NX AREA CONTROLLER V2.0 (NXAC2-120)

USER GUIDE

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ABOUT THIS DOCUMENT

This document describes how to configure, monitor and control a NX Distributed Intelligence™ System with the NX Area Controller V2 (Model # NXAC2-120) Web-based Software Application.

IMPORTANT INFORMATION

This document does not cover the initial installation and setup of the NX Area Controller. Please refer to the NX Area Controller Installation Sheet if you are installing this software for the first time.

The information and procedures in this document assume that:

- An NX Area Controller has already been installed and setup on your site.
- You are familiar with the NX Lighting Controls mobile app and the NX Area Controller Installation Guide including the process for accessing the Login Page of the NX Area Controller application.

USING THIS GUIDE

If you are:

- New to the NX Lighting Controls System, begin with the NX System Architecture on page 4
- Configuring an installed NX Area Controller System for the first time, start with Step 1 on page 6
- Looking for specifics on device commissioning, go directly to Step 6 on page 32
- Monitoring and controlling the NX System, go directly to Configuring the Devices on page 36
- Installing the NX Area Controller and Accessing the Software for the first time, refer to the NX Area Controller (NXAC2 Series) Installation Guide.
- Configuring the Facility Settings, go to Step 4.1 on page 8
- Configuring User Settings, go to Step 4.2 on page 9
- Configuring Security Settings, go to Step 4.3 on page 10
- Configuring General Settings, go to Step 4.4 on page 12
- Configuring the Network Settings, go to Step 4.5 on page 20
- Configuring the BACnet Settings, go to Step 4.6 on page 21
- Performing Diagnostics, go to Step 4.7 on page 25

RELATED DOCUMENTATION

NX Area Controller Installation Guide
This guide covers the initial installation and setup of the NX Area Controller and how to access the Login Page.

NX Area Controller Specification Sheet
This guide describes key features, ordering instructions and typical network wiring diagrams for the NX lighting control network.

NX Area Controller Network & Security Guide
This guide provides guidance on integrating the NX Area Controller with an IT network and how to perform security tasks.

Legacy to Next Generation Upgrade Instructions
This guide provides step by step instructions on how to upgrade a legacy NX Area Controller software to the NXAC-UNV-001 software.

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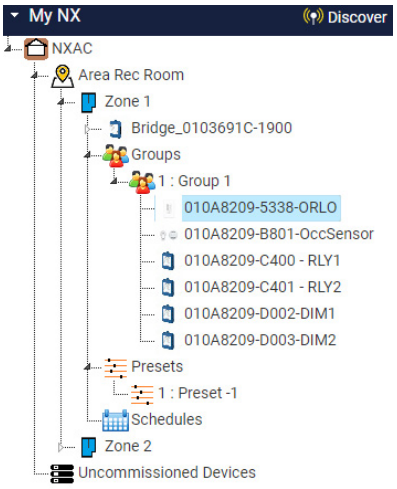
IMPORTANT: Do not attempt to commission any devices using the NX Area Controller without following the specific steps outlined in this document. It is highly recommended that the rooms be configured and named using the controlHUBB Mobile App prior to discovery by the NX Area Controller.

NX SYSTEM ARCHITECTURE

Understanding the architecture of the NX Lighting Controls System is key to a successful installation. While NX is a distributed system, there are some unique features that greatly shorten the discovery process and simplify the setup procedure. The NX Area Controller (NXAC2-120) is the central component on the network which communicates to all connected devices. During the setup process, a database is created and stored in the NXAC. The database contains all the system components and configuration settings. Since the settings, programming, schedules, etc. are stored in the system components the NXAC does not need to be online for basic control functions to operate. One exception is when integrating to a Building Automation System (BAS) via BACnet.



Most control functions take place within the logical construct of a Zone. Sensors, switches, relays and dimmers establish relationships within a Zone to interact and perform a sequence of operation. The link between these components is made through inclusion in a Group. Each Zone includes up to 16 Groups providing a great deal of flexibility. Typically, an occupancy sensor will be included in all the Groups that are created in the associated Zone assuring that all lighting in the Zone will be turned OFF when unoccupied. And a button on a switch can control a relay in the Zone simply by including the switch in the same Group within the Zone.

A Zone is analogous to a room or contiguous space in a building. See the Key Terms section on page 6.

Zones will typically be associated together within the logical construct of an Area. This association not only provides a way to organize a building or site, but also establishes a layer of control that can span multiple Zones. For instance, ten rooms on the floor of a building can each have a unique local sequence of operation as individual Zones. By associating these ten rooms with an Area, they are automatically made children to the Area (floor) when viewed in the Navigation Tree within the NX Area Controller's Graphical User Interface (GUI), making it possible to perform local control functions that span all or part of the Zones on the floor (Area). An example is a master ON/OFF switch for the floor. See Area Level Switch in the Key Terms section on page 6.

An NX system may include one or more lighting control panels. These panels contain resources that will be associated with Zones during the commissioning process. The construct for programming panels within the NX system differs from the traditional concepts used with other panel product lines such as CX. Panels can contain relays, dimmers, low voltage inputs, and low voltage outputs. Low voltage switches and sensors connected to the panel's low voltage input terminals will appear as available resources during the discovery and commissioning process. Resources from a panel are individually commissioned into Zones making them usable for control. Groups are the mechanism used for linking inputs to outputs.

There are two other NX components capable of hosting distributed control devices (resources) for discovery by the NX Area Controller. These are the NXSP

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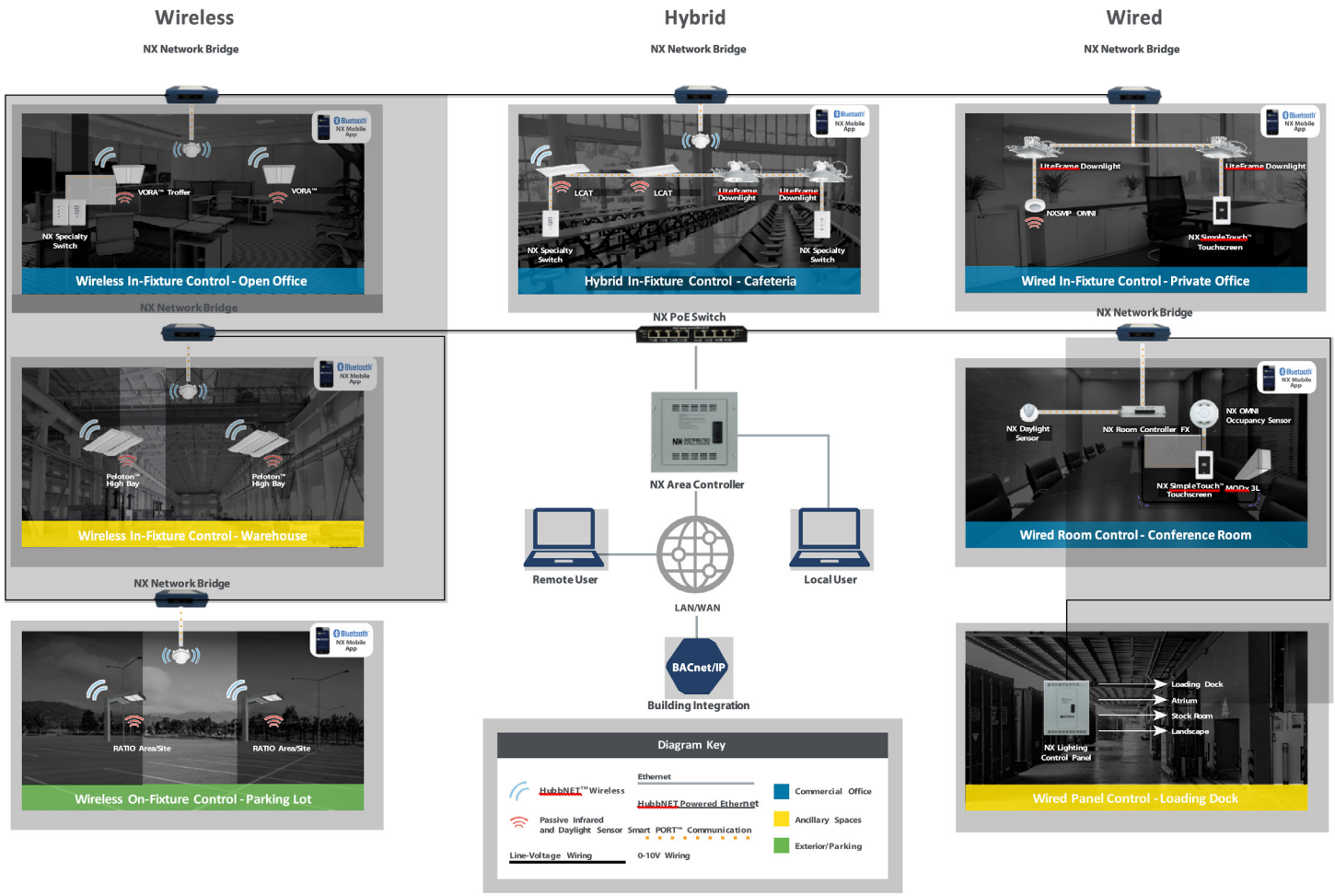
SmartPORT™ Module and the NXDCIO Input Output Module. NX smart switches and sensors plugged into a SmartPORT module RJ45 port become resources that are individually discoverable by the NX Area Controller and can then be commissioned into Zones as needed. The input and output terminals on the NXDCIO module are identical to those available in a panel and can host legacy low voltage sensors, daylight sensors, or any other dry contact input device such as a key switch. It must be noted that legacy sensors are not communicating devices. As such, any number of sensors connected in parallel to one port on the NXSP or the NXDCIO will be discovered as a single device. Legacy occupancy sensors connected in this fashion will operate using typical OR logic i.e. if one or more occupancy sensor is ON, the state is occupied. It is not recommended to connect more than one legacy daylight sensor to a port.

The introduction of NX Room Controllers (NXRCFX) into the NX system provides a unique twist on the typical construct of distributed controls. At this level, the system employs a hybrid architecture that takes advantage of local self-configuration of devices to provide out-of-the-box functionality and simplified commissioning. Room controllers, switches, and sensors physically connected at the room level will automatically be configured into a Zone. The control parameters can be modified locally using the Manual Configuration process or by using the optional Bluetooth® controlHUBB mobile app. When discovered by the NX Area Controller, the Room Controller Zone will remain intact and the configuration will persist during commissioning. It is not necessary to individually commission the devices that are part of a Room Controller Zone.



NX SYSTEM ARCHITECTURE

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INTRODUCTION

The NX Area Controller is a web server which employs a standard browser as the user interface. No software is required other than a standard web browser to access the features of the Graphical User Interface. Before attempting to use the NX Area Controller with your NX Lighting Controls System, be sure that the NX Area Controller has been installed and configured as defined in the Installation Instructions shipped with the unit.

KEY TERMS

Area - A virtual segmentation that defines a portion of the site. This could be a floor, a wing, or a building on a site that has a cluster of buildings. A project may have up to 128 Areas.

Area Level Button - A button on a programmable switch station that is configured to control lighting in multiple Zones.

Area Level Switch - A specialty switch station that is configured to control lighting in multiple Zones.

BACnet®- A Data Communication Protocol for Building Automation and Control Networks (ANSI/ASHRAE Standard 135-2020)

Commissioning (Area Controller) - The process of moving discovered devices (located in the Uncommissioned Devices folder) into Areas and Zones where they will be programmed and made operational.

Decommissioning (Area Controller) - The process of moving a device from a Zone back to the Uncommissioned Devices folder. This erases all programming associated with the device(s).

Discovery - The process of querying the HubbNET™ network to find connected NX devices. This process will generate a list of NX devices in the Uncommissioned Devices folder in the user interface Navigation Tree.

HubbNET™ - The building wide PoE (Power over Ethernet) network that interconnects the primary network components of the NX Distributed Intelligence™ System.

Manual Configuration - The process by which a Room Controller Zone is reconfigured using the buttons and LED indicators provided on the room controller and switches.

Navigation Tree – displays all the NX system components and hierarchy.

Resource - An individual switch, relay, dimmer, input, output, or sensor that is discovered by nature of it being contained in, or connected to, a network level device such as a panel, NXSP SmartPORT™ module or NXDCIO input output module.

Room Controller Zone - A room or contiguous space that uses one or more room controllers with associated room devices to provide distributed control functionality. A Room Controller Zone is treated as a single entity during the commissioning process.

Room Controller Zone Blob – all the room devices connected to the Room Controller which is shown in the user interface Navigation Tree.

Room Devices - Switches, occupancy sensors, daylight sensors or other accessory devices that are physically connected to a Room Controller's SmartPORTs via Cat5 cables.

Self Configuration - The process by which a Room Controller Zone is configured automatically to perform a prescribed sequence of operation as room devices are plugged into the SmartPORTs.

Uncommissioned Devices - NX devices displayed in the Uncommissioned Devices folder in the user interface Navigation Tree have not been commissioned. For the devices to be usable, they must first be commissioned.

Zone - A room or contiguous space within an Area. Each Area may have up to 128 Zones.

STEP BY STEP CHECK LIST

1. Read this entire document
2. Have a plan for organizing the site
3. Make provision for identifying the Room Controller Zones
4. Discover the network and confirm that all devices are found and appear in the Navigation Tree.
5. Commission the devices by dragging them from the Uncommissioned Devices folder in the Navigation Tree to the desired Zone.
6. Program Groups, Schedules, Presets, etc.
7. Save the database as a backup.

STEP 1 - READ THIS DOCUMENT

It is extremely important to follow the procedures described in this document, especially for when commissioning devices and for creating Zones. A successful project requires that the Navigation Tree be properly constructed during the commissioning process. Note that the process for creating Zones containing Room Controllers is different than creating Zones that will use devices not associated with a Room Controller.

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STEP 2 - PLANNING

Before attempting to do any commissioning or programming, you should plan the organization of the site. While the system may be configured with all Zones residing in a single Area, it may be beneficial to divide the site into logical Areas, each with the appropriate Zones that are physically located in that Area. This will organize the Navigation Tree and make navigating the site easier. For instance, a school with an East and West classroom wing, a core area, and exterior lighting might be setup with four Areas:

1. East Classroom Wing
2. West Classroom Wing
3. Core Area
4. Exterior Lighting

Each Area, will then contain the appropriate Zones. For instance, the Core Area might contain:

1. Principal's office
2. Entry lobby
3. Gymnasium
4. Cafeteria
5. Auditorium

TIP: If there will be a need to have a master switch to control multiple Zones, these Zones must be located within a single Area. An Area level switch or Area level button cannot control lighting in multiple Areas.

STEP 3 - IDENTIFYING THE ZONES

It is highly recommended that the Zones (rooms) be named prior to discovery by the NX Area Controller. This procedure requires the NXBTC Bluetooth® radio module and the NX Lighting Controls Mobile App running on a smart device. If this is not possible, it will be necessary to know the MAC address of the NXHNB2 module associated with each Zone. This is the number directly below the bar code beginning with a zero. Extra stickers are provided on the NXHNB2 housing as a convenience. Make sure the sticker is visible after the NXHNB2 is installed.

3.1 LOGGING INTO THE NX AREA CONTROLLER WEB BASED SOFTWARE APPLICATION

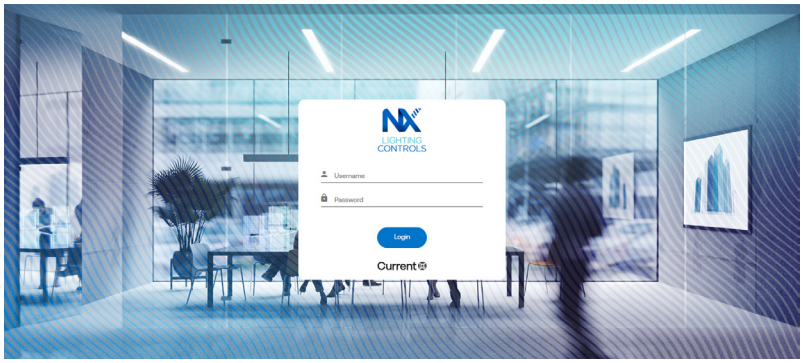
IMPORTANT: Users must adhere to the recommended browser requirements for their machine, for successful access:

Internet Explorer: Not supported	Mozilla Firefox: 77.0.1 (64-bit) and up
Microsoft Edge: 44.18362.449.0 and up	Google Chrome: 83.0.4103.106 (64-bit)
Microsoft Chromium: Any version	

Recommended Screen Resolution: 1366 x 768 or 1024 x 768

Follow the steps below to login to the NX Area Controller Software:

1. Connect your PC to the RJ45 port in the NX Area Controller. Refer to the NX Area Controller Installation and Operation Instructions for details on connecting to and configuring the network settings on your computer. See section "Starting up the Area Controller", Page 3
2. Login using the following: User name: 'admin'; Password: 'Nextgen.1' *(Note: 10 unsuccessful login attempts will lead to account lock-out).*
3. See Login screen below



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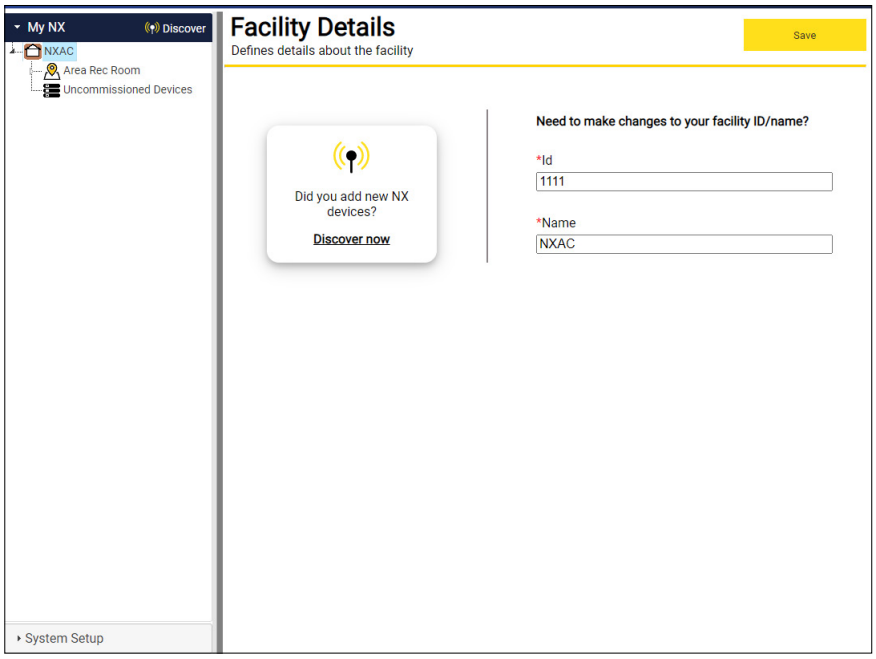
STEP 4 - SYSTEM SETUP

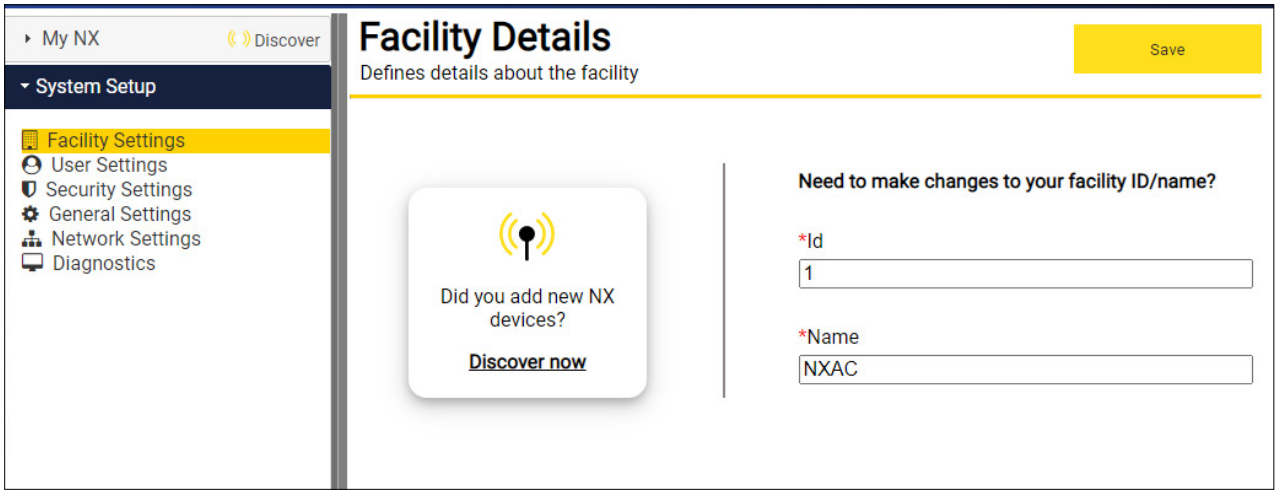
The System Setup Menu is located at the bottom of the screen below the Navigation Tree. These menus are used to configure the following settings:

- Facility Settings
- User Settings
- Security Settings
- General Settings
- Network Settings
- Diagnostics



STEP 4.1 - FACILITY SETTINGS

Click on the Facility Settings menu to display the Facility Details page which is used to configure a Facility Id and Name. This is useful when there are more than one NX Area Controller's within a facility or campus.



Click on the <Save> button to save the settings.

Note: The default setting for Facility Id is 1. The default setting for Facility Name is NXAC.

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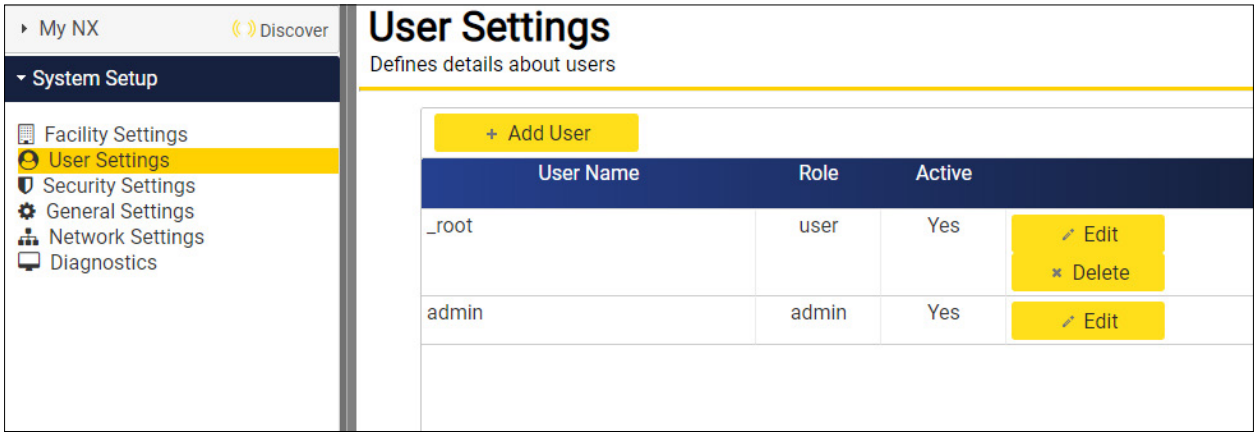
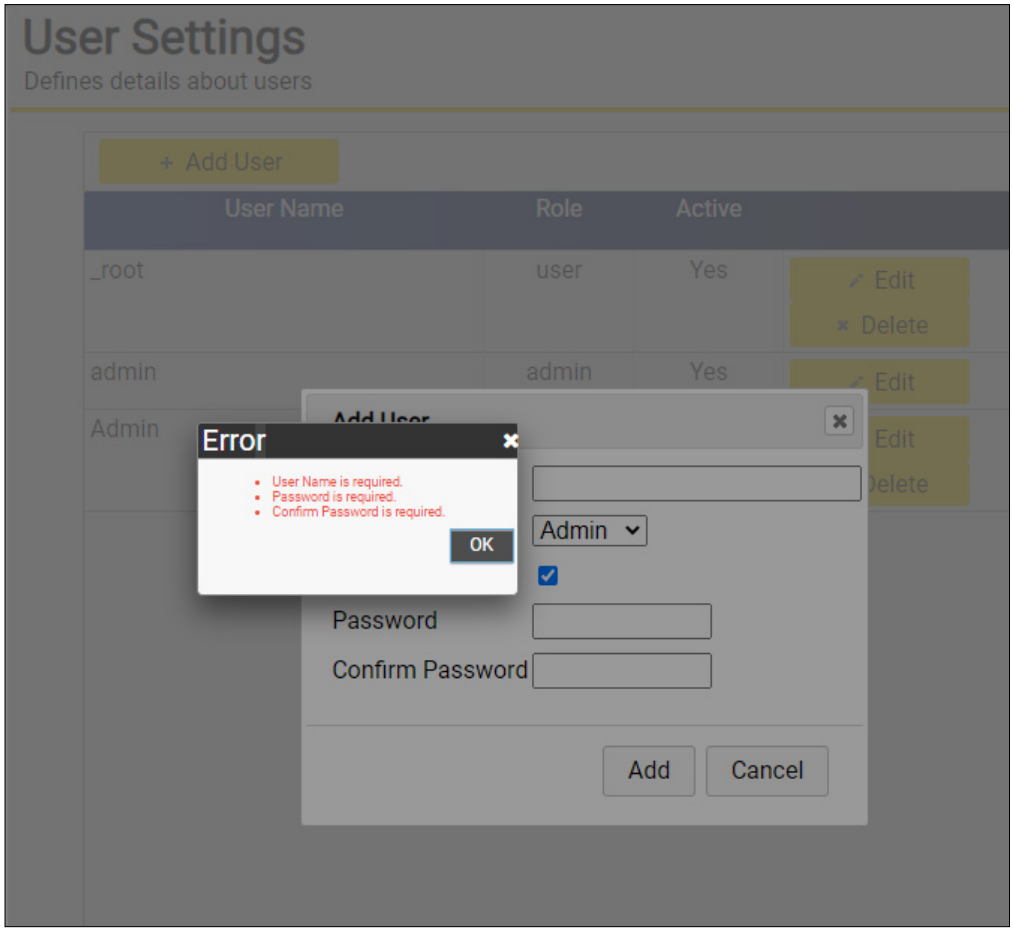
STEP 4.2 - USER SETTINGS

Click on the User Settings menu to display the User Settings page which is used to add Users and configure roles and activity.

Click on the <+ Add User> button to add a User to the system. There are three (3) User Roles that can be set by clicking on the Role field pulldown menu. These Roles are Admin, User and Reader. An Admin Role has the highest privilege and can edit all the configuration settings. The User Role has limited access to the configuration settings and the Reader Role has read only access to the configuration settings.



Note: A User Name and Password must be configured properly for a User to be added. Check the 'Is Active' box to activate the new User and then click on the <Add> button or click on the <Cancel> button. Users can be edited or deleted by using the respective buttons.



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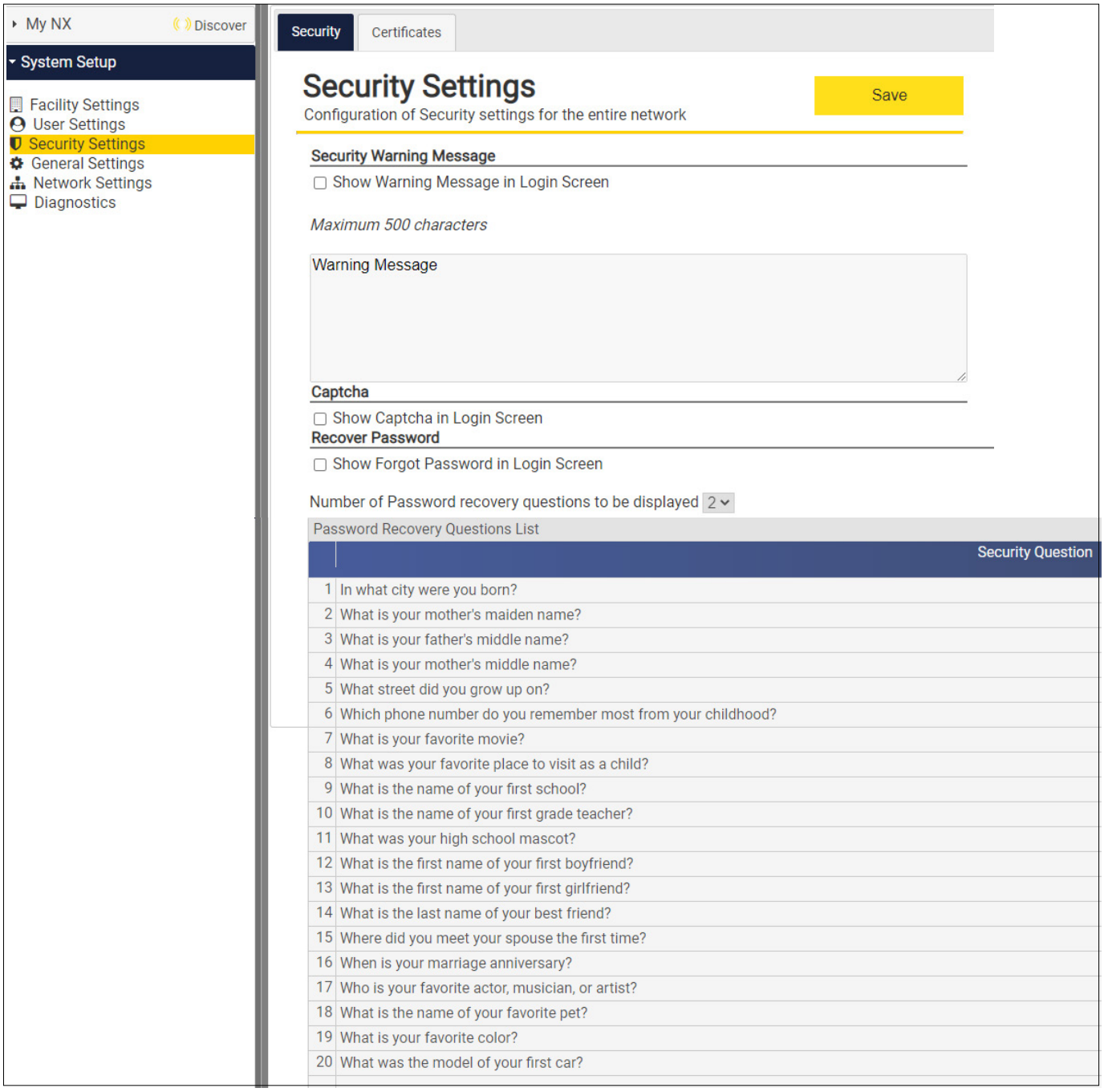
STEP 4.3 - SECURITY SETTINGS

The Security Settings menu allows the user to configure a Security Warming Message, a Captcha, and Password recovery settings.

Click on the Security Settings menu then the Security Tab to display the Security Settings page.



Security Warning Message

When the 'Show Warning Message in Login Screen' is checked, a Warning message will appear on the Login Screen with the text that has been entered in the 'Show Warning Message in Login Screen' field.

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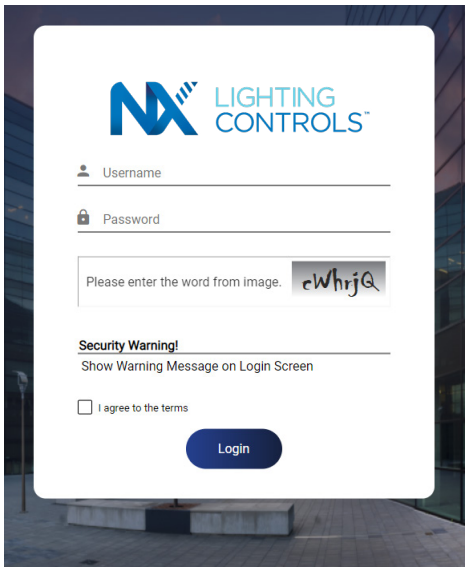
Captcha

When the 'Show Captcha in Login Screen' is checked, a field containing stretched characters will appear on the Login page. The user will need to enter the letters which appear to distinguish between a real person and a bot.



Recover Password

Check the 'Show Forgot Password in Login Screen' checkbox to select the Password recovery question(s) that will be used to recover the Login password if it has been forgotten.

Click on the 'Number of Password recovery questions to be displayed' field pulldown to select the number of recovery questions to be displayed in the Login Screen. Up to five (5) password questions can be selected.

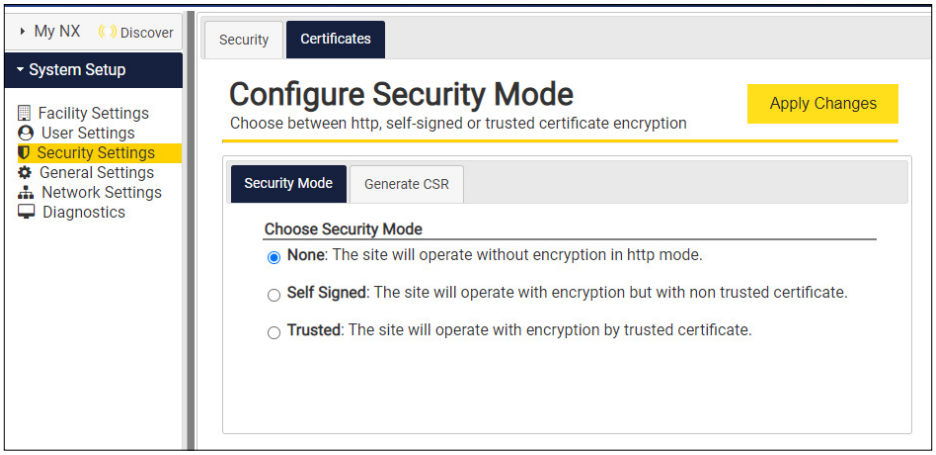
Certificates

Click on the Certificates Tab to display the Configure Security Mode page.

Security Mode

Click on the Security Mode Tab to select the Security Mode settings. There are three (3) security modes that are supported:

- None: Network communications between client and server will operate without encryption in the http mode.
- Self Signed: Network communications between client and server will operate with encryption but the certificates are not signed by a trusted certificate authority. They will be signed be a locally created not trusted certificate authority.
- Trusted: Network communications between client and server will operate with encryption by a trusted certificate authority.



Click on the <Apply Changes> button to save settings.

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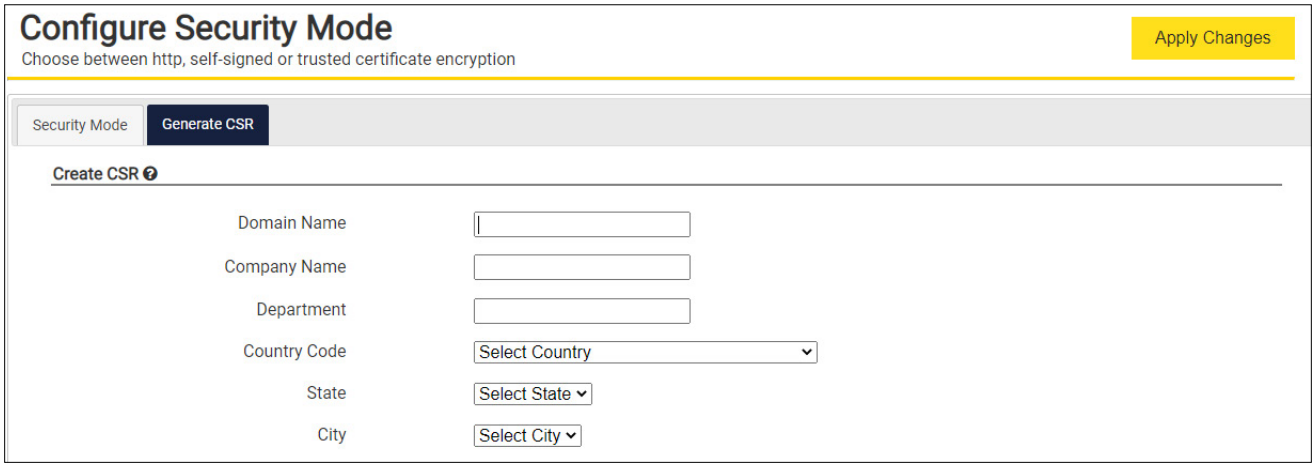
Generate CSR

Click on the Generate SCR Tab to create a Certificate Signing Request (CSR).



Use the corresponding fields to configure the Domain Name, Company Name, Department, Country Code (pulldown), State (pulldown), and City (pulldown) that will be used in the Certificate request.

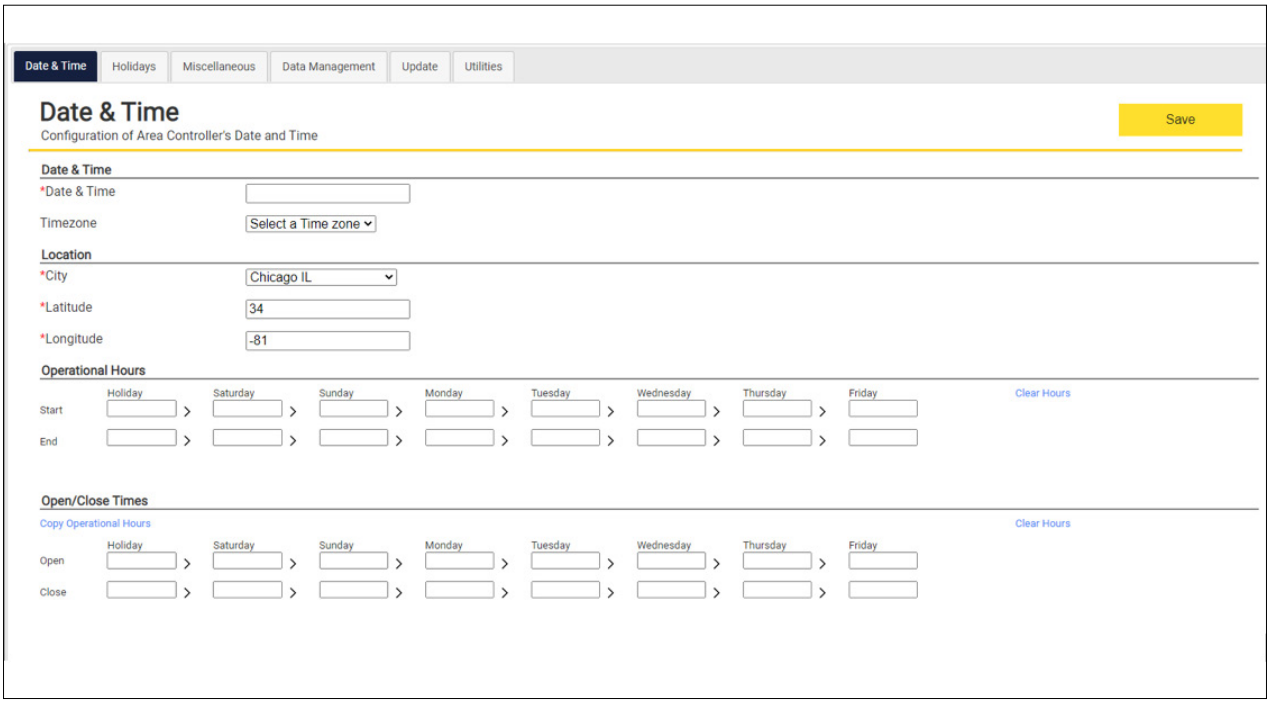
Click on the <Apply Changes> button to save these settings.

STEP 4.4 - GENERAL SETTINGS

The General Settings menu configures the Date & Time, Holidays, Miscellaneous settings such as Location, Alerts and NXAC reboot, Data Management, Updates and Utilities.

Step 4.4.1 – DATE & TIME

Click on the Date & Time Tab to display the NX Area Controller's Date & Time page.



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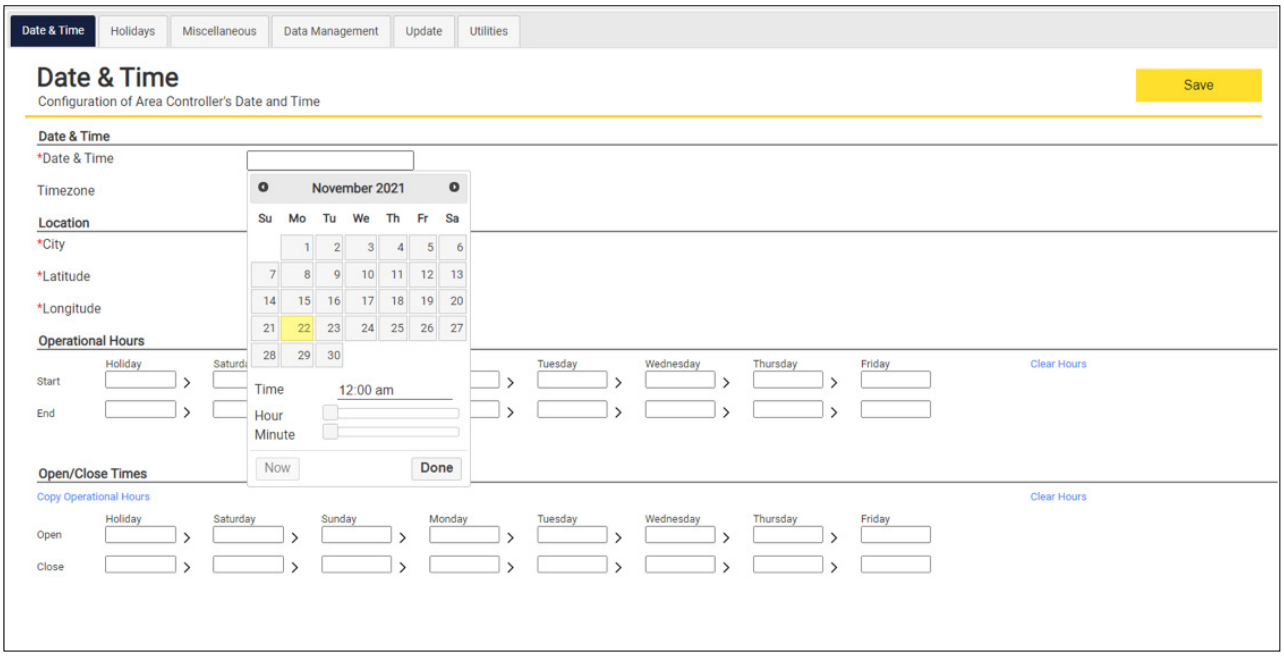
Date & Time

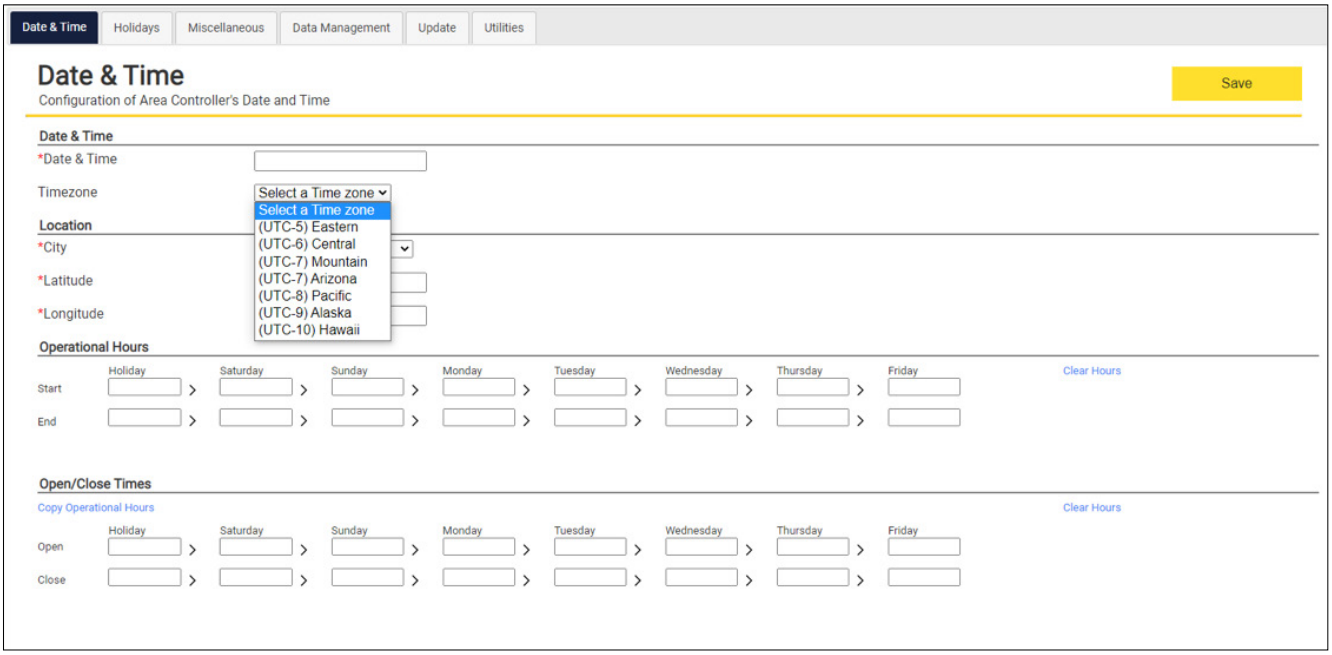
Click on the Date & Time field to display a popup window of a monthly calendar and Time setting. Use the 'Now' button to automatically set the current Time, Hour and Minute. Or, select the Month and Day using the calendar and the Time using the Hour and Minute slidebars.

Click the <Done> and <Save> buttons to save the settings.



Time zone

Click on the time zone field drop-down menu to select a time zone. Click the <Save> button to save the settings.



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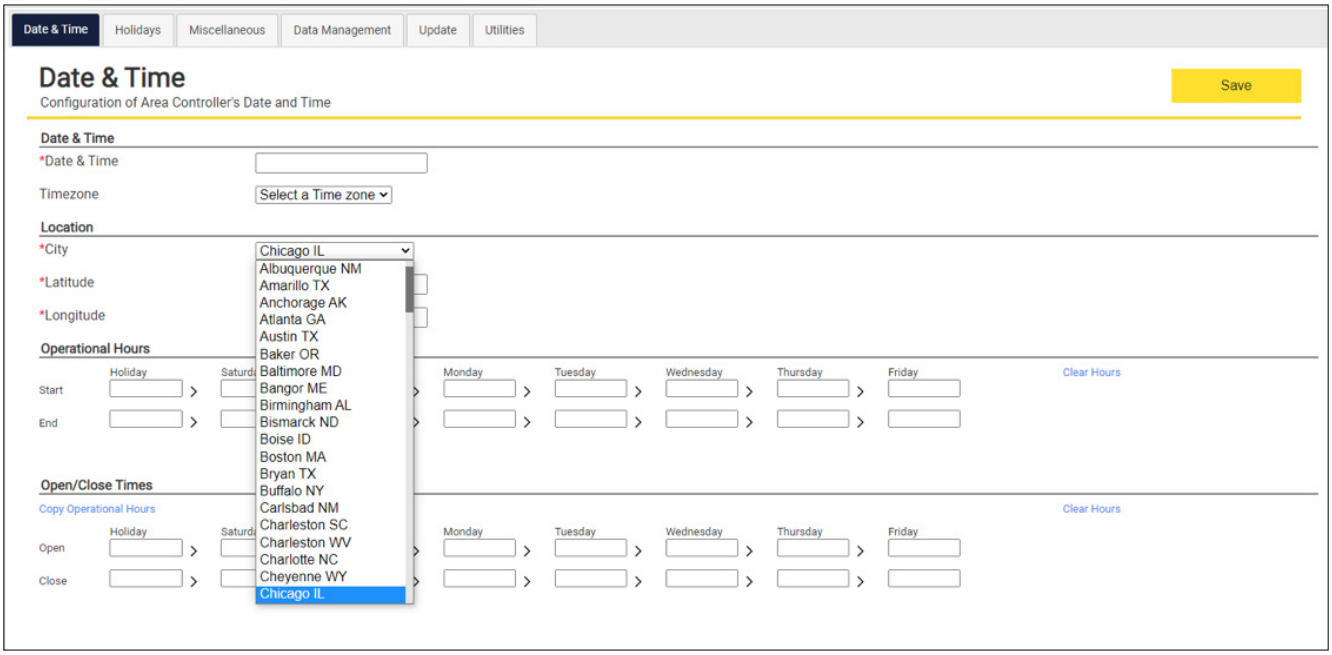
Location

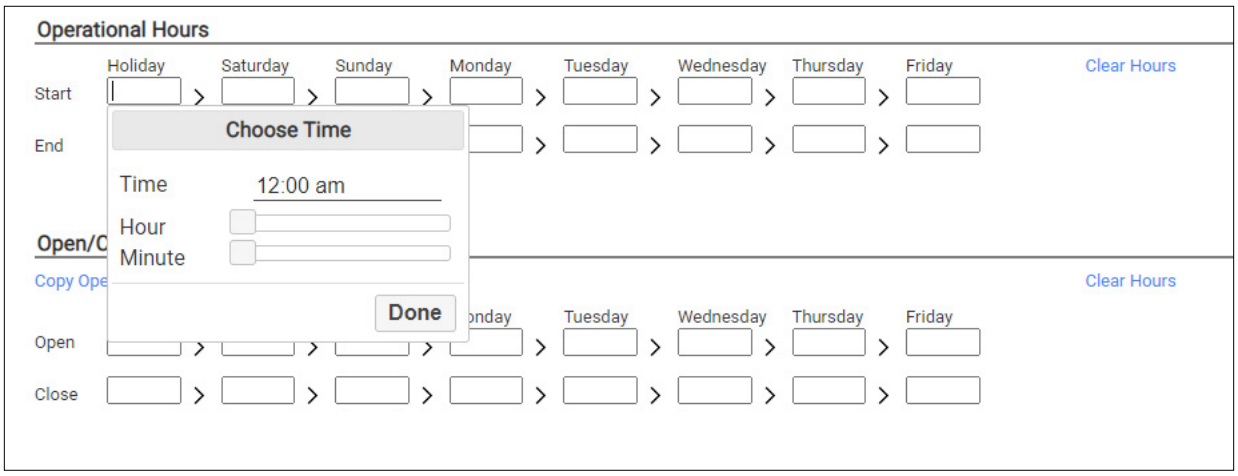
Click on the city zone field drop-down menu to select a location. Click the <Save> button to save the settings.



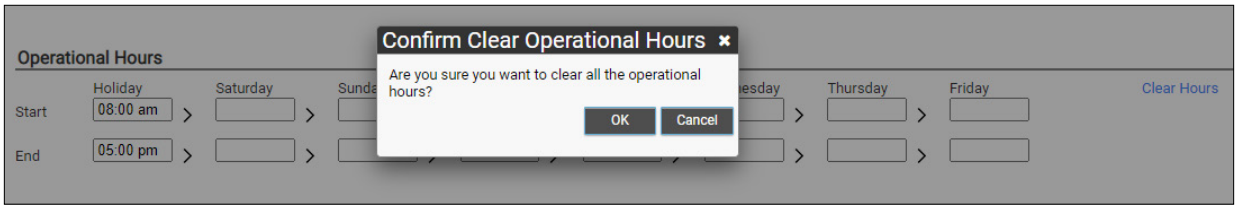
Operational Hours

The Operation Hours section configures the Start and End times (Hour & Minute) for the Days of the Week and the Holidays that will be in effect.

Click on a Start or End Holiday or Day of the Week fields to configure the Time using the slide bar. Click the <Done> button to save the settings.



Click on the 'Clear Hours' link to display a popup window which will clear (by selecting OK) or keep (by selecting Cancel) the Time configured in each Operational Hours field.



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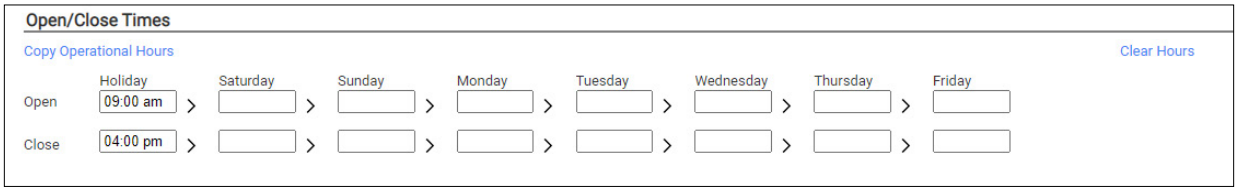
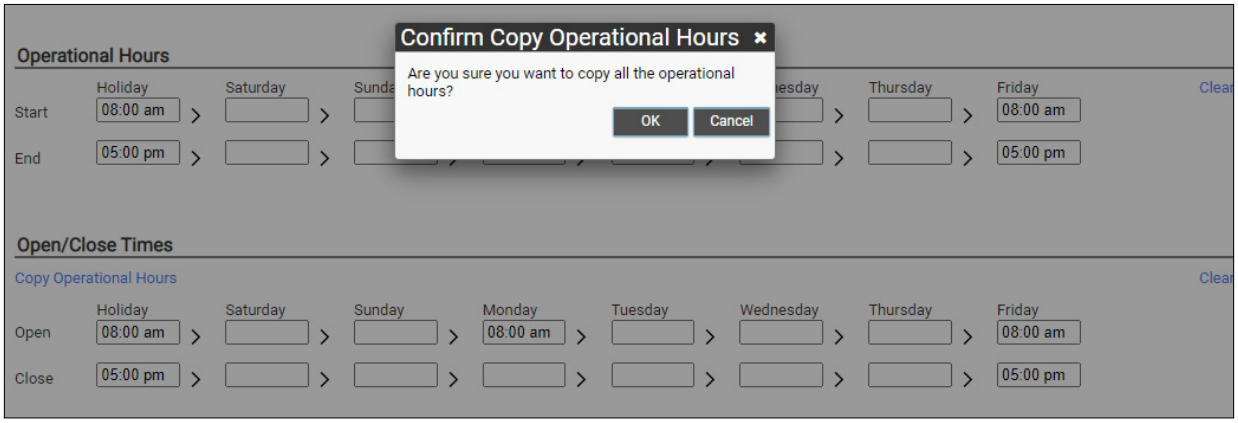
Open/Close Times

The Open/Close Times section configures the Time (Hour and Minute) when the Facility is Open and Closed. This may or may not be the same as the Operation Hours.

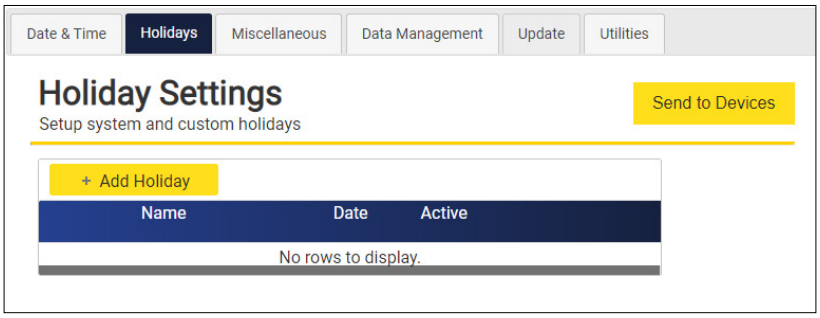


Click on the 'Copy Operational Hours' link to display a popup window which will copy the same Time configured in the Operational Hours fields (by selecting OK). Or select Cancel to select the Times manually.



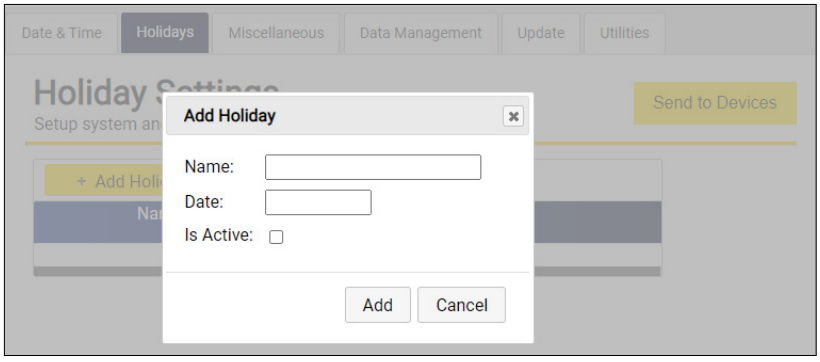
STEP 4.4.2 – HOLIDAYS

Click on the Holiday Tab to display the Holiday Settings page.



Add Holiday

Click on the <+ Add Holiday> button to display a popup window which will configure a Holiday Name and Date. Check the 'Is Active' box, then click the <Add> button to save the settings or click Cancel.



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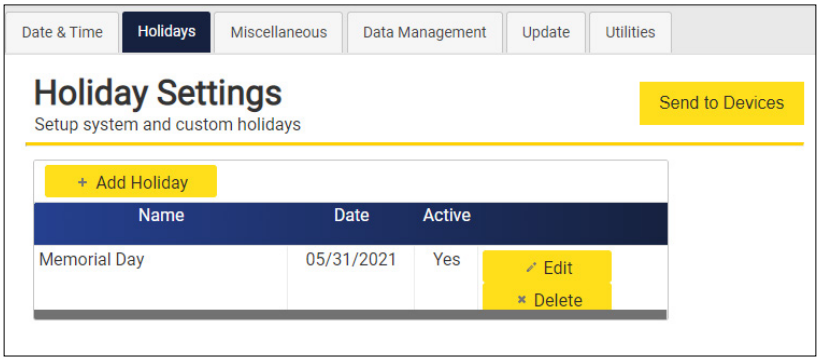
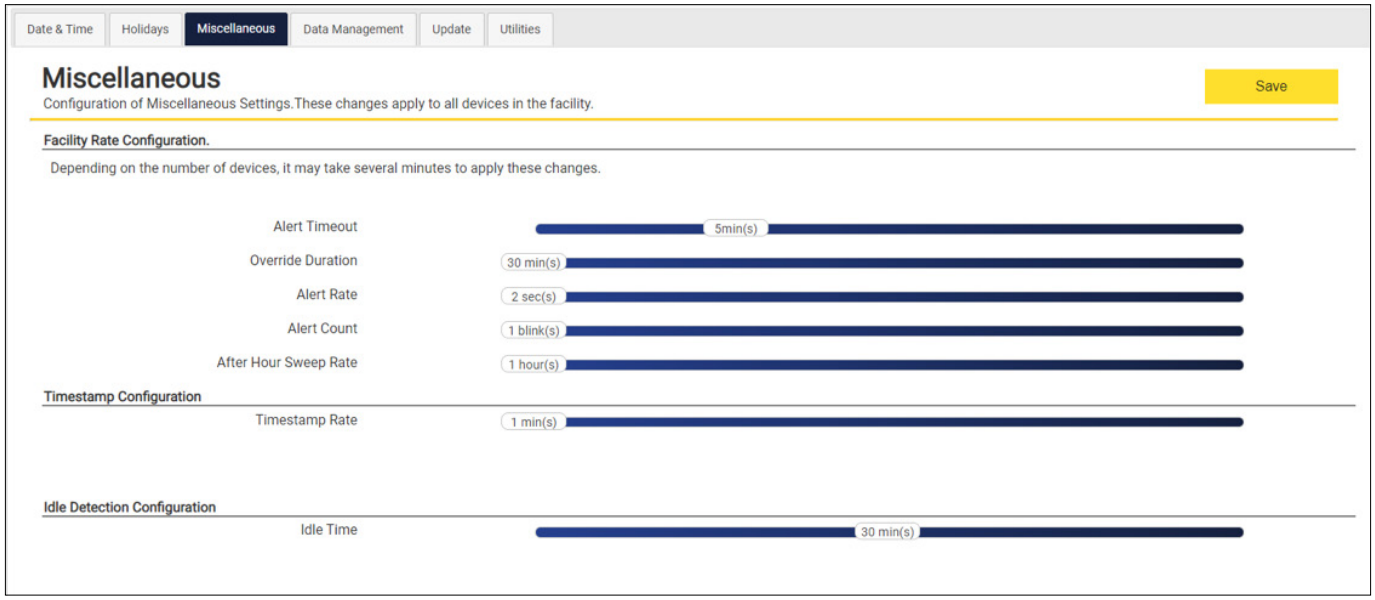
After each Holiday has been added, click on the 'Send to Devices' button to send the Holiday settings to the connected Zone devices.



STEP 4.4.3 – MISCELLANEOUS

Click on the Miscellaneous Tab to display the Miscellaneous Settings page. The Blink Alerts settings are configured on this page.



Location

The Location section configures the City, Latitude and Longitude where the NXAC is installed. Click on the City field drop-down menu to select the closest City to where the NXAC is installed. The Latitude and Longitude fields will be automatically populated.

Facility Rate Configuration

Blink Alert settings are not global. Changing the configuration here will apply these changes at all the applicable individual devices.

After Hour Sweep Rate

This setting in conjunction with the operational hours will perform after out sweeps. This must be noted when a separate schedule is created but overridden by After Hour Sweeps.

Blink Alert Description

Blink Alerts are a method of visual indication to occupants of the controlled Zone that an Off Event is about to occur to give them an opportunity to override the Off Event. Blink Alerts will only occur if an Occupancy Sensor has never been seen in the Zone. The rationale for this behavior is that Off Events are delayed until the space becomes unoccupied, so no Blink Alert is necessary. Also, no Blink Alerts would be necessary if the space is unoccupied at the time of the Scheduled Off Event because no one would be there to override the Off Event. Therefore, Blink Alerts are only used when there is no occupancy sensor in the Zone.

Blink Alerts begin at the scheduled Off time in a schedule or at the end of a Timed-On override. The beginning of the window in which the occupant can override the Off Event is signaled by one occurrence of the Blink pattern specified by the Blink Alert settings. The override window remains active for the duration configured by the Blink Alert Duration setting. If a button is pressed during the override window, the lights shall remain ON for the time specified by the Override Duration setting. At the end of the Override time, the Off Event shall be retried using the same Blink Alert procedure described above. Note that a subsequent Scheduled On event cancels the previous Blink Alert sequence and Off Event.

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A summary of the Blink Alert enable rules follows.
- Blink Alerts only occur of no Occupancy Sensor has ever been detected in the Zone.
- Blink Alerts only occur if the lights are on.
- If the lights are off, or no Occupancy Sensor has been detected in the Zone, Blink Alerts don't run.

The third rule is just another way of stating the first two rules.

An example of the operation of Blink Alerts follows. There is no Occupancy Sensor in the Zone. An Off event is scheduled. At the Off-Event time, the lights blink twice (the specified pattern) to indicate the start of the override window. The impending Off event is overridden if the occupant presses a button or switch that is in the same Group as the Off-event target during the Blink Alert duration. In this example, the button is a toggle. The first press of a toggle button cancels the blink override duration timer and overrides the Off event for the group. The LED on the button remains lit since the lights are still on at this point. Once the event has been canceled, the button operates normally. The Override Duration was previously set to one hour so after one hour, the blink alert pattern is initiated again, and the sequence starts over. This time, since the Blink Alert Duration had been set to five minutes, the scheduled Off Event executes after five minutes if no button presses have been detected.

Operation of various types of buttons pressed during the Blink Alert Duration is described below. In all cases, the Blink Alert Duration is disabled, and the Scheduled Off event is overridden.
- On — Loads On
- Toggle — Loads On
- Off — Loads Off
- Preset — Loads to Preset
- Raise — Loads On, Raise Dim Level
- Lower — Loads On, Lower Dim Level

The Timed-On button is a special case because it starts its own override event. If a Timed-On button is pressed during the Blink Alert Duration, loads are turned On as specified by the Timed-On settings for the duration specified by the Timed-On override settings. The Blink Alert and Override Duration from the previous Off Event shall be canceled.

Note that the Off button will already turn off the lights. This is still treated as an override, but with the lights off. As with other button presses, at the end of the override period, the Scheduled Off event is executed. If the lights remained off, the Scheduled Off event will have no effect. However, if the occupant turned the lights on during the override period, the Scheduled Off event will act as a Sweep and turn the lights back off.

If a new Scheduled On or Off event occurs during the Blink Alert window or override, the event will be processed. If the Scheduled event is Off, the current Blink Alert sequence is terminated and a new one is started based on the new Scheduled Off event. If the Scheduled event is On, the Blink Alert sequence is terminated, and the Scheduled-On event is immediately executed.

Override Duration
The Override Duration (in hours 1- 3) is the length of time the Off Event is overridden. At the end of the Override Duration, the Blink Alert shall execute again. If no subsequent button press is detected within the Blink Alert Duration, the Off Event shall execute. If a Scheduled-On event occurs during the Override Duration, the On Event shall be executed and the Blink Alert and Override Duration from the previous Off Event shall be canceled.

Alert Rate & Alert Count
The Relays programmed for the Blink function shall be turned Off and On the number of times indicated by the Blink Alert Count (1 – 5 blinks). The sequence defined by the Blink Alert Rate (in seconds 2-10) and Blink Alert Count shall be executed once at the start of the Blink Alert Duration. The
Relays programmed for the Blink function shall be turned Off and On at the rate set the Blink Alert Rate. The Off duration of each Blink shall be 500 milliseconds. The rate each Blink shall be measured from the start of an Off to the start of the next Off. Consequently, the On duration shall be the Blink Alert Rate – ½ seconds. The sequence defined by the Blink Alert Rate and Blink Alert Count shall be executed only once at the start of the Blink Alert Duration.
Blink Alert Duration
The Blink Alert Duration (in minutes 1- 15) is the length of time the Blink Alert override period active. During this time, the occupant has the opportunity to override the scheduled Off event.

Timestamp Configuration
The Timestamp Configuration section sets the Timestamp Rate (in minutes) that will be appended to the Alert message.

Idle Detection Configuration
The Idle Detection Configuration section sets the Idle Time (in minutes) of the NXAC User Interface. The user will be logged off if the inactivity time is greater than the Idle time setting. The Login screen will then be displayed.

Reboot
The Reboot section will reboot the NXAC. Click on the <Reboot Box> button to display the Confirm Reboot popup window. The system will automatically reboot within 60 seconds (by selecting OK) and the Login screen will be displayed. Or, select Cancel.

Click the <Save> button to save the settings.

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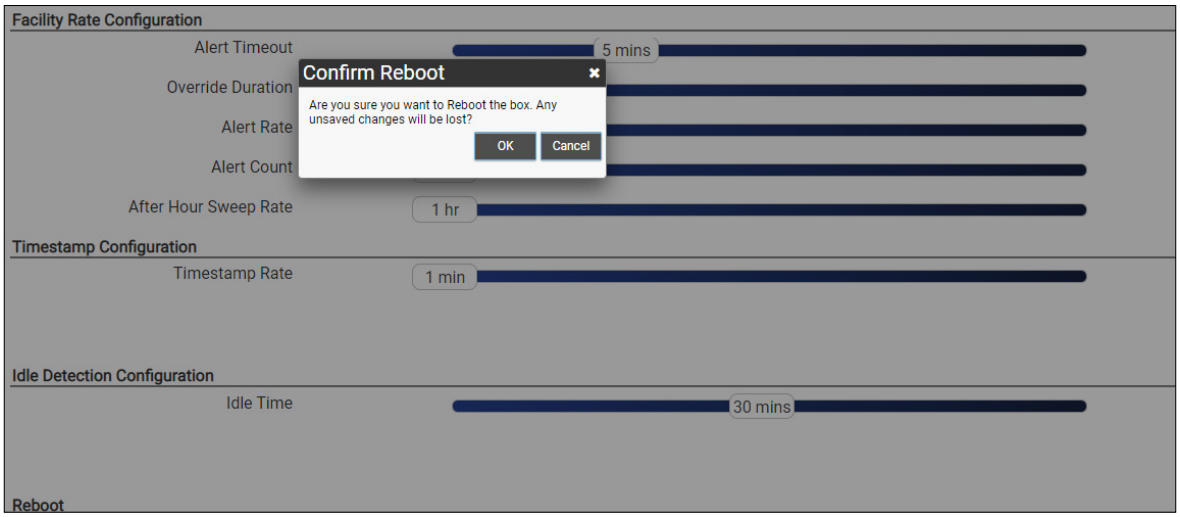
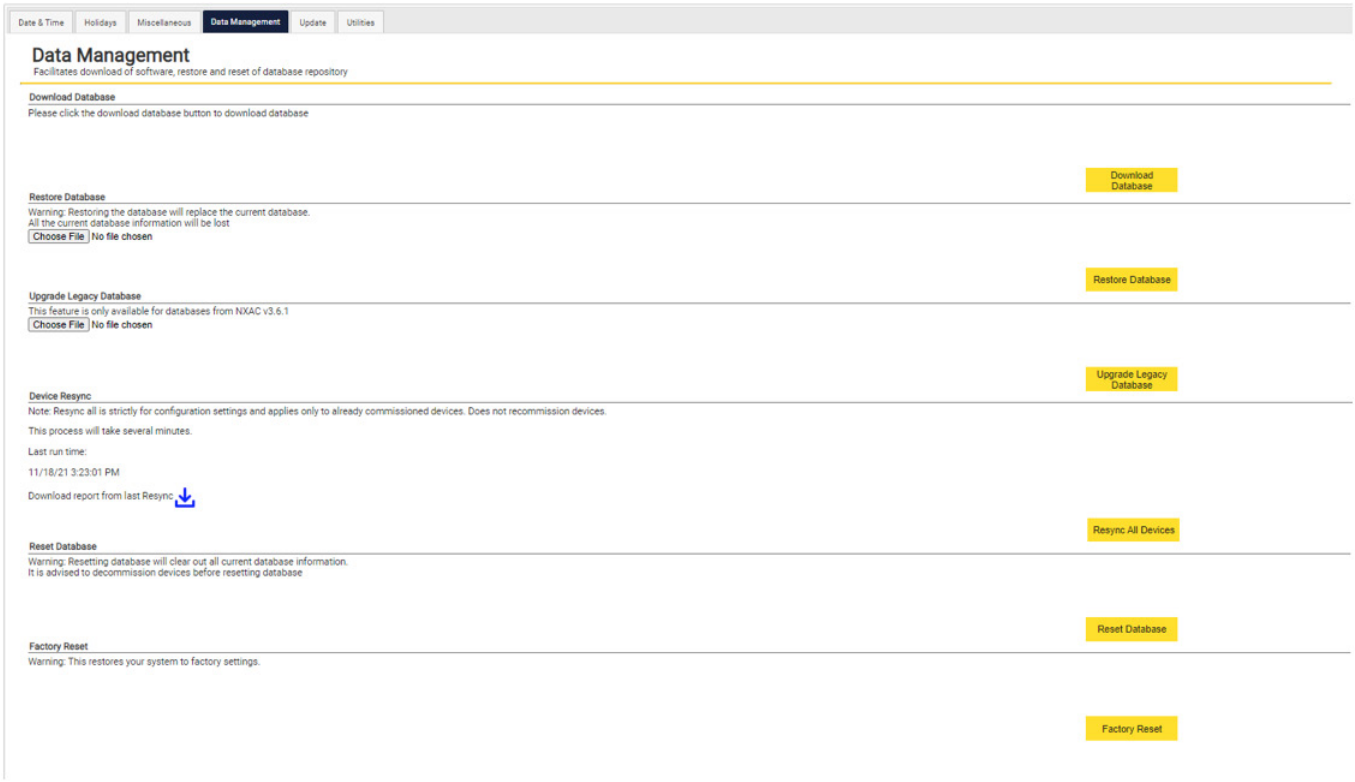


STEP 4.4.4 – DATA MANAGEMENT

Click on the <Data Management> Tab to display the Data Management page.



Device Resync

On the field when devices are already commissioned and when further configuration changes are made on devices using an app or otherwise, the NXAC database goes out of sync. We currently have a Resync option that can be performed to sync at a single device level from the device tree. But when several devices are configured, it is a tedious task to resync individual devices. Resync All Devices feature allows to resync all commissioned devices automatically.

Note:

- This feature cannot be used to recommission devices.
- It is strongly recommended to perform this resync after Legacy Database Upgrade or Restore Database.

Download Database

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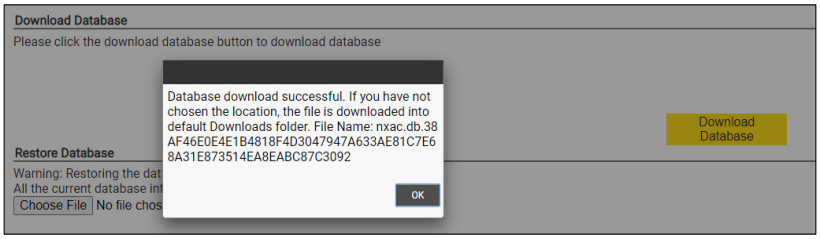
Click on the <Download Database> button to save the database file of your NX system. A popup window will appear, click OK to confirm the save. The database file will be named "nxac.db" and will be saved in the Downloads folder on your computer.



It is recommended that you make at least one additional copy and store it somewhere other than on the host PC.

Restore Database
Click on the <Choose File> button. Locate and select the desired database file on your computer to be used to replace/restore the current database information. Then click on the <Restore Database> button.

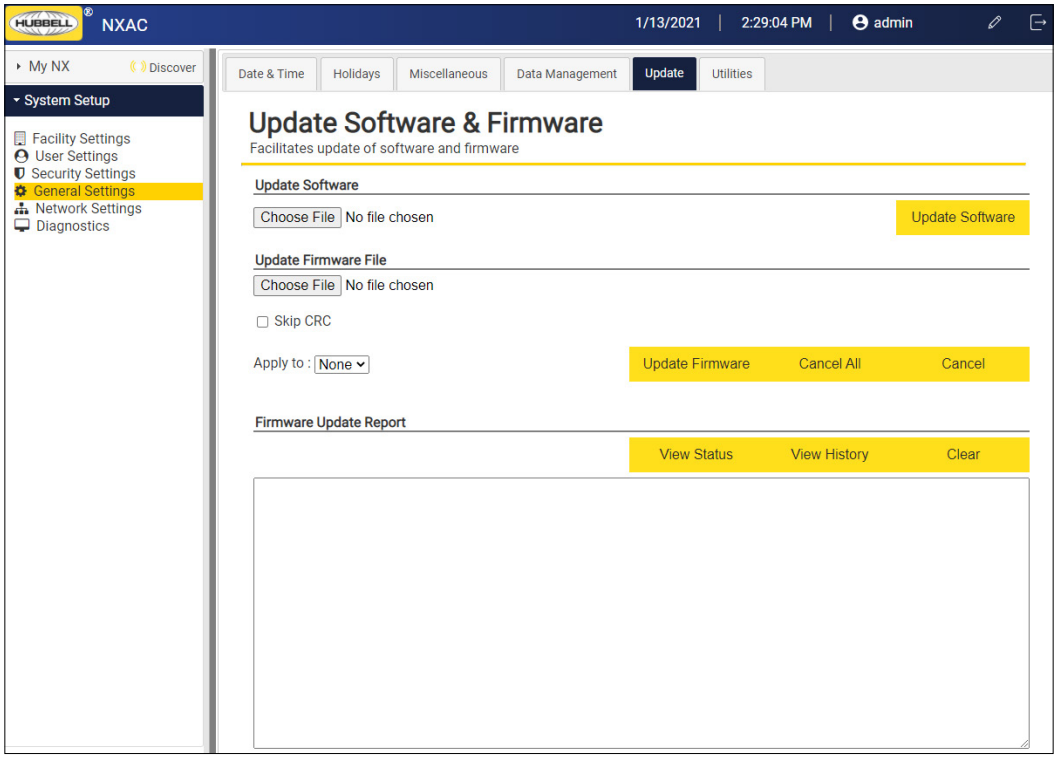
Upgrade Legacy Database
If you are using a Legacy database and would like to upgrade to a Next Generation NXAC database, click on the <Choose File> button to locate and select the desired database file and then click on the <Upgrade Legacy Database> button.

Reset Database
Click on the <Reset Database> button to clear out the current database in your NX system. Warning: It is recommended that the devices in your system be Decommissioned before resetting the database so that the device configuration is saved. After resetting the database the Decommissioned devices can be commissioned.

Factory Reset
Click on the <Factory Reset> button to restore your system to the factory default settings.

STEP 4.4.5 – UPDATE

Click on the <Update> Tab to display the Update Software & Firmware page.



Update Software
Click on the <Choose File> button to select the NXAC Software Update file. This will be a .zip file with a 'su' in the file name.

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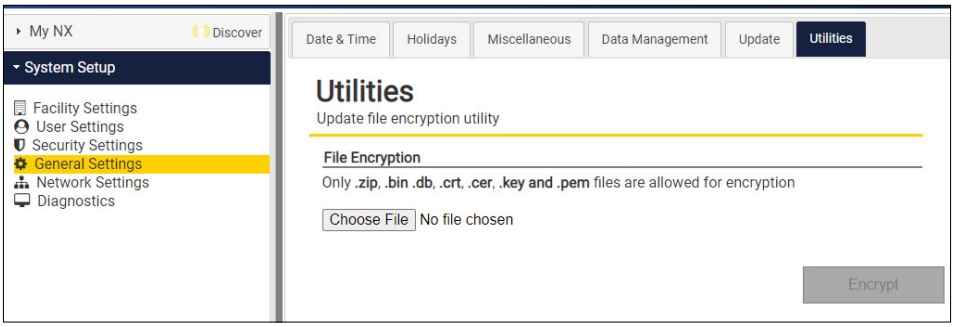
Update Firmware File
Click on the <Choose File> button to select the NXAC firmware file to be updated. A CRC (Cyclic Redundancy Check) will not be performed when the Skip CRC box is checked, otherwise a CRC will be performed on the raw data in the firmware file. Click on the <Update Firmware> button to update the firmware.

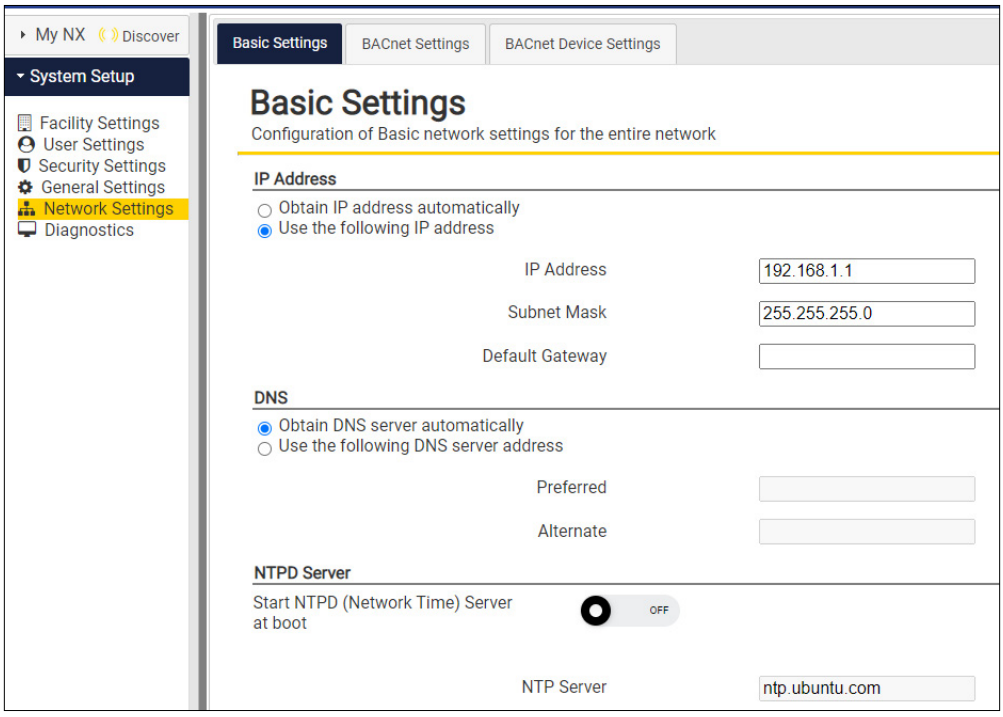
Firmware Update Report
Click on the <View Status> button to display the firmware version #. Click on the <View History> button to display a list of the firmware version #'s. Click on the <Clear> button to clear this information.

STEP 4.4.6 – UTILITIES
Click on the <Utilities> Tab to display the Utilities page.



File Encryption
Click on the <Choose File> button to select an Update file to encrypt. This will protect the file from being accessible to unauthorized parties. The Update file selected must be in the form of a .zip, .bin, .db, .crt, .cer, .key or .pem for the file encryption to be successful. Click on the <Encrypt> button to perform the file encryption.

STEP 4.5 – NETWORK SETTINGS
Click on the Network Settings menu to display the Basic Settings and the BACnet Settings pages.



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Basic Settings

Click on the Basic Settings Tab to display the Basic Settings page. The IP Address of the NXAC Area Controller, the DNS Server and the NTPD Server can be configured from this page.

The IP Address

The IP Address section configures the IP address of the NXAC Area Controller Web-based User Interface. This address can be obtained automatically by selecting the 'Obtain IP address automatically' radio button which will attempt to get an IP address via DHCP.
Note: Verify that your network supports this capability otherwise, you may need to ask your network administrator for the appropriate IP address settings.

Or, the NXAC Area Controller IP address can be fixed by selecting the 'Use the following IP address' radio box and entering the IP address to be used.
Note: the NX Area Controller ships with a static default IP address of 192.168.1.1

Subnet Mask

This field sets the Subnet Mask address. It is recommended that the Subnet Mask address be set to 255.255.255.0.

Default Gateway

This field sets the Default Gateway address. It is recommended that the Default Gateway address be set to 192.168.1.0 if the NXAC Area Controller's IP Address is set to 192.168.1.1. Otherwise, this field can be left blank.

DNS

Th DNS section sets the Domain Name System (DNS) server IP address. This address can be obtained automatically by selecting the 'Obtain DNS server automatically' radio button which will attempt to receive DNS server addresses from the network service provider.

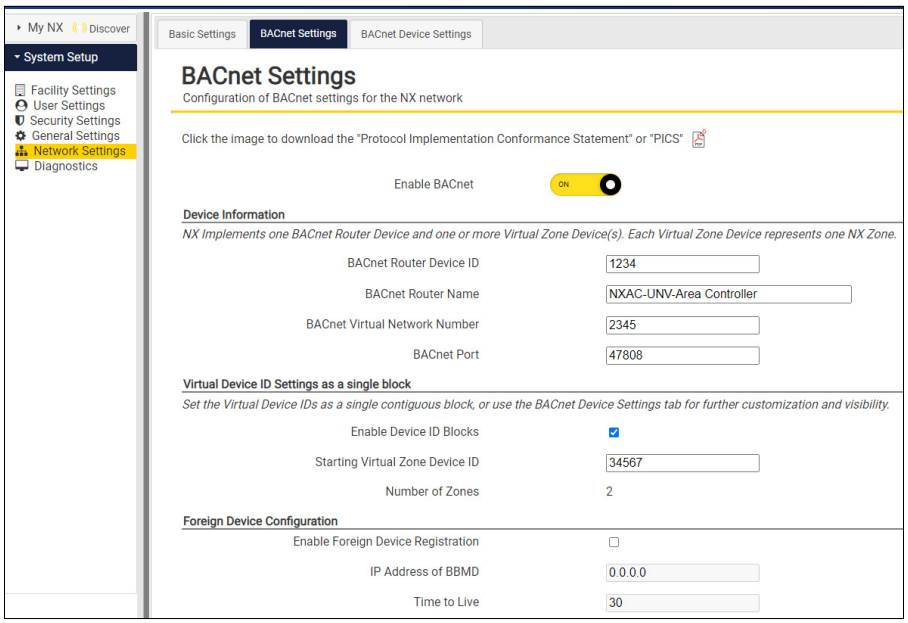
Or the DNS server address can be fixed by selecting the 'Use the following DNS server address' radio button and entering the DNS server address to be used in the Preferred and Alternate fields.

NTPD Server

The NTPD Server section sets the Network Time Protocol Server ON or OFF. When the NTDP server is set to ON, all of the clocks in the network will be synchronized. If set to OFF, this feature will be disabled.

STEP 4.6 BACnet Settings

Click on the BACnet Settings Tab to display the BACnet Settings page. Important: BACnet must be enabled for the BACnet parameters to be configured and supported. Use the BACnet Enable slide button to Enable BACnet. The default is ON.



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What is BACnet and how does the NXAC Area Controller support BACnet?

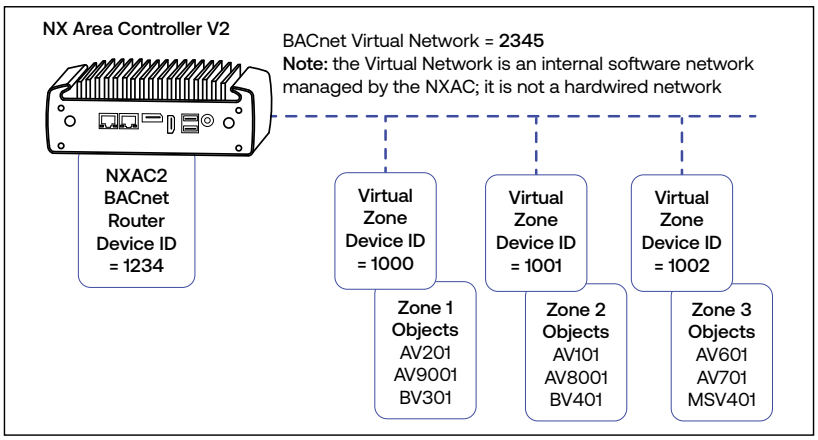
The Building Automation and Control Network (BACnet) defined by ANSI/ASHRAE Standard 135-2020 is a building automation and control networking protocol which provides mechanisms for building automation systems or components from different manufacturers to exchange information; typically for integrating HVAC/R, lighting controls and/or security systems within a building.

This protocol identifies a collection of data structures called standard BACnet "objects". Each object has a defined list of properties which represent various aspects of the hardware, software and operation of the device. These objects provide a means of identifying and accessing information without requiring knowledge of the details of the device's internal design or configuration.

The NXAC-UNV-001 Area Controller (NXAC) acts as a BACnet server and virtual BACnet router between BACnet clients and a NX virtual BACnet solution. BACnet devices served by the NXAC are Zones. Zones are virtual BACnet devices that represent physical space within the building such as conference rooms, open offices or corridors. Each Zone will have a single state of occupancy and some quantity of Relays and/or Dimmers.

Each NXAC Area Controller has a single BACnet Device Object. Each Virtual BACnet Device or Virtual Zone supports a single Zone Device Object and some quantity of Analog, Binary and/or Multi-state Standard BACnet Objects. The number of Standard BACnet Objects in each Zone depends on the actual devices that are connected to the NX network.

The NXAC Area Controller/IP Router conforms to the BACnet Standardized Device Profile (as defined in BACnet 135.1 2012 Annex L) for a BACnet General (B-GENERAL) and the Virtual Zone Devices for an BACnet Application Specific Controller (B-ASC) and are tested to Protocol Revision 14. The NXAC Area Controller is not a BACnet Broadcast Management Device (BBMD) but will respond to incoming BACnet/IP messages that pertain to BBMDs. The NXAC supports Foreign Device Registration (FDR) as well as DHCP IP addressing.



NX Area Controller and BACnet Virtual Zone Devices

Key BACnet features include:

- Supports up to 128 Virtual Zones with up to 249 BACnet Objects in each Zone.
- 1000 Mbps BACnet IP and DHCP addressing
- Local Access Ethernet port at 10 or 100Mbps for system start-up and troubleshooting
- Firmware upgrades can be performed remotely
- Capacitor-backed real-time clock keeps time in the event of a power failure or network interruption for up to three days.

Refer to the NXAC Protocol Implementation Conformance Statement (PICS) for details on the BACnet Standard Object types and BACnet Interoperability Building Blocks (BIBBs) supported.

Tip: The NXAC/Zone PICS can be found on the Hubbell NX Distributed Intelligence website: https://hubbellcdn.com/literature/BACnet_protocol_NXAC_120.pdf or in the NXAC User Interface by clicking on the Network Settings in the Navigation Tree > BACnet Settings Tab and then by clicking on the "PICS" image which is in the upper right-hand corner of the screen. This will download the NXAC PICS document to the Downloads folder on your computer.

Note: Saving any BACnet settings will cause the NXAC to automatically reboot.

The Enable BACnet toggle switch enables/disables the BACnet features and services.

IMPORTANT: The <Enable BACnet> button must be in the ON position for the BACnet communications and services to function. Click on the <Save> button to enable or disable this feature.

Device Information

The Device Information section configures the BACnet Router Device ID, the BACnet Router Name, the BACnet Virtual Network Number and the BACnet Port.

BACnet Router Device ID

The BACnet Router Device ID sets the NXAC BACnet Device Object Identifier (ID). The allowable range is 0-4194302.

BACnet Router Name

The BACnet Router Name sets the NXAC BACnet Device Object Name. Alphanumeric and specialty characters (up to 24) are allowed.

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BACnet Virtual Network Number

The BACnet Virtual Network Number sets the Virtual BACnet Network Number on which the Virtual BACnet Zone Devices are 'virtually' connected. Refer to Figure XX for the relationship.

BACnet Port

The BACnet Port sets the User Datagram Protocol (UDP) port number for BACnet/IP communications. The UDP port number 47808 (X'BAC0' in hexadecimal) has been reserved and is typically used for BACnet communications. This can be changed to use a different number if this port number is already in use.

Virtual Device ID Settings as a single block

The Virtual Device ID Settings section enables/disables the ability to configure a block of contiguous Virtual Zone Device IDs and configure the Starting Virtual Zone Device ID. The Number of Zones field is not configurable; it is a dynamic display of the number of Zones in the NX system.

Enable Device ID Blocks

The Enable Device ID Blocks checkbox determines whether the Block Device ID Mode is to be used or the Custom/Non-Block ID Mode is to be used when configuring the BACnet Virtual Zone Device IDs.

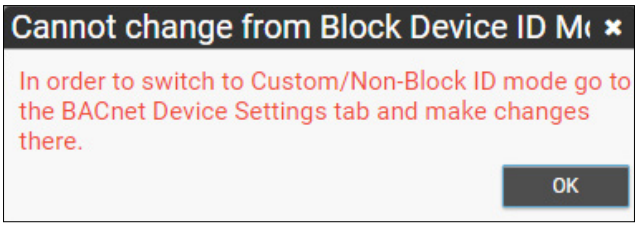
Block ID Mode

When the Enable Device ID Blocks checkbox is checked the Block Device ID Mode will be used to set the Virtual Zone Device IDs in an unbroken contiguous sequence starting with the value entered in the Starting Virtual Zone Device ID field.

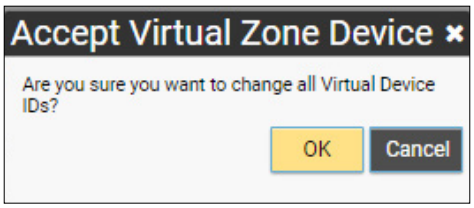
For example: The Starting Virtual Zone Device ID = 1000 and the Number of Zones in the NX System is 5.
The five (5) Virtual Zone Device IDs will be set to:

Zone 1 – Device ID = 1000
Zone 2 – Device ID = 1001
Zone 3 – Device ID = 1002
Zone 4 – Device ID = 1003
Zone 5 – Device ID = 1004

The pop-up shown below will be displayed when this checkbox is checked. Click OK and the Block ID Mode will be used.



When in the Block ID Mode the pop-up shown below will be displayed after the Starting Virtual Zone Device ID is configured. Click on OK to confirm. Save.



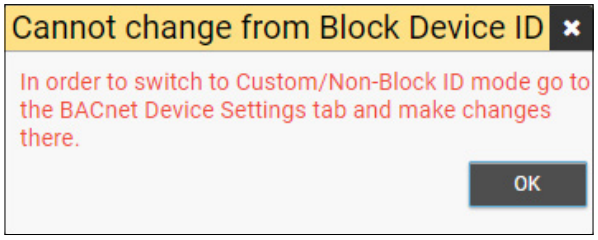
Note: The list of Zones/Device IDs are displayed in the BACnet Device ID table on the BACnet Device Settings page.

Custom/Non-Block ID Mode

When the Enable Device ID Blocks checkbox is not checked the Custom Block Device ID Mode will be used to set the Virtual Zone Device IDs one a per Zone Device ID setting. The first Zone Device ID will be set to the value entered in the Starting Virtual Zone Device ID field.

For example: The Starting Virtual Zone Device ID = 1000 and the Number of Zones in the NX System is 5.
The five (5) Virtual Zone Device IDs will be set to:

If the Enable Device ID Blocks is checked and then is unchecked the pop-up below will be displayed. Click OK to switch to the Custom/Non-Block ID Mode which will allow the individual Zone Device ID to be configured via the BACnet Device Settings page.



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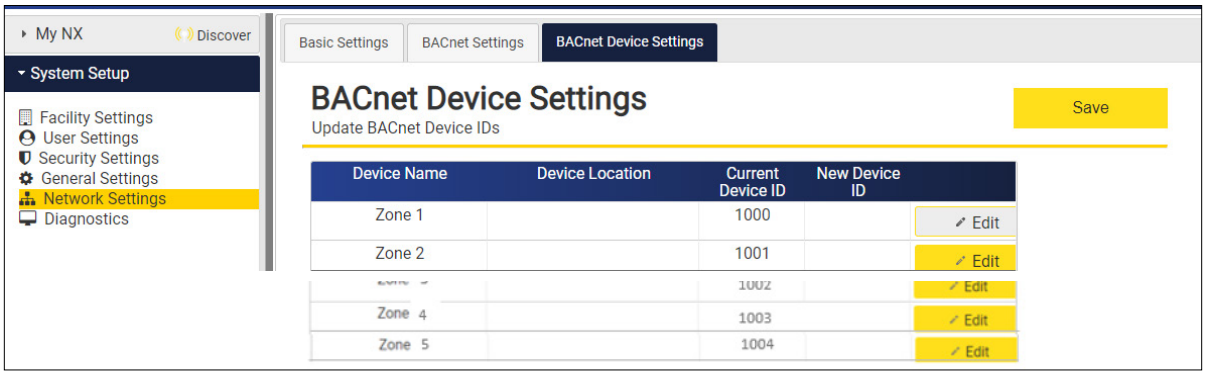
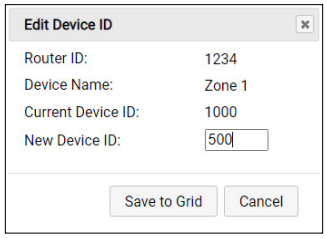
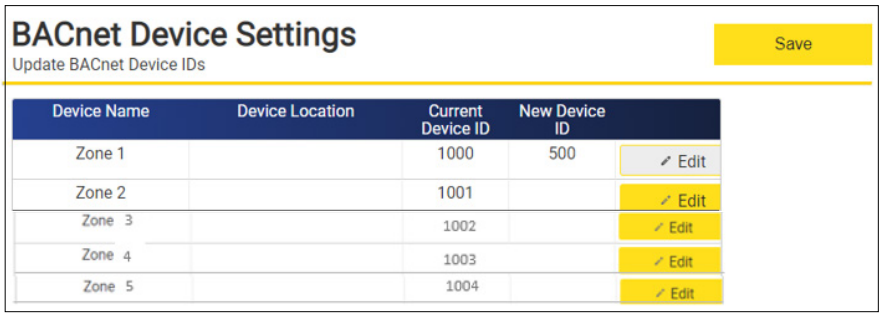
Go to the BACnet Device Settings page.



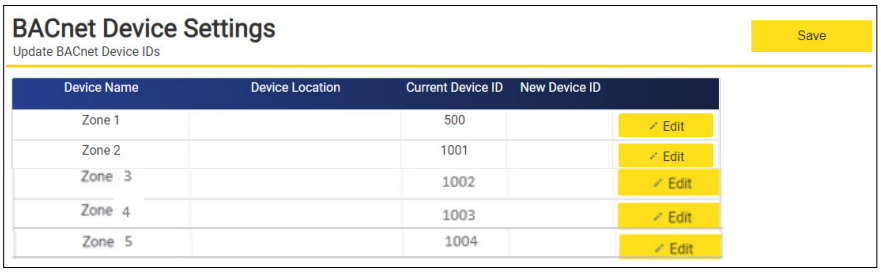
Click-on the Edit button in the Device ID row to be changed. The pop-up shown below will be displayed. Change Zone 1 Device ID to 500 by entering the value in the New Device ID field. Click-on the Save to Grid button to confirm or Cancel.



Note: The New Device ID value will be displayed in the New Device ID column until the Save button is clicked.



Then click-on Save. The BACnet process will automatically be restarted if BACnet is Enabled and the New Device ID value will be saved as the Current Device ID.



Note: Move your mouse and hover over the 'Current Device ID' text in the table header. When an underline appears click on it and an up arrow will be displayed. Use the up arrow to reorder the Zone Numbers that appear in the table.

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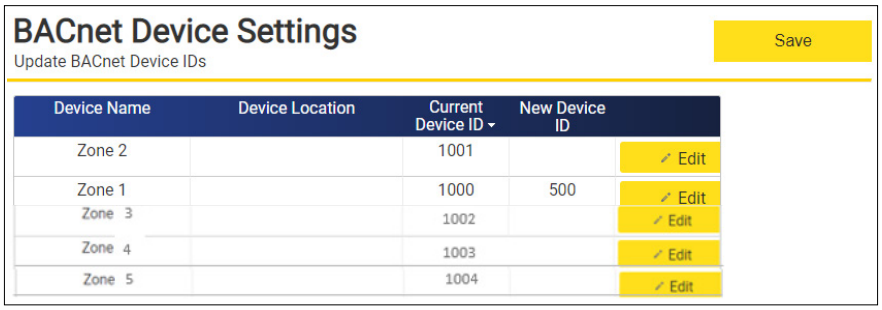


Repeat this process for each Zone Device ID to be changed. **Tip**: Remember to make each Zone Device ID unique.

Starting Virtual Zone Device ID

The Starting Virtual Zone Device ID sets the Virtual Zone Device Object Identifier for the first Zone that is added to the NX Network. Subsequent Zones that are added will have the Virtual Zone Device Object Identifier incremented by one when the Block ID Mode has been selected.

Number of Zones

The Number of Zones value displays a dynamic value of the number Virtual Zone Devices that have been connected and configured in the NX System. This is a non-configurable value. This value will help to identify the Zone Device ID's that are being used in the NX system. This is useful since Zone Device ID's must be unique. Note: The BACnet Router Device ID must also be unique and cannot be the same as any Virtual Zone Device ID's in the NX System.

Foreign Device Configuration

The Foreign Device Configuration section enables and configures the IP Address of the Foreign Device to be Registered and the Time to Live.

Enable Foreign Device Registration

Click on the Enable Foreign Device Registration checkbox to enable the Foreign Device Registration feature. Note: The NXAC Router is not a BACnet/IP Broadcast Management Device (BBMD) but supports registrations by Foreign Devices as a non-BBMD B/IP device.

IP Address of BBMD

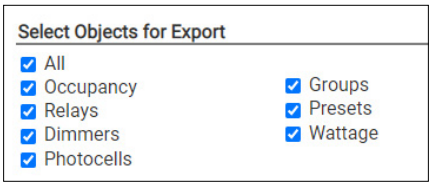
The BBMD IP Address sets the BACnet Broadcast Management Device IP Address. The BBMD Address relays BACnet/IP broadcast messages within a BACnet/IP network when the destination is on another IP subnet.

Time to Live

The Time to Live sets the length of time in seconds that the Foreign Device Registration is active (plus a fixed 'grace period" of 30 seconds).

Select Objects for Export

The Select Objects for Export section identifies the BACnet Objects that will be created in the Virtual Zone Device Object(s). Refer to the NXAC PICS for a list of the BACnet Objects supported. The default is set to All which will Export all these Object types to BACnet i.e. the corresponding BACnet Objects will be created if they are physically connected and Discovered in the NX System with the exception of Groups and Presets. Groups and Presets are manually added in the Navigation Tree as they are not hardware devices. The checkboxes can be enabled and disabled individually.



Note: If no Objects are selected for Export, the Virtual Zone Device IDs will not be created.

STEP 4.7 - DIAGNOSTICS

The Diagnostics menu allows diagnostic commands to be sent to the NXAC, generates Firmware Reports for discovered devices, sets Security PINS for Areas and Zones, generates Log Files and sets up the Network Interface for the HubbNET and LAN.

Firmware Report, Security and System tabs are not included in the document index.
On the System Tab we also have Purge Logscvsayani

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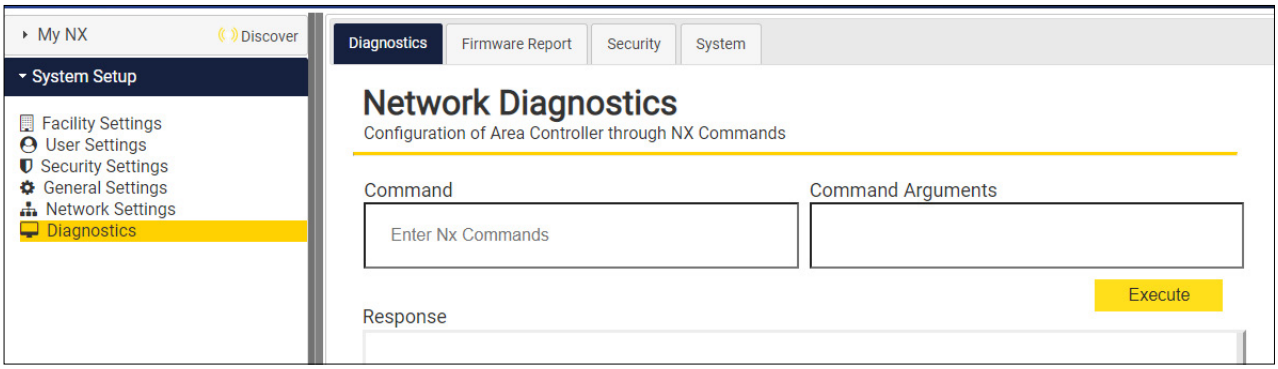

Click on the Diagnostics menu then the Diagnostics Tab to display the Network Diagnostics page.

Network Diagnostics

The Network Diagnostics is a tool within the system setup is a newly introduced utility available in the Next Generation NX Area Controller software. It is a powerful tool to help technicians perform important tasks to ensure the successful commissioning, configuration and troubleshooting of the NX lighting system.

These tools include (but are not limited to) device query, diagnosing the network for any wiring problems prior to the start of commissioning, performing advanced configuration tasks not supported by the GUI, cross checking device configuration settings, etc. Hence, this newly introduced diagnostics tool can replace the need for using PuTTY*.

Using this tool involves using a command or a set of commands to invoke a certain action which has a certain purpose. It is very important for the user to understand the different purposes before using these commands. For ease of use, the commands are divided into 3 broad categories along with associated sub-categories.

Category 1: Prior to Commissioning

Sub-Category 1: Network Discovery

Purpose: Getting to know the network and get a quick overview

a. Find out who is on the network
b. What are the different device types
c. What is the count of each device

type Commands:

1. nx-discover - Discovers the devices on the network
2. nx-fw-discover - Discovers the devices, categorizes into device types and provides the count of each type.
3. nx-dev-discover - Discovers the devices, categorizes them by physical layer hierarchy and provides MAC addresses of the devices discovered.
4. nx-help - A general command to use in case the user is not sure about the purpose.

Sub-Category 2: Network Information

Purpose: Getting to know the network devices

a. What type of information do you have?
b. What is your firmware version?
c. Do you belong to any Groups or Zones already?
d. What specific settings do you have?
e. Who has "x"

Information?

Commands:

5. nx-ping - General command to get basic information about the device by sending this ping command. See below example. Note: If not sure about which device to ping, user can do a broadcast by typing "b" in the argument. In this case, the ping will go to the most immediate device (s) connected to the NX Area Controller on the network. See screenshot below. In this example, there is a NX Network Bridge connected directly to the NX Area Controller that receives the broadcast ping command and reports out the information.

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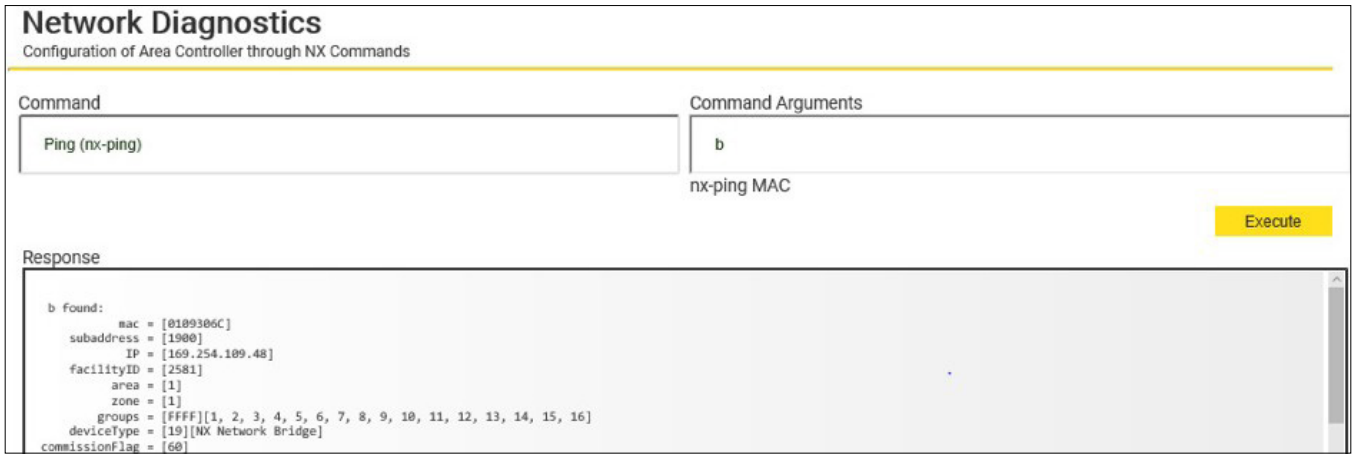


*third party tool for network diagnostics that the technicians have been using on the Legacy NX Area Controller.

6. The get command allows the user to procure device specific information or specific information from all devices or specific information from a certain device type. Below are all the get commands supported.

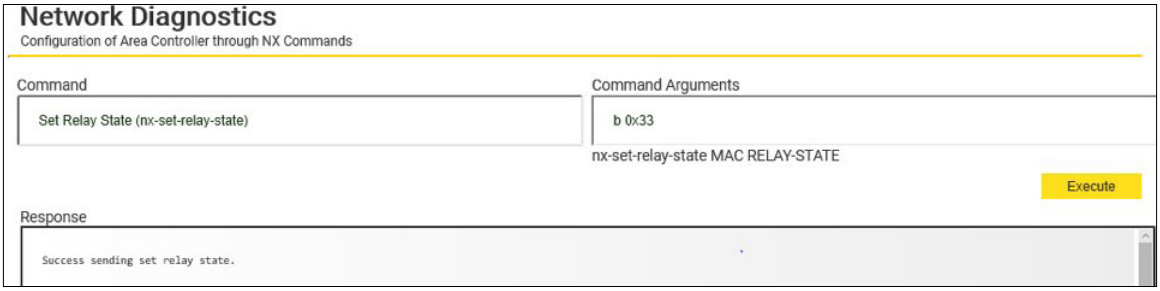
nx-get-active-times	nx-get-dimmer-trim-level	nx-get-operational-hours
nx-get-area	nx-get-disable-buttons	nx-get-port-list
nx-get-bl-version	nx-get-fire-emergency-states	nx-get-preset
nx-get-blink-alerts	nx-get-fw-version	nx-get-preset-name
nx-get-button-func-msg	nx-get-group-name	nx-get-rc-order
nx-get-button-parms	nx-get-groups	nx-get-relay-state
nx-get-button-type	nx-get-holiday	nx-get-schedule
nx-get-coords	nx-get-dm-info	nx-get-startup-state
nx-get-daylight-sensor-function	nx-get-light-level	nx-get-subdevices
nx-get-daylight-sensor-range	nx-get-mask-multi	nx-get-subdevices-list
nx-get-demand-response	nx-get-occupancy-mode	nx-get-switch-aggregate
nx-get-device-location	nx-get-occupancy-sensing-states	nx-get-switch-function
nx-get-device-name	nx-get-occupancy-state	nx-get-timestamp
nx-get-dimmer-level	nx-get-open-close-times	nx-get-zone

Sub-Category 3: Network Functionality
Purpose: Getting to know the whether the lighting system installed is even functional or not

a. Are the lights turning ON and OFF?
b. Are the lights dimming?
c. Is the device functional?
d. Can I enable/disable?
e. Can I perform a functional test?

Commands:

7. **nx-set-relay-state** - Turns on or off relays. A broadcast command can turn on or off all relays in all the Areas of the facility (controlled by the NX Area Controller). See example below. A state of 0x33 implies on. Similarly, a state of 0x30 asks the relays to turn off. "b" is for broadcast.



8. **nx-set-dimmer-level b** - Sets the dimmer level to a value (between 0 -100 percent). A broadcast command can dim the lights in all Areas of the facility to a certain level. See example below. Here, the user sets the dimmer to 100%. (Note: 15 is for the device id of a dimmer).

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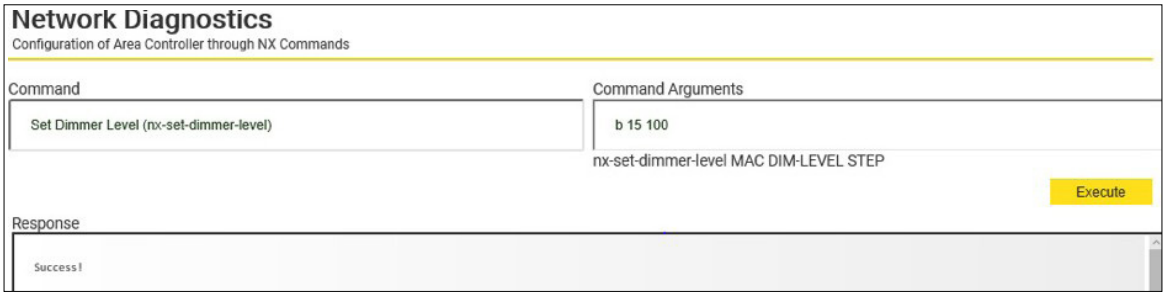

9. nx-wink - Winks the device (winking is to toggle on & off).

Sub-Category 4: Network Settings and Changes

Purpose: Broadcast settings and make changes. Some of the tasks are listed below

a. Can I broadcast a setting to all devices of the same type?
b. Can I perform a reset?
c. Can I blank a device?
d. Can I swap or replace a device?
e. Can I decommission a device?
f. Can I commission a device?
g. Can I add or remove a device?

Commands:

10. The set command allows the user to record a specific setting to a device or all devices of a certain type. Below are some of the commands in this category.

nx-set-active-times	nx-set-device-type	nx-set-zone-name	nx-set-facility-id
nx-set-afterhours-sweeps	nx-set-dimmer-trim-level	nx-set-zone-name-to-zone	nx-set-occ-permit-messages
nx-set-area	nx-set-fire-emergency-states	nx-ss-set-dev-state	nx-set-scheduler-state
nx-set-area-name	nx-set-group-name	nx-switch-set-area	nx-set-startup-state
nx-set-area-name-to-area	nx-set-groups	nx-switch-set-zone	nx-set-switch-save-restore
nx-set-azg	nx-set-mac	nx-zone-master-set	nx-set-network-id
nx-set-blink-alerts	nx-set-mask-multi	nx-set-rm-param	nx-set-nid
nx-set-button-func-msg	nx-set-occupancy-mode	nx-set-color-temp-level	nx-set-timeout
nx-set-button-parms	nx-set-occupancy-sensing-states	nx-set-color-temp-range	nx-set-disable-buttons
nx-set-button-type	nx-set-preset	nx-set-emergency-timeout	nx-set-holiday
nx-set-commission-flag	nx-set-preset-name	nx-set-em-ovrd-level	nx-set-open-close-times
nx-set-coords	nx-set-relay-type	nx-set-room-combine-table	nx-set-oper-mode
nx-set-daylight-sensor-function	nx-set-schedule	nx-set-led-control	nx-set-operation-hours
nx-set-daylight-sensor-range	nx-set-schedule-invalid	nx-set-config	nx-set-operational-hours
nx-set-demand-response	nx-set-schedule-preset	nx-set-config-switch-groups	nx-set-manual-config
nx-set-device-location	nx-set-switch-function	nx-set-schedule-disable	
nx-set-device-name	nx-set-zone	nx-set-schedule-enable	

11. **nx-blank-device** - Blank a device to remove all settings and configurations from it. The device after blanking goes back to the factory default.
12. **nx-reboot-device** - Restarts the device, essentially power cycling.

Category 2: Commissioning

Sub-Category 1: Advanced Level Network & Device Configuration

Purpose: Performing some of the advanced commissioning tasks that may or may not be supported by GUI

a. Configuring an Area level switch
b. Elevating the status of a Zone switch to Area level
c. Configuring a switch to control a different Zone or multiple Zones
d. Changing the MAC Address of the device
e. Decommission an individual device from a Zone blob
f. Changing the device type

Commands:

13. **nx-decommission-device** - Decommissioning the device removes it from a specific Area and Zone that it was part of.
14. **nx-set-mask-multi** - Performs the function of configuring a switch to control a different Zone or multiple Zones in the Area. Usage explained below.

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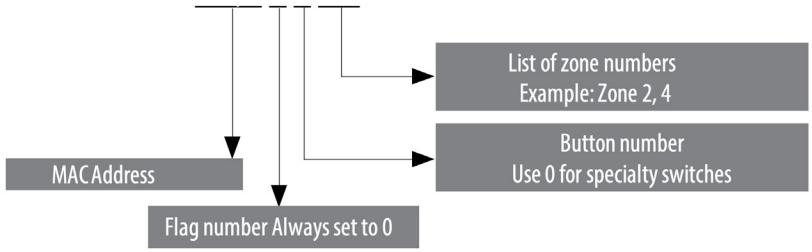
nx-set-mask-multi MAC 0 0 2,4



15. Configuring an Area level switch
    Involves configuring a switch to control an entire Area (to turn the lights on/off for the whole Area).
    - Requires changing the device type.
    - Changing the device type is a significant change so it requires a two-step process:
      - Send a message to enable "functional test"
      - Send a message to change the device type to the desired device
    - Find the On/Off switch station (or any 2-button switch that you want to convert to Area level). We will use "01040DD9-5223" as an example MAC address.
    - Enable "functional test" mode:
      - nx-send-func-test-enable <MAC address>
      - nx-send-func-test-enable 01040DD9-5223
    - Set the device type to an Area On/Off (0x5E)
      - nx-set-device-type <MAC Address> <New device type>
      - nx-set-device-type 01040DD9-5223 0x5E
    - Blank the device:
      - nx-blank-device <New MAC address>
      - nx-blank-device 01040DD9-5E23
    - Confirm settings: nx-discover 01040DD9-5E23

Category 3: Post-Commissioning

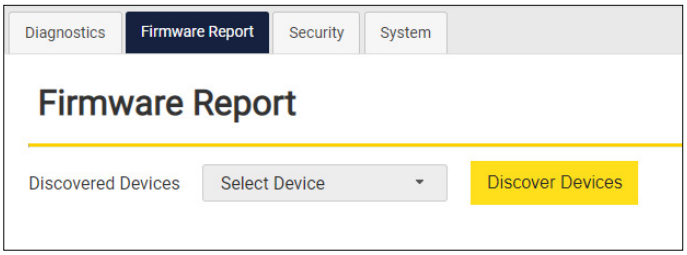
Purpose: Cross-check commissioning effort.

a. Re-discover the devices
b. Procure the device information again

The same set of commands as described before can be used to perform the above.

Firmware Report

Click-on the Firmware Report Tab to display the Firmware Report page.



In order to generate a Firmware Report the Discover Devices button must be used. After clicking on the Discover Devices button a list of all the NX device types will appear under the Select Devices pulldown.

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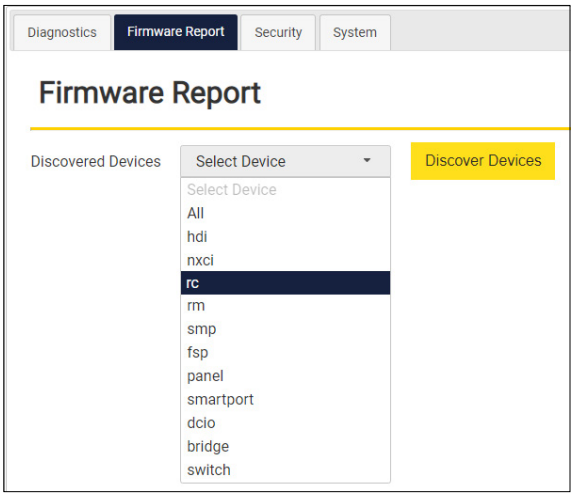
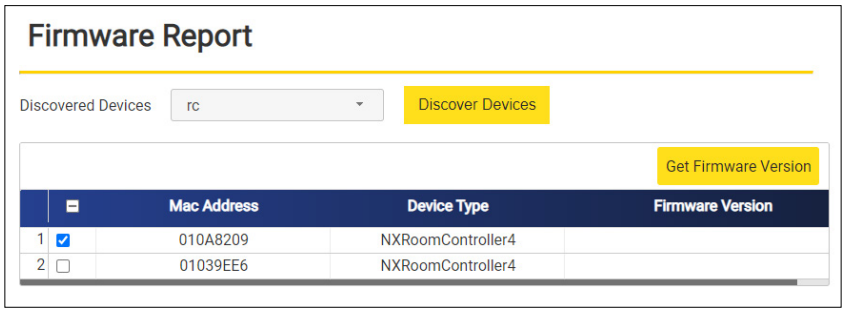
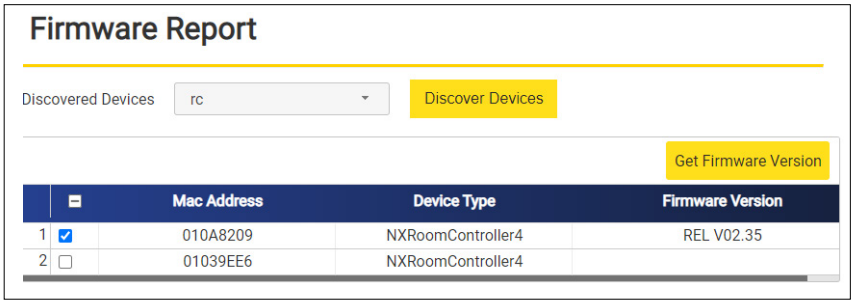


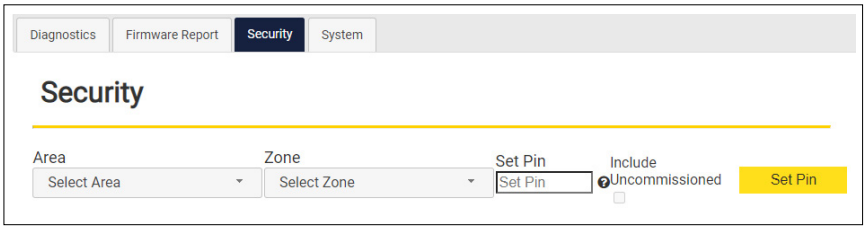
Select the device in the NX System to generate that device's Firmware Report. A list of the devices in the system will be displayed. Click the checkbox to select the desired device then click-on the Get Firmware Version button.



The Firmware Version of the device will be displayed in the corresponding row.



Security
Click-on the Security Tab to display the Security page.



Select an Area and a Zone using the pulldowns. Enter in a PIN (up to 4-digits). The PIN can be cleared by entering in spaces or by using the backspace. There is an Include Uncommissioned checkbox if an Uncommissioned device is to be included. Click-on the Set PIN button to confirm settings.

System
Click-on the System Tab to display the System Diagnostics page. There is a Download Log Files section and a Swap Network Interface section on this page.

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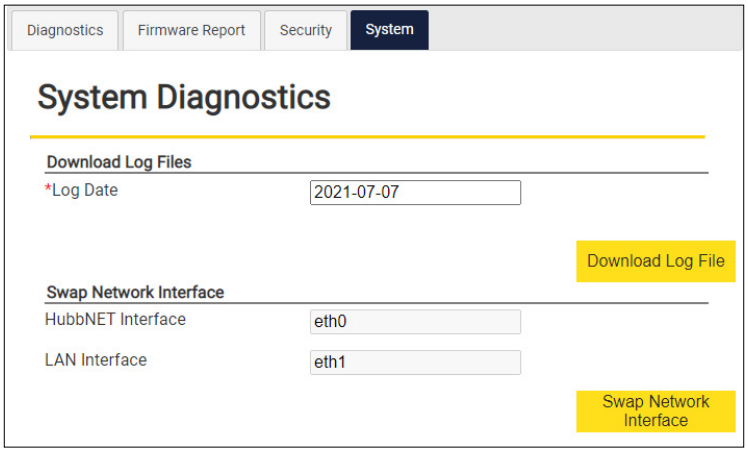
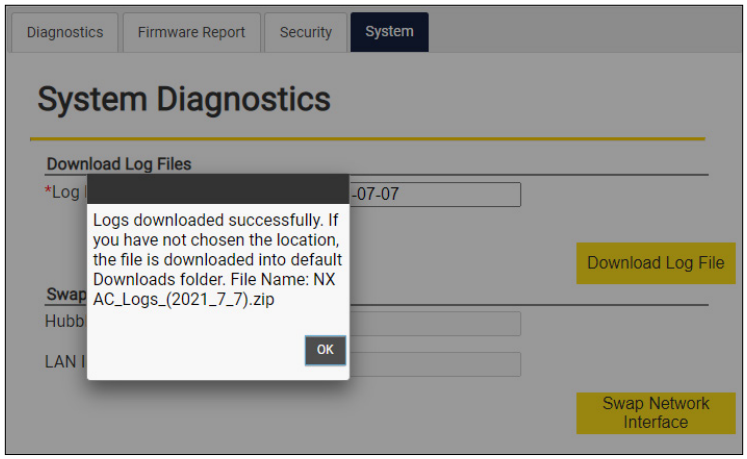
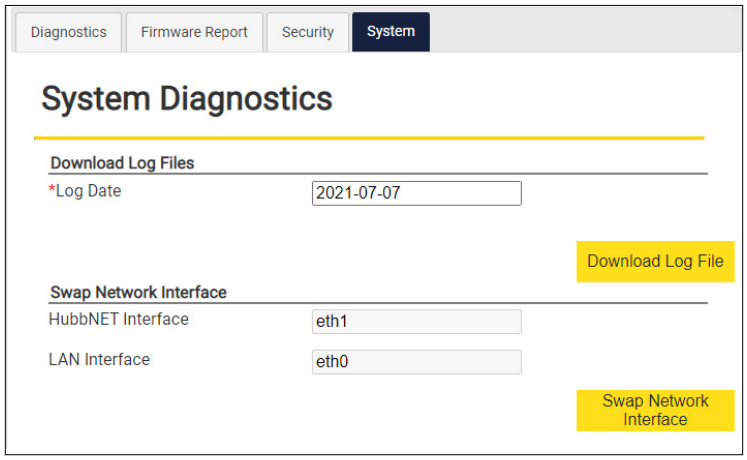
Download Log Files
Click-on the Download Log File button to generate a Log File. A pop-up will appear indicating the Log file was successfully downloaded. Click the OK button and the Log file will be saved to the Download folder on your local PC. Note: The name of the Log file is displayed in the pop-up.





Swap Network Interface
Click-on the Swap Network Interface button to change the HubbNet and LAN Network Interfaces.



Tip: Make sure to note that this change has been made especially when troubleshooting the Network after this change is made.

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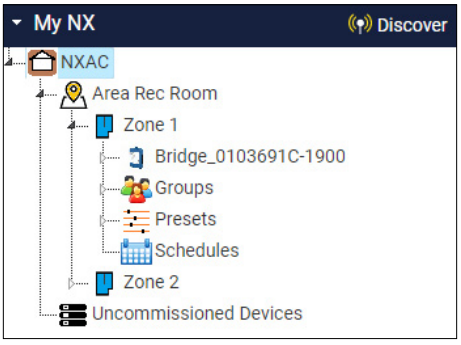
STEP 5 - DISCOVER THE NETWORK

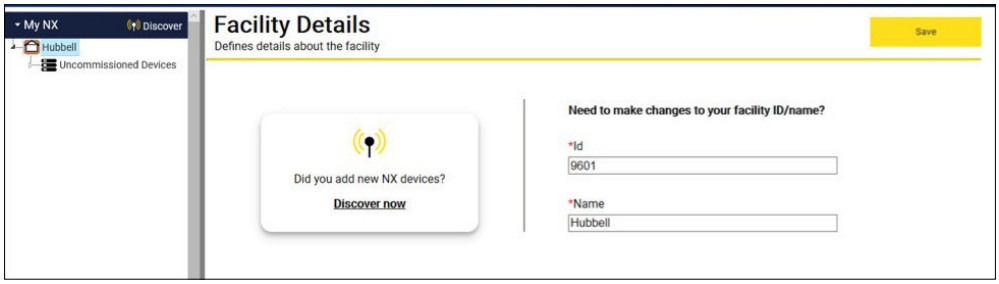
Once you are logged in, you can now start the device discovery process, using the "Discover Now" function on the Home Screen (see screenshot below). There are three primary NX devices that will be discovered by the NX Area Controller. Each of these may also have attached devices that are discovered:

1. Room Controller Zones (rooms)
2. Panels
3. SmartPORT™ modules
4. Input/Output modules (NXFSP)

Note: Give the Zones logical names during the installation and setup process prior to discovering the network. The NX Room Setup Tool (controlHUBB mobile app) can be used to write the name into the Network Bridge Module for the Zone. This name will be displayed in the Navigation Tree after discovery, which will be very helpful in organizing the site. The figure below shows a Room Controller Zone that was discovered with the name "Cafeteria" just below a Room Controller Zone that was not named prior to discovery. The Zone is identified only by the MAC address of the Network Bridge Module (01043E40) and the device type code for a Bridge (1900).



From the Home Screen, click the large button labeled "Discover now".



The time required to complete the discovery process will be dependent upon the number of devices on the network.

Room Controller Zone (NXRCFX) - These will be discovered by the NX Area Controller as a complete entity with all of the configuration and programming that was done locally via the mobile app remaining intact. Typically, it is not necessary to perform additional programming of a Room Controller Zone using the NX Area Controller user interface. A typical Room Controller Zone Blob is shown below upon discovery into an Uncommissioned Devices folder.

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Panels (NXP) - contain various quantities of: relays, dimmers, inputs, auxiliary inputs, and auxiliary outputs. These resources will be individually commissioned into Zones as appropriate. A panel is not commissioned as an entity, only the relays, dimmers, inputs, auxiliary inputs, and auxiliary outputs contained in the panel are commissioned into the Zones.

SmartPORT™ Modules (NXSP) - are connection points where digital switch stations, occupancy sensors, daylight sensors, etc. may be connected directly to the HubbNET™ network. Each of these devices are individually discovered and commissioned into the Zones.

Input/Output Modules (NXDCIO) – are connection points for low voltage wired devices. These can be low voltage contact closure inputs and Form C low voltage outputs. Inputs can be from local devices such as a key switch or from another system such as a Demand Response or Fire Alarm signal.

In-fixture Controller Zone (NXFSP) - is an access point for NX in-fixture control Zone. A Zone may have multiple NXFSPs. Each NXFSP represents a single luminaire and may contain an NXFM (NX Fixture module) that performs relay On/Off control and dimming (0-10V), an NXSMP (Smart sensor with built-in occupancy and daylight harvesting), a NXFSP (which provides a SmartPORT connection) and a NXRM (Radio Module). The NXRM is the Radio Module that provides wireless capability to the fixture or luminaire to which it is attached.

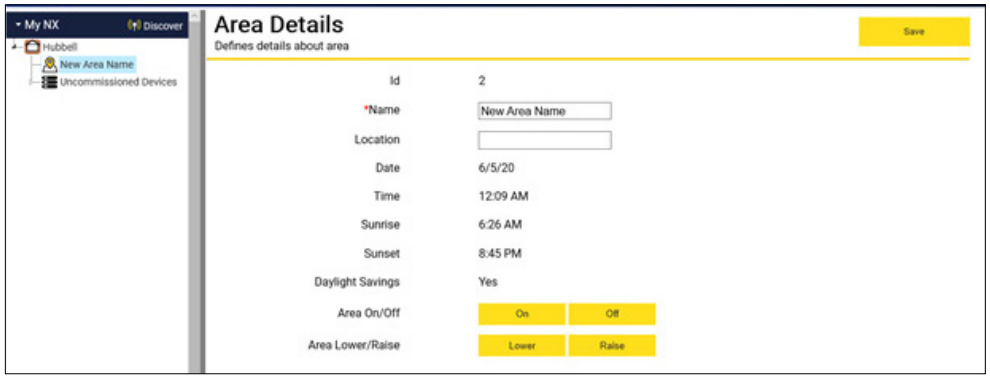
In the case of a wireless Zone, a NXFSP is not required and an the NXRM represents the access point and is the parent to devices connected to it (NXFM, NXSMP or both).

STEP 6 - COMMISSION DEVICES

The first step in commissioning is to create at least one Area. Smaller systems will likely use a single Area to contain all of the Zones. The system can support up to 128 Areas. If the option to create an initial Area and Zone was not selected during installation of the NX Area Controller, it will be necessary to manually do this now.

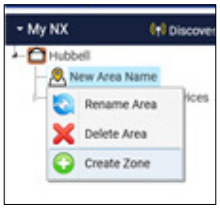
CREATING AN AREA

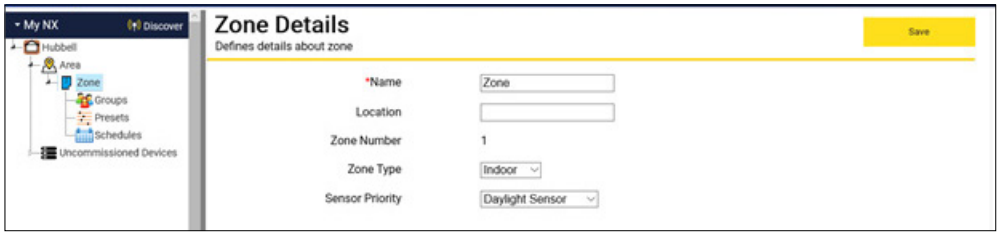
Areas must be created manually prior to creating any Zones. Right click on the Facility Name icon at the top of the tree and select Create Area. Right click in the name field for the Area and type a name for the new Area.



ADDING ZONES TO AN AREA (MANUAL)

Right click on an Area and select Create Zone. Click in the Zone Name field and type a name for the Zone. Zones should only be manually created where the Zone will contain devices associated with Panels, SmartPORT™ Modules, and Dry Contact I/O Modules. Regardless of how the Zone is created, containers for the Groups, Presets, and Schedules will automatically be created as children to the Zone. Refer to STEP 6 for Programming Groups, Programming Presets, and Programming Schedules.





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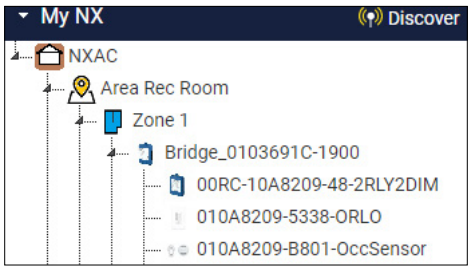
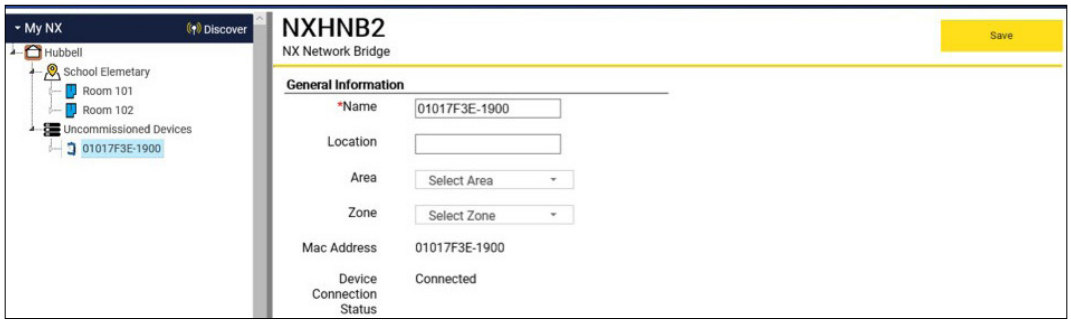
ADDING ROOM CONTROLLER ZONES TO AN AREA

There are two methods for adding a Room Controller Zone to an Area. One is manual and the other is automatic. For smaller jobs with only a few Zones, it is more convenient for the Zones to be created automatically upon dragging the room controller Zone blob. A Zone will automatically be created when a Zone level Controller (such as a Room Controller) is dragged into an Area. The Zone Name field is automatically filled in with the name of the associated Network Bridge Module. Note in the figure below, the Zone was automatically named "Room101". Further, the occupancy sensor and switch station with associated programming are also brought into the Zone automatically.



Zones are commissioned into Areas at a minimum with the programming that was created by the NX Self Configuration process. Additional programming created through the Manual Configuration process or NX controlHUBB mobile app is preserved and imported into the NX Area Controller database during discovery.



MANUAL CREATION

Areas and Zones can also be created manually. This method is very beneficial in for large job sites that have a large number of Zone blobs which leads to a long tree structure. Dragging devices into a commissioned space from the bottom of a long tree to the top is very cumbersome. In order to avoid this, it is better to create Areas and Zones in advance and name them. Now instead of dragging, the user can simply select a specific Zone blob (Network Bridge) in the Uncommissioned Devices folder and assign it an Area and Zone as shown above. Immediately upon this assignment, the entire Zone blob will drop into the commissioned node under the assigned Area and Zone.

COMMISSIONING OTHER DEVICES

For NX control devices to work with each other, they must be commissioned into the same Zone. An exception to this is an Area Level Switch. Refer to STEP 6 for Commissioning Devices.

Locate the device to be commissioned in the Uncommissioned Devices folder in the Navigation Tree. Individual devices, such as a relay or a switch, will be located in the tree as children under the device that contain or connects to them. For example, a relay can be located by expanding the panel that contains it. Or, a digital Smart Switch can be located by expanding the SmartPORT™ Module to which it is connected.

Drag the relay from the panel up the tree and drop it into a Zone. During the commissioning process, the dotted line (branch) in the tree representing the relay will be color coded. The branch representing the relay entering the Zone will be green and the branch representing the uncommissioned relay will be red. Once successfully commissioned, the color coding will disappear. Repeat this process for the switch.

Note that the relay and the switch have been moved from the bottom of the tree to the Zone at the top of the tree. The switch can now be programmed to control the relay. Refer to STEP 7 for Programming Devices.

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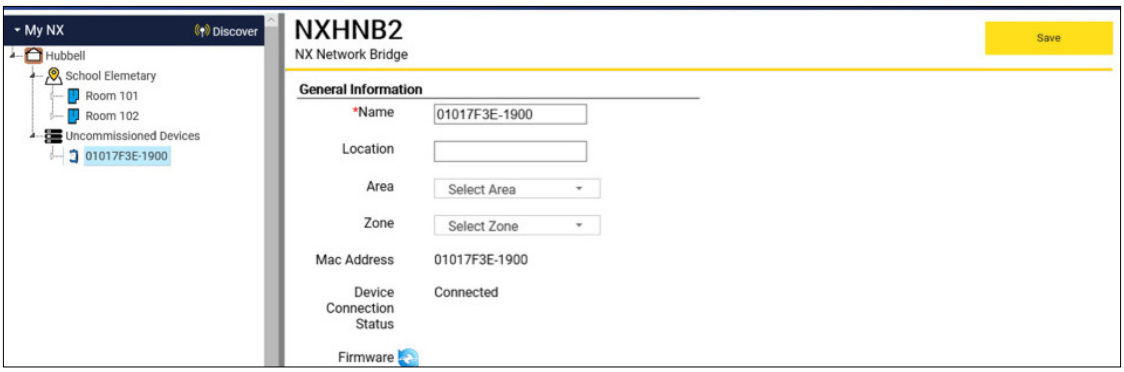
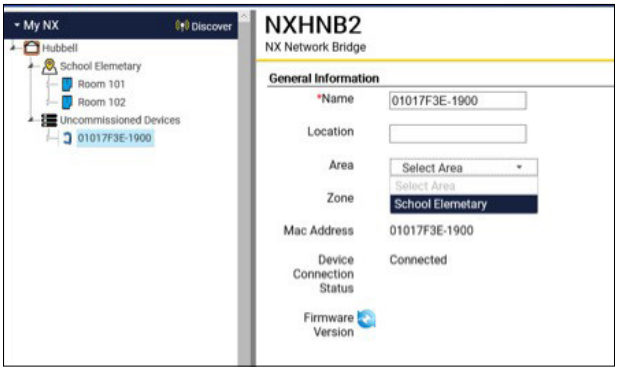
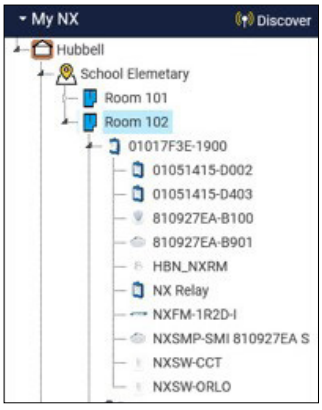
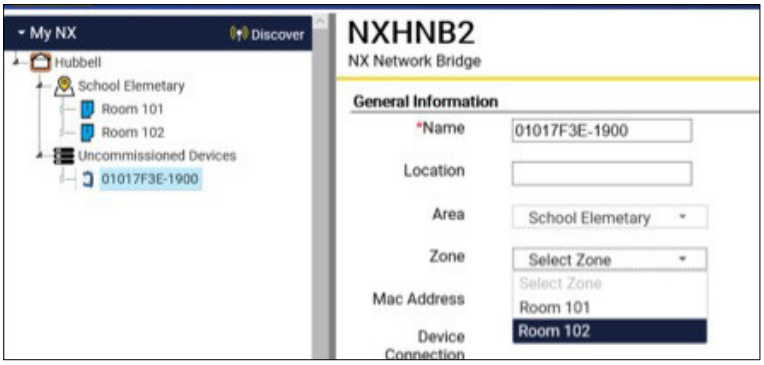
AN ALTERNATE METHOD FOR COMMISSIONING DEVICES (AREA AND ZONE ASSIGNMENT)

In some installations, dragging a device into a Zone is not the most convenient method especially when the tree is large. Dragging and dropping devices from the bottom of the tree to the top and finding the correct Zone may be cumbersome. To simplify this process, the device page can be used to configure the Area and the Zone for the device. Click on the device node to display the device page. Use the drop downs in the Area and the Zone fields and select an existing option. Refer to the screenshots below.









DECOMMISSIONING DEVICES

Decommissioning is the process of removing a device or a blob from the commissioned device node. This may be required if the user has decided to replace a device with another device of the same type or of a decommission the device in the Zone that has been affected.

To decommission an individual device and have it return to the Uncommissioned Devices folder, right click on the device and select "Remove". After decommissioning, refresh the browser to rebuild the tree so the device appears in the proper location in the tree.

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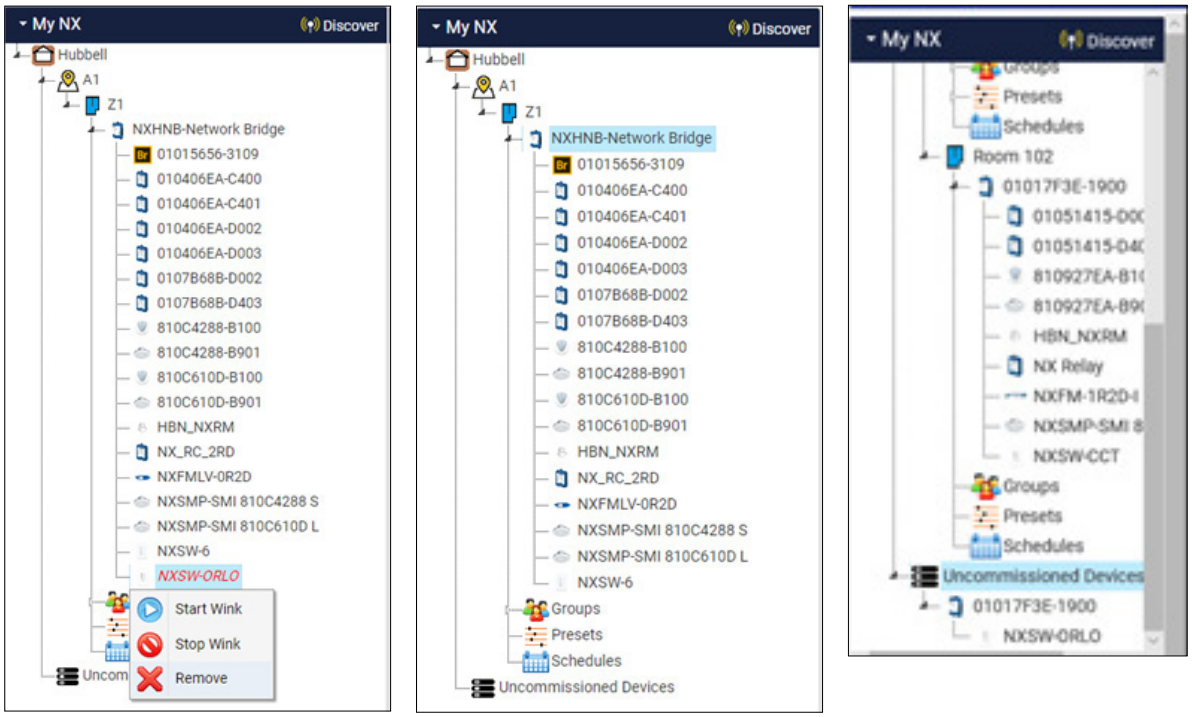
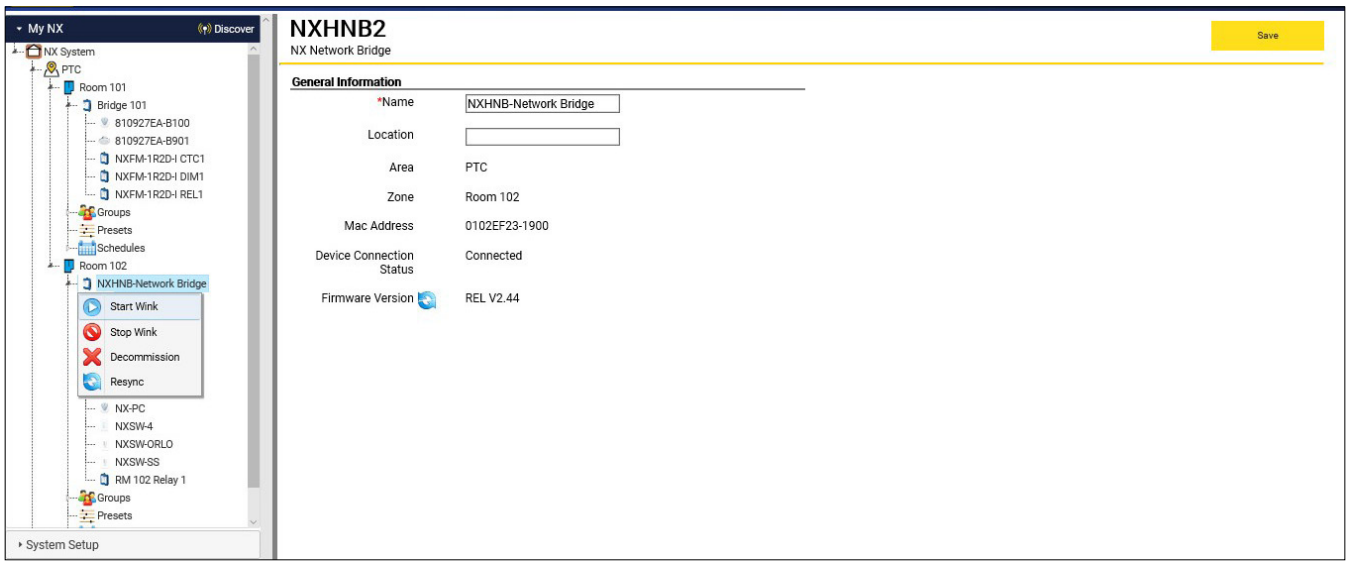
The following screenshot depicts the Remove option by right clicking on the device node to be decommissioned in the tree. This option is only available on disconnected devices. The connection status is on the device node is indicated by font color red and italicized.



Should it be necessary to Decommission a Room Controller Zone (as an example), right click on the Network Bridge associated with the Room Controller Zone and select Decommission (see image below). Note that Decommissioning a Room Controller Zone will erase all programming in the associated devices. In this example, after decommissioning a Room Controller Zone, the Room Controller and the attached devices will appear in the Uncommissioned Devices folder again.



STEP 7 - CONFIGURING (PROGRAMMING) THE DEVICES

Once devices have been assigned to their respective Areas and Zones and the tree is finalized, the next step typically is to start configuring the devices. Configuring the devices means clicking on each device node page and setting their parameters to meet the control intent. Configuration also involves creating/adding Groups, assigning devices to those Groups, creating Presets (if applicable) and Schedules.

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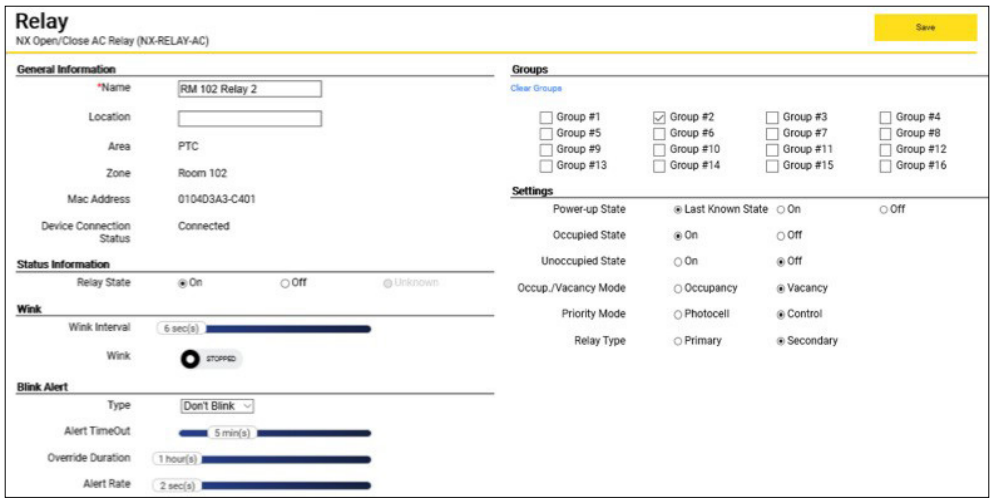
PROGRAMMING RELAYS

Relays are sub-devices that are part of an NX Controller such as a NXRCFX an In-Fixture Controller (NX-IFM) or a NX Panel. However, in the NX Area Controller, relays are visible as children devices under their controller parent and can be individually programmed and associated to Group(s), Presets or Schedules. To configure a relay, click on a relay in the tree to open the device page. The fields in the Status Information section allows real time control of the relay. The Wink function when <Started> is selected will flash the relay ON and OFF for a duration time based on the value configured in the Wink Interval field. This can aid in finding the location of the controlled light and verifying that the relay is operational. Click <Stopped> to end winking.



Once the Relay is commissioned into an Area and Zone, the Group association be set. Check the Group # (1-16) for the relay.

Note: for a relay to be controlled, it must be associated with a Group. If a relay resides in a Room Controller Zone, it will already be in a Group based on the local programming done for the room prior to discovery. If you need to change the Group assignment of the relay, you can do this it from the relay device page (shown above) and click on the <Save> button to save the settings.

Other settings for Relays include:

<Power Up Setting> - choose how this relay should react after a power cycle. Default is last known state.

<Occupied Setting> - choose the state of the relay while the room is occupied. Default is ON.

<Unoccupied Setting> - choose the state of the relay while the room is unoccupied. Default is OFF.

<Occupancy/Vacancy Mode> - choose <Occupancy> if the relay is to turn on automatically when controlled by a motion sensor. Choose <Vacancy> if the relay will not turn on until a switch/button is pressed after the room becomes occupied.

Click on the <Save> button after making a change to any of the above settings.

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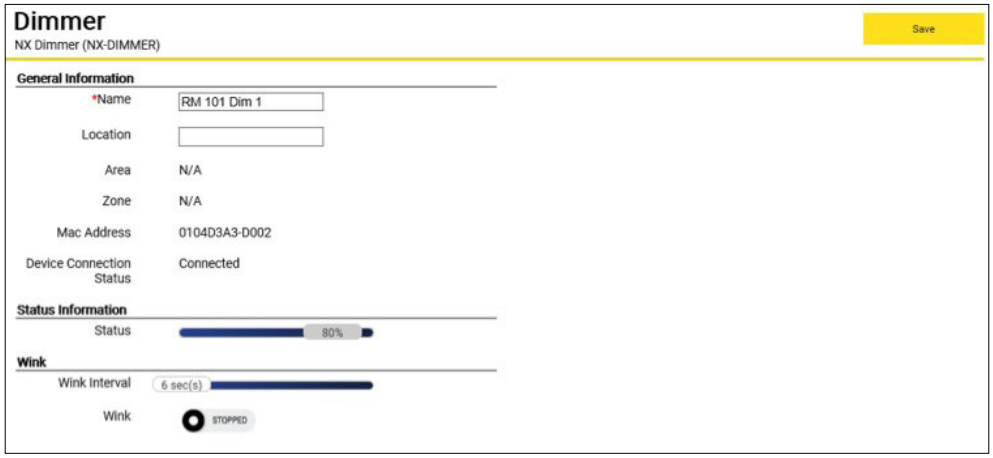
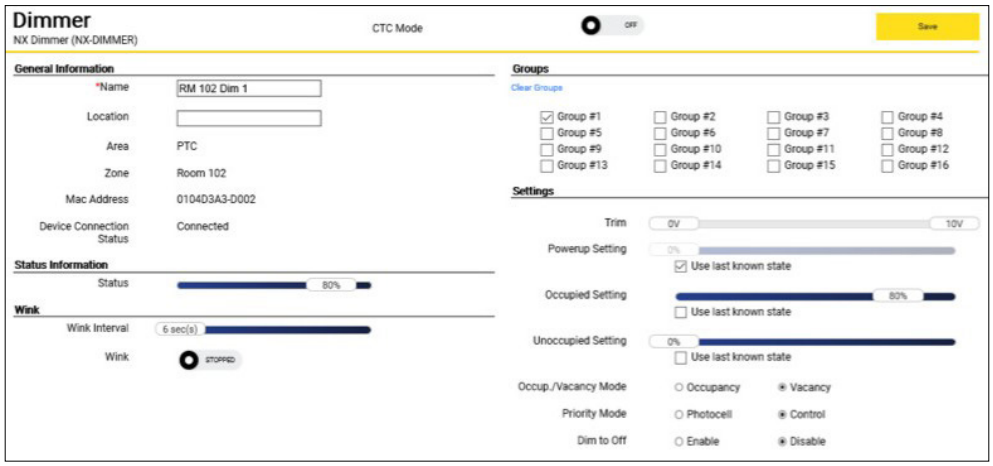
PROGRAMMING DIMMERS

Click on a Dimmer branch in the Navigation Tree to display the device page.

The <Status> field allows real time control of the Dimmer. This setting will not turn the lighting ON and OFF. If ON it will dim the light up and down.

The <Wink> function will flash the relay ON and OFF to aid in finding the location of the controlled light. Click <Start> to begin winking, click <Stop> to end winking.





Select a Group or Groups (up to 16) for this Dimmer. The Dimmer may be in more than one Group if required.

Note: for this Dimmer to be controlled, it must be in a Group. Dimmers do not turn lights ON and OFF. Typically, a dimmer will be associated by Group with a relay. If this dimmer resides in a Room Controller Zone, it will already be in a Group based on the local programming done for the room prior to discovery. In case you want to change the Group assignment of the dimmer, you can do it here from this page (as shown).

Other settings for Dimmers include:

<High Trim> - choose the upper limit for this dimmer. Note that visual actuators for this dimmer will travel the full range. However, the 100% upper limit will be calibrated to be the High Trim set point.

<Low Trim> - choose the lower limit for this dimmer. Note that visual actuators for this dimmer will travel the full range. However, the 1% lower limit will be calibrated to be the Low Trim set point.

<Power Up Setting> - choose how this Dimmer should react after a power cycle. The default is last known state.

<Occupied Setting> - choose the state of the Dimmer while the room is occupied. The default is 100%.

<Unoccupied Setting> - choose the state of the Dimmer while the room is unoccupied. The default is 0%. Click the appropriate <Save> button after making a change to one of the above settings.

CTC Mode – Enabling this allows the user to configure the dimmer as a CCT dimmer with CCT settings available. However, this is only allowed if the dimmer is CCT capable. If it is not and the CCT mode is turned on, user will get an error.

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PROGRAMMING SWITCHES

Click on a switch in the Navigation Tree to open the device page.

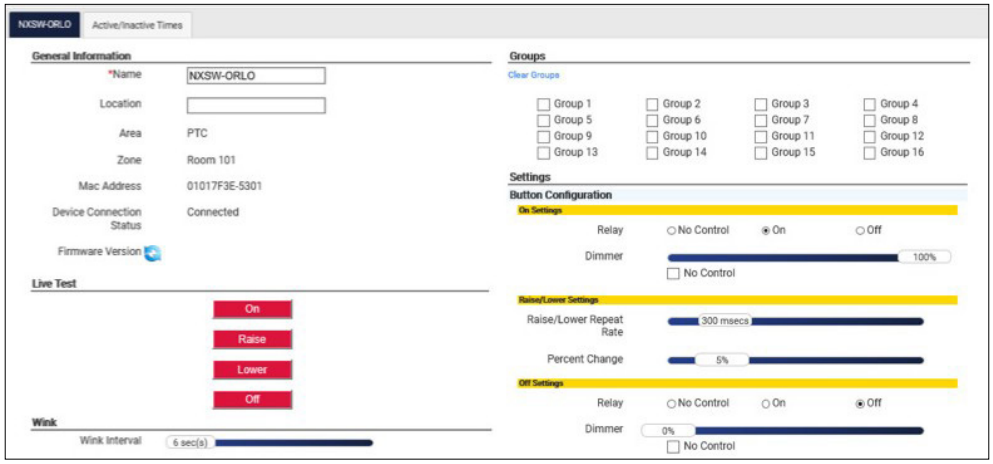
SPECIALTY SWITCHES

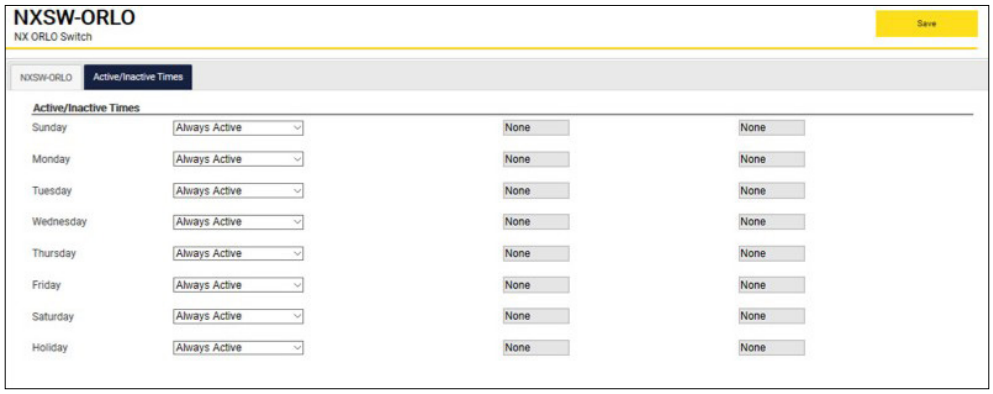
Specialty Switches such as the NXSW-ORLO, NXSW-RL, NXSW-OO etc. are programmed to control lights based on their type. The button functions on these switches are not changeable.

Select a Group or Groups for the specialty switch to control. Make other settings on the page as needed.

The <Control> field can be used to test the functionality once a Group(s) has been selected. Note that the Group must also contain Relay(s) and Dimmer(s) for these functions to work.

Click on <Save> to save the settings.





PROGRAMMABLE SWITCHES

Programmable Switch Stations such as the NXSW-4 have buttons that are individually programmable. The fields for programming these buttons will change based on the button <Type> selected. The factory default button type is <Toggle>. A Toggle button type will turn a fixture ON and OFF with alternate presses.

Other button type choices are:

<On> - Button type sends an ON message with each press.

<Off> - Button type sends an OFF message with each press.

<Raise> - Button type sends a dimmer ramp up message while the button is held down. The button first sends an ON message? when pressed for a half second and then sends a dimmer ramp up message until released.

<Lower> - Button type sends a dimmer ramp down message while the button is held down. The button first sends an OFF message? when pressed for a half second and then sends a dimmer ramp down message until released.

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<Preset> - Button sends a preset message when pressed. A list of the type of presets available is shown in Fig. 2 for Button #1 Type pulldown. The LED will be lit while the respective preset is active. When choosing the Preset button type, it is also necessary to select the preset number 1 – 16 which assigns the Group Number to that preset. Note that presets cannot be "turned off". They're like "radio" buttons in that only one button can be active at a time.

<Timed On> - Button type sends a high priority ON when pressed which expires after the value configured in the time set field. The LED will be lit while the Timed On is active. Note that the Timed On function overrides all other functions except Daylight Harvesting.

If the station has more than one button, select which button to program See Fig. 1
Select a Group # for the button to control.

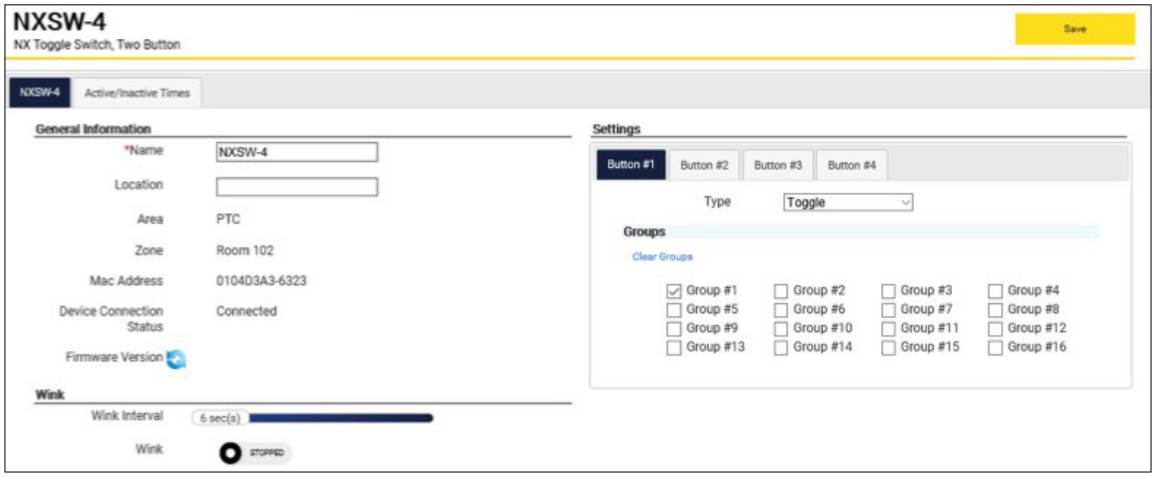

Fig. 1

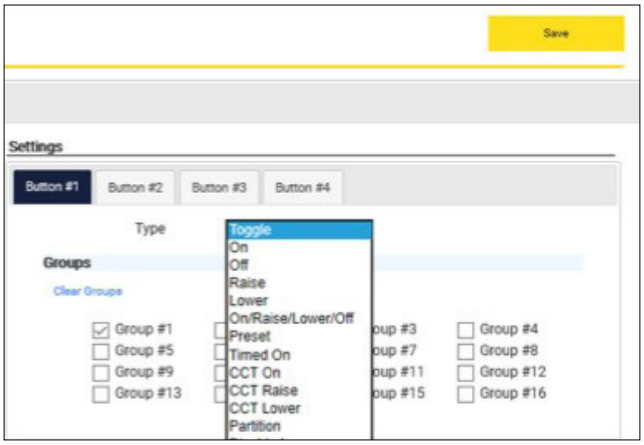

Fig. 2

Click <Save> to save the settings.

ACTIVE/INACTIVE TIMES FOR SWITCHES

Click the <Active/Inactive> tab to set a time range that the switch will be Active (operational). This setting affects the entire switch station. It cannot be set on a button by button basis.

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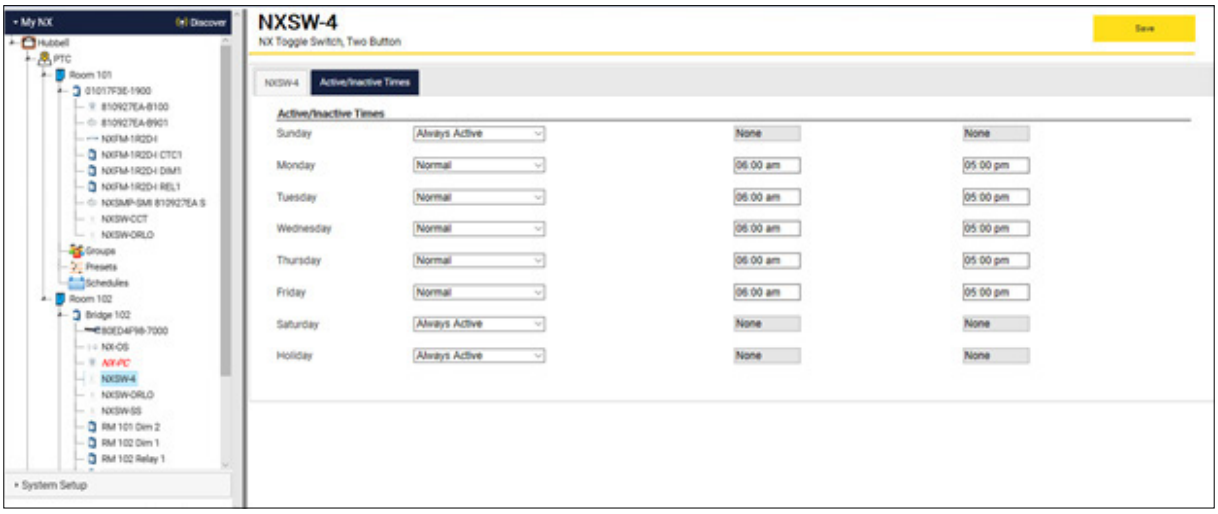
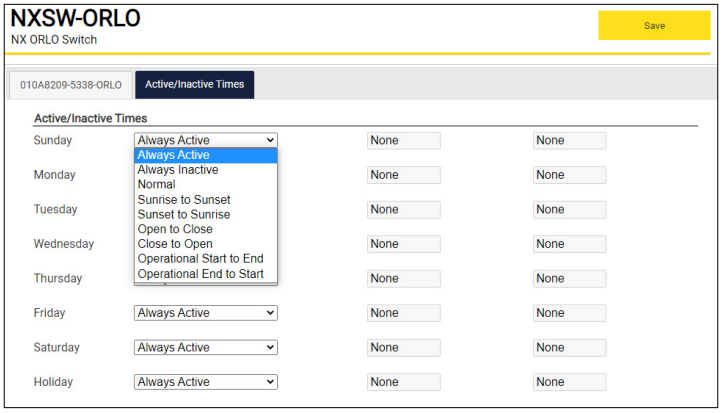
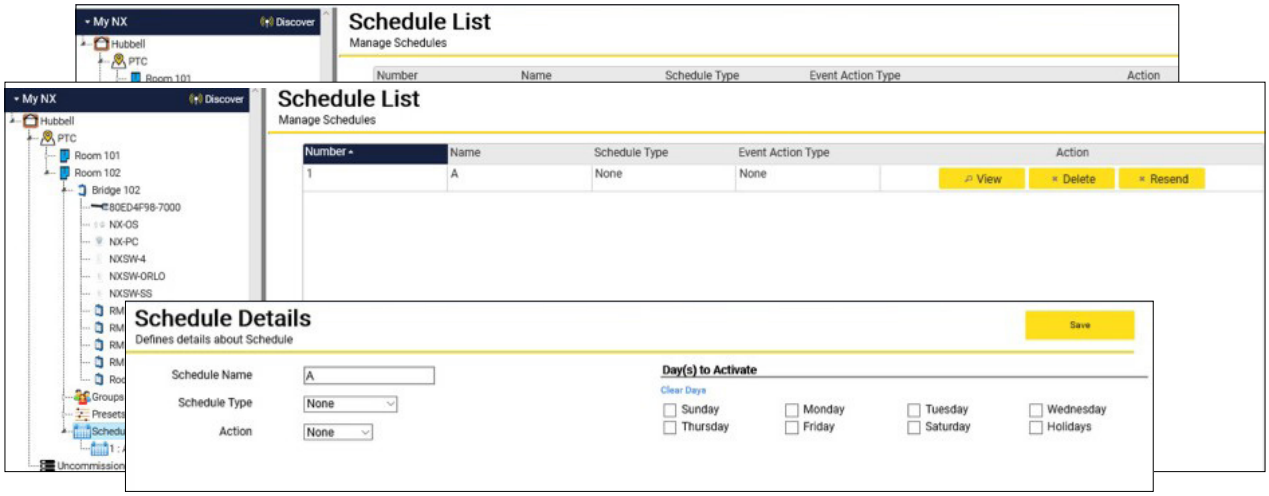




Click <Always Active> to choose the time range for the Active Time. In the above example, the 4-button switch station in the Room 102 will be active from 6:00 AM until 5:00 PM each weekday. During other times of the day, the switch will be ignored or inactive.

PROGRAMMING SCHEDULES

Each Zone will automatically have a folder for schedules. Initially, this folder is empty and therefore is not expandable. To begin programming a schedule for the Zone, right click on the Schedules folder then click <Add Schedule>. When the first schedule is created, the Schedules folder will be expandable.



Click on the Schedule icon in the tree to open the Schedule Details page where you will define the schedule.

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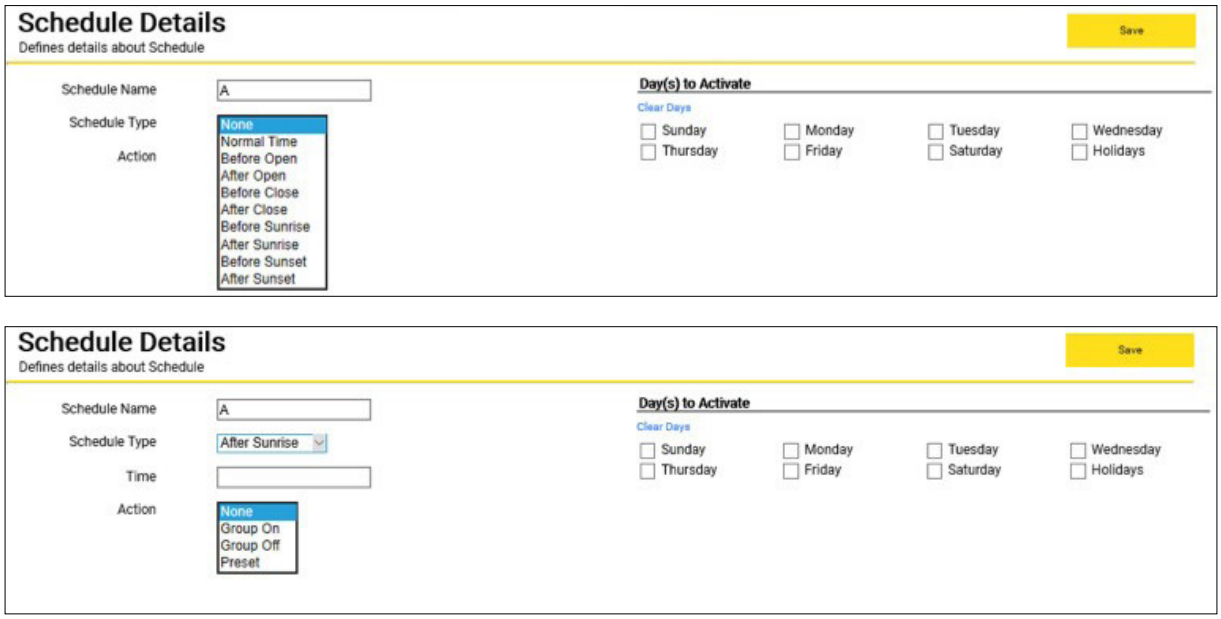


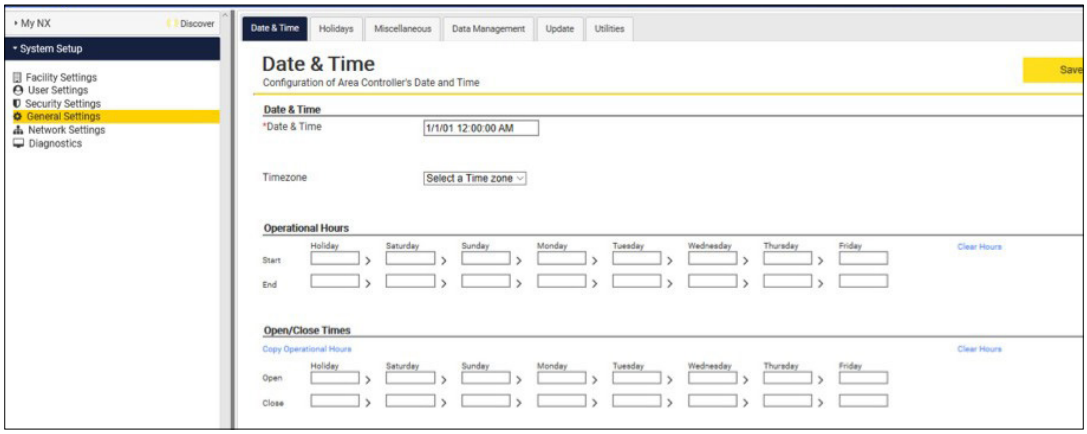
The first step is to choose the Schedule Type. The <Normal Time> is the common clock-based schedule where an action will occur based on the current time. The choices on the screen will change based on the type of schedule chosen. The example below is for the Normal Time schedule type where each Schedule will define a single action that will occur at a specific time on the specified day(s).

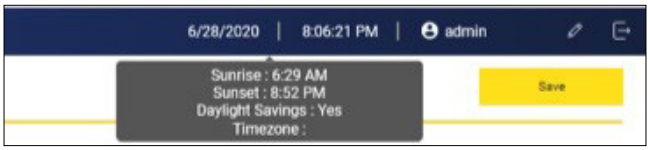
Choose the Schedule Action to select the type of control action to be performed. The three control choices for a <Normal Schedule> are displayed using the Action pulldown. They are <None> <Group On> <Group Off> and <Preset>.

The selected Group should contain all of the loads that are to be affected by this schedule. See Programming Groups.

Note: for Schedules to operate correctly, the NX Area Controller must have the correct Date & Time and Time Zone configured. If the Astronomic Clock feature (dusk and dawn) is to be used for a schedule, the Location must also be set prior to creating schedules.

To set the Date & Time and Time Zone:
Click on <System Setup> at the bottom of the navigation tree.
Click on <General Settings>
Click on the <Date & Time> tab and select the current Time and Date. Select the Time Zone from the pulldown list and select the proper time zone.
Click on the Save button to these settings.





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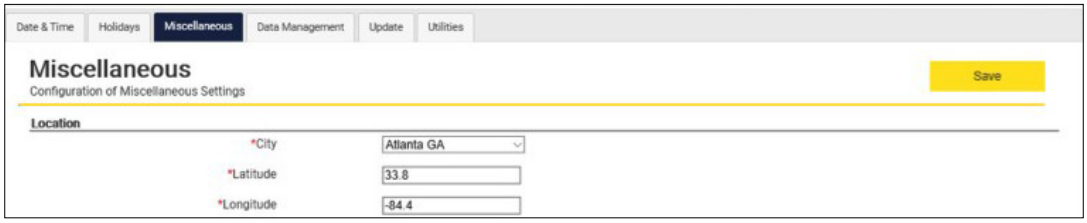
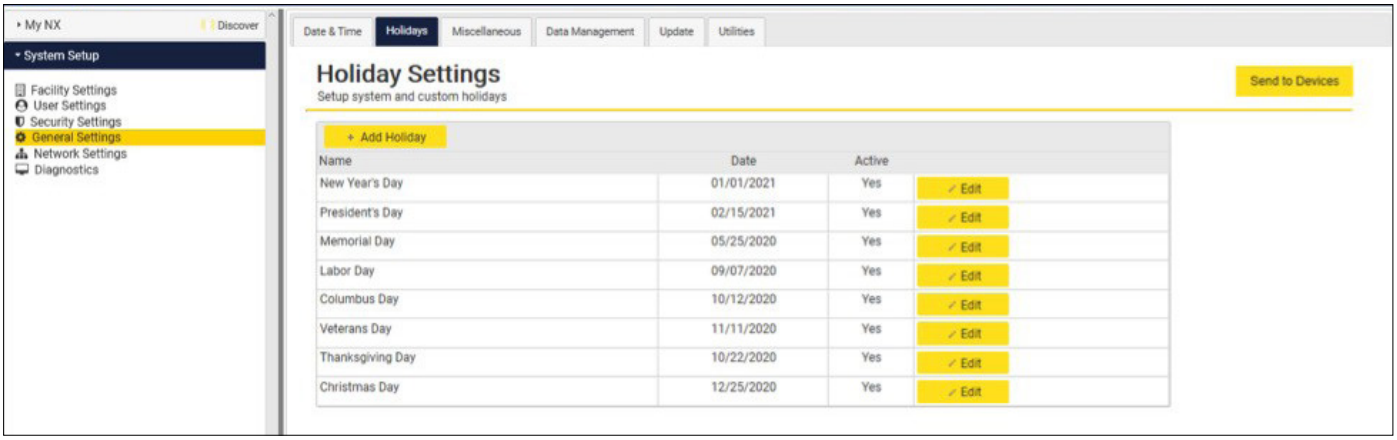
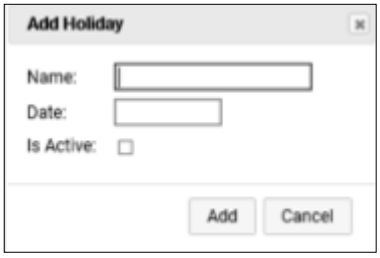
To set the Location:
Click on <System Setup> at the bottom of the navigation tree. Click on <General Settings> state.
Click on <Miscellaneous>
Choose the city from the pulldown list or enter the first letter of the city and then select the city and state. If the city is not listed, choose the closest city to the installation. Or, you can manually enter the Longitude and Latitude of the installation.
Tip: Google the longitude and latitude of the city.

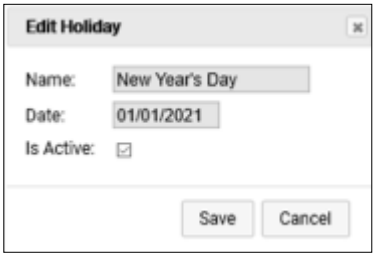


Enter just the numbers into the appropriate fields on the page. Click <Save > button to save the entered location.

Enter Holiday Dates:
Click on <System Setup> at the bottom of the navigation tree.
Click on <General Settings>
Click on the <Holidays> tab
Check any standard Holidays that apply
Click on the <+ Add Holiday> button to add a custom Holiday.
Enter a name and date for the new Holiday in the appropriate fields.
Select the 'Is Active' checkbox to activate the Holiday and then click on the <Add> button.
Click on the <Send to Devices> button at the top right of the screen to download the holiday(s) to the NX devices.







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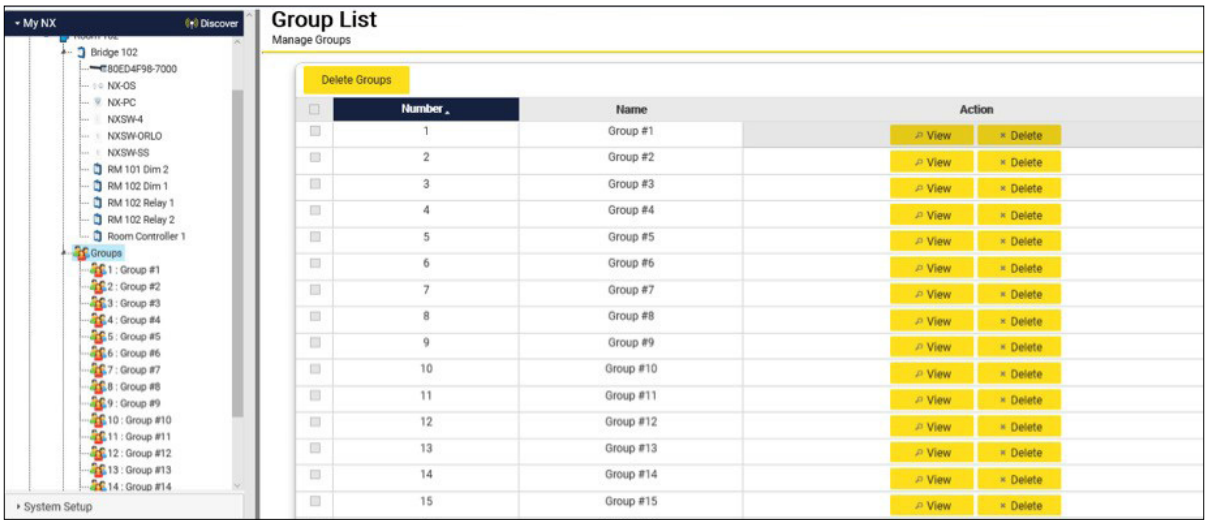
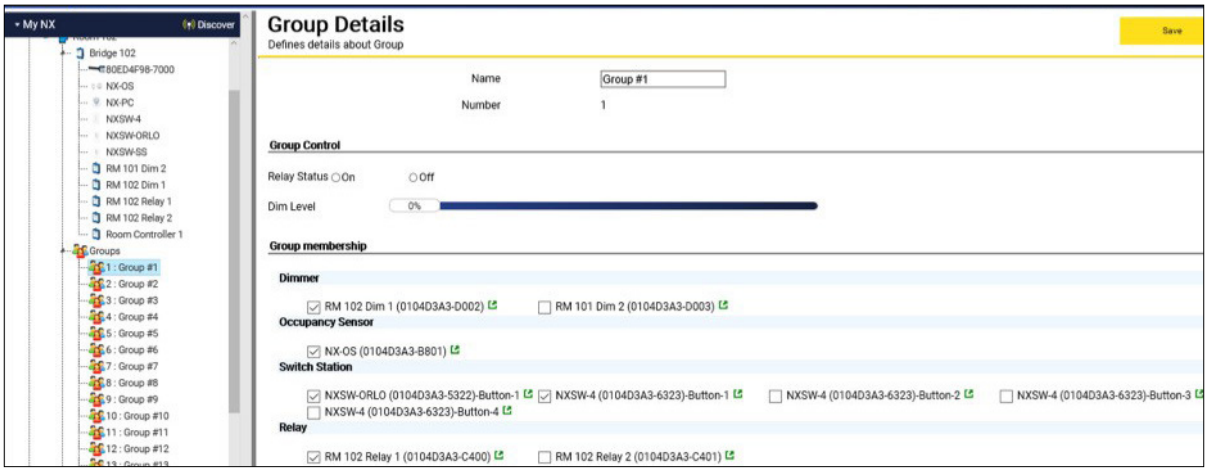
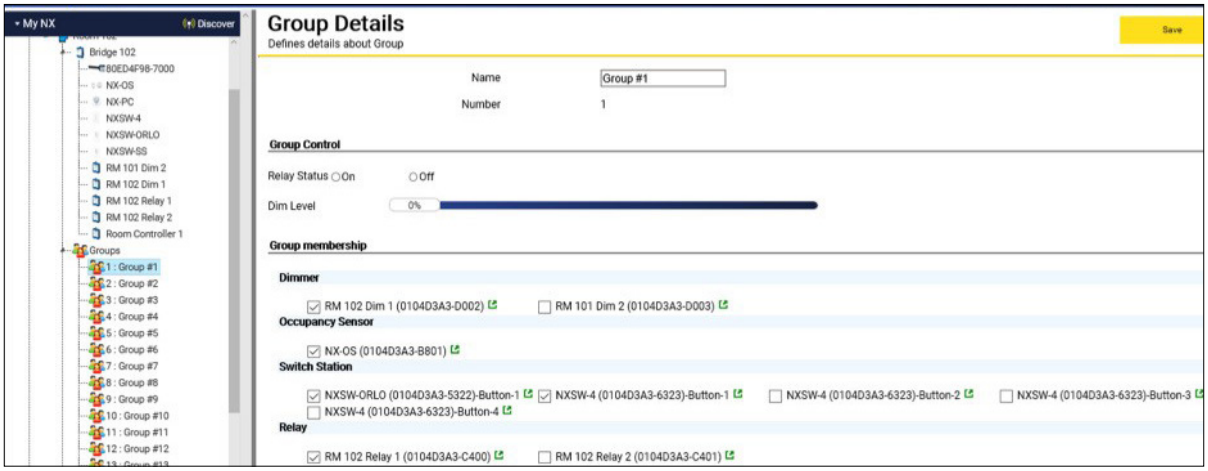
PROGRAMMING GROUPS

Groups are not "programmed" directly in a NX system. Group membership is assigned while programming relays, dimmers, switches, buttons, motion sensors, etc. If a button on a switch is to control a Relay, both the Relay and the button must be assigned to the same Group during programming.

Each Zone can support up to 16 Groups. Note that Room Controller Zones will have at least one Group defined when discovered and commissioned. For example, a Room Controller Zone with two Relays and a two-button switch will have two Groups defined. This allows button one to control Relay 1 via one Group and button two to control Relay 2 via a second Group. Should it also be necessary to control both Relay 1 and Relay 2 together, such as with a Schedule, both Relay 1 and Relay 2 must be assigned to a third Group. This will allow both Relays to be controlled by a Schedule. event. See Refer to STEP 6 programming Schedules.







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PROGRAMMING LEGACY OCCUPANCY SENSORS

Click on an <Occupancy Sensor> in the tree to open the Occupancy Sensor page in the GUI.

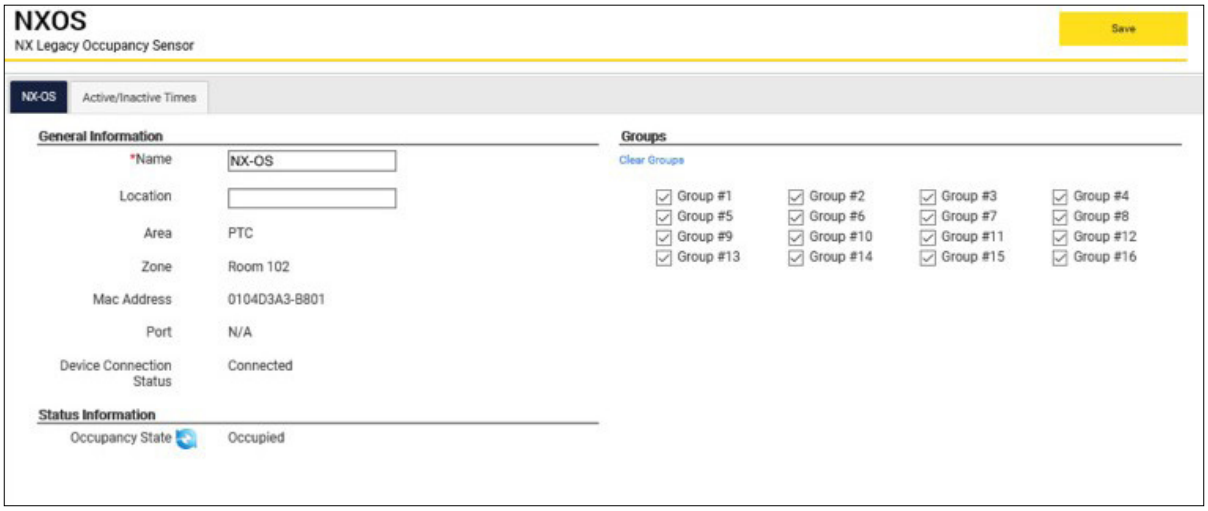
The <Status> field will indicate the current state of the Occupancy Sensor. Note that this does not necessarily indicate that the lights are on in the space but that the sensor is detecting motion.

Choose the <Group> or Groups that this Occupancy Sensor will be assigned. Note that an Occupancy Sensor that is part of a Room Controller Zone will be in all 16 Groups by default.

Note: Occupancy Sensors that are connected in the same Zone will appear collectively as a single Occupancy Sensor. If any of the sensors is detecting occupancy, the <Status> will be indicated as Occupied.

ACTIVE/INACTIVE TIMES FOR OCCUPANCY SENSORS

The only programming necessary for a legacy occupancy sensor other than naming, is to set times when the sensor is Active and when it should be Inactive (non-functional). By default occupancy sensors are always active. Click on the Active/Inactive Times tab to set the period that the sensor will be active.



Click <Always Active> to choose the type of schedule for the Active Time period to follow. In the above example, the occupancy sensor in the Common Area will be active from 5:00 PM until 6:00 AM each weekday. During other times of the day, the Occupancy Sensor will be ignored.

PROGRAMMING A DAYLIGHT SENSOR (PHOTOCELL)

THEORY OF OPERATION

The NX system employs an open loop Daylight sensor (NXDS) for control of lighting based on ambient light levels. Continuous dimming is the most common technology for indoor daylight harvesting applications, but in addition, the NX system also allows for simple switching, and step switching type control. The Daylight Sensor monitors the amount of daylight entering the space at the window. The system then regulates the level of electric light to provide the minimum specified amount of light on the work surface.

There are three settings required to calibrate the system for daylight harvesting. The light level at the window as measured by Daylight sensor, the light level at the surface of the task as measured by a light meter with the electric lights turned OFF and Design Level which is the minimum amount of light that must be maintained. Two additional settings regulate the speed at which the controlled lighting will dim down and up. These settings should control the dimming subtly but should not leave the space too dark. The up is calibrated in seconds and the down is calibrated in minutes. Typically, the down should be at least one minute and the up should be no more than 30 seconds.

The user should be aware that the default Room Controller settings will begin the daylight dimming 30 seconds after the lights are turned ON. This meets the expectations of an occupant entering the space then gradually reduces lighting in the Daylight Zone(s). Note that the system will allow raise/lower controls to lower the light level but will not allow the level to be raised above the level called for by the Daylight Sensor.

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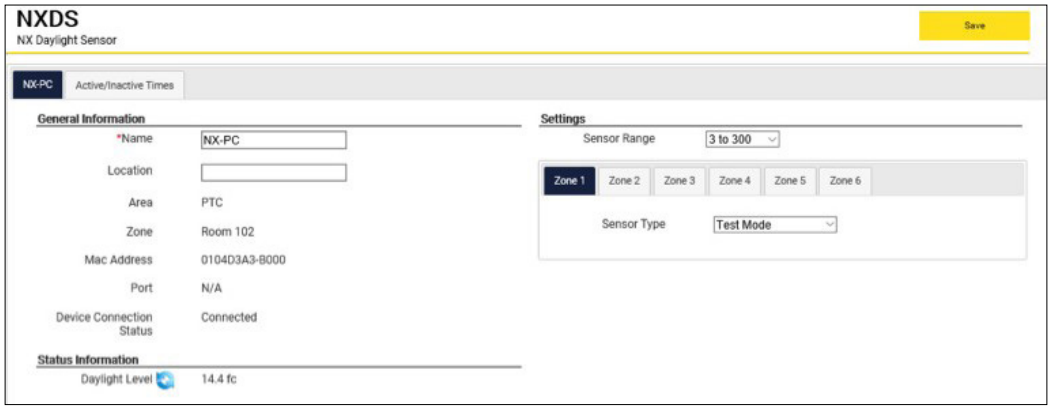
PROGRAMMING A DAYLIGHT SENSOR FOR CONTINUOUS DIMMING

Click on a Daylight Sensor in the tree to display the settings page. The sensor may be given a meaningful name to help with future identification.

The system allows definition of up to six (6) separate Daylight Zones using a single Daylight Sensor. Click on the Zone 1 tab to define a Daylight Zone.



The **Daylight Level** field will indicate the last light level reading taken by the sensor. The brighter the sunlight, the higher this number will be. Note that a <Refresh> button is provided to refresh this reading. For best results, the calibration should be done at a time of day when this reading is 50 or higher. On a bright day, this reading will typically be close to 200.

Enter the Daylight Level in the <Daylight at Sensor> field.

Use a light meter to measure the amount of daylight on the work surface within the daylight zone. The electric lighting should be turned off while making this measurement. The goal is to determine the amount of daylight contribution on the work sur-face at the current Daylight Level sensor reading.

Enter the meter reading in the <Daylight at Task> field.

Note: if a meter is not available this setting can be estimated. On a bright day where the daylight Zone is well lit by the sun, and the expectation is for the lighting to be dimmed down, enter a <Daylight at Task> value somewhat above the <Design Level>. This will cause the controlled lighting to dim to the minimum level. Adjust the <Daylight at Task> number until the desired amount of dimming is achieved. Click <Save> each time a change is made.

Check the <Groups> box to select which Group or Groups is to be controlled by the Zone 1 settings. Click <Save> to save the settings. Note: the Daylight Harvesting will take affect 30 seconds after the controlled lighting is turned on.

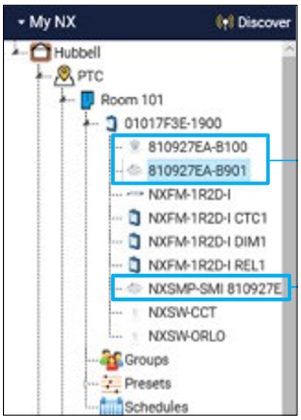
ACTIVE/INACTIVE TIMES FOR DAYLIGHT SENSORS

The Daylight Sensor can be active only during selected times. The procedure for setting this is similar to setting Occupancy Sensors and Switches to be active during selected times.

PROGRAMMING THE IN-FIXTURE DEVICES

SMART SENSORS (NXSMPS)

The NXSMP devices are integral component of the NX In-Fixture solution. They can also be used and programmed for outside of the fixture, for integration with the Room Controller. Upon discovery, the NXSMP will show up as an individual device under its parent (which could be a NX Network Bridge (NXHNB2) or a radio module). The NXSMP has two integral sub-devices - a) an occupancy sensor and b) daylight sensor. These sub-devices also show up as individual programmable devices in the tree above the NXSMP device under the same parent device. See below.



Occupancy and Daylight sensor sub-devices

NXSMP device showing up under the parent (bridge)

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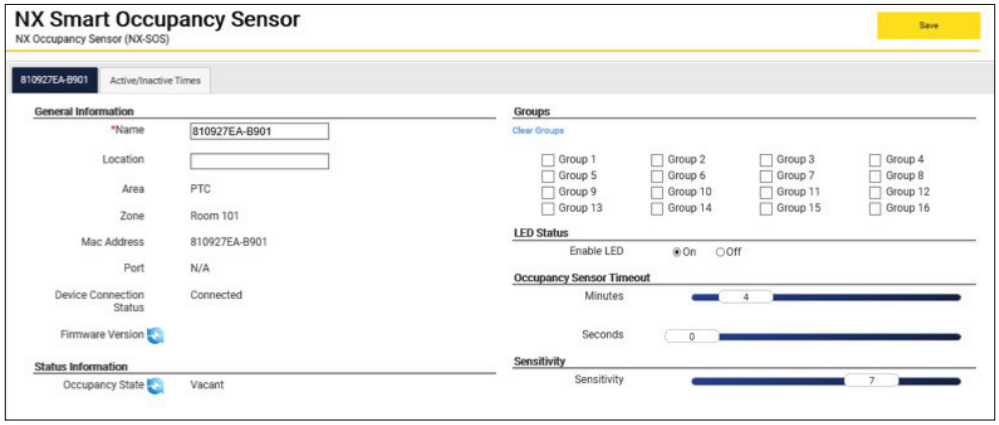
OCCUPANCY SENSORS

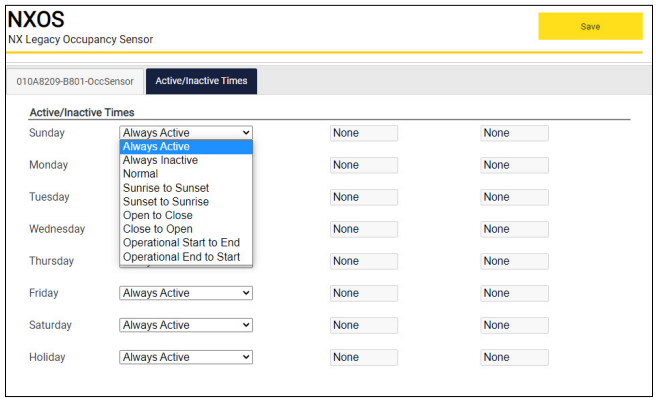
The NX Smart Occupancy Sensor (part of the NXSMP) is individually programmable and can be assigned to Groups from its configuration page. Click on the sensor to open and access its device page for configuring the settings as shown below.



Click on <Save> to save the settings.

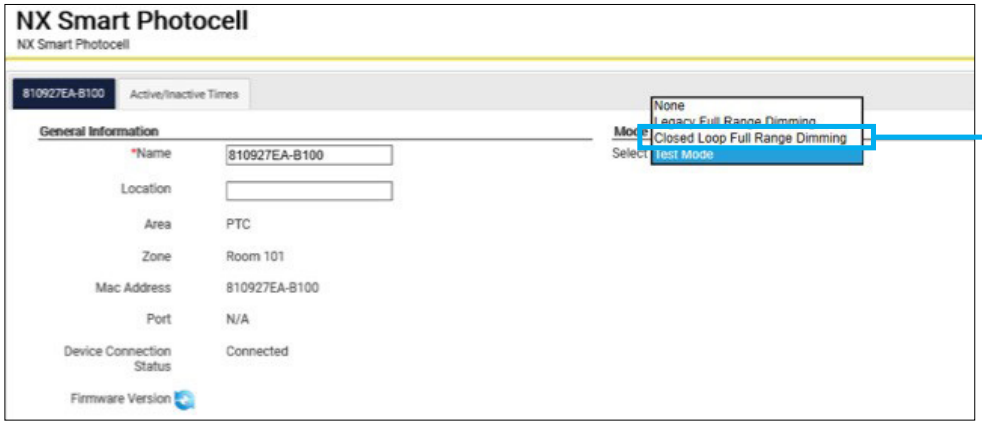
ACTIVE/INACTIVE TIMES FOR SMART OCCUPANCY SENSORS

The Smart Occupancy Sensor can be active only during selected times. Refer to the procedure for setting the Active/Inactive times for other NX Devices as described in previous sections.



DAYLIGHT SENSOR

The NX Smart Photocell (part of the NXSMP) is a closed loop daylight sensor that is programmable and can be assigned to Groups from the configuration page. Click on the sensor to open and access the device page for configuring the settings as shown below. There are four (4) different modes of operation; the most common mode being the Closed Loop Full Range Dimming.



Mode selection:
Choose closed loop full range dimming from here

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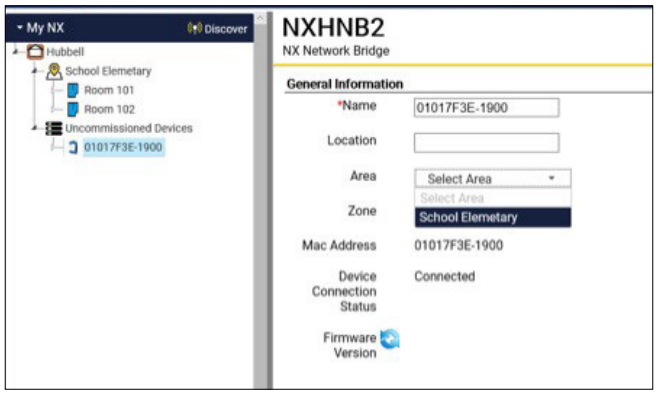
NETWORK DIAGNOSTICS TOOL

The diagnostics tool within the system setup is a newly introduced utility available in the Next Generation NX Area Controller software. It is a powerful tool to help technicians perform important tasks to ensure successful commissioning, configuration and troubleshooting of the NX lighting system. See screen shot below.



These tasks include (but not limited to) device query, diagnosing the network for any wiring problems prior to the start of commissioning, performing advanced configuration tasks not supported by GUI, cross checking device configuration settings etc. Hence, this newly introduced diagnostics tool replaces the need for using PuTTY*.

Using this tool involves using a command or a set of commands to invoke a certain action which has a certain purpose. It is very important for the user to understand the different purposes before learning to use these commands. To make it easier, the commands are divided into 3 broad categories along with associated sub-categories.

Category 1: Prior to Commissioning

Sub-Category 1: Network Discovery

Purpose: Getting to know the network and get a quick overview

a. Find out who is on the network
b. What are the different device types
c. What is the count of each device type

Commands:

1. **nx-discover** - Discovers the devices on the network
2. **nx-fw-discover** - Discovers the devices, categorizes into device types and provides the count of each type.
3. **nx-dev-discover** - Discovers the devices, categorizes them by physical layer hierarchy and provides MAC addresses of the devices discovered.
4. **nx-help** - A general command to use in case the user is not sure about the purpose.

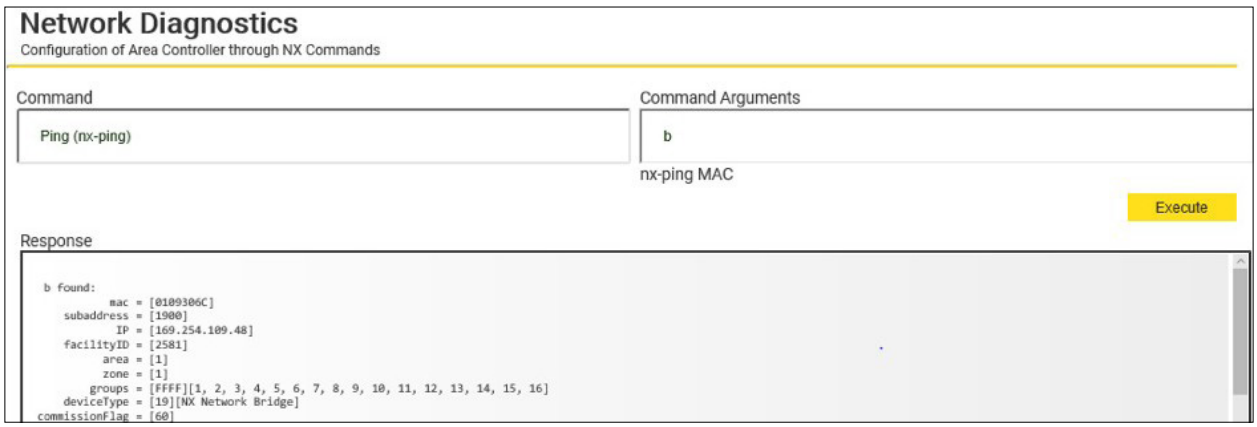
Sub-Category 2: Network Information

Purpose: Getting to know the network devices

a. What type of information do you have?
b. What is your firmware version?
c. Do you belong to any Groups or Zones already?
d. What specific settings do you have?
e. Who has "x" information?

Commands:

5. **nx-ping** - General command to get basic information about the device by sending this ping command. See below example. Note: If not sure about which device to ping, user can do a broadcast by typing "b" in the argument. In this case, the ping will go to the most immediate device (s) connected to the NX Area Controller on the network. See screenshot below. In this example, there is a NX Bridge (NXHNB2) connected directly to the NX Area Controller that receives the broadcast ping command and reports out the information.



*third party tool for network diagnostics that the technicians have been using on the Legacy NX Area Controller.

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6. The get command allows the user to procure device specific information or specific information from all devices or specific information from a certain device type. Below are all the get commands supported.

nx-get-active-times
nx-get-area
nx-get-bl-version
nx-get-blink-alerts
nx-get-button-func-msg
nx-get-button-parms
nx-get-button-type
nx-get-coords
nx-get-daylight-sensor-function
nx-get-daylight-sensor-range
nx-get-demand-response
nx-get-device-location
nx-get-device-name
nx-get-dimmer-level
nx-get-dimmer-trim-level
nx-get-disable-buttons
nx-get-fire-emergency-states
nx-get-fw-version
nx-get-group-name
nx-get-groups
nx-get-holiday
nx-get-dm-info
nx-get-light-level
nx-get-mask-multi
nx-get-occupancy-mode
nx-get-occupancy-sensing-states
nx-get-occupancy-state
nx-get-open-close-times
nx-get-operational-hours
nx-get-port-list
nx-get-preset
nx-get-preset-name
nx-get-rc-order
nx-get-relay-state
nx-get-schedule
nx-get-startup-state
nx-get-subdevices
nx-get-subdevices-list
nx-get-switch-aggregate
nx-get-switch-function
nx-get-timestamp
nx-get-zone

Sub-Category 3: Network Functionality
Purpose: Getting to know the whether the lighting system installed is even functional or not

a. Are the lights turning ON and OFF?
b. Are the lights dimming?
c. Is the device functional?
d. Can I enable/disable?
e. Can I perform a functional test?

Commands:

7. **nx-set-relay-state** - Turns on or off relays. A broadcast command can turn on or off all relays in all the areas of the facility (controlled by the NX Area Controller). See example below. A state of 0x33 implies on. Similarly, a state of 0x30 asks the relays to turn off. "b" is for broadcast.
8. **nx-set-dimmer-level b** - Sets the dimmer level to a value (between 0 -100 percent). A broadcast command can dim the lights in all Areas of the facility to a certain level. See example below. Here, the user sets the dimmer to 100%. (Note: 15 is for the device id of a dimmer).
9. **nx-wink** - Winks the device (winking is to toggle on & off).

Sub-Category 4: Network Settings and Changes
Purpose: Broadcast settings and make changes. Some of the tasks are listed below

a. Can I broadcast a setting to all devices of the same type?
b. Can I perform a reset?
c. Can I blank a device?
d. Can I swap or replace a device?
e. Can I decommission a device?
f. Can I commission a device?
g. Can I add or remove a device?

Commands:

10. The set command allows the user to record a specific setting to a device or all devices of a certain type. Below are some of the commands in this category.

nx-set-active-times
nx-set-afterhours-sweeps
nx-set-area
nx-set-area-name
nx-set-area-name-to-area
nx-set-azg
nx-set-blink-alerts
nx-set-button-func-msg
nx-set-button-parms
nx-set-button-type
nx-set-commission-flag
nx-set-coords
nx-set-daylight-sensor-function
nx-set-daylight-sensor-range
nx-set-demand-response
nx-set-device-location
nx-set-device-name
nx-set-device-type
nx-set-dimmer-trim-level
nx-set-fire-emergency-states
nx-set-group-name
nx-set-groups
nx-set-mac
nx-set-mask-multi
nx-set-occupancy-mode
nx-set-occupancy-sensing-states
nx-set-preset
nx-set-preset-name
nx-set-relay-type
nx-set-schedule
nx-set-schedule-invalid
nx-set-schedule-preset
nx-set-switch-function
nx-set-zone
nx-set-zone-name
nx-set-zone-name-to-zone
nx-ss-set-dev-state
nx-switch-set-area
nx-switch-set-zone
nx-zone-master-set
nx-set-rm-param
nx-set-color-temp-level
nx-set-color-temp-range
nx-set-emergency-timeout
nx-set-em-ovrd-level
nx-set-room-combine-table
nx-set-led-control
nx-set-config
nx-set-config-switch-groups
nx-set-schedule-disable
nx-set-schedule-enable
nx-set-facility-id
nx-set-occ-permit-messages
nx-set-scheduler-state
nx-set-startup-state
nx-set-switch-save-restore
nx-set-network-id
nx-set-nid
nx-set-timeout
nx-set-disable-buttons
nx-set-holiday
nx-set-open-close-times
nx-set-oper-mode
nx-set-operation-hours
nx-set-operational-hours
nx-set-manual-config

11. **nx-blank-device** - Blank a device to remove all settings and configurations from it. The device after blanking goes back to the factory default.
12. **nx-reboot-device** - Restarts the device, essentially power cycling.

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Category 2: Commissioning

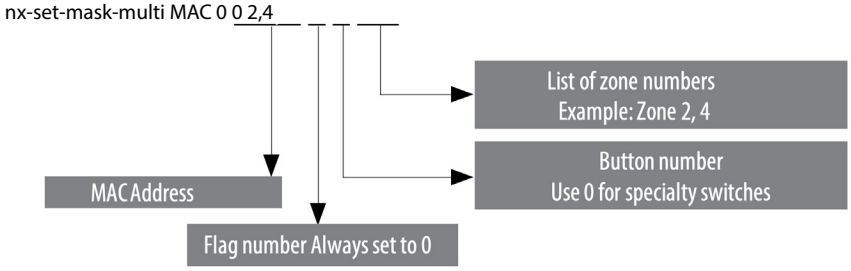
Sub-Category 1: Advanced Level Network & Device Configuration

Purpose: Performing some of the advanced commissioning tasks that may or may not be supported by GUI

a. Configuring an Area level switch
b. Elevating the status of a Zone switch to Area level
c. Configuring a switch to control a different Zone or multiple Zones
d. Changing the MAC Address of the device
e. Decommission an individual device from a Zone blob
f. Changing the device type

Commands:

13. **nx-decommission-device** - Decommissioning the device removes it from a specific Area and Zone that it was part of.
14. **nx-set-mask-multi** - Performs the function of configuring a switch to control a different Zone or multiple Zones in the Area. Usage explained below.



15. Configuring an Area level switch

Purpose: Involves configuring a switch to control an entire Area (to turn the lights on/off for the whole Area).

- Requires changing the device type.
- Changing the device type is a significant change so it requires a two-step process:
  - Send a message to enable "functional test"
  - Send a message to change the device type to the desired device
- Find the On/Off switch station (or any 2-button switch that you want to convert to Area level). We will use "01040DD9-5223" as an example MAC address.
- Enable "functional test" mode:
  - nx-send-func-test-enable <MAC address>
  - nx-send-func-test-enable 01040DD9-5223
- Set the device type to an Area On/Off (0x5E)
  - nx-set-device-type <MAC Address> <New device type>
  - nx-set-device-type 01040DD9-5223 0x5E
- Blank the device:
  - nx-blank-device <New MAC address>
  - nx-blank-device 01040DD9-5E23
- Confirm settings: nx-discover 01040DD9-5E23

16. Configuring for NX Demand Response Steps

a. Configure the NXCI Input as a demand response input.
b. Identify the zones that need to participate in the demand response.
c. Decide the dim level for demand response.
d. Send a message to the selected zones to enable demand response with a dimming level.

Category 3: Post-Commissioning

Purpose: Cross-check commissioning effort.

a. Re-discover the devices
b. Procure the device information again

The same set of commands as described before can be used to perform the above.

End of Document

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