUDE_CODES in the \$alerts() parameter list:

2021-04-22 10:15:20 --- ALERT --- Tornado Warning (Extreme, Possible, Future, Monitor)

The next example was achieved by adding INCLUDE_CODES and INCLUDE_COUNTY in the \$alerts() parameter list:

2021-04-22 10:15:20 --- ALERT (FLC095) --- Tornado Warning (Extreme, Possible, Future, Monitor)

The following examples are comparable idle-screen notices on the NQ-T1100 Admin Phone:

>Tornado Warning

>(FLC095) Tornado Warning

If multiple routines are executing that contain a Display-Msg action with the <code>\$alerts()</code> variable using different counties, alerts will be displayed for all counties that have active alerts. If you plan to display alerts for multiple counties, we recommend adding the <code>INCLUDE_COUNTY</code> parameter in the <code>\$alerts()</code> parameter list to help distinguish between the counties that may be simultaneously displayed.

Note: In the phone images below, ALERT_DEMO2 and ALERT_DEMO4 are demonstration county codes.



Figure 224. POST_DASH_PHONE_TEXT with ALERT_DEMO4



Figure 225. POST_DASH_PHONE_TEXT with ALERT_DEMO4 and ALERT_DEMO2

Important: For details on how to view the full alerts on the NQ-T1100 and NQ-ZPMS, see "Viewing NWS Alerts on NQ-ZPMS Admin Phone" on page 548 and "Viewing NWS Alerts on NQ-T1100 Admin Phone" on page 550.

REPEAT_<integer>

Automatically repeats the alert processing and re-displays any resulting alerts every <integer> seconds with a minimum of 30 seconds. Previous alerts are automatically removed from displays. This option provides a convenient way to check for and display alerts at a regular interval without having to create a routine loop and without having to worry about deleting previous or expired alerts.

Important: This option is required when using the POST_DASH_PHONE_TEXT parameter to display NWS alerts on phone devices and/or the E7000 dashboard.

Warning When this option is used in a routine, subsequent actions of that routine will never be executed.

Tip: If you would like to monitor multiple locations for NWS alerts while using this option, create multiple routines, one for each location to be monitored.

Since alert processing requires Internet access processing, Bogen recommends a minimum <integer> value of 60 seconds. Using less than 60 seconds may significantly impact your network and Nyquist server processing utilization.

ROUTINE_ALERT_DTMF_<dtmf-code>

Executes the routine with the DTMF code specified by <dtmf-code> when an alert is present.

For example, including ROUTINE_ALERT_DTMF_555 will cause the routine with a DTMF code of 555 to be executed, which might execute a routine that closes an I/O controller output contact which, in turn, might turn on an external light or buzzer.

Tip: If the REPEAT_<integer> parameter is present in \$alerts() and alerts are present, the routine will be executed at each repeat cycle. For example, if REPEAT_60 is included, the routine will be executed every 60 seconds. You can use ROUTINE_ALERT_ONCE to force the routine to only execute once while alerts are present.

ROUTINE_ALERT_ONCE

If this parameter is included with ROUTINE_ALERT_DTMF_<dtmf-code>, the specified routine will only be executed once during the alert lifetime.

ROUTINE_NOALERT_DTMF_<dtmf-code>

Executes the routine with the DTMF code specified by <dtmf-code> if no alerts are present.

For example, including ROUTINE_NOALERT_DTMF_600 will cause the routine with DTMF code of 600 to be executed if *no alerts* exist. For example, this might execute a routine that opens an I/O controller output contact that, in turn, might turn off an external light or buzzer.

Tip: If the REPEAT_<integer> parameter is present in \$alerts() and *no alerts* exist, the routine will be executed at each repeat cycle. For example, if REPEAT_60 is included in the parameter list but no alerts exist, the routine will be executed every 60 seconds. You can use ROUTINE_NOALERT_ONCE to force the Routine to only be executed once while alerts do not exist.

ROUTINE_NOALERT_ONCE

If this parameter is included with ROUTINE_NOALERT_DTMF_<dtmf-code>, the specified routine will only be executed once if *no alerts* are present.

Tip: The ROUTINE_ALERT_DTMF_<dtmf-code> and ROUTINE_NOALERT_DTMF_<dtmf-code> parameters can be used together to toggle the state of an I/O Controller output contact. They could also be used together to add and/or delete Dashboard messages via Routine Actions.

UPDATE_CACHE

When using the AUTO_FIND_COUNTY option, Nyquist caches the county code found so the system does not have to search more than once. If your county code changes, however, include the UPDATE_CACHE option along with AUTO_FIND_COUNTY to have the system rediscover the county code and cache the new value.

Important: You should remove the UPDATE_CACHE option after the first use (i.e., execute the Routine once, remove the UPDATE_CACHE option from the Routine Action, then restart the Routine); otherwise, the Nyquist system searches for the county code every time alerts are retrieved.

ZONE_DISPLAY_NAME_<text_to_display>

When the INCLUDE_COUNTY option (see "INCLUDE_COUNTY" on page 541) is used in the parameters list in combination with coordinate-based alerts (see "LATLON: <latitude >_ <longitude >" on page 542), use ZONE_DISPLAY_NAME_<text_to_display> to change the name to be displayed in place of the county code. For example, to display "Orlando Florida" in place of the county code, specify:

ZONE_DISPLAY_NAME_Orlando_Florida

Note: Underscore characters in the *<text_to_display>* will be replaced by spaces on the display. For example, Orlando_Florida will be displayed as "Orlando Florida."

Caution Only alphanumeric characters are supported within *< text_to_display >*. Do not use special characters other than the underscore to indicate where spaces should be displayed.

Viewing National Weather Service Alerts

NWS Alerts will display automatically on some devices, but they are not as easily visible on NQ-ZPMS and NQ-T1100 Admin Phones.

NWS Glossary

NWS Alerts use a lot of abbreviations and technical terminology. The NWS provides a glossary of many of the terms they use, which can be found at:

https://forecast.weather.gov/glossary.php

It is also available in JSON format for programmatic access at:

https://api.weather.gov/glossary

Viewing NWS Alerts on NQ-ZPMS Admin Phone

National Weather Service (NWS) alerts can be viewed on the NQ-ZPMS display. To enable this, use the Nyquist server to customize one of this station's Line Keys with a **Type** of **NWS Alerts.** This will create a Line Key on the NQ-ZPMS (i.e., the **NWS Alerts** button on the Line Keys screen) that can be used to view pending NWS alert messages.

Tip: To notify NQ-ZPMS users about an active NWS alert, we suggest triggering an announcement over the NQ-ZPMS station's associated Speaker Extension, triggering strobe lights via an I/O Controller, or displaying the NWS alerts on a highly visible NQ-GA10PV display. One or more of these actions can be initiated by triggering a routine via the ROUTINE_ALERT_DTMF_<dtmf-code> \$alerts parameter, specifying the DTMF code of a routine containing one or more actions that notify users of the NWS alert.

To view the text of the active National Weather Service Alerts, press the **NWS Alerts** Line Key.

If no NWS alerts are active, the display will show "No alerts":



Figure 226. NWS with No Alerts

Note: "No alerts" can also indicate that there are no NWS Alert Routines executing to process NWS alerts.

Important: For NWS alerts to be displayed on the NQ-ZPMS, the Nyquist server must execute an NWS Alert Routine with **Post Dashboard and Phone Text** enabled (or that includes the POST_DASH_PHONE_TEXT parameter of the \$alerts variable). For details, see "NWS Alert Routines" in the *Nyquist System Administrator Guide*.

When NWS alerts are active, a scrollable text window will display the text of active alerts:

		and a
	National Weather Servic	e Alerts
ALERT Flood	Warning (Severe,Observed,Immediate	,Avoid)The Flood Warning
continues for the	following rivers inNebraskaSouth Da	kotaMissouri River Near
GreenwoodMisso	uri River Near VerdelMissouri River At N	NiobraraMissouri River At Spring-
fieldJames River	At HuronJames River Near Forestburg.	James River At MitchellJames River
Near ScotlandJa	nes River Above Yankton.The following	g river forecasts include forecast
precipitation thro	ughtonight. Any additional future rains	could affect the crestforecasts.The
Flood Warning co	ntinues forThe James River Near Fores	stburg.* until further notice.* At
08AM Monday th	e stage was 15.35 feet.* Moderate floc	oding is occurring and Moderate
flooding is foreca	st.* Flood stage is 12.00 feet.* Forecas	stThe river will remain near 15.3
feet for the next f	ew days.* At stages near 15.0 feetMa	any of the county roads in the area
areimpassable, a	nd some roads are under water for as r	nuch as 1/2 mile.Instructions:Safety

Figure 227. NWS with scrollable window

Touch and drag the screen to advance through the alert text pages. Press the Exit button to go back to the phone's main screen. While displaying the alerts, if there is no scrolling activity for 45 seconds, the phone will automatically return to the idle screen. If a call rings on the phone while the alerts are being displayed, the phone will automatically switch to the incoming call display.

Important: The alerts display is limited to 2000 characters. If the active alerts contain more than 2000 characters of text, "-TRUNCATED" will be appended to the end of the alert text to indicate that the remaining alert text has been truncated. To reduce the number of characters taken up by alerts, consider excluding the INCLUDE_INSTRUCTIONS \$alerts() parameter.

Viewing NWS Alerts on NQ-T1100 Admin Phone

National Weather Server Alerts text can be viewed on the NQ-T1100 Admin Phone display. To view the text of all active National Weather Service Alerts, press the NWS Alerts softkey found on the bottom of the NQ-T1100 Admin phone display:



Figure 228. NWS Alerts softkey

If no NWS alerts are active, the display will show "No alerts":



Figure 229. NWS with No Alerts

Note: "No alerts" can also indicate that there are no NWS Alert Routines executing to process NWS alerts.

Important: For NWS alerts to be displayed on the NQ-T1100, the Nyquist server must execute an NWS Alert Routine with **Post Dashboard and Phone Text** enabled (or that includes the POST_DASH_PHONE_TEXT parameter of the \$alerts variable). For details, see "NWS Alert Routines" in the *Nyquist System Administrator Guide*.

When NWS alerts are active, a scrollable text window will open in the center of the phone's screen to display the text of active alerts:



Figure 230. NWS with scrollable window

Use the scrollbar to advance through the alert text pages. Press the back button (on the bottom left) to go back to the phone's Idle screen. While displaying the alerts, if there is no scrolling activity for 45 seconds, the phone will automatically return to the Idle screen. If a call rings on the phone while the alerts are being displayed, the phone will automatically switch to the incoming call display.

Note: The alerts display is limited to 2000 characters. If the active alerts contain more than 2000 characters of text, the end of the display will show "-TRUNCATED" to inform you that the remaining alert text has been truncated. To help reduce the number of characters taken up by alerts, consider not using the INCLUDE_INSTRUCTIONS \$alerts() parameter.

· 105		01:	52 PM Sun, Apr 18
105	National Weather Service Alerts PM MDT for northeastern Colorado. ALERT (ALERT_DEMO13) Severe Thunderstorm Warning (Severe,Observed,Immediate,Shelter) The National Weather Service in Goodland has issued a * Severe Thunderstorm Warning for Southern Yuma County in northeastern Colorado * Until 200 PM MDT. * At 117 PM MDT, a severe thunderstorm was located 13 miles southwest of Eckley, or 13 miles southeast of Yuma, moving east at 35 mph. HAZARD60 mph wind gusts and half dollar size hail. SOURC-TRUNCATED		All-Call
			Emergency All-Call
Record Page		•	S Announce
S Routines		4/4	Audio Distribution
Multi-Site All-Call		•	Schedules
Multi-Site Emerg-All-Call			+ More
5			₩

Figure 231. NWS without INCLUDE_INSTRUCTIONS

Appendix A: Bogen Digital Certification Authority

When a client (e.g., a web browser) connects to the Bogen device's web application, the device's digital certificate is sent to the client to authenticate the identity of the device's web application. The client uses the Bogen Certification Authority (CA) certificate to authenticate the device's digital certificate, which verifies that the client is connecting to a valid server. If the Bogen CA certificate is not installed on the client, the browser will display a warning that it was unable to authenticate the server, displaying a red *Not secure* warning immediately to the left of the browser's address bar (or a similar warning, depending on the browser) after it attempts to access the Bogen device.

The following sections provide instructions for downloading and installing the Bogen CA in various environments.

Tip: The Bogen CA can be downloaded using the cURL command instead of via the browser. If you prefer that method, issue the following command in lieu of step 1 of the subsequent installation instructions:

curl.exe --insecure https://<device>/ssl/bogenCA.crt > bogenCA.crt

Installing Certification Authority on Windows System

To download and install the Certification Authority on a Windows device:

- From your Chrome or Edge browser, type http://<device>/ssl/bogenCA.crt in the address bar, where <device> is the Nyquist device's IP address or DNS name (for example, http://192.168.1.0/ssl/bogenCA.crt).
- 2 Select the downloaded file and select **Open**.
- 3 Select Open when prompted with "Do you want to open this file?"
- 4 Select the Install Certificate... button. The Certificate Import Wizard starts.
- 5 Select Current User, and then select Next.

Note: To allow *all* users on this Windows client to access the Nyquist device, select **Local Machine** instead of **Current User**. You may be prompted for administrator credentials.

- 6 Select "Place all certificates in the following store", then select Browse.
- 7 Select Trusted Root Certification Authorities, and then select OK.
- 8 Select Next.
- 9 Select Finish.
- **10** Restart the browser and log in to the device's web application.

Install Certificate Authority using PowerShell (optional)

You can optionally download and install the Certification Authority using a PowerShell command prompt or script, which involves fewer steps.

To download the certificate to a CRT file, execute the following PowerShell command, replacing <device> with the IP address or DNS name of the Nyquist device:

Invoke-WebRequest -Uri http://<device>/ssl/bogenCA.crt -OutFile \$env:TEMP\bogenCA.crt

To optionally validate the certificate before importing it, execute the following command:

[Security.Cryptography.X509Certificates.X509Certificate2]::new(
 "\$env:TEMP\bogenCA.crt").GetCertHashString() -eq '0A8248F69D970F8DD855D0E0592972DA64B1A845'

If the command returns True, the certificate is valid.

To install the CA certificate into the CurrentUser certificate store, which only applies to the current user, execute the following command:

Import-Certificate -CertStoreLocation cert:\CurrentUser\Root -FilePath \$env:TEMP\bogenCA.crt

To install the certificate for all users on this machine, which requires administrator privileges to execute, execute the following command:

Import-Certificate -CertStoreLocation cert:\LocalMachine\Root -FilePath \$env:TEMP\bogenCA.crt

Note: These commands can be executed remotely using PowerShell Remoting, which may be helpful if the certificate needs to be installed on many client machines.

Installing Certification Authority on Mac System

To download and install the Certification Authority on a Mac:

- From your Safari browser, type http://<device>/ssl/bogenCA.crt in the address bar, where <device> is the Nyquist system device's IP address or DNS name (for example, http://192.168.1.0/ssl/bogenCA.crt).
- 2 Save the downloaded bogenCA.crt file to the desktop.
- 3 Double-click the certificate file on the desktop. The Keychain Access App opens.
- 4 Double-click the certificate to reveal the trust settings.
- 5 Change the top trust setting to **Always Trust**.
- 6 Close the Trust Setting window and enter the computer administrative password to save.
- 7 Restart the browser and log in to the Nyquist web application.

Installing Certification Authority on an Android Device

Note: The Android device WiFi must be connected to the same network as the Nyquist Server.

To download and install the Certification Authority on an Android device:

- 1 From your Chrome or Edge browser, type http://<device>/ssl/bogenCA.crt in the address bar, where <device> is the Nyquist device's IP address or DNS name (for example, http://192.168.1.0/ssl/bogenCA.crt).
- 2 If prompted, verify your identity (e.g., enter your PIN or fingerprint).
- **3** Type a certificate name (e.g., "Bogen CA"), specify "VPN and apps" under "Used for", and select **OK** to install the certificate.

Installing Certification Authority on an iOS Device

Note: The iOS device WiFi must be connected to the same network as the Nyquist Server.

To download and install the Certification Authority on an iPhone Operating System (iOS) device:

- From your Safari browser, type http://<device>/ssl/bogenCA.crt in the address bar, where <device> is the Nyquist device's IP address (for example, http://192.168.1.0/ssl/bogenCA.crt).
- 2 Select Go.
- 3 Select **Allow** when prompted to allow the download.
- 4 Select **Close** after the notification that a profile was downloaded.
- 5 Select Settings > General > VPN & Device Management.
- 6 Select the **Bogen CA** certificate under **DOWNLOADED PROFILE**.
- 7 Select Install.
- 8 If prompted, enter your passcode.
- 9 On the Warning page, select Install.
- 10 Select Done.
- **11** Select **Settings > General > About > Certificate Trust Settings**.
- 12 Under ENABLE FULL TRUST FOR ROOT CERTIFICATES, enable the switch next to Bogen CA.

Viewing the Certificate

The following steps outline how to view and verify the TLS/SSL certificate that was provided by the Nyquist device.
- *Important:* The user interfaces for browsers change not infrequently, so the exact details may vary from what is described in the following instructions. Some security packages can also affect the information available, such as antivirus software that injects its own CA certificate in lieu of the website's actual certificate, which has the effect of hiding the actual certificate from the user.
- 1 Browse to the Bogen device's web application in your browser (using Safari on iOS, Chrome or Edge on all other platforms).
- 2 Select the lock icon on the address bar of the browser (to the left of the URL).
- 3 Display the CA certificate by following one of the following steps:
 - a) On the Chrome or Edge browser, select Connection is secure, then select either Certificate is valid, the certificate icon, or Certificate information to display the Certificate Viewer dialog.
 Select the Details tab, then Bogen CA in the Certificate Hierarchy section.
 - **b)** On the Safari browser [MacOS or iOS only], select **Show Certificate** in the window that appears.
 - c) As an alternative on Android devices, select the Android system's Settings > Biometrics and security > Other security settings > View security certificates, select the USER tab, and select the Bogen certificate.
- 4 Verify that the Bogen CA certificate is selected and not the server certificate (the server certificate's name will be an IP address). To verify that the certificate is valid, verify that the displayed fingerprint values match the following:

 SHA-1:
 0A 82 48 F6 9D 97 0F 8D D8 55 D0 E0 59 29 72 DA 64 B1 A8 45

 SHA-256:
 6B D0 D5 8D C8 F7 E8 03 9E A3 F1 52 32 1D 9C 5C 58 8B 4E FA DF 03 43 64 34 C2 6C 63 C5 4A AC 46

Appendix B: Acronyms and Abbreviations

Α AD **Active Directory Ambient Noise Sensor** ANS **Application Programming Interface** API Analog Station Bridge ASB Analog Telephone Adapter ATA Auth Authorization В **Billing Telephone Number** BTN С CA **Certification Authority** CAN **Controller Area Network** CAP **Common Alerting Protocol** CDR Call Detail Record codec Coder-Decoder Class of Service CoS CPU **Central Processing Unit** D

DCS	Digital Call Switch
DHCP	Dynamic Host Configuration Protocol
DID	Direct Inward Dial
DISA	Direct Inward System Access
DN	Distinguished Name
DNS	Domain Name System
DSP	Digital Signal Processing
DTMF	Dual Tone Multi-Frequency

DUNDI	Distributed Universal Number Discovery
_	
E	
EAS	Emergency Alert System
ECC	Error Correcting Code
F	
FXO	Foreign Exchange Office
FXS	Foreign Exchange Subscriber
G	
GND	Ground
GUI	Graphical User Interface
н	
HTTP	Hypertext Transfer Protocol
HTTPS	HTTP Secure
I	
I/O	Input/Output
ICE	Interactive Connectivity Establishment
iOS	iPhone Operating System
IP	Internet Protocol
IRS	Internet Radio Services
IT	Information Technology
ITSP	Internet Telephony Service Provider

J

Κ

L

LAK	License Activation Key
LAN	Local Area Network
LDAP	Lightweight Directory Access Protocol
LED	Light Emitting Diode

Μ

MAC	Media Access Control
MGCP	Media Gateway Control Protocol
MMPA	Matrix Mixer Pre-Amp

Ν

NAS	Network Attached Storage
NAT	Network Address Translation
NFS	Network File System
NIC	Network Interface Card
NTP	Network Time Protocol
NTS	Network Time Server
NWS	National Weather Service

0

ODBC	Open Database Connectivity
OS	Operating System

Ρ

PBX	Private Branch Exchange
PC	Personal Computer
PCI	Peripheral Component Interconnect
PCIe	PCI Express
PIN	Personal Identity Number
PoE	Power over Ethernet
PSTN	Public Switched Telephone Network
PTT	Push-To-Talk

Q

R

RAID	Redundant Array of Independent Disks
REST	Representational State Transfer
RGB	Red-Green-Blue
RTP	Real-time Transport Protocol

S

SAN	Storage Area Network
SIP	Session Initiation Protocol
SMTP	Simple Mail Transfer Protocol
SNMP	Simple Network Management Protocol
SRTP	Secure Real-time Transport Protocol
SSL	Secure Sockets Layer
STUN	Session Traversal Utilities for Network Address Translation (NAT)

Т

ТСР	Transport Control Protocol
TFTP	Trivial File Transfer Protocol
TLS	Transport Layer Security
TURN	Traversal Using Relays around Network Address Translation (NAT)

U

UDP	User Datagram Protocol
UI	User Interface
URL	Uniform Resource Locators
USB	Universal Serial Bus

V

VLAN	Virtual Local Area Network

VoIP	Voice over Internet Protocol
W	
WAN	Wide Area Network
WBC	Wall Baffle Combo Speaker with Integrated LED Message Display and Flasher (NQ-S1810WBC)
X XML	Extensible Markup Language
Y	
Z	

Appendix C: Nyquist DTMF Feature Dialing Codes

Most features of the Nyquist system can be accessed via DTMF dial codes entered from a station's keypad. The availability of a particular feature dial code is determined and restricted by the DTMF code's required CoS and the station's CoS assignments.

- "Alarm/Tone Activation" on page 563
- "Announcements" on page 564
- "Calling" on page 565
- "Call Forwarding" on page 566
- "Call Parking/Call Pickup" on page 566
- "Call Transfer" on page 567
- "Conferencing" on page 567
- "Monitoring/Recording" on page 568
- "Paging" on page 569
- "Voicemail" on page 570
- "Walking CoS" on page 571
- "Dial Codes Used for Simulating Calls to Admin Station from Station Call Switches" on page 571
- "Routines" on page 572
- "Audio Distribution" on page 572
- "Miscellaneous Dial Codes" on page 573

For a list of alternatives to some of the DTMF codes listed here (e.g., codes that do not use the pound/hashtag symbol, #), see:

• "Alternate Dialing Codes" on page 574

Note: DTMF codes marked with ^a support terminating the DTMF code with a # symbol to avoid the 5-second delay while the DISA application waits for additional digits to be entered.

Alarm/Tone Activation

Description	DTMF Code	Required CoS
Start Alarm specified by {DTMF-code}	*91{DTMF-code} ^a	Activate Alarm Signals
	0000091 <i>Note:</i> You will be prompted to enter the Alarm's DTMF code.	Activate Alarm Signals
Start Tone specified by {DTMF-code}, play to {zone} <i>Note:</i> *{zone} is optional.	*96{DTMF-code}*{zone} ^a	Manually Activate Tone Signals
	0000096{DTMF-code}*{zone}	Manually Activate Tone Signals
Start Tone specified by {DTMF-code}	*96{DTMF-code}	Manually Activate Tone Signals
Prompts user to enter a tone number and tone parameters (e.g., times to play) and starts the tone at all Time-type zones	*96	Manually Activate Tone Signals

Announcements

Description	DTMF Code	Required CoS
Start Announcement specified by {DTMF-code} to station's configured "Appouncement Zone"	*92{DTMF-code}	All-Call Page
<i>Note</i> : If "Announcement Zone" is not configured, the caller	0000092{DTMF-code}	All-Call Page
will be prompted to enter a zone number.		
Start Announcement specified by {DTMF-code},	*92{DTMF-code}*{zone} ^a	Zone Paging
	0000092{DTMF-code}*{zone}	Zone Paging
Start Announcement specified by {DTMF-code} to	*97{DTMF-code}#0	Multi-Site Paging
an Facilities (including local facility)		Inter-Facility Call/Page
Start Announcement specified by {DTMF-code} to Facility specified by {facility-page-number}	<pre>*97{DTMF-code}#{facility-page-number}</pre>	Inter-Facility Call/Page
Start Announcement specified by {DTMF-code} to dialed Eacilities	<pre>*97{DTMF-code}#{facility-page-number}*{facility- page-number}</pre>	Multi-Site Paging
<i>Note:</i> Use "0" for {facility-page-number} to include the local facility.		Inter-Facility Call/Page
<i>Note</i> : The number of dialed digits cannot exceed 70 digits.		
Stop Announcement currently playing to {zone-	*93{zone-number} ^a	(none)
,	0000093{zone-number}	(none)

Calling

Description	DTMF Code	Required CoS
Call {extension} speaker (intercom, auto-answer)	{extension}	Call Any Station
Call {extension} ringer (telephonic, ringing)	*{extension}	Call Any Station
Join conversation at {extension}	<pre>*#{extension}</pre>	Join Conversation
Call {extension} at {facility-page-number}	<pre>##*{facility-page-number}*{extension}</pre>	Inter-Facility Call/Page
Place long distance call with area code (AAA = Area code, NNNNNN = number)	981AAANNNNNN	Outside Access rights
Place local ten-digit call with area code	98AAANNNNNN	Outside Access rights
Place local seven-digit call	98NNNNNN	Outside Access rights
Place 911 emergency call	911	(none)
<i>Note:</i> Based on Station's 911 Route setting, call may be directed to Admin Station, PSTN-based 911, or denied.	98911	(none)
Place Emergency call to designated Admin station	****	(none)
Place call to PBX system (via SIP Trunk) by dialing {DTMF-codes}	***{DTMF-codes}	Outside Access rights
<i>Note</i> : {DTMF-codes} can be as simple as an extension number on the attached PBX system.		

Call Forwarding

Description	DTMF Code	Required CoS
Call Forwarding Menu	970 ^a	Call Forwarding
All-Calls (CFALL)	971{extension}	Call Forwarding
When Busy (CFBS)	972{extension}	Call Forwarding
When No Answer (CFNA)	973{extension}	Call Forwarding
When Busy or No Answer (CNBN)	974{extension}	Call Forwarding
Cancel Call Forwarding	975	Call Forwarding
Call Forwarding Status (Caller only)	976	Call Forwarding
Call Forwarding Status (All users)	977	Call Forwarding

a. The DTMF code can be terminated with a # symbol to avoid the 5-second delay while the DISA application waits for additional digits to be entered.

Call Parking/Call Pickup

Description	DTMF Code	Required CoS
Park call (during call)	#72	(none)
<i>Note:</i> To pick up a parked call, dial the parked call's extension (by default, extensions 21-29) that was provided when the call was parked using #72. The parking lot extensions can be changed at the Admin Web UI through System Parameters .		
Call pickup {extension} when ringing	7*{extension} ^a	Remote Pickup

Call Transfer

Description	DTMF Code	Required CoS
Blind transfer (during call)	#1{extension}	Call Transfer
Attended transfer (during call)	*1{extension}	Call Transfer
Complete attended transfer, dropping out of call	*2	Call Transfer
Complete attended transfer, but stay in the call	*3 ^a	Call Transfer
Swap to the other party (during attended transfer)	*4	Call Transfer
Transfer (drop) call from Speaker to associated Phone	*3 ^a	Call Transfer
Transfer (drop) call from Speaker to associated Phone	####	Call Transfer
Transfer call from Phone to associated Speaker	<pre>#1{speaker-extension}</pre>	Call Transfer

a. The DTMF code can be terminated with a # symbol to avoid the 5-second delay while the DISA application waits for additional digits to be entered.

Conferencing

Description	DTMF Code	Required CoS
Create/Enter Dynamic Conference {number}	**{number}	Conference Admin
		Conference User
<i>Note</i> : If the conference owner enters 0000 as the password, the conference will be deleted. If an Admin station user type enters 0000 as the password but is not the conference owner, the user will be prompted for the system password. If the correct system password is entered, the conference will be deleted.		
Start system playback of list of created conferences that includes the conference number and the extension that created the conference	**0	(none)

Monitoring/Recording

Description	DTMF Code	Required CoS
Monitor call or location at {extension}	978{extension} ^a	Monitor Calls/Locations
<i>Note:</i> Spy Mode monitoring cannot be used on a station that has been set to Privacy Mode.		
Enable "spy mode" (MUTE) during call monitoring	4	(none)
Enable "whisper mode" during call monitoring	5	(none)
Enable "barge mode" during call monitoring	6	(none)
Record Message (Announcement)	*990 ^a	All-Call Paging

Note: When you record an announcement by dialing *990 or by selecting **Record Announcement** on the Admin phone's **Announce** menu, the initial DTMF Code for the recorded and saved announcement will be set to the announcement's row ID. You can change the DTMF Code after the announcement is saved by editing the announcement in the web interface **Announcements** view.

The saved announcement has **Play to Zone** set to blank (no zone selected). This means that when you play an announcement via an IP phone **Announcement** menu selection, you will be asked to enter a zone number (where 0 = All Speakers). You can define a permanent zone number for the saved announcement by updating **Play to Zone** after the recorded announcement has been saved.

Playback recorded calls	999	Manage Recordings
MENU : 1–Emergency, 2–Monitored, 3–Urgent, 4– Standard		
Start/Stop recording (DTMF used during a call)	*3	Record Calls

Note: The "##" prefix is used to indicate multi-facility paging operations.

Description	DTMF Code	Required CoS
Multi-Site Emergency All-Call Page	##0911 ^a	Emergency All-Call
		Multi-Site Paging
Multi-Site All Call Page	##0	All-Call Paging
		Multi-Site Paging
Emergency All-Call Page	#0911 ^a	Emergency All-Call
Multi-Facility Emergency All-Call Page	<pre>##0912{facility-page-number}*{facility-page- number}</pre>	Emergency All-Call
		Multi-Site Paging
Emergency All-Call Page	951	Emergency All-Call
All-Call Page	#0 ^a	All-Call Paging
	#00	All-Call Paging
	000000	All-Call Paging
Real-time All-Call Page that belongs to a queue	#0* ^a	All-Call Paging
	0000001 ^a	All-Call Paging
Page to {zone}	#{zone} ^a	Zone Paging
	0000099{zone} ^a	Zone Paging
Real-time Page to {zone} that belongs to a queue	#{zone}* ^a	Zone Paging
All-Call Page to {facility-page-number}	<pre>##{facility-page-number}</pre>	Inter-Facility Call/Page

Paging (Continued)

Note: The "##" prefix is used to indicate multi-facility paging operations.

Description	DTMF Code	Required CoS
Multi-Facility All-Call Page	<pre>##{facility-page-number}*{facility-page-number}</pre>	Inter-Facility Call/Page
Zone Page to {zone-number} at {facility-page- number}	<pre>##{facility-page-number}#{zone-number}</pre>	Inter-Facility Call/Page
Real-time page to {zone-number} that belongs to a queue at {facility-page-number}	<pre>##{facility-page-number}#{zone-number}*</pre>	Inter-Facility Call/Page
Record page; system will prompt for Zone Number	*991	Zone Paging
Record page for {zone-number}	*991*{zone-number} ^a	Zone Paging
Cancel Recorded Page	*992	Zone Paging
<i>Note:</i> Only works if made from the same extension that created the recorded page.		
Cancel Recorded Page for {zone-number}	*992*{zone-number} ^a	Zone Paging
<i>Note</i> : Only works if made from the same extension that cre- ated the recorded page.		

a. The DTMF code can be terminated with a # symbol to avoid the 5-second delay while the DISA application waits for additional digits to be entered.

Voicemail

Description	DTMF Code	Required CoS
Voicemail for current caller	900	Voicemail
Voicemail for specified {extension}	904{extension}	Voicemail
Leave voicemail for specified {extension}	904{extension}*	Voicemail

Walking CoS

Description	DTMF Code	Required CoS
Current phone or station temporarily uses the CoS settings of the specified {extension}	3*{auth-code}*{extension}	Walking Class of Service
For {auth-code}, specify the Auth Code configured for {extension} or, if that is 0000, the Auth Code configured via the System Parameters.		
<i>Note</i> : If Auth Code is set to 0000 in the Admin Web UI's Sys- tem Parameters , this feature is disabled.		

Dial Codes Used for Simulating Calls to Admin Station from Station Call

Switches

Description	DTMF Code	Required CoS
Normal call to admin	0	(none)
<i>Note:</i> During the Check-In process, a Normal call starts the check-in process for a station.		
Emergency call to admin	*0	(none)
Urgent call to admin	*00	(none)
Outside line calling in (uses night-ring logic)	*000	(none)

Routines

Description	DTMF Code	Required CoS
Execute Routine with {routine-DTMF-code}	*94{routine-DTMF-code} ^a	Execute Routines
<i>Note</i> : Only routines with Allow DTMF can be executed from the Admin Phone.	0000094{routine-DTMF-code}	Execute Routines
Execute Routine with {routine-DTMF-code} specify- ing values for parameters \$cmdParam1 and \$cmd- Param2.	<pre>*94{routine-DTMF-code}* {cmdParam1}*{cmdParam2}</pre>	Execute Routine
	0000094{routine-DTMF-code}*	Execute Routine
<i>Note</i> : Only routines with Allow DTMF can be executed from the Admin Phone.	{cmdParam1}*{cmdParam2}	
Stop Routine with {routine-DTMF-code}	*95{routine-DTMF-code} ^a	Execute Routines
<i>Note:</i> If the Allow DTMF parameter for the specified routine is set to No , you will be prompted to enter the system password.	0000095{routine-DTMF-code}	Execute Routines

a. The DTMF code can be terminated with a # symbol to avoid the 5-second delay while the DISA application waits for additional digits to be entered.

Audio Distribution

Description	DTMF Code	Required CoS
Start Audio Distribution where {DTMF-code} is the DTMF code for the desired Audio Distribution	987*{DTMF-code} ^a	Audio Distribution
	00000987{DTMF-code}	Audio Distribution
Stop Audio Distribution where {DTMF-code} is the DTMF code for the desired Audio Distribution	980*{DTMF-code} ^a	Audio Distribution
	00000980{DTMF-code}	Audio Distribution
Stop ALL Scheduled Audio	920	Audio Distribution

Miscellaneous Dial Codes

Description	DTMF Code	Required CoS
Restart Nyquist system server	#*349	(none)
Note: User is prompted for System Password.		
Toggle Audio Distribution to associated speaker	*9 ^a	(none)
Disable Audio	0000097 ^a	Disable Audio
Enable Audio	0000098 ^a	Enable Audio
Stop Scheduled Audio	920	Audio Distribution
Close {contact-number} on I/O Controller {exten- sion}	942#{extension}#{contact-number}	Manage Output Contacts
<i>Note:</i> For example, dialing 942#120#1 closes contact number 1 on I/O Controller 120.		
Open {contact-number} on I/O Controller {extension}	943#{extension}#{contact-number}	Manage Output
<i>Note:</i> For example, dialing 943#120#1 opens contact number 1 on I/O Controller 120.		Contacts
Request a callback during a call	*7	Call Any Station
Cancel a callback request during a call	*8	Call Any Station
Request a callback from a specific extension	*7{extension} ^a	Call Any Station
Cancel a callback request from a specific extension	*8{extension} ^a	Call Any Station
Start Nyquist Features on Remote Facilities	<pre>##*{facility-page-number}*{feature-DTMF-digits}</pre>	Inter-Facility Features
Examples:		(none)
Start Announcement 1 on Facility 1	##*1*00000921	(none)
Start Audio Distribution 6 on Facility 5	##*5*000009876	(none)
Execute Routine 5 on Facility 10	##*10*00000945	(none)

Alternate Dialing Codes

If a PBX is not able to pass through the pound sign (or hashtag), #, in the dialing digits, alternative dialing codes may be used to replace Nyquist extensions that start with #.

Nyquist Feature	Dial Code	Alternative Dial Code
All-Call Page	#0	000000
Emergency All-Call Page	#0911	951
Zone Page	#{zone}	0000099{zone}
Start Alarm	*91{DTMF-code} ^a	0000091{DTMF-code}
Start Tone to zone	*96{DTMF-code}*{zone} ^a	0000096{DTMF-code}*{zone}
Start Tone to all Time-type zones	*96{DTMF-code}	0000096{DTMF-code}
Start Announcement	*92{DTMF-code}	0000092{DTMF-code}
Start Announcement to zone	*92{DTMF-code}*{zone} ^a	0000092{DTMF-code}*{zone}
Stop Announcement	*93{zone} ^a	0000093{zone}
Start Audio Distribution	987*{DTMF-code}	00000987{DTMF-code}
Stop Audio Distribution	980*{DTMF-code}	00000980{DTMF-code}
Start Routine	*94{DTMF-code}	0000094{DTMF-code}
Start Routine with parameters	<pre>*94{DTMF-code}* {cmdParam1}*{cmdParam2}</pre>	0000094{DTMF-code}* {cmdParam1}*{cmdParam2}
Stop Routine	*95{DTMF-code}	0000095{DTMF-code}
Restart Nyquist system server <i>Note:</i> User is prompted for System Password.	#*349	00000349

Appendix D: Routine Action Types

All Action types include the following parameters:

Table 150. Routine Common Parameters

Parameter	Description
Name	User-supplied name for the action.
Enabled	This action can only be executed if Enabled is Yes.
Туре	The routine action to execute.
Condition	Optional boolean condition statement (using PHP syntax) that determines whether or not the action should be executed. Blank always evaluates to True. See "Condition Statements" on page 467 for further details.
Description	User-supplied description of the action.

The following table describes the Routine Action Types and any Action-specific parameters.

Note: Parameters that can be overridden for Routines API calls via the <action>Params elements are described in Table 152, "Routine Action Parameter Overrides via Routines API v2," on page 597.

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Add-Announcement-Audio	Audio Source Type	Announcement to play		
Adds audio to a temporary announcement.		(depends on Audio Source Type)		
This must be preceded by a New-Announcement action followed by zero or more Add-Announcement-Audio actions and finally a Play- Announcement action	Announcement	 Announcement Selected announcement (announcement type in parentheses) 		
Announcement action. The following variables can be used for Number or Text-to- Speech announcements: \$apiParam1 \$apiParam2 \$called \$contact \$schedParam1 \$schedParam1 \$schedParam2 \$station • Tex	 Number Text-to-Speech 	Number • Numeric value • Variable Text-to-Speech (TTS) Text, with optional variables and TTS formatting (see "Using SSML for Text-to-Speech Entries" on page 320)	Force Announcement of Fraction (used only when Audio Source Type is Number) • No • Yes	 Announce number as (used only when Audio Source Type is Number): Numeric Digits
	• JSON-Uploaded-File	 Form-Field Parameter Name Name of the Routines API v2 parameter that specifies the audio file (mp3 or wav) to use, formatted as: {{audio.<label>}}</label> See "Routines API v2" on page 420 for details. 		

Table 151. Routine Action Type-Specific Parameters

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Alarm	Alarm Selected alarm 	None	 Duration Number of seconds for action to continue; default is 86400 seconds (24 hours) 	None
All-Call <i>Note:</i> All-Call must be the last action in a routine.	None	None	None	None
Announcement	 Announcement Selected announcement (announcement type in parentheses) 	ZoneAll speakersSelected zone	 Number of seconds for action to continue; default is 86400 seconds (24 hours) <i>Note:</i> The announcement will stop when the duration length is reached, regardless of the length of the announcement. 	None
Audio-Dist-Start	 Audio Distribution Selected Audio Distribution 	None	None	None
Audio-Dist-Stop	 Audio Distribution Selected Audio Distribution All 	None	None	None

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Call-And-Announce	Number to Call	Announcement to Play	Play Count	None
	• 911	Selected announcement	Continuous Play	
	Station Extension		Number of times to play	
	A local 7-digit phone number prefixed with 98		<i>Note</i> : If left blank or set to zero (0), the announcement	
	A local 10-digit phone number prefixed with 98		plays continuously until the called number hangs up. If	
	 A long distance 10-digit phone number prefixed with 981 		announcement to a station that cannot disconnect the call (such as a speaker), spec-	
	<i>Note:</i> If the specified number to call is not a station exten- sion, then at least one outgo- ing SIP trunk or Outside Line DAHDI port must be available, and the CoS of the Routine extension must match the extension defined by the SIP trunk or Outside Line DAHDI port.		play the announcement.	
Change-Setting	Selected Setting	New Value		
	Disable Emergency All-Call and Intercom when Audio Disabled	The new value for the Selected Setting .		
	Enable Callback Request Indicator			
	Night Ring Admin			
	Night Ring Enabled			

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Change-Volume	Audio Type	Zone	Cut Level (dB)	None
Tip:To change the cut level for multiple Audio Types and/or Zones in a Routine, add a Change- Volume action for each.Tip:To change the cut level at a specific time (or on a recurring schedule), create a Scheduled Routine that calls the Change-Volume action.	 All-Call Audio Distribution Emergency-All-Call Zone Paging 	 (available options determined by specified Audio Type) All Speakers All Speakers One of a list of Audio zones All Speakers One of a list of Paging and Time-type zones 	A value between -42 and 0 dB. If a Cut Level Type of "Cut Level" is specified, the cut level value is specified (in dB) via a slide control. If a Cut Level Type of "API Value" is specified, select either: • \$apiParam1 or • \$apiParam2. The actual cut level (in dB) will be determined by the value of the selected variable when this action is executed via a Routines API call.	
Change-WBC-Setting	Stations • All Displays • List of WBC station extension numbers <i>Tip:</i> WBC settings can be cha "bell" schedule and/codisplays after hours (Marine Brightness = Low, Meditive Schedule and Schedule	 Field to change Enable Clock Display Clock Time Format Show Clock Seconds Enable Flasher Use Message LED Brightness Flasher LED Brightness 	New value for specified field Select a new value for the specified <i>Field to change</i> . Available values are deter- mined by the selected field.	v executing a routine as part of ne could turn off all WBC LED xt day starts (Message LED

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Check-In	Check In	Stations	Finish Delay	None
Cneck-In	 Start Stop Done Finish Wait (see "Check-In Action Type with Check-In Set to Wait" on page 453) Station 	• Selected Stations • Selected Stations Note: Used when Parameter 1 (Check In) is Station, Vacancy- Add, Vacancy-Delete, Exclude-Add, or Exclude- Delete.	 No-Delay Wait-Until-Done No-Delay means the next action will execute immediately. Wait-Until-Done means the next action will not execute until this action has completed. 	None
	 Vacancy-Add Vacancy-Delete Reset Exclude-Add Exclude-Delete 			
Check-Intercom	None	None	None	None

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Dash-Delete	Dash Delete			
This action type is for deleting	LIFO (Last In, First Out)	None	None	None
face dashboard.	• FIFO (First In, First Out)	None	None	None
The number used for Number is based on the order the message was created; the third message created would be identified as number 3.	• IDENT	Identifier The following variables can be used: \$apiParam1 \$apiParam2 \$caller \$called \$contact \$deviceMacAddr \$facility \$eventid \$eventname \$schedParam1 \$schedParam2 \$schedParam2 \$schedParam2 \$schedParam2 \$scheduleid \$toneid \$toneid \$tonename \$user_var[110] \$zone	None	None
	Number	Number	None	None

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Dash-Text	Style	Identifier	Scope	Text
This action type is for adding messages to web interface dashboards.	 Basic Danger Info Success Warning 	The following variables can be used: \$apiParam1 \$apiParam2 \$caller \$called \$contact \$deviceMacAddr \$facility \$eventid \$eventname \$namecalled \$namecalled \$namecaller \$schedParam1 \$schedParam2 \$schedParam2 \$scheduleid \$station \$toneid \$tonename \$user_var[110] \$zone Note: This parameter is optional and is used to identify a message for deletion.	• All • Admin	The following variables can be used: \$apiParam1 \$apiParam2 \$schedParam1 \$schedParam2 \$caller \$called \$contact \$cputemp \$date1 \$date2 \$date3 \$deviceMacAddr \$deviceName \$df-avail \$facility \$eventid \$eventname \$namecaller \$namecalled \$scheduleid \$scheduleid \$scheduleid \$toneid \$tonename \$toneid \$tonename \$station \$time1,\$time2 \$uptime \$user_var[110] \$zone
	<i>Note:</i> When specifying the text dashboard and NQ-GA10PV dis calls are placed from outside the	to display, you can use variables, splay messages, the variable is re ne system, it displays the phone n	such as \$caller. When \$caller is placed by the ID of the caller tha umber of the caller.	used in the Text parameter for t triggered the routine. When
Disable Audio Note: In addition to the parameters, you can also set a Finish Delay, of either No- Delay or Wait-Until-Done	None	None	None	None

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Display-Msg	Zones	Identifier	Stations	Device Type Filter
Display a message on the NQ-GA10PV and/or NQ-S1810WBC display.	 All Displays Selected zone or zones 	Note: This parameter is optional and is used to iden- tify a message for deletion. The following variables can be used as part of the identifier value: \$apiParam1 \$apiParam2 \$caller \$called \$contact \$deviceMacAddr \$tonename \$facility \$eventid \$eventname \$schedParam1 \$schedParam2 \$scheduleid \$station \$user_var[110] \$zone	 Selected NQ-GA10PV or NQ-S1810WBC station \$called \$caller Note: Using the \$called variable allows a single Intercom-call triggered routine to handle all NQ-GA10PV and NQ-S1810WBC displays. 	 GA10PV and WBC GA10PV Only WBC Only Note: To display weather alert notices on NQ-ZPMS devices, specify any Device Type Filter value and include the POST_DASH_PHONE_TEXT parameter in the \$alerts function (see "POST_DASH_PHONE_TEXT" on page 543). Text (see description below) Priority 6 = Fullscreen on GA10PV 5 = Exclusive on GA10PV 5 = Exclusive on GA10PV 1-4 0 = Lowest Display Time (seconds) 0–99999 Message Type Text Image JSON-Uploaded-Image

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Display-Msg (cont'd)				Device Type Filter
				 GA10PV and WBC GA10PV Only WBC Only To display weather alert notices on NQ-ZPMS devices, specify any Device Type Filter value and include the POST DASH_PHONE_TEXT parameter in the \$alerts function (see "POST_DASH_PHONE_TEXT" on page 543).
				GA10PV Background Color
				GA10PV Font
				GA10PV Font Size
				GA10PV Font Color
				GA10PV Font Styles
				WBC Flasher Pattern
				 No Change Off Slow Fast Double Triple Quad
				WBC Number of Flasher Pattern Cycles
				Zero (0) turns the flasher on
				for the duration of the mes-
				sage.

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4		
Display-Msg (cont'd)				WBC Flasher Color		
				 Amber Blue Green Orange Red Violet White 		
				Yellow		
				Image Priority		
				Text Over Image		
				Image Over Text		
				Form Field Parameter Name		
				The name of the Routines API v2 HTTP POST element con- taining the image to be dis- played.		
	The Display-Msg Action Type a background color, font, font siz Color in Display Messages" on p	allows you to set the message tex e, font color, font styles), and mc page 492.	t or image, display time (in secon ore. For further information about	ids), priority, style settings (e.g., message settings, see <i>"Using</i>		
	You also have the option to select a Message Template , which will initialize many of the Display-Msg parameters with preset values to use as a starting point for your message. The template selected can be of type Text or Image. For further information about defining and using Message Templates, see "Managing Display Messages" on page 485.					
	Caution Be aware that specifying part of the action), but i settings that you may ha Message Template for	g a Message Template does not asso is only used to <i>initialize</i> the settings f ave already specified, such as the Tex a previously defined action.	ciate the current action with that tem or this action. This also means that s t or Identifier properties (among oth	plate (and will not be persisted as electing a template can override ers). Use caution when selecting a		
	<i>Tip:</i> You can use this Action T <i>ting Variables for the Disp</i>	<i>Tip:</i> You can use this Action Type to create a routine for displaying emergency alerts from the National Weather Service (NWS). See <i>"Set-ting Variables for the Display Message" on page 535</i> for descriptions about the variables used in an Alerts routine.				
	<i>Note</i> : Be aware that the Display Ti ndiately and the routine proceeds to plan to use Display-Msg-Delete to	me (seconds) setting causes the me the next action. You can use the Pau o explicitly delete a displayed messad	ssage to display for that length of tim se action if you want the routine to pa ge, set Display Time (seconds) to 0	ne, but the action completes imme- ause for a specified duration. If you (i.e., do not automatically delete		

message).

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4	
Display-Msg (cont'd)	When entering the text to display, you can use variables, such as \$caller. When \$caller is used in the Text parameter for dashboard and NQ-GA10PV or NQ-S1810WBC display messages, the variable is replaced by the ID of the caller that triggered the routine. When calls are placed from outside the system, it displays the phone number of the caller.				
	On the NQ-GA10PV, you can al	so use basic HTML tags, such as:			
	 for bold <i> for italic </i> <u> for underline </u> 				
	Includes the following fields, wh	nich were entered when the Actio	n was created:		
	 Display Time ⁺Priority Text to display Text style settings ⁺ Priority of 5 (Exclusive) is disabled when Me The Text field may use any of the fc \$alerts \$apiParam1 \$apiParam2 *\$autofontcolor 	 Message type Image type Image priority Message image essage Type is Image. bllowing variables (availability determ *\$calltypeshort *\$calltypelong \$contact \$contact \$cputemp \$date1	nined by initiating trigger): \$eventid \$eventname \$facility \$namecalled \$namecaller	\$station \$time1 \$time2 \$tonenid	
	*sautoronicolor \$autopriority \$auto_resize \$caller \$called *\$calltypechar	\$date1 \$date2 \$date3 \$deviceMacAddr \$deviceName \$df-avail	\$namecaller \$schedParam1 \$schedParam2 \$scheduleid \$schedulename	\$tonename \$uptime \$user_var[110] \$weather \$zone	
	 * Available only for emergency-call and urgent-call triggers <i>Tip:</i> To completely blank out an NQ-GA10PV screen, display a message using the Solid-Black (1920×1080) image, which is available by default. This can be used to "turn off" an NQ-GA10PV display such that it will not display a message or the clock (i.e., completely black). The Image Type must be set to Full Screen. To ensure no other messages will display during this message duration, specify a Priority of 6 (Fullscreen on GA10PV). 				

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Display-Msg-Delete	Display Message Delete			
Note: NQ-GA10PV and	• LIFO	None	None	None
NQ-S1810WBC Display Messages created by a Routine	• FIFO	None	None	None
Messages created by a Routine that expires during the Routine's execution remain in the undeleted messages list until deleted with a Display-Msg- Delete action. When using LIFO , FIFO , or NUMBER to delete display messages, you will still need to execute a Display-Msg- Delete command for any display messages that have expired during the Routine's execution.	• IDENT	Identifier The following variables can be used: \$apiParam1 \$apiParam2 \$caller \$called \$contact \$deviceMacAddr \$facility \$eventid \$eventname \$schedParam1 \$schedParam2 \$schedParam2 \$schedUleid \$station \$toneid \$tonename \$user_var[110] \$zone	None	None
	• PARAM	Zones	Stations	None
		Note: This field is optional.	Note: This field is optional.	
	NUMBER	Number	None	None

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Email	Send Email To	Subject	Text	None
<i>Note:</i> In addition to the parame- ters, you can also set a Finish	Specifies a comma-delimited list of email addresses.	The following variables can be used:	The following variables can be used:	
Delay, of either No-Delay or Wait-Until-Done.	Maximum length of string is 2048 characters.	\$apiParam1 \$apiParam2 \$caller	\$apiParam1 \$apiParam2 \$caller	
	Note: To use this parameter to send a text message to a cell- phone, see "Using Email Action to Send Text Message" on page 451.	<pre>\$called \$contact \$cputemp \$date1 \$date2 \$date3 \$deviceMacAddr \$deviceName \$df-avail \$facility \$eventid \$eventname \$namecaller \$namecaller \$namecalled \$schedParam1 \$schedParam2 \$schedUename \$station \$time1 \$time2 \$toneid \$tonename \$uptime \$user_var[110] \$zone Note: The availability of vari- ables is based on the trigger type.</pre>	<pre>\$called \$contact \$cputemp \$date1 \$date2 \$date3 \$deviceMacAddr \$deviceName \$df-avail \$facility \$eventid \$eventname \$namecaller \$namecaller \$namecalled \$schedParam1 \$schedParam2 \$schedUename \$station \$time1 \$time2 \$toneid \$tonename \$uptime \$user_var[110] \$zone Note: The availability of vari- ables is based on the trigger type.</pre>	
Emergency-Call	Placed by	None	None	None
	Calling Station			
	Selected Station			
	<i>Note:</i> If Calling Station is used, this action must be the last action in the routine and must be executed via DTMF code.			

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Emerg-All-Call	None	None	None	None
<i>Note:</i> This action must be the last action in a routine.				
Enable-Audio	None	None	None	None
<i>Note</i> : You can set a Finish Delay , of either No-Delay or Wait-Until-Done .				
Facility-Announcement	Announcement	Facilities	None	None
	 Non-continuous announcement to be played (announcement type in parentheses) 	 One or more facilities at which the announcement will be played 		
Facility-Page	Facilities	None	None	None
<i>Note:</i> This action must be the last action in a routine.	 Facilities to be paged (maximum of 25) 			

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4		
Feature-Wait	Feature Wait	Maximum Wait Time	None	None		
	• 911	Number of seconds to wait for feature to com- plete; default is 86400 sec- onds (24 hours)				
<i>Note:</i> 911 waits for the cific caller to disconne	<i>Note:</i> 911 waits for the spe- cific caller to disconnect.					
	 Alarm Announcement All-Call Disable-Audio Emerg-All-Call Facility-Page Note: Facility-Page should only be used when the trigger is also Facility-Page. 	<i>Note:</i> A value of 0 means to wait until the feature has completed regardless of the time it takes to complete. <i>Note:</i> If the feature is not active, the routine continues to the next action.				
	Multi-Site-All-Call					
	Multi-Site-E-All-Call					
	• Tone					
	Zone-Page					
Goto	Routine Action					
	The Goto action can be used to change the flow of Action execution in a Routine.					
	The Goto action can also be used to cause the Routine to repeat (loop) by adding a Goto Action at the end of the Routine and selecting the first Action in the Routine as the Routine Action to go to.					
	The Condition field of the Goto action can be used to conditionally execute the Goto.					
	Caution If you create a loop that causes the Routine to repeat all Actions until the Routine is stopped, please ensure that the loop does not put too much burden on the Nyquist server by aggressively repeating actions that are time consuming. If several aggressive Routines are started on the server, they could negatively impact system and audio performance. If Routines aggressively send Display messages to GA10PV devices, audio performance on the GA10PV could be negatively impacted.					

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Intercom-Call	 Placed by Calling Station Selected station Note: If Calling Station is used, this action must be the last action in the routine and must be executed via DTMF code. 	Received byStation that received the call	None	None
Intercom-Wait Note: This action can be used to wait for an Intercom Call to be disconnected or for the end of a Real-Time (not queued) Zone Page by caller.	None	None	None	None
Log-Text This action can be used to log user-supplied text to the Rou- tines log file: nyquist_rou- tines.log. This file can be viewed via System Logs under the Nyquist E7000 category. Note: Similar functionality is also available via the log- Text() function, for use within CODE: segments (see "Logging Functions" on page 473).	Text to log The text supplied in the Text field will be logged. The text can include the same variables that are available to the Dash-Text action's Text field (excluding the \$date# and \$time# variables, as log entries already contain a timestamp). A maximum of 4095 charac- ters can be entered as text to log. Note: Single-quote and dou- ble-quote characters are automatically removed and not included in the log out- put.	None	None	None
Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
--	--	---	--	---
Multi-Site-All-Call Note: This must be the last action in a routine.	None	None	None	None
Multi-Site-E-All-Call Note: This must be the last action in a routine.	None	None	None	None
New-Announcement Creates a temporary announcement to be played by the routine. This must be followed by at least one Add-Announce- ment-Audio actions and a Play-Announcement action.	Announcement TypeEmergencyNormal	ZoneSelected zone numberAll speakers (0)	 Number of times to play announcement Number of times to play (1–60) 	 Silence time between repeats (seconds) Decimal number between 0.5 and 10.0
No-Action	None	None	None	None
Output-Contact-Close	 IO Controller Selected IO Controller API-Specified <i>Note</i>: A selected I/O controller can be overridden by the API but will be used if the API call does not specify. 	 Output Contacts Selected output contact or contacts API-Specified <i>Note</i>: The selected contacts can be overridden by the API but will be used if the API call does not specify. 	 Duration Number of seconds for action to continue <i>Note:</i> Duration of zero (0) will cause the contact or contacts to momentarily close. Leaving Duration blank will cause the contact to stay closed; use Output-Contact-Open to reopen the contact. 	None
Output-Contact-Open	IO ControllerSelected IO ControllerAPI-Specified	 Output Contacts Selected output contact or contacts API-Specified 	None	None

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Page-Exclusion	Page Exclusion	Stations	None	None
	• Add	Selected station or sta-		
	• Delete	tions		
Pause	Duration	None	None	None
<i>Note:</i> If pausing is used in a DTMF-based routine that ends with paging, the page will not start until all pauses have been executed. If a DTMF-based routine does not end in a page, the call will not disconnect until all pauses have been executed.	 Number of seconds to pause 			
Play-Announcement	None	None	None	None
<i>Note:</i> This must be preceded by a New-Announcement action and at least one Add- Announcement-Audio actions.				
Play-Ringtone	Action	Zones	Timeout (seconds)	
Note: Using this action type	• Start	All speakers	Note: Blank or 0 means no	
will not trigger a routine that has a night-ring trigger.	• Stop	Selected zone	timeout.	
Ring-Wait	None	None	None	None
<i>Note:</i> Waits for caller's ring to end.				

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Routine	Routine	Facility	None	None
Note: In addition to the	Selected Routine	• Local		
parameters, you can also set a Finish Delay , of either No-	Routine DTMF	Selected Facility		
Delay or Wait-Until-Done.	DTMF of Routine to	All Facilities		
All trigger parameters and trigger types from the selected routine pass to the new routine so both routines have the same trigger con- text.	execute on remote Facilities			
Routine-Disable	Routine	None	None	None
<i>Note</i> : If the routine that invokes this action does not execute for any reason (e.g., the server is down), the selected routine will <i>not</i> be disabled, even after the server resumes.	Selected routine			
Routine-Enable	Routine	None	None	None
<i>Note</i> : If the routine that invokes this action does not execute for any reason (e.g., the server is down), the selected routine will <i>not</i> be enabled, even after the server resumes.	Selected routine			
SM-Disable-Zone	Sound Masking Zone	None	None	None
	All Sound Masking Zones			
	Selected zone			
SM-Enable-Zone	Sound Masking Zone	None	None	None
	All Sound Masking Zones			
	Selected zone			

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
SM-Scheduled-Ramp	Sound Masking Zone	Volume Adjustment	Ramp Duration (minutes)	Range (dB)
	All Sound Masking Zones	• Down	• 60	• 5
	Selected zone	• Up	• 120	• 10
SM-Set-Output-Gain	Sound Masking Zone	Output Gain (dB)	None	None
	All Sound Masking Zones	A value between -30 and 0		
	Selected zone	dB.		
Stop-Announcement	Zone	None	None	None
	 All Speakers (stop an announcement that is playing to All Speakers) Selected zone 			
Tone	Tone	Zone	Duration	None
<i>Note:</i> In addition to the parameters, you can also set a Finish Delay , of either No-Delay or Wait-Until-Done .	Selected tone	• Selected zone All zones of type Time	 Number of seconds for action to continue; default is 86400 seconds (24 hours) 	
Urgent-Call	Placed by	None	None	None
	Calling Station			
	Selected Station			
	<i>Note:</i> If Calling Station is used, this action must be the last action in the routine and must be executed via DTMF code.			

Webhook-Post POST command None None None Sends an HTTP(S) POST request to a specified URL via a specified UrL (or wget) command. The curl (or wget) POST requests to be executed by this action. In the curl (or wget) POST requests. The external system defines the actions and procedures on external systems that support incoming. Mot: The specified value can wget commands. The Webhook-Post Routine Action can be used to execute actions and procedures on external system to its made to a speci- fied URL with specified data. The target URL address and any related data is specified by the external system to send the HTTP POST requests to the external system for whatever purpose, as defined by the external system to send the HTTP POST request to generate the HTTP POST request to a webhook. Site service. (Visit https://webhook.site to generate your own unique webhook URL that can be used to receive and view requests): curlrequest POST -H "Content-Type: application/json"data '{"header": "Bogen Nyquist Alert", "title": "Lockdown": "A Lockdown has been initiated."}' -H "x-api-key: cservice-api-keys" https://webhook.site/ 7afcar16-:51a-db37-2bac-bb8052c4fa99 The following example will execute the Nyquist routine configured for DTMF 15 via the Routine API on server cservery: curlcacert /etc/apache2/ssl/bagenCA.crtssl-no-reveke -H "Accept: apilcation/json" -H "Content-Type: application/json" -H "Content-Type: applicat	Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4		
Sends an HTTP(S) POST request to a specified URL via a tion. The ucul (or wget) POST request to be executed by this action. Note: The specified value can execute only the curl and wget commands. The Webhook-Post Routine Action can be used to execute actions and procedures on external systems that support incoming HTTPS POST requests. The external system defines the actions that will be taken when a specified HTTP POST is made to a spec- fied URL with specified data. The target URL address and any related also specified by the external system. The Myquist system to send the HTTPS POST request to the external system for whatever purpose, as defined by the external system to send the HTTPS POST request to up envare the HTTP POST request that is sent to the external system. The Nyquist system uses the curl command to generate the HTTP POST request that is sent to the external system. The Nyquist system view the curl command to generate the HTTP POST request that are used to receive and view requests): curlrequest POST -H "Content-Type: application/json"data '{header": "Bogen Nyquist Alert", "title": "lockdown", "body": "A lockdown has been initiated."}'' -H "x-api-key: cservice-api-keys" https://webhook.site/ 7afca7i6-551-ab37-9edc-bb8b95/dFa98 The following example will execute the Nyquist Routine configure dor DTMF 15 via the Routine API on server cserver >: curlcacert /sfc/apache2/s51/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see:	Webhook-Post	POST command	None	None	None		
Note: The specified value can https://webhook.rboit Routine Action can be used to execute actions and procedures on external systems that support incoming weet commands. https://webhook.rboit Routine Action can be used to execute actions and procedures on external systems that support incoming https://webhook.rboit Routine Action can be used to execute actions and procedures on external systems that support incoming https://webhook.site ifed URL with specified data. The target URL address and any related data is specified by the external system. The defined infor- mation can then be used via the Nyquist Webhook-Post action to cause the Nyquist system to send the HTTP POST request that is sent to the external system. The byoatist system to send the HTTP POST request that is sent to the external system. The following example sends an HTTP POST request to a webhook. site service. (Visit https://webhook.site to generate your own unique webhook URL that can be used to receive and view requests): curlrequest POST - # "Content-Type: application/json"data '{"header": "Bogen Nyquist Alert", "title": "Lockdown", "body": 'A lockdown has been initiated."}' -# "x-api-key: cservice-api-key>" https://webhook.site/ 7afca716-551a-4b37-9e4c-bb88b9c4fa99 The following example will execute the Nyquist routine configured for DTMF 15 via the Routine API on server cserver>: curlcacert /etc/apache2/ss1/bogenCA.crtss1-no-revoke -# "Accept: application/json" -# "Content-Type: application/json" -# "Authorization: Bearer 24f78e9392d475413855c2478575a5e" https://cservers/routine/api/15/ 0/1/4/0 No	Sends an HTTP(S) POST request to a specified URL via a specified curl (or wget) command	The curl (or wget) POST request to be executed by this action.					
The following example sends an HTTP POST request to a webhook. site service. (Visit https://webhook.site to generate your own unique webhook URL that can be used to receive and view requests): curlrequest POST -H "Content-Type: application/json"data '{"header": "Bogen Nyquist Alert", "title": "Lockdown", "body": "A lockdown has been initiated."}' -H "x-api-key: <service-api-key>" https://webhook.site/ 7afca716-551a-4b37-9e4c-bb08b9c4fa09 The following example will execute the Nyquist routine configured for DTMF 15 via the Routine API on server <server>: curlcacert /etc/apache2/ssl/bogenCA.crtssl-no-revoke -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Bearer 24f78e9392d4754138555c2470575a5e" https://<server>/routine/api/15/ 0/1/0/0 Note: If the command will access the Nyquist Routine API, the requisite Bogen Certification Authority (CA) CertifiCate file can be accessed on the Nyquist server at: /etc/apache2/ssl/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget.1 Tip: If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).</server></server></service-api-key>	<i>Note:</i> The specified value can execute <i>only</i> the curl and wget commands.	The Webhook-Post Routine Action can be used to execute actions and procedures on external systems that support incoming HTTPS POST requests. The external system defines the actions that will be taken when a specified HTTP POST is made to a specified URL with specified data. The target URL address and any related data is specified by the external system. The defined information can then be used via the Nyquist Webhook-Post action to cause the Nyquist system to send the HTTPS POST request to the external system for whatever purpose, as defined by the external system. The Nyquist system uses the curl command to generate the HTTP POST request that is sent to the external system.					
curlrequest POST -H "Content-Type: application/json"data '{"header": "Bogen Nyquist Alert", "title": "Lockdown", "body": "A lockdown has been initiated."}' -H "x-api-key: <service-api-key>" https://webhook.site/ 7afca716-551a-4b37-9e4c-bb08b9c4fa09 The following example will execute the Nyquist routine configured for DTMF 15 via the Routine API on server <server>: curlcacert /etc/apache2/ssl/bogenCA.crtssl-no-revoke -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Bearer 24f78e9392d4754138555c2470575a5e" https://cserver>/routine/api/15/ 0/1/0/0 Note: If the command will access the Nyquist Routine API, the requisite Bogen Certification Authority (CA) Certificate file can be accessed on the Nyquist server at: /etc/apache2/ssl/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 Tip: If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).</server></service-api-key>		The following example sends an own unique webhook URL that	HTTP POST request to a webhoo can be used to receive and view	k.site service. (Visit https://w requests):	ebhook.site to generate your		
The following example will execute the Nyquist routine configured for DTMF 15 via the Routine API on server <server>: curlcacert /etc/apache2/ssl/bogenCA.crtssl-no-revoke -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Bearer 24f78e9392d4754138555c2470575a5e" https://cserver>/routine/api/15/0/1/0/0 Note: If the command will access the Nyquist Routine API, the requisite Bogen Certification Authority (CA) Certificate file can be accessed on the Nyquist server at: /etc/apache2/ssl/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 Tip: If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).</server>		curlrequest POST -H "Content-Type: application/json"data '{"header": "Bogen Nyquist Alert", "title": "Lockdown", "body": "A lockdown has been initiated."}' -H "x-api-key: <service-api-key>" https://webhook.site/ 7afca716-551a-4b37-9e4c-bb08b9c4fa09</service-api-key>					
curlcacert /etc/apache2/ssl/bogenCA.crtssl-no-revoke -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Bearer 24f78e9392d4754138555c2470575a5e" https://cserver>/routine/api/15/ 0/1/0/0 Note: If the command will access the Nyquist Routine API, the requisite Bogen Certification Authority (CA) certificate file can be accessed on the Nyquist server at: /etc/apache2/ssl/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 Tip: If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).		The following example will execute the Nyquist routine configured for DTMF 15 via the Routine API on server <server>:</server>					
Note: If the command will access the Nyquist Routine API, the requisite Bogen Certification Authority (CA) Certificate file can be accessed on the Nyquist server at: /etc/apache2/ss1/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 Tip: If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).		curlcacert /etc/apache2/ssl/bogenCA.crtssl-no-revoke -H "Accept: application/json" -H "Content-Type: application/json" -H "Authorization: Bearer 24f78e9392d4754138555c2470575a5e" https:// <server>/routine/api/15/ 0/1/0/0</server>					
 /etc/apache2/ss1/bogenCA.crt. Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 Tip: If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples). 		<i>Note</i> : If the command will access the Nyquist Routine API, the requisite Bogen Certification Authority (CA) certificate file can be accessed on the Nyquist server at:					
Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see: https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 <i>Tip:</i> If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).		/etc/apache2/ssl/bogenCA.crt.					
 https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 <i>Tip:</i> If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples). 		Important: The specified curl or wget command will execute on the Nyquist system and, therefore, must comply with the Debian syntax and implementation of the command. For details, see:					
<i>Tip:</i> If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).		 https://manpages.debian.org/buster/curl/curl.1 https://manpages.debian.org/buster/wget/wget.1 					
		<i>Tip:</i> If testing curl commands using a Windows Command Prompt, be aware that it uses different syntax from Debian Linux Bash, such as different quoting rules. You may want to use the Windows Subsystem for Linux (WSL) to test compatibility. Alternatively, use a PowerShell command prompt which, although not identical, is more similar to Bash (e.g., it supports single-quoted strings, as shown in the previous examples).					

Routine Action Type	Parameter 1	Parameter 2	Parameter 3	Parameter 4
Zone-Page	Zone	None	None	None
<i>Note:</i> This must be the last action of the routine.	Selected zone			
Dashboard messages created during the routine will be deleted when the user dis- connects the call.				

Some Routine Action parameters can be overridden via the Routines API v2. The following table indicates the names and values that can be used to override Action parameters. For details on specific actions or parameters, see Table 151, "Routine Action Type-Specific Parameters," on page 576. For information about using the API, see *"Routines API v2" on page 420*.

Note: To indicate which Action is being overridden, the JSON object must specify the Action's name via the object's name property, which corresponds to the Name of the Action being overridden. Because the Name is not actually overridden, it is not specified here.

Table 152. Routine	Action Parameter	Overrides via Routines API v2
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Action(s)	Action Field Name Label	JSON Field Name	Valid Values
Alarm		alarmParams	
	Alarm	alarmDTMF	DTMF or Name from Tones list
		or	
		alarmName	
	Duration (seconds)	duration	
Announcement		announcementParams	
	Announcement	announcementDTMF	DTMF or Name from Announcements list
		or	
		announcementName	
	Zone	announcementZone	0 = All speakers
			# = Number from list of Zones that include Paging zone type

Action(s)	Action Field Name Label	JSON Field Name	Valid Values
	Duration (seconds)	duration	
Display-Msg		displayMsgParams	
	Zones	zones	
	Stations	stations	
	Device Type Filter	deviceTypeFilter	0 = GA10PV and WBC 1 = GA10PV Only 2 = WBC Only
	Text	text	
	Priority	priority	0–6
			5 = Exclusive on GA10PV
			6 = Fullscreen on GA10PV
	Display Time (seconds)	displayTime	0–99999
	Image Туре	imageType	• full
			• left
			• right
	Image Priority	imagePriority	• text
			• image
	WBC Flasher Pattern	wbcFlasherPattern	• no-change
			• off
			• slow
			• fast
			• double
			• triple
			• quad
	WBC Number of Flasher Pattern Cycles	wbcFlasherCycles	0–99999
			0 = keep flasher on

Table 152. Routine Action Parameter Overrides via Routines API v2

Action(s)	Action Field Name Label	JSON Field Name	Valid Values
	WBC Flasher Color	wbcFlasherColor	• amber
			• blue
			• green
			• orange
			• red
			• violet
Emergency-Call		emergencyCAllParams	
	Placed By	placedBy	
Intercom-Call		intercomCallParams	
	Placed By	placedBy	
	Received By	receivedBy	
New-Announcement		newAnnouncementParams	
	Announcement Type	type	• normal
			• emergency
	Zone	zone	Number from Zones web page
	Number of Times to Play Announcement	numTimesToPlay	1–99
	Times Between Repeats (seconds)	timeBetweenRepeats	1–10
Output-Contact-Close	2	outputContactCloseParams	
and		and	
Output-Contact-Open	1	outputContactOpenParams	
	IO Controller	ioController	
	Output Contacts	outputContacts	
	Duration (milliseconds)	duration	0 = momentary closure
	(Output-Contact-Close only)		blank = stay closed

Table 152. Routine Action Parameter Overrides via Routines API v2

Action(s)	Action Field Name Label	JSON Field Name	Valid Values
Tone		toneParams	
	Tone	toneName	
		or	
		toneDTMF	
	Zone	toneZone	0 = All Time Zones
			1–99999
	Duration (seconds)	duration	
Urgent-Call		urgentCallParams	
	Placed By	placedBy	

Table 152. Routine Action Parameter Overrides via Routines API v2

Appendix E: Routine Trigger Types and Parameters

The following table describes each **Trigger Type** and its applicable parameters.

Table 153. Routine Trigger Types and Parameters

Routine Trigger Type	Parameter 1	Parameter 2
911	None	None
AF-Primary-*	None	None
For details, see Table 22, "Failover Event Routine Triggers," on page 89.		
AF-Secondary-*	None	None
For details, see Table 22, "Failover Event Routine Triggers," on page 89.		
Alarm	Alarm	None
	Selected alarm	
	• Any	
All-Call	None	None
Amp-Protection-Mode	Selected device(s)	None
Routines with this trigger will execute whenever a selected ampli-	• Any	
fier device goes into protection mode.	 Selected device(s) 	
	<i>Note:</i> Up to 19 devices may be selected. If more are needed, create additional triggers for the addition devices.	

Routine Trigger Type	Parameter 1	Parameter 2
Announcement	Announcement type	
	• Any	None
	Number	Announcement
	Normal-Any	None
	Normal-Zone	Zone
		All Speakers
		Any Zone
		Selected Zone
	Emergency-Any	None
	Emergency-Zone	Zone
		All Speakers
		Any Zone
		Selected Zone
Audio-Dist	Audio Distribution Command	Audio Distribution Selection
<i>Note:</i> The routine must have an extension defined and Use Caller's Extension must be set to No .	• Start	• Any
	• Stop	Selected Audio Distribution
<i>Tip:</i> If you want to trigger on a Scheduled Audio that uses a playlist, make the playlist an Audio Distribution selection and then schedule the Audio Distribution instead of the playlist.		
Audio-Disabled	None	None
Audio-Enabled	None	None

Routine Trigger Type	Parameter 1	Parameter 2
Check-In	Check In	Stations
<i>Note:</i> Done indicates that all stations that were expected to check in have done	• Start	• Any
so. Finished indicates that the check-in process was manually finished by an admin user at the completion of check-in.	• Stop	Selected station or stations
	• Done	
	Finished	
	• Reset	
Emergency-Call	Callers	Called
<i>Note:</i> When both Callers and Called are specified, the trigger occurs when an intercom call involves a specified caller OR a specified called party.	• Any	• Any
	Selected station or stations	Selected station or stations
Emerg-All-Call	None	None
Facility-Page	Facility	None
	• Any	
	 Selected facility number(s) 	
	<i>Note</i> : A maximum of 25 facilities may be selected.	
Facility Status Down	Facility	None
<i>Note:</i> The routine must have an extension defined and Use Caller's Extension must be set to No.	• Any	
<i>Note:</i> If displaying messages, delete messages first using IDENT, then create messages with IDENT set.	Selected facility number	
Warning Routines will be triggered every 60 seconds. Make sure that repeating actions make sense.		

Routine Trigger Type	Parameter 1	Parameter 2
Facility Status Up	Facility	None
<i>Note</i> : This trigger fires when a facility that was previously down comes back up. After a Nyquist server reboot, it will fire for each Facility that has registered with the Nyquist server.	AnySelected facility number	
<i>Note</i> : The routine must have an extension defined and Use Caller's Extension must be set to No.		
<i>Note</i> : If displaying messages, delete messages first using IDENT, then create messages with IDENT set.		
Warning Routines will be triggered every 60 seconds. Make sure that repeating actions make sense.		
Incoming-Call	None	None
<i>Note:</i> Incoming-Call triggers on incoming calls from the PSTN (from SIP or DAHDI trunks) that are received by an Admin station. (The Admin station rings and the call must be answered). Incoming-Call does not trigger on incoming DISA or Security DISA calls.		
Input-Contact-Closed	IO Controller	Input Contacts
<i>Note:</i> If it is possible for the input contact to be repeatedly closed or opened in a very short time frame, consider setting Allow Multiple to No so the routine prevents multiple invocations from simultaneously occurring.	Selected IO Controller	Selected input contact or contacts
Input-Contact-Opened	IO Controller	Input Contacts
<i>Note:</i> If it is possible for the input contact to be repeatedly closed or opened in a very short time frame, consider setting Allow Multiple to No so the routine prevents multiple invocations from simultaneously occurring.	Selected IO Controller	 Selected input contact or contacts
<i>Note</i> : This trigger is not generated for input contacts that have Stop On set to Manual Control .		

Routine Trigger Type	Parameter 1	Parameter 2
Intercom-Call	Callers	Called
	• Any	• Any
	Selected station or stations	Selected station or stations
Multi-Site-All-Call	None	None
Multi-Site-E-All-Call	None	None
NWS-Alert	Event	Severity
<i>Note:</i> The Event and Severity parameters can be used to filter the execution of Routines via the trigger. <i>Note:</i> This trigger requires at least one Routine running with a Display-Msg action that includes the \$alerts variable.	AnySelected event type	 Any Extreme Severe Moderate Minor Unknown
Night-RingNote: Use the Action Ring-Wait to detect when a call has been answered or disconnected. See "Understanding Action Parameters" on page 450 for more information.Note: The routine must have Use Caller's Extension disabled and an assigned Extension with the proper CoS.	None	None

Routine Trigger Type	Parameter 1	Parameter 2
PBX-Incoming-Call	Caller ID	Called Extension
This trigger is evaluated on all incoming calls from <i>PBX Connection</i> types.	Allowed values (one of the fol- lowing):	Allowed values (one of the fol- lowing):
<i>Note</i> : This trigger does not apply to incoming calls from PSTN (use the Incoming-Call trigger for these).	 Comma-separated list of caller ID extensions to match (e.g., 100,101) Partial caller ID number followed by a percent sign (%) indicating a wildcard that matches one or more subsequent digits Leave blank to match any caller ID number 	 Comma-separated list of station or feature extensions (e.g., 100,#0911,*94111,*94222) Partial caller ID number followed by a percent sign (%) indicating a wildcard that matches one or more subsequent digits Leave blank to match any caller ID number
Reboot	None	None
Routines with this trigger will execute whenever the Nyquist server reboots or is restarted via Restart Server. Routines with this trigger will also be executed after a System Update is performed on the Nyquist server. To use this trigger, the routine must have an extension defined and disable Use Caller's Extension .		
Schedule-Activated	Holiday or Schedule Name	None
This trigger will start an associated routine every day at midnight when the schedule defined by parameter 1 is activated for the day, or when the schedule defined in parameter 1 is manually activated via the Admin web interface or Admin Phone.		
<i>Note</i> : When schedules are edited via the Nyquist web interface, this trigger is generated for all active schedules after changes have been saved.		

Routine Trigger Type	Parameter 1	Parameter 2
Sched-Event	Scheduled Event	None
	• Any	
	Selected event	
Scheduled-Tone	Tone	None
Note: The routine must have an extension defined and "Use Callers Extension"	• Any	
must be set to "No".	Selected tone	
Station-Status-Up	Stations	None
Note: The routine must have an extension defined and Use Caller's Extension	• Any	
must be set to No .	Selected station or stations	
<i>Note:</i> Station Supervision must be enabled in System Parameters.		
Station-Status-Down	Stations	None
Note: The routine must have an extension defined and Use Caller's Extension	• Any	
must be set to No .	 Selected station or stations 	
<i>Note:</i> Station Supervision must be enabled in System Parameters.		
Tone	Tone	None
	• Any	
	Selected tone	
Urgent-Call	Callers	Called
Note: When Callers and Called are both specified, the trigger occurs when	• Any	• Any
intercom call involves a specified caller OR a specified called party	Selected station or stations	Selected station or stations
Zone-Page	Zone	None
	• Any	
	Selected zone	

Appendix F: E7000 Software Licenses

This appendix describes the software licenses available for the E7000 series.

Note: Nyquist E7000 software licenses do not expire and no annual license renewal fees are charged.

NQ-E7000SWL – Nyquist E7000 System Software License

One NQ-E7000SWL is required for each E7000 system server.

NQ-E7000CCL – Nyquist E7000 Concurrent Call License

Concurrent Call Licenses are sold in packs of 10.

The following items each require and consume one or more Concurrent Call Licenses:

- All Call (1)
- Emergency All Call (1)
- Multi-Site All Call (1)
- Multi-Site Emergency All Call (1)
- Multi-Facility Pages (1)
- Multi-Facility Announcements (1)
- Zone Page (1)
- Intercom Call (1)
- Station-to-Station Call (1)
- Recording an announcement (1)
- Recorded Page (2)
- Facility Page (1)
- Facility Announcement (1)
- Retrieving a voicemail message (1)
- Scheduled Events (e.g., Bells, Tones, Announcements) (1 per active event)
- Audio Distribution (1 per active stream)
- Call Monitoring/Recording (1 in addition to the 1 for the call itself)
- DISA Station Monitoring (2)
- Executing routine via DTMF (1)

Note: If the routine ends with a call type, it does not consume an additional call. In this case, starting the routine consumes a call, but the call action takes over the call at the end of the routine.

• Executing routine on remote facilities (2)

NQ-E7000SSL – Nyquist E7000 System Station License

System Station Licenses are sold in packs of 25.

The following items require and consume a Station License:

- Each NQ-T1100 or NQ-ZPMS Admin VoIP phone
- Each NQ-T1000 or NQ-T2000 Staff/Classroom VoIP phone
- Each active port on an NQ-E7030 Analog Station Bridge (max. 24-ports)

Bogen automatically quotes/provisions one SSL License Pack (25 licenses) for each ASB requested in a quote configuration.

Note: Use of analog and/or digital call switches with an ASB port does not affect station licensing.

• Each NQ-S1810CT and/or NQ-S1810WT VoIP speaker

Note: Use of analog and/or digital call switches with a VoIP speaker does not affect station licensing.

- Each NQ-P0100 Matrix Mixer Pre-Amp
- Each NQ-EDP01-Entry Door Phone
- Each NQ-GA10P or NQ-GA10PV PoE VoIP Intercom Module

Note: Use of analog and/or digital call switches with an NQ-GA10P/V does not affect station licensing.

- Each NQ-GA20P2 PoE+ Integrated Amplifier Module
- Each output channel on any 2-Ch. (NQ-A2xxx) and 4-Ch. (NQ-A4xxx) amplifiers
- Each single-channel NQ-PAxxx Public Address Mixer/Amplifier
- Each active SIP-ATA-FXS port implemented via a Cisco and/or Grandstream ATA device (if equipped)
- Each active port on a 24-port FXS VoIP Gateway integration (Yeastar TA2400) for analog phone support (if equipped)

Note: Bogen automatically quotes/provisions one (1) SSL License Pack for each 24-port FXS Gateway integration requested in a quote configuration.

• Each defined Web UI user/station

NQ-E7000TTS – Nyquist E7000 Text-To-Speech License

This license is required to enable TTS-based announcements and messaging in an E7000 system.

NQ-E7000SWLAF – Nyquist E7000 System Software License - Automatic Failover

This license is required to enable the Automatic Failover (AF) capability of the Nyquist server in an E7000 system. The AF feature requires customers to purchase a secondary standby System Controller (or server) on which to install this S/W license. An AF S/W license is not required to be purchased for the Nyquist system's primary server.

NQ-E7000API – Nyquist E7000 Routines API License

This license is required to enable the API for 3rd-party access to Routines on an E7000 system. Only one (1) license is required regardless of how many 3rd-parties access/use the API.

NQ-E7000SML – Nyquist E7000 Sound Masking Software License

This license is required to enable the Sound Masking feature.

Software Update Subscription (SUS) Extensions

Note: If your optional Software Update Subscription has expired, you will receive a dashboard message notifying you that you must contact your Bogen dealer to purchase a SUS renewal in order to continue to be able to access and apply system software updates.

The following three SUS Coverage Extensions can be purchased:

- NQ-E7MaintXSYC1X 1-Year Extended SUS Coverage X SSL Packages, Y CCL Packages. (Includes new standard features and bug fixes.)
- NQ-E7MaintXSYC3X 3-Year Extended SUS Coverage X SSL Packages, Y CCL Packages. (Includes new standard features and bug fixes.)
- NQ-E7MaintXSYC5X 5-Year Extended SUS Coverage X SSL Packages, Y CCL Packages. (Includes new standard features and bug fixes.)

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