

Technical Document

Niagara Edge 10 Install and Startup Guide

May 29, 2023



Niagara Edge 10 Install and Startup Guide

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About this guide

This topic contains important information about the purpose, content, context, and intended audience for this document.

Product Documentation

This document is part of the Niagara technical documentation library. Released versions of Niagara software include a complete collection of technical information that is provided in both online help and PDF format. The information in this document is written primarily for Systems Integrators. To make the most of the information in this book, readers should have some training or previous experience with Niagara software, as well as experience working with JACE network controllers.

Document Content

This document describes the initial Niagara 4 software installation and configuration for a QNX-based controller, using Workbench (latest Niagara version).

For physical mounting and wiring details for the device, refer to its specific hardware installation document.

This document does not cover station configuration or Niagara 4 components. For more information on these topics, please refer to online help and various other Niagara 4 software documents.

Document change log

Changes to this document are listed in this topic.

May 29, 2023

Created new chapter "Reference" and added new topics to it.

- Edge Io Network
- Edge Io Device Manager
- Edge Io Device
- Edge Io Point Folder
- Edge Io Point Manager
- Edge Io buttons and lights

Added references to JACE-9000

March 28, 2022

Added "Edge Licensing Scheme for Niagara 4.10 and later" topic.

November 9, 2020

In the "Overview" topic, added a note on the change in the licensing model for Edge devices.

May 27, 2020

Minor editorial changes throughout.

January 29, 2020

Edited the "Factory-shipped state" and "Select modules" topics to include a note that recommends updating to the latest released software.

October 8, 2019

In the topic, "Edge security considerations", added a caution note alerting customers to restrict access to all computers, devices, field buses, components, etc., that manage their building model.

September 10, 2019

Minor changes throughout to correct device name variable usage.

June 12, 2019

Minor edits throughout to update for provisioning changes in Niagara 4.8. Replaced figure shown in "Provisioning configuration".

May 2, 2019

In the "Overview" section in chapter 1, and in the "About Platform Services" section in chapter 4, included a note on added support for the IEEE 802.1X wired authentication standard for Edge platforms.

January 16, 2019

Minor edits in the "Platform services (station) and administration" chapter to remove references to the DataRecoveryService.

October 19, 2018

In the "Configuration steps" section of the "Provisioning tools" chapter edited the topic, "Initial Steps to Run Only Once", to add optional steps and a note.

October 9, 2018

Initial publication release.

Related documentation

Additional information on Niagara system, devices and protocols is available in the following documents.

- *Edge 10 Mounting and Wiring Guide*
- *JACE-8000 Install and Startup Guide*
- *Niagara Provisioning Guide*
- *Niagara Platform Guide*

Chapter 1 Overview

Topics covered in this chapter

- ◆ Factory-shipped state
- ◆ Initial IP address
- ◆ IO Points
- ◆ Niagara Edge security considerations

Niagara Edge 10 controllers are shipped from the factory with Niagara software to run a platform daemon, along with a Tridium certificate, and a default Niagara station pre-installed.

Use the Niagara Workbench to establish a platform connection to the Edge device and commission it to install the selected modules, licenses, and to perform other platform configuration. Some important related tasks include setting the controller's:

- IP network address, and related IP networking parameters
- Platform daemon user(s), for platform login
- Time and date (or simply sync with your PC's time)

To do this, use the platform **Commissioning Wizard**.

NOTE: The **Commissioning Wizard** is the only way to install the needed core software in the controller. Most steps in the Commissioning Wizard are also available as separate platform views. For example, there is a **Software Manager**, **License Manager**, and many others. Using these views individually may be useful after commissioning the device.

For more details see the *Niagara Platform Guide*. Always use the **Commissioning Wizard** to commission a new Edge device for Niagara, as well as to upgrade any controller from one Niagara point release to another—and make sure a license file is available!

NOTE: In Niagara 4.10 and later, a change in the licensing model for Niagara Edge devices allows them to be added independently of the `niagaraDriver.device.limit`. More specifically, an Edge device can be treated as 1/10 of a standard `NiagaraStation` connection under the `NiagaraNetwork`. This change applies only to Supervisor stations. The `niagaraDriver` license feature must include the `"edgeLite1_device.percentage"` attribute, which is hardcoded with a value of 10. This is the same for all customers and will not change going forward. If this attribute is not present in the license, behavior reverts to the original license behavior where an Edge device counts the same as a JACE station under the `niagaraDriver`.

NOTE: In Niagara, there is added support for the IEEE 802.1X wired authentication standard for the JACE-8000, JACE-9000, Niagara Edge 10 and Edge platforms. For more details, see the *Niagara IEEE 802.1X Configuration Guide*.

Factory-shipped state

The factory-shipped state of the Edge device has the following default settings for IP address, HTTPS port and Platform credentials.

Ethernet connectors

Two RJ-45 10/100Mb Ethernet connectors are labeled PRI for primary and SEC for secondary. Use a standard Ethernet patch cable to an Ethernet switch. These ports are suitable for daisy-chaining Edge devices or for connection to a JACE-8000, JACE-9000 or directly to a network.

The Edge device ships in daisy chain mode. When in daisy chain mode the PRI/SEC labels are inconsequential.

HTTPS port for platform access

There is no unsecure platform connection, only HTTPS secure connection is allowed.

When shipped, the Edge platform daemon is configured to listen on HTTPS port 5011. Often this is left at default. However, if a different port is needed for a platform connection (possibly for firewall reasons), you can change this via the commissioning process.

Software

The Edge device ships with Niagara and the drivers for BACnet, Modbus and SNMP.

NOTE: It is the recommended security best practice to update to the latest software release.

Default platform daemon credentials

Edge devices are shipped with default platform daemon (administrator) username and password credentials. The default credentials are:

- Username: `tridium`
- Password: `niagara`

Initially, you use the factory default credentials to open (login) a platform connection to the Edge device. Default credentials are temporary. During your startup commissioning, you must replace the default platform admin account with at least one different platform admin user.

NOTE: For security reasons, be sure to guard the credentials for such platform users closely.

Default system passphrase

In addition to the default platform daemon (administrator) credentials. Edge devices are shipped with a default system passphrase. The default passphrase is:

- Passphrase: `niagara`

Default station details

The Edge device also ships with a default NiagaraStation pre-installed. By default, the network configuration for the station is set to the daisy chain mode. The default station name is a combination of the controller model and the unique hostid. For example, `Edge10_3F88_5ACB_C28A`.

The default station includes the EdgeloNetwork already installed to access the physical I/Os.

The default station credentials are:

- Username: `admin`
- Password: `Admin12345`

NOTE: You are required to enter new credentials on the initial login.

Initial IP address

Previous controllers shipped with a static IP address. To facilitate bulk deployment, Edge devices are shipped with a one-time feature enabled that allows the controller to initially attempt to connect to a DHCP server.

Upon first startup, when IP connectivity is detected, the Edge-10 initially requests an IP address via DHCP. If a DHCP address is not found, the controller reverts to a static IP address based on its serial number. See the following section for examples..

This feature only applies during the first power up cycle with an active Ethernet connection. At all other times the network settings are set or modified the same as on the JACE-8000/JACE-9000.

NOTE: For this onetime feature to execute there must be an active Ethernet connection. A flag is maintained that enables this feature. This feature will execute once and then the flag will be disabled.

During a factory restore the flag enabling this is reset to enabled

Fallback Static IP

The fallback static IP is built using the last four digits of the devices serial number. Route and subnet mask are set appropriately.

- Static IP : 192.168.1xx.xx where xx.xx are numbers lifted from the serial number, as shown in the following two examples:
 - For serial number : 010106 the resulting IP is: 192.168.101.06
 - For serial number: 106 the resulting IP is: 192.168.101.06
- Route : 192.168.1.1
- The default subnet mask is: 255.255.0.0

Summary

The follow behaviors apply to the factory state:

1. Edge device power ups with no Ethernet cable connected.
 - a. Maintains the factory shipped state
2. Edge device power ups with the Ethernet cable connected and DHCP server on the network.
 - a. The device obtains an IP address from the DHCP server
 - b. Fallback mechanism is disabled
3. Edge device power ups with Ethernet cable connected and no DHCP server or DHCP fails.
 - a. Apply fallback static IP
 - b. Fallback mechanism disabled

IO Points

The Niagara Edge 10 device is designed with a mix of IO points. 5 universal inputs, 2 analog outputs and 3 digital outputs.

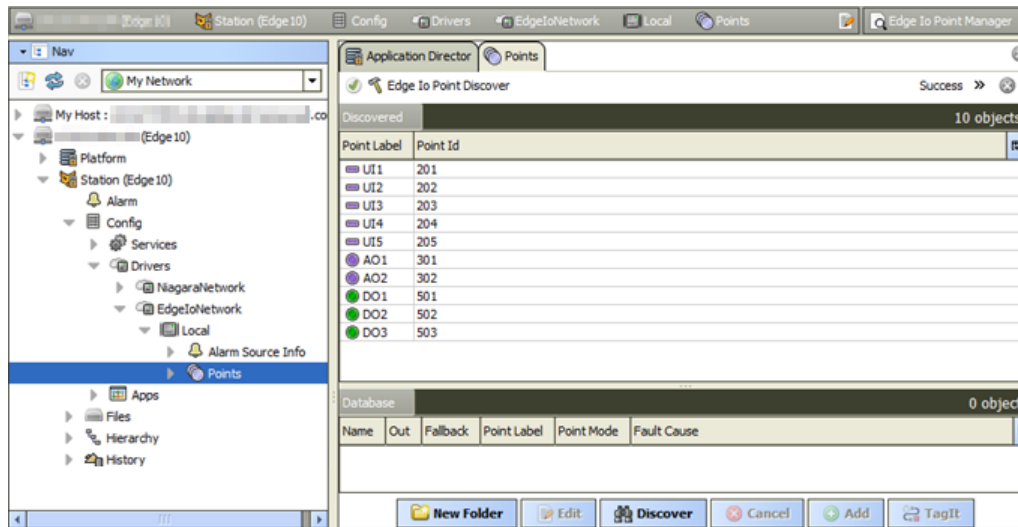
For more details on physical connection of IO points see the "Inputs" section of the *Edge 10 Mounting and Wiring Guide*.

Usage details

The Edgelo driver provides proxy points to access these points.

To use the Edgelo driver add an EdgeloNetwork object to the station config folder (already installed in the default station). The EdgeloNetwork contains a Local device with a Points folder. Invoking the **Edge Io Point Manager Discover** function shows a list of available points, as shown here.

Figure 1 Edge Io Point Manager view



Point Configuration

Proxy points can be configured through the **Add/Edit** functions in the **Edge Io Point Manager**.

For UI points set the **Type** to an AI (NumericPoint), DI (BooleanPoint) or pulse counter (pulseInput).

For Pulse Counter type inputs, edit the proxy point to configure **Calc Type**, **Rate Scale**, **Rate Interval** and **Rate Windows** properties. More details on this will be available in a *EdgeIo Guide* (not currently available).

Io Defaults Values

The AO and DO points can have a configured default value which will be applied during the devices boot sequence. This value will be applied to points in less than 20 seconds of a reset or power cycle. This default value is stored in a writeable proxy Fallback property. The fallback value can be set in the **Edge Io Point Manager** via the **Add/Edit** windows. Similarly, a set operation on the proxy point will also set the fallback value.

Niagara Edge security considerations

These topics include information about security issues that are important to consider when working with the Edge-10 platform.

CAUTION: Protect against unauthorized access by restricting physical access to the computers and devices that manage your building model. Set up user authentication with strong passwords, and secure components by controlling permissions. Failure to observe these recommended precautions could expose your network systems to unauthorized access and tampering.

SSL/TLS commissioning notes

NOTE: In Niagara 4, "SSL" is always implemented using the TLS (Transport Layer Security) protocol, supporting TLS versions 1.0, 1.1, and 1.2. See the *Niagara Station Security Guide* for complete details.

When using Workbench, note that default **"Open Platform"** and **"Open Station"** operations initially assume **Platform TLS Connection** and **Fox TLS Connection** types, respectively. This is intended to encourage this TLS usage for all Niagara 4 platforms and stations. If necessary, you can change either connection type, and Workbench "remembers" this type to use on your next connection. As needed, change back again.

Protection of source integrity

Niagara provides support on hardware platforms for connecting to external services. It is important to ensure that any such service is either trusted or controlled by your organization. For example, when synchronizing the system clock with an NTP service, it is important to make sure that the selected NTP service is a trusted source. For more information related to source integrity, see “Security precautions” in the Niagara Station Security Guide.

Good network configuration measures in place

Edge 10 devices could be put in a network without good network configuration measures in place. There are a number of ISA 62443 requirements that deal with the configuration of the network that is beyond the scope of this product. Best practice documentation for network security is included in the Security best practices topic in the *Niagara Networking and IT Guide*.

Install hardware in a secure location

Restricting physical access to controllers is essential to security. If an attacker can physically connect to your hardware using a cable, they can gain complete control of the system. This could potentially be disastrous. Keep your controllers secure in a locked room with restricted access.

Related documentation

The following related documents provide more security-related information:

- *Niagara Networking and IT Guide*
- *Niagara Station Security Guide*
- *Niagara 4 Hardening Guide* located on the Tridium.com resources library (<https://www.tridium.com/en/resources/library#ReferenceMaterials>).

Chapter 2 Preparation

Topics covered in this chapter

- ◆ Provide power
- ◆ Provide connectivity
- ◆ Initial configuration and setup
- ◆ Setting up a single device using Commissioning

Consider the following areas to prepare before proceeding: Power, connectivity, software and PC requirements.

Provide power

Refer to the *Edge 10 Mounting and Wiring Guide* for details on adding power wiring and Ethernet wiring connections to the controller.

CAUTION: The Edge 10 device is not compatible with a Power-Over-Ethernet (POE) network. Connecting the Edge device on a network segment which carries power causes the unit to fail (lockup). In that event, you must disconnect it from the POE network segment and cycle power to the unit.

Provide connectivity

This section provides an overview of several common connectivity options, and indicates which setup options should be used.

Edge 10 devices can be connected to each other and to other Ethernet devices in a variety of different ways. Depending on how the controllers are connected, the controllers will need to be configured using either the Workbench Commissioning, the Provisioning Service of a connected supervisor /JACE, or both.

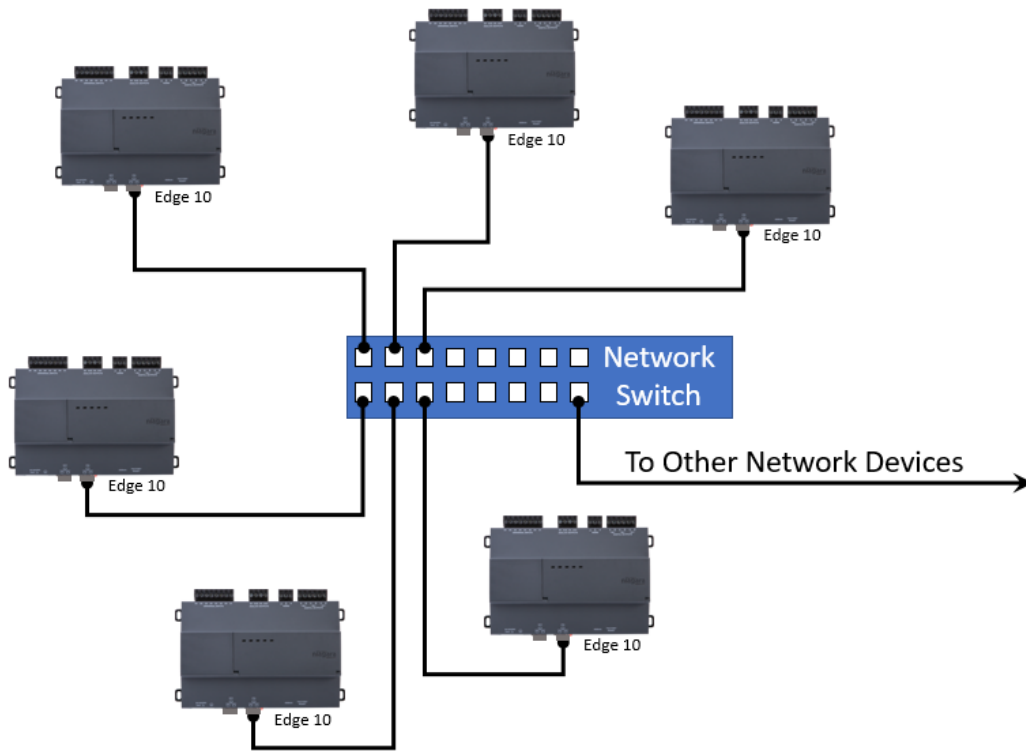
Constructing a network with Edge devices

Edge 10 devices have a built in two-port Real-Time Transport Protocol (RSTP) capable switch, enabling them to be interconnected in a variety of different Ethernet topologies. The three basic topologies are described here.

Edge 10 devices can be connected to each other and to other Ethernet devices in a variety of different ways. Depending on how the Edge devices are connected, they will need to be configured using either the Workbench Commissioning tool, the Provisioning Service of a connected Supervisor/JACE, or both.

Star

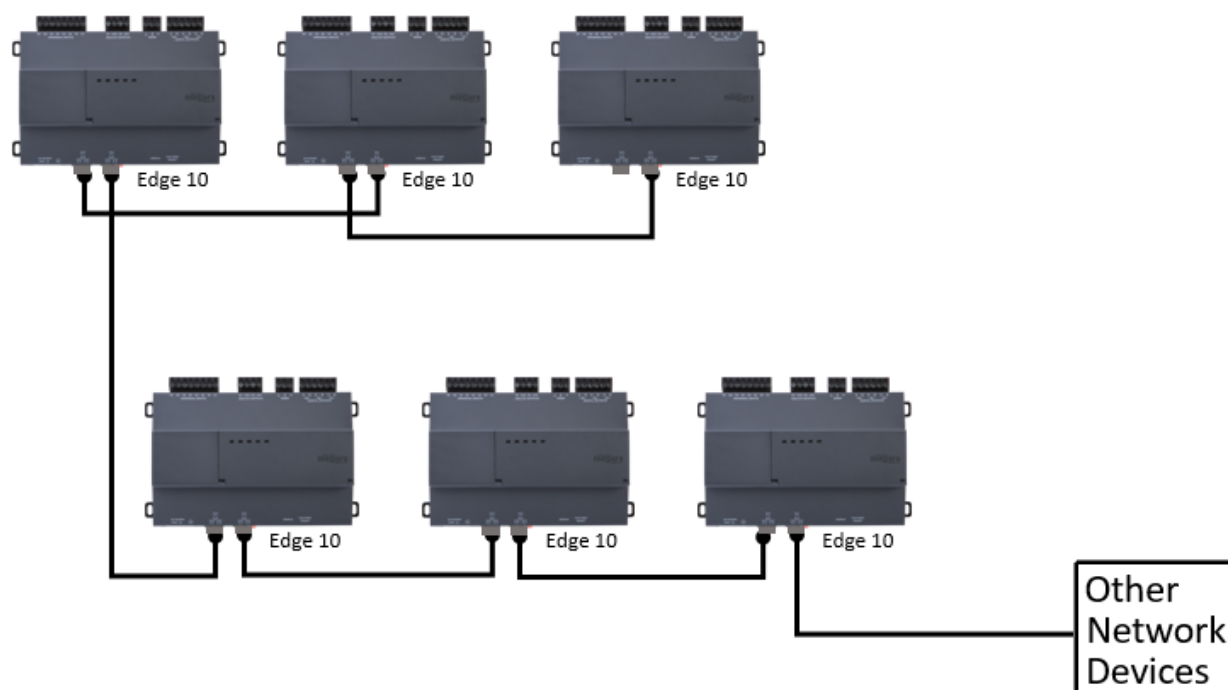
In this configuration, each Edge 10 device is connected to a central switch by a single Ethernet cable connected to its primary Ethernet port. This is what is commonly known as a “home run” deployment.

Figure 2 Star network topology

Daisy chain

In this configuration, the Edge 10 devices are connected to each other, with the primary Ethernet port on one device connected to the secondary Ethernet port on another. The first device in the chain is directly connected to a central switch via its primary port, and the last device in the chain has no connection to its secondary port.

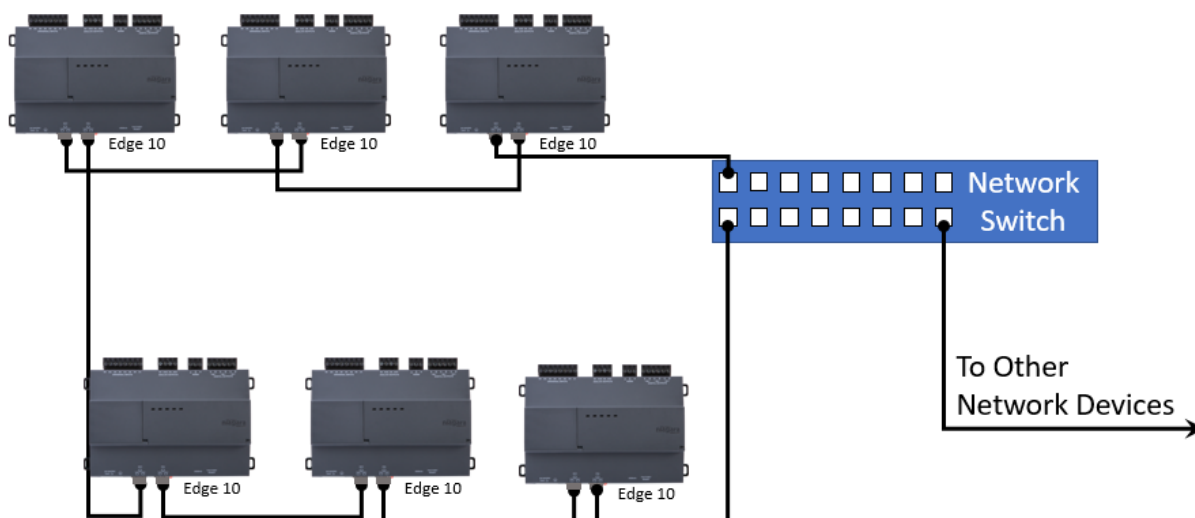
Figure 3 Daisy chain network topology



Ring

This configuration is the same as the daisy chained topology, except that the last controller in the chain is connected by its secondary port back into the same switch as the first controller. RSTP is used to prevent “packet storms” (i.e. excessive traffic) due to the connection loop.

Figure 4 Ring network topology



These basic topologies can be combined as necessary to construct larger networks of controllers. For example, multiple sets of daisy chained controllers could be connected back to central switch, forming a star of daisy chained controllers.

Connecting to a JACE

If a JACE is going to be incorporated into the Edge device network, the devices can be connected to either the primary or secondary port of the JACE. Connecting the Edge devices to the primary port of the JACE puts the Edge devices on the same logical network as the JACE, sharing the same IP address range. In this arrangement, both the JACE and Edge devices are directly reachable from the same network segment, and Workbench commissioning can be used to setup and manage all the devices.

It is also possible to connect the Edge devices to the secondary port of the JACE. In this arrangement, the network of JACEs becomes a private network, isolated from the network to which the primary port of the JACE is connected. When connected to the secondary port, the JACEs are not directly reachable from the main network, and NiagaraNetwork provisioning running on the JACE station must be used to setup and manage the controllers.

Note that prior to connecting JACEs to the secondary port of the JACE, you must either preconfigure the devices with static IP addresses, or enable the DHCP server on the JACE.

Initial configuration and setup

Depending on the chosen network configuration, you will be able to setup the device with commissioning, provisioning, or some combination of both. The following table summarizes which tools to use, based on the network configuration.

JACE connection	Static IP for Edge devices	Can setup with provisioning alone	Can setup with commissioning alone	Must use both commissioning and provisioning
Primary Port	No	No	Yes	No
Primary Port	Yes	Yes	Yes	No
Secondary Port	No	Yes (must be run on JACE)	No	No
Secondary Port	Yes	No	Yes	Yes - set static IP's with commissioning, configure other settings with provisioning or commissioning
None	No	Yes	Yes	No
None	Yes	Yes	Yes	No

Setting up a single device using Commissioning

These instructions assume that you have a PC running a licensed copy of Niagara Workbench or later, installed with the "installation tool" option. That option copies distribution files needed for commissioning various models of controllers. This PC is referred to as "your PC."

NOTE: Your PC must meet minimum hardware/operating system requirements for the Workbench workstation. This includes a working Ethernet adapter with TCP/IP support (browser capable). An Ethernet TCP/IP connection to the Edge device is required to install Niagara software and establish other parameters.

For this initial Ethernet connection, you can use either of the following:

- An Ethernet patch cable connected directly between your PC and the Edge device (if your PC Ethernet port is not "auto-sensing", you will need an Ethernet crossover cable)

NOTE: If in daisy chain mode connect both the PC and the Edge devices to a switch.

- A normal LAN connection, meaning that both your PC and the Edge device are physically connected to the same Ethernet hub or switch.

Preparing for new device commissioning

To prepare for new Edge device commissioning, perform the following steps:

Prerequisites:

- NiagaraWorkbench

Step 1 If not already installed, install the Niagara software on your PC, including its permanent license.

Step 2 Typically, the license file for the Edge device already resides on the licensing server, where (if you have Internet connectivity) it is automatically retrieved during the licensing step of the **Commissioning Wizard**.

NOTE: If you were emailed a license archive (.lar file) or .license file for the Edge device, and you wish to use it instead of the online license server (for some reason, for example your Workbench PC will not have Internet connectivity when you are commissioning the device, make the file available to Workbench first, as follows:

- Copy the file to your `!security/licenses/inbox` folder, then restart Workbench. For more details, refer to the section "Local license inbox" in the *Niagara Platform Guide*.

Step 3 Attach one end of a standard category-5 Ethernet unshielded twisted pair (UTP) patch cable to the RJ-45 Ethernet connector for LAN1 (labeled PRI) on the Edge device.

Step 4 Attach the other end of the patch cable to a network port or directly to an Ethernet hub.

Step 5 Power up the Edge device.

Step 6 Record your PC's current IP settings, then re-assign your PC's IP address for its Ethernet NIC (network interface card). If necessary, refer to Windows online Help for details on configuring TCP/IP settings.

NOTE: As an alternative to re-assigning your PC's IP address, you can do one of the following:

- Obtain a USB-to-Ethernet network adapter (second network interface card, or NIC), and use it with an Ethernet crossover cable to commission Edge devices. In this case, configure this second NIC to use the settings in the remainder of this step.
- Use a serial shell mode connection to the Edge device to re-assign its factory IP address settings. After making this change and rebooting the device, you can continue commissioning using Workbench. This requires a USB-to-MicroUSB adapter cable, VCP driver, and a special power-up mode for the Edge device.

VCP (Virtual COM Port) drivers cause a USB device to appear as an additional COM port available to the PC. Using terminal emulation software, such as PuTTY or ClearTerminal, the PC can access the USB device in the same way as it would access a standard COM port. VCP driver downloads are available at www.ftdichip.com and other sites.

For this initial connection to a factory-shipped Edge device, configure your PC's NIC to use an IP address in the same subnet as the Edge device, as well as a matching subnet mask.

Set the IP address in the range: 192.168.1.1 to 192.168.1.254

with a subnet mask of: 255.255.0.0

NOTE: Do not assign your PC the identical IP address as the Edge device's factory-assigned IP address.

Step 7 From your PC, start Workbench. The Nav tree should be visible in the side bar area (left pane).

If not, from the menu bar, select **Window→Side Bars→Nav**.

Opening a platform connection to the device

Once the Edge device has powered up, connect to it with Workbench. A platform connection to any Edge device is required for most host-level operations. This includes installing Niagara core software and modules and performing various other platform tasks.

Step 1 From the menu bar, select **File→Open→ Open Platform**.

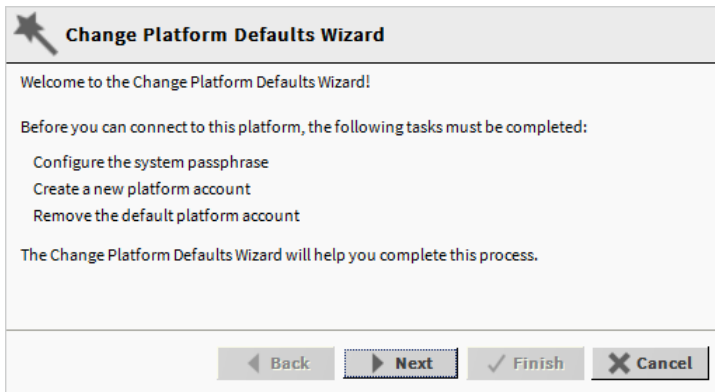
The **Open Platform** dialog box appears.

Step 2 Complete the fields in the **Open Platform** dialog box as follows:

- Type — Select **Platform Connection**, if not already selected.
NOTE: By default, Workbench prompts for a **Platform TLS Connection**.
- Host — Leave at default **IP**, and type in the IP address of the new Edge device.
- Port — Leave at default 5011.
- Credentials, which may be:
 - Username — Type in default username, for example: `tridium`
 - Password — Type in default password, for example: `controls`

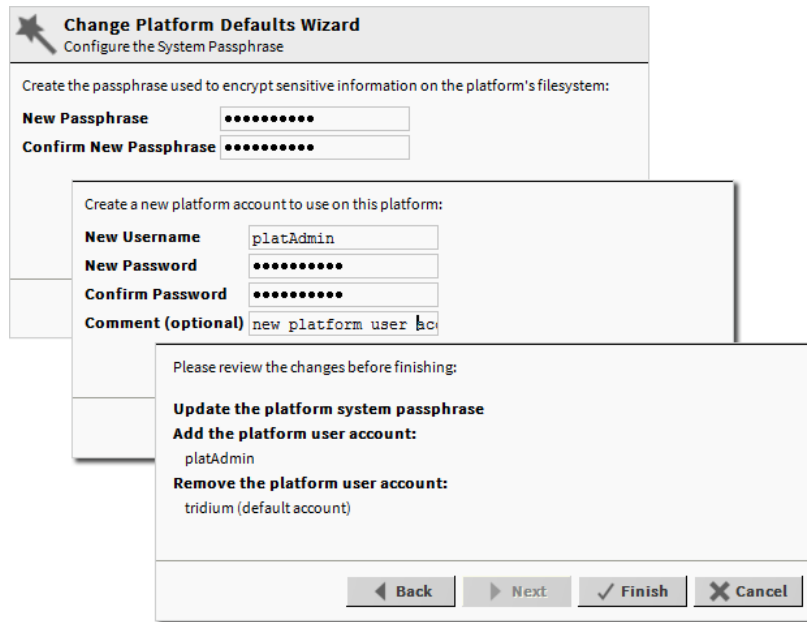
Step 3 Click the **OK** button to accept all settings.

NOTE: If the Workbench detects factory default credentials when connecting to a remote platform it launches the **Change Platform Defaults Wizard** (shown here) which forces you to change the factory defaults prior to completing the platform connection.



If this wizard does not display the platform connection completes.

- a. If the **Change Platform Defaults Wizard** displays, click **Next** to step through creating a system passphrase, creating a new platform account, and removing the default platform account, as shown below.



Change Platform Defaults Wizard
Configure the System Passphrase

Create the passphrase used to encrypt sensitive information on the platform's filesystem:

New Passphrase [.....]
Confirm New Passphrase [.....]

Create a new platform account to use on this platform:

New Username [platAdmin]
New Password [.....]
Confirm Password [.....]
Comment (optional) [new platform user account]

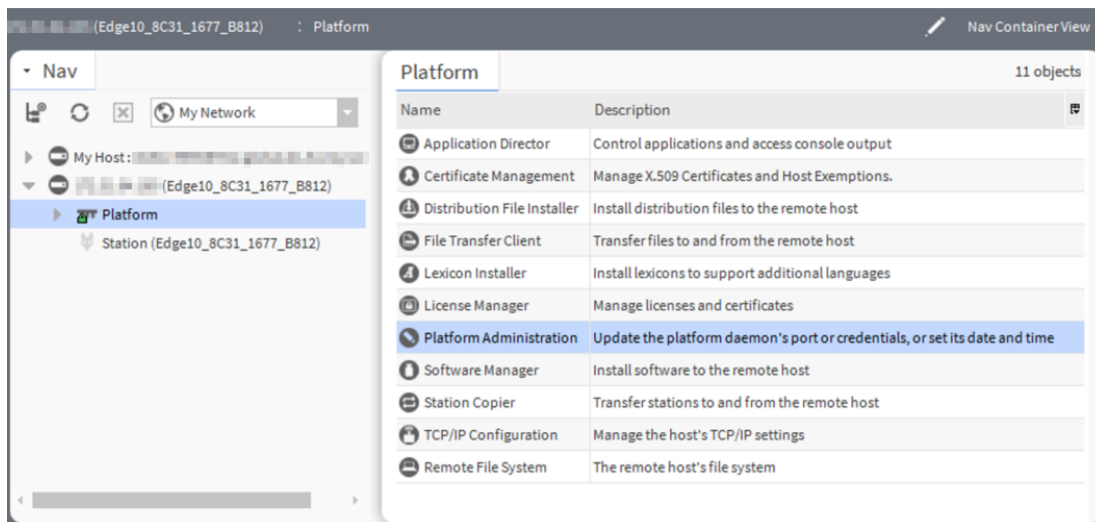
Please review the changes before finishing:

Update the platform system passphrase
Add the platform user account:
 platAdmin
Remove the platform user account:
 tridium (default account)

◀ Back Next ▶ ✓ Finish ✕ Cancel

b. Click **Finish** to complete these changes.

On completion, the platform opens in the Nav tree, and its Nav Container View displays in the view pane.



After you open the platform connection, you can run the **Commissioning Wizard**.

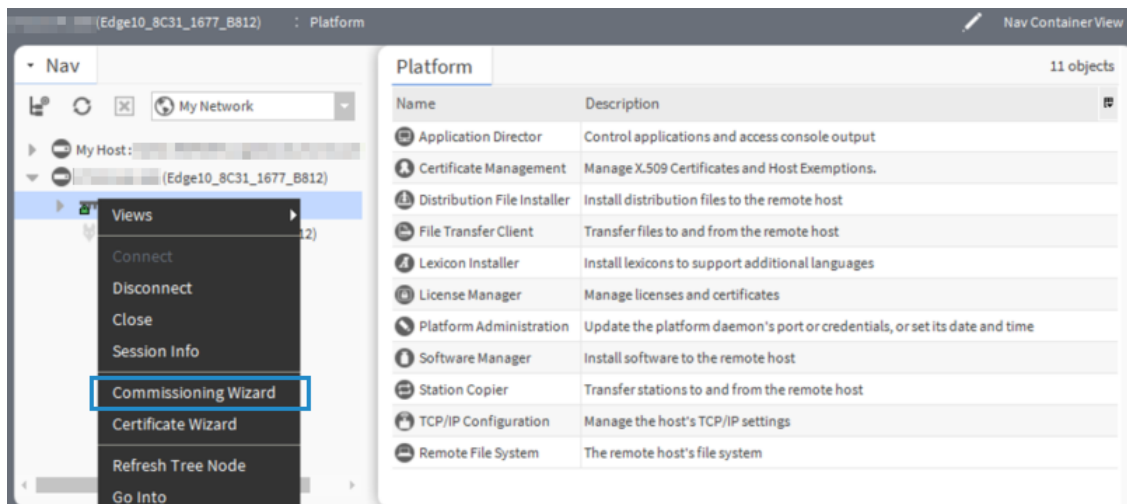
Chapter 3 Run the Commissioning Wizard

Topics covered in this chapter

- ◆ Starting the Commissioning Wizard
- ◆ Installing or updating licenses
- ◆ Installing or updating licenses from files
- ◆ Edge licensing scheme for Niagara 4.10 and later
- ◆ Setting the enabled runtime profiles
- ◆ Specifying a station database to install
- ◆ Selecting modules to install or upgrade
- ◆ Install/upgrade core software
- ◆ TCP/IP configuration
- ◆ Configuring system passphrase
- ◆ Remove default platform user account
- ◆ Configuring additional platform daemon users
- ◆ Reviewing and finishing the Commissioning Wizard

As shown below, the **Commissioning Wizard** is a right-click option on any connected Edge 10 platform in the Nav tree. You can also launch the wizard from the **Platform Administration** view.

Figure 5 Commissioning Wizard as right-click platform option



Use this wizard when installing a new Edge device, as it provides a “checklist” method to perform essential (and often “one time”) platform tasks. Also use this wizard whenever you upgrade the core Niagara 4 software in the Edge device, at some future time. See the *Niagara Platform Guide* for more details.

Before starting the commissioning process, note the following points:

- Throughout the wizard's dialogs, use the buttons **Back** and **Next**, as needed, to retrace (or skip) steps. Also, the **Cancel** button exits the wizard after your confirmation—no operations are performed as a result.
- Before committing to the final sequence of steps, the wizard provides a summary for you to review.

Starting the Commissioning Wizard

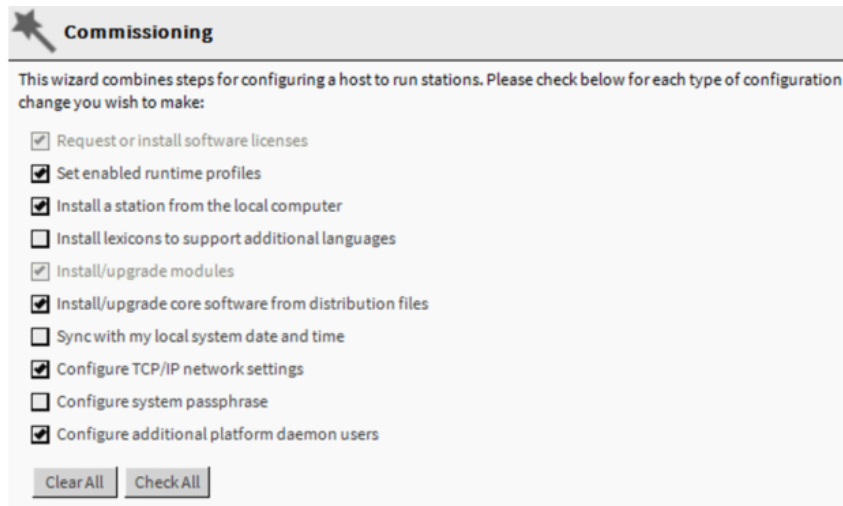
The **Commissioning Wizard** runs a series of steps to guide you through all the needed information.

Prerequisites:

- In Workbench on your PC, open a platform connection to the Edge device.

Step 1 In the Nav tree, right-click **Platform**→**Commissioning Wizard**.

The window **Commissioning for "<IP address>"** displays with default selections for a new Edge device).



By default, all steps are preselected except lexicon installation. Steps are executed in the order listed.

NOTE: If the Workbench FIPS property **Show FIPS Options** is set to `true` certain FIPS options become visible in this window. If selected, the framework enforces FIPS-strength password requirements.

Step 2 As needed, click to include or omit steps. For a new Edge device, you typically accept all default selections.

Commissioning steps include:

- Request or install software licenses — Preselected for any new Edge device.
- Set enabled runtime profiles — Preselected and read-only for any new unit.
- Install a station from the local computer — Recommended. Optionally, you can station(s) at a later time.
- Install lexicons to support additional languages — Option to install file-based lexicon sets (alternative to lexicon modules). Typically you leave this unselected since lexicon modules are required in N4.
- Install/upgrade modules — (always preselected, whenever wizard is run). To select the software modules, and optionally any lexicon modules.
- Install/upgrade core software from distribution files — Preselected and read-only for any new unit.
- Sync with my local system date and time — Preselected in most cases (new Edge device for example, where controller time may greatly differ from actual time).
- Configure TCP/IP network settings — Recommended.

- Remove platform default user account — Preselected and read-only for a new unit. You cannot commission a unit with the factory default platform user.
- Configure additional platform daemon users — Recommended option if you require additional platform admin user accounts, with unique user names and passwords (all have full equal privileges).

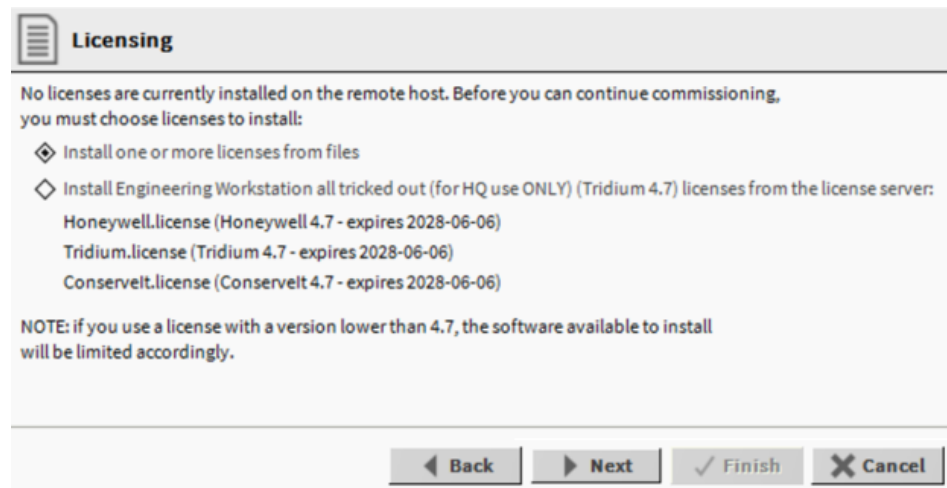
Step 3 Click the **Next** button to continue.

Installing or updating licenses

At the License step, you install one or more license files in a new Edge device. You typically select the option to get and install licenses from the licensing server.

Prerequisites:

- A minimum of one license file is always needed. Typically, other license files are not needed unless you are using third-party module(s). In this case, you can also install those license files during this same commissioning step, either automatically, or by selecting to install from files.



At least one license file specific to any Edge device is stored on the licensing server. Providing you have Internet connectivity, this is the recommended method to install or update a license.

For license files validated against the Tridium certificate, installation can be automated from Workbench. All such purchased licenses (including Edge device, Supervisor, or Workstation-only) are stored and available to Workbench through the licensing server.

If your PC currently has Internet connectivity while running a platform connection to any Niagara host, Workbench provides an install option to get and install the licenses for the host from the license server. When selected, Workbench silently searches the license server for a license with a matching "Host ID" of the target platform. When found, it selects the license(s) and advances to the next wizard step. For more details, refer to the section "About the licensing server" in the *Niagara Platform Guide*.

Step 1 Select "Install licenses from the license server."

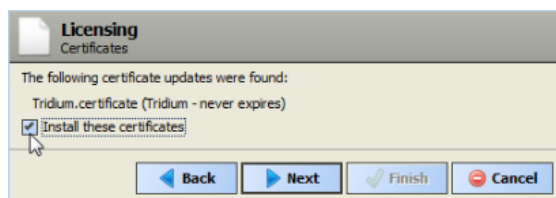
Step 2 Workbench silently searches the licensing server, locates the license(s), and the wizard advances to the next step.

NOTE: If the “license server” option shown above does not appear, Workbench has not detected Internet connectivity, and so cannot contact the licensing server. In this case, you can either:

- If you already have a license for this Edge device in your “local license database,” select the last option shown to install from your “Workbench license database.” (This option will be missing if your local license database does not include a license for this Edge device.) Workbench locates the license, and the wizard advances to the next step.
- If you have the Edge device license file(s), use the procedure, “Installing or updating licenses from files”. If necessary, you can install license(s) later, either from your local license database or from license files.

Installing or updating licenses from files

During the license install step, the wizard checks to see if a Tridium certificate is installed. This certificate is required by any Niagara host, to verify the license file. If other licenses are installed, additional certificates may also be required.



Step 1 Select **Install these certificates** and click **Next** to advance to the next step.

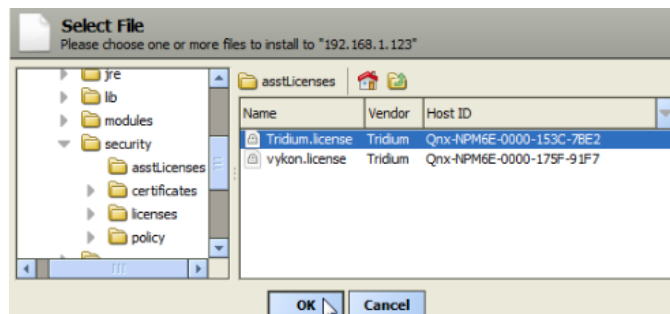
Step 2 At the License step, select “**Install one or more licenses from files**”.

Step 3 Click the **Next** button.

The “Choose license files to install” step appears .

Step 4 Click the **Add** button.

A “Select File” dialog appears. By default, the contents of your `licenses` subfolder is listed (showing your Workbench license). If you previously pointed Workbench to another location, license files in that location are listed instead.



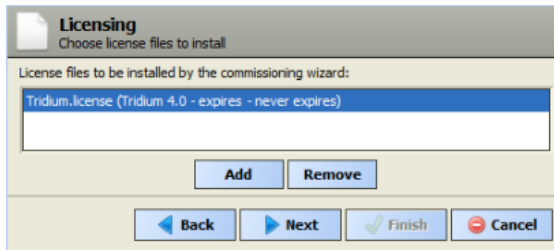
- If you see the license you need, click it to select it. If other licenses are also needed, you can select multiples by holding down the Ctrl key while you click.
- If a license is not listed, navigate to its location using the left-pane folder tree controls, and click the license to select it.

NOTE: The licensing tool prevents selection of a wrong license (different hostid) to install in the Edge device.

Step 5 Click the **OK** button.

Step 6 If necessary, click the **Add** button again to add additional license files.

- Step 7** When all needed licenses are listed in the **Choose license files** window, click the **Next** button to go to continue.



Edge licensing scheme for Niagara 4.10 and later

Niagara 4.10 introduces a new Niagara Edge licensing scheme for Supervisor NiagaraNetwork connections. This licensing scheme allows you to connect 10 Niagara Edge devices to a Supervisor for the same price as a standard Niagara station connection.

Q: Which Edge devices qualify?

A: This applies to Niagara Edge 10 and other Edge devices powered by Niagara Framework with a license for 150 points capacity or less. A combination of Niagara Edge 10 and other Niagara Edge devices can be used together with each counting as a single NiagaraNetwork Edge connection.

Q: Does this apply to a JACE?

A: This is not applicable for JACE platforms regardless of point capacity.

Q: What do I need to do?

A: Follow the steps below and connect up to 10 times more Niagara Edge devices to your Supervisor for the same price:

1. Upgrade your Supervisor station to Niagara 4.10 or later.
2. Download an updated license for your Niagara Edge device.
3. Discover your Niagara Edge devices and add to your Supervisor NiagaraNetwork.

Q: Can you provide an example of how this works?

A: Niagara Edge 10 or other devices powered by Niagara Framework with a 150 points or less based capacity license now count as a one tenth (1/10) of a standard NiagaraNetwork connection.

See the following examples of how Edge 10 licensing can work with Niagara 4.10 and later:

Example 1: For a Supervisor with 1 NiagaraNetwork connection.

You can now connect

- 1 JACE
OR
- Up to 10 Niagara Edge devices.

Example 2: For a Supervisor with 2 NiagaraNetwork connections.

You can now connect

- Up to 20 Niagara Edge devices
OR
- Up to 10 Niagara Edge devices and 1 JACE or Supervisor

NOTE: : 1 JACE and 1 Niagara Edge device requires 2 connections, but so does 1 JACE and 2, 3, 4, 5, 6, 7, 8, 9 or 10 Niagara Edge devices.

Example 3: For a Supervisor with 3 NiagaraNetwork connections.

You can now connect

- Up to 30 Niagara Edge devices
OR
- Up to 20 Niagara Edge devices and 1 JACE or Supervisor
OR
- Up to 10 Niagara Edge devices and 1 JACE and 1 Supervisor
OR
- Up to 10 Niagara Edge devices and 2 JACEs or Supervisors

Example 4: For a Supervisor with 10 NiagaraNetwork connections.

You can now connect up to

- 100 Niagara Edge devices
OR
- Up to 90 Niagara Edge devices and 1 JACE or Supervisor
OR
- Up to 80 Niagara Edge devices and 2 JACEs or Supervisors
OR
- Up to 80 Niagara Edge devices AND 1 JACE AND 1 Supervisor
OR
- Up to 70 Niagara Edge devices AND 3 JACEs or Supervisors
OR
- Up to 70 Niagara Edge devices AND 2 JACEs AND 1 Supervisor
OR
- Up to 70 Niagara Edge devices AND 1 JACE AND 2 Supervisors

Q: Can I use this new licensing schema with pre-existing Edge devices in my Supervisor Niagara Network?

A: For any customers with pre-existing Edge devices in a Supervisor NiagaraNetwork, following are two options you can employ to start using the new Edge licensing schema without having to rediscover the station:

1. Adding new station
 - a. Add a new Niagara Edge Station to your Supervisor's NiagaraNetwork and configure the network parameters. Don't enable the network.
 - b. Navigate to the points folder in the pre-existing Niagara Edge device and select all items. Perform the same step for all imported or exported histories and schedules under the NiagaraNetwork.
 - c. Cut and paste the selected items into the points folder of the new Niagara Edge Station. Perform the same step for all imported or exported histories and schedules and paste in the respective folders under the NiagaraNetwork.
 - d. Configure the Alarm Class for the new Niagara Edge device under the Supervisor NiagaraNetwork to use the Alarm Class utilized by the original Niagara Edge device.
Disable the original Niagara Edge device.
 - e. Ensure the new Niagara Edge station is an allowed host under the **Supervisor Certificate Manager**.
 - f. Delete the original Niagara Edge device.
2. Using Station Copier
 - a. Open a **Platform** connection and access the **Station Copier**.

- b. Copy the Supervisor station to your local host.
- c. Navigate to **User Home**→**stations** folder, access the station bog file copied in the above step and open the text editor view of the station XML.
- d. Locate the pre-existing Niagara Edge device in the Supervisor NiagaraNetwork and change the station type from `nd:NiagaraStation` to `nd:NiagaraEdgeLiteStation`.
- e. Save the bog file.
- f. Open the **Platform** connection and access the **Station Copier**. Copy the Supervisor station edited in the step above on your local host and copy to the Supervisor host.

Q: I have another Niagara Edge device with less than 150 points that allows capacity upgrades. What happens if I add an upgrade option to exceed 150 points?

The Niagara Edge device license has a platform feature with an attribute to indicate it is an Edge platform. If upgrading to over 150 points, this attribute is reset.

The NiagaraNetwork connection to a device will only count as an Edge connection if the license indicates it is an Edge platform.

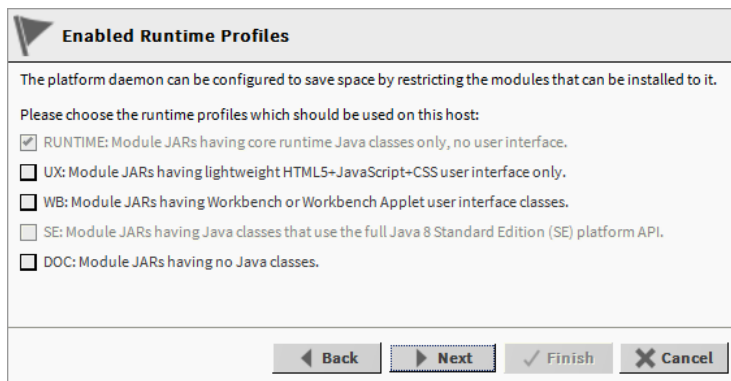
If the capacity is over 150 points, then it will revert to a standard NiagaraNetwork connection regardless of station type. It will only connect if your Supervisor license has adequate Niagara capacity.

Q: What if I have additional questions?

A: Please contact tsupport@tridium.com for further assistance.

Setting the enabled runtime profiles

Enabled runtime profiles specify what types of N4 software module JAR are to be installed, as shown in the following image. This affects the total file space consumed by the installed module JAR files.



All Niagara 4 platforms require the base “RUNTIME” (-rt) module JARs, so it is pre-selected/read-only.

For QNX-based Edge devices, you can also select “UX” (-ux) and “WB” (-wb) module JARs, but not “SE” (-se) module JARs. Note that following commissioning, you can also change the enabled runtime profiles, working from the **Platform Administration** view. For details, see “ the *Niagara Platform Guide*.

At the Enabled Runtime Profiles step:

Step 1 Click all module profile types to be installed in this device, which include one or more of these:

NOTE: The selection of UX automatically includes WB, and vice-versa.

- **RUNTIME** — Always selected. Note if UX (or UX and WB) are not selected, the device will not support client Web browser access from its WebService—only client access from Workbench via Fox.
- **UX** — Select to support Web client browser access, using HTML5, Javascript, and CSS technologies only (client does not need to run Java and download WbApplet from the device).
- **WB** — Select (in addition to UX) if the device must also support client Web browser access from its WebService.
- **SE** — Not available for QNX-based devices.
- **DOC** — Selectable, but not recommended on the device for file space reasons.

Step 2 Click the **Next** button for the next step.

Specifying a station database to install

If you have a specific station database ready to install in the Edge device, you can specify it at this step in the wizard. Or, simply accept the default “(Don’t transfer a station)” and click **Next**. (You can create a station later using the New Station Wizard, and install it using the platform’s **Station Copier**. Or you can simply select an existing station to install using the **Station Copier**.)

At the Station Installation step, do the following:

Step 1 Click the Station drop-down control and click the name of a station database on your PC.

Listed are station subfolders in your Workbench **User Home**.

Step 2 If you select a station the following additional options are available, as shown:

- **New Name**
Either leave at same station name as local copy, or type in a new station name.
- If the passphrase for the local copy of the station is different from the remote host’s system passphrase, you are prompted to enter the local copy’s passphrase. If there is no passphrase mismatch, you are not prompted to enter one.
- **START AFTER INSTALL**
If enabled (the default), and a reboot is *not* included at the end of commissioning, when commissioning completes the station is restarted. In cases where commissioning ends in a reboot, such as if commissioning a new Edge device (installing core software) and/or changing TCP/IP settings, the next “AUTO-START” setting determines if the installed station is started following the reboot.

Note in Niagara 4, it is possible to start or restart a station without rebooting the host controller.

- **AUTO-START**

If enabled (the default), the station starts every time the device is rebooted. This is recommended.

NOTE: In some commissioning scenarios, you may wish to disable (clear) both “Start” options when installing a station, especially if commissioning ends in a reboot. This way the software modules needed by the station will be installed (along with all station files), but the station will be “idle”.

In this case, to start the station you must reopen a platform connection to the Edge device following the reboot, starting the (now idle) station from the **Application Director** view. This allows you to see all standard output messages from the station, as it transitions from “idle” to “starting” to “started”.

If doing this, in the **Application Director** be sure to enable “AUTO-START” on the selected station. Otherwise, it will remain “idle” after the next controller reboot.

Step 3 Click the **Next** button to continue.

A dialog asks which station files to copy, where you can select one of the options:

- Copy files from selected directories

Allows you to specify which subfolders under that local station to copy. It produces a “tree” selection dialog upon clicking **Next**.

- If you choose this, click folder controls to expand and contract as needed.
- Selected folders appear with an “X” and unselected folders show an empty folder box.

- Copy every file in the station directory and its subdirectories.

The default, and most typically used.

NOTE: Copying identical alarm/history data to multiple Edge devices is not recommended. For this reason, Alarm and History data are not included (by default) in the station copying process.

- Copy only the “config.bog” station database file

Copies only the station configuration (components), and not any supporting folders/files like px files, html files, and so forth.

Step 4 Click the **Next** button for the next step (or if skipping that step, go to “Select modules”).

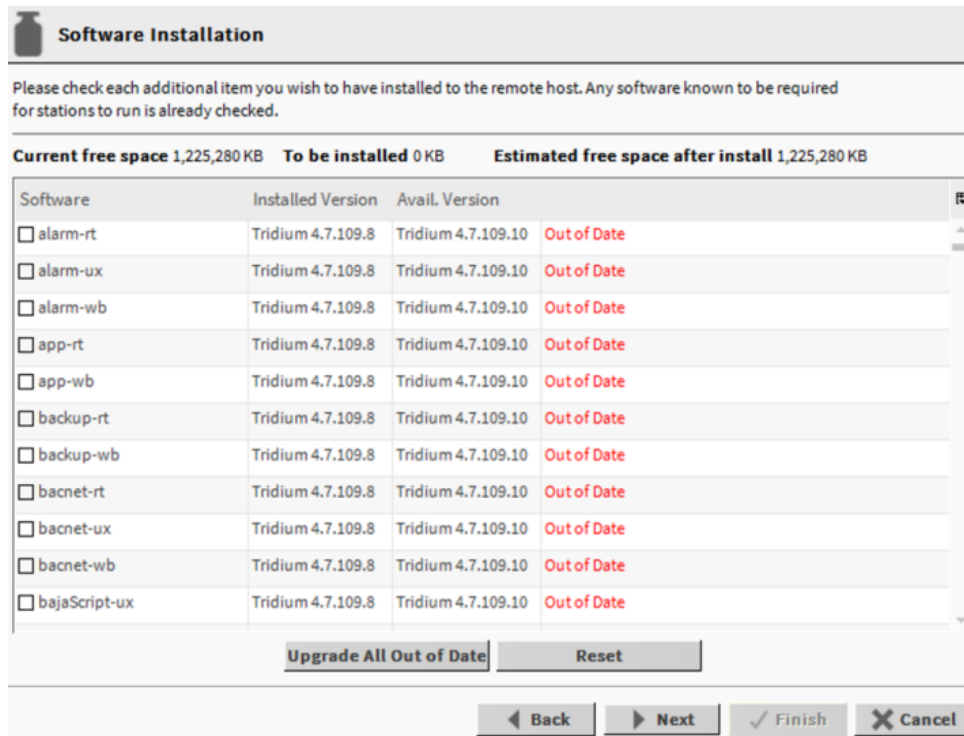
Selecting modules to install or upgrade

At the select modules step, the **Software Installation** window appears as the dependencies of the Edge device are compared against the available software modules in your Workbench PC’s “software database.” During commissioning, you can add to the software modules that are preselected for installation. Sometimes you may not make any changes, as the wizard preselects all necessary “core” modules, plus any additional modules needed by the station you previously specified in the Install Station step.

However, you may need to select additional modules, including a few not directly related to the contents of the station selected for installation. Examples include lexicon module(s), or some modules related to **Platform Services**. Or, you may know that the Edge device will need one or more modules in the future (say for a driver), and you wish to install them now.

In general, do not select modules if you are not sure they are needed. You can manage software modules anytime later, using the **Software Manager**. Also, if you install a station later, the **Station Copier** will automatically prompt for confirmation to install any additional modules deemed necessary.

Figure 6 Software installation window (default)



NOTE: It is the recommended security best practice to update to the latest software release.

NOTE: For cases described below, install the following additional module(s) to enable options.

- Select either (or both) "theme"-related modules: `themeLucid-ux`, `themeZebra-ux`, depending on how station users are assigned to Web Profiles (for example, Default Hx Profile, Hx Theme=Lucid).
- Note that "standard" lexicon modules appear listed using a module name convention of:

`niagaraLexiconLc-rt`

where `Lc` is a two-character language code, such as `Fr` for French or `Es` for Spanish. It is also possible to make custom lexicon modules using Workbench Lexicon Tools (which can use different naming).

Selecting modules for installation

At the Software Installation step, do the following:

- Step 1 Review the list of available modules (this list is long and requires you to use the scroll bar). Each selected module has an "X" in its selection box.

Note the following:

- Modules preselected from "core" need or station database reasons each have a red text descriptor, which may read as:
 - Install required platform module
 - Install required for runtime profile
 - Install module required by station

By default, these modules are at the top of the list. You cannot deselect these modules.

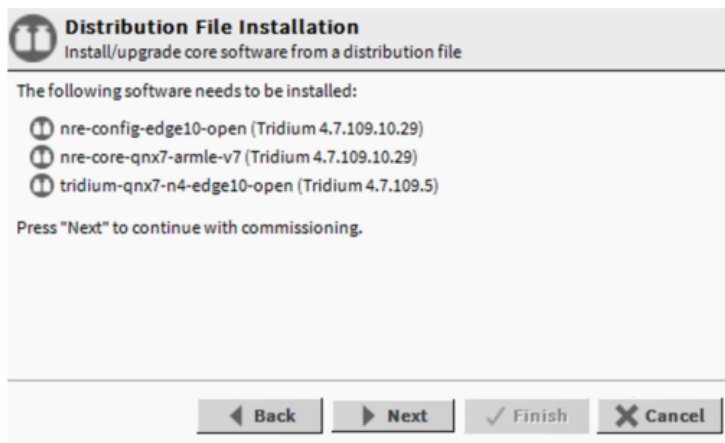
- You can select additional modules to install by clicking selection boxes. The description for each is in blue text, and displays as either:

- Not Installed (if not selected)
- Install (if selected)
- To resort the list alphabetically, click the **Module** header in the table. To return to the default sort order, click the table's (blank) description header.
- To reset the selection of modules to the original collection, click the **Reset** button.

Step 2 Click the **Next** button to go to the next step.

Install/upgrade core software

At the install/upgrade core software step, the dependencies of the Edge device platform are compared against the distribution (dist) files available in your Workbench PC's "software database." For the initial commissioning the wizard determines what core distribution files are needed, selects the files automatically, and then informs you in a dialog, as shown.



1. Click **Next** to continue.

TCP/IP configuration

The TCP/IP configuration step allows you to review and adjust the platform's TCP/IP settings.

Figure 7 TCP/IP Configuration dialog

**TCP/IP configuration**
Platform TCP/IP settings

Change the TCP/IP settings of the platform by modifying the values below:

localhost

▼

☐ Yes

+

×

▲

▼

+

×

▲

▼

Link Mode

Daisy Chain ▼

Spanning Tree Enabled ☐ Enabled

Advanced STP Settings ▼

Interface 1 ▲

ID

en0

Description

Onboard Ethernet Adapter en0

Physical Address

00:01:F0:08:20:D6

Adapter Enabled

☒ Enabled

🌐 IPv4 Settings

🌐 IPv6 Settings

DHCPv4

☐ Enabled

IPv4 Address

IPv4 Subnet Mask

255.255.

DHCPv4 Server

DHCPv4 Lease Granted

DHCPv4 Lease Expires

Interface 2 ▼

◀

▶

Undo Changes

◀ Back

▶ Next

✓ Finish

✕ Cancel

NOTE: IPv6 support is available; however this document focuses on IPv4 configuration. For details on IPv6, refer to the *Niagara Platform Guide* section on **TCP/IP Configuration**.

Daisy chain mode

By default the Edge device is factory shipped in the daisy chain link mode. The Daisy Chain/STP settings are configured during the TCP/IP step of the **Commissioning Wizard** and during distribution file install procedure.

NOTE: The STP settings are available only when **Link Mode** is configured for Daisy Chain.

Figure 8 Link Settings in TCP/IP Configuration step, with Link Mode set to Daisy Chain

The screenshot shows the 'TCP/IP configuration' window with the 'Platform TCP/IP settings' tab selected. The 'Link Settings' section is highlighted with a blue box. It contains the following fields:

- Link Mode:** Daisy Chain (dropdown menu)
- Spanning Tree Enabled:** ☐ Enabled
- Advanced STP Settings:**
 - Bridge Priority:** 49152
 - Port Priority 1:** 128
 - Port Priority 2:** 128
 - Hello Time:** 00000h 00m 02s
 - Forward Delay Time:** 00000h 00m 15s
 - Maximum Aging Time:** 00000h 00m 20s
- Interfaces:**
 - Interface 1 (dropdown menu)
 - Interface 2 (dropdown menu)

At the bottom of the window, there are buttons for 'Back', 'Next', 'Finish', and 'Cancel', along with an 'Undo Changes' button.

Configuring TCP/IP settings

Perform the following steps to configure the device's TCP/IP settings.

- Step 1 Review the **Interface 1** settings on the **IPv4 Settings** tab, which include the temporary factory-shipped IP address.
- Step 2 Assign the Edge device a unique IPv4 address for the network you are installing it on. No other device on this network should use this same IP address. Include the appropriate subnet mask used by the network.

NOTE: If the Edge device is in daisy chain mode, interface2 is not available for TCP/IP configuration.

CAUTION: If enabling more than one LAN port (applicable to PRI/LAN1, SEC/LAN2) then the IP address for each must be configured on different subnets, otherwise the ports will not function correctly. For example, with a typical "Class C" subnet mask of 255.255.255.0, setting Interface 1=192.168.1.99 and Interface 2=192.168.1.188 is an invalid configuration, as both addresses are on the same subnet.

Alternatively, if the network supports DHCP, you can enable it (click DHCP Enabled). In this case, the IP Address and Subnet Mask fields become read only.

Note that in general (for stability, static IP addressing is recommended over DHCP. If DHCP is preferred, an IP Address 'Reservation' should be entered for the controller in the DHCP Server. The controller IP address should not change.

CAUTION: Do not enable DHCP unless you are certain that the network has DHCP servers! Otherwise, the controller may become unreachable over the network.

Step 3 Review and adjust other TCP/IP settings as needed, which (in usual order of importance) include:

- **IPv4 Gateway** — The IP address for the device that forwards packets to other networks or subnets.

NOTE: The Edge device only supports one gateway for all adapters.

- **DNS Domain Name** — Enter the name of network domain, or if not applicable, leave blank.
- **DNSv4 Servers** — Click the  add button for a field to enter the IPv4 address of one or more DNS servers.
- **Hostname** — Default may be “localhost,” or enter another name you want to use for this host. If a hostname is entered, typically the name is unique for the domain.

NOTE: In some installations, changing hostname may result in unintended impacts on the network, depending on how the DHCP or DNS servers are configured. If in doubt, leave hostname at default.

- **Hosts File** — Click control to expand edit field. Format is a standard TCP/IP hosts file, where each line associates a particular IP address with a known host name. Each entry should be on an individual line. The IP address should be placed in the first column, followed by the corresponding host name. The IP address and the host name should be separated by at least one space.

- a. To add a line, click at the end of the last line and press **Enter**.
- b. Type in the required data on the new line.

To return to see all TCP/IP settings, click the control to collapse the edit field when done.

NOTE: The **Undo Changes** button resets all settings (all Interfaces) back to the original pre-step values.

Step 4 Click the **Next** button to go to the next step.

NOTE: Edge devices have two Ethernet ports, where “**Interface 2**” is available for configuring the secondary (LAN2) Ethernet port (unless the device is in daisy chain mode). By default, this port is disabled, that is without a “default” address. The intended usage of this secondary port is for:

- Connecting multiple Edge devices by daisy chaining one device to the next. In this scenario, each device’s SEC port is used to connect to another Edge device. Note that in daisy chain mode, **Interface 2** (SEC/LAN2) is not available for TCP/IP configuration.
- Isolating a “driver’s” Ethernet traffic from the primary (LAN1) interface, OR
- In some cases, LAN2 may be set up with a standard, fixed, IP address that is used only by a company’s service technician, when on site. This allows access to the device without disconnecting it from the customer’s network, or without connecting the technician’s service PC to the customer’s network (which might go against local IT security policies).

In any case, note that only one LAN port can be set as DHCP. If enabling LAN2, you must specify another (network) static IP address and the appropriate subnet mask, i.e. a different subnet mask for each enabled LAN port IP address.

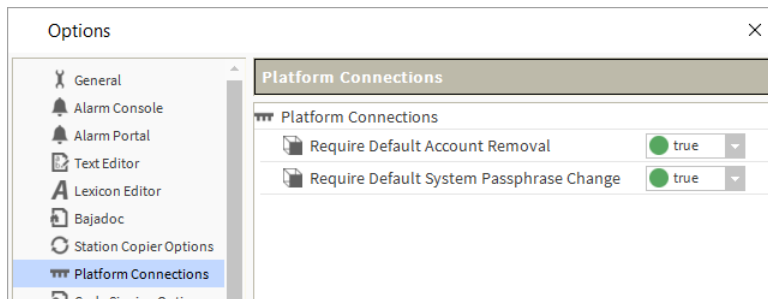
- The device does not provide IP routing or bridging operation between different Interfaces.

Configuring system passphrase

In this Commissioning Wizard step, you specify a passphrase to replace the factory default passphrase. A strong password is required (a minimum of 10 characters and include at least one uppercase character, at least one lowercase character, and at least one digit).

In Niagara, Workbench requires that the user remove the default platform user account and change the default system passphrase prior to completing a platform connection. These requirements are configurable via the **Platform Connections** options under **Tools→Options**.

Figure 9 Platform connection options



These platform connection options are “true” by default, so that anytime Workbench detects either of the following conditions when making a platform connection it launches the **Change Platform Defaults Wizard** which steps you through the required changes:

- The system passphrase of the remote platform is the default value.
- The platform credentials of the remote platform are factory default values.

This view allows you to configure whether or not the system prompts the user to remove the default platform user account and/or to change the default system passphrase when making a platform connection. These options are offered as a convenience. For example, if another workflow already prompts for these changes, setting one or both of these options to `false` can prevent redundant prompts.

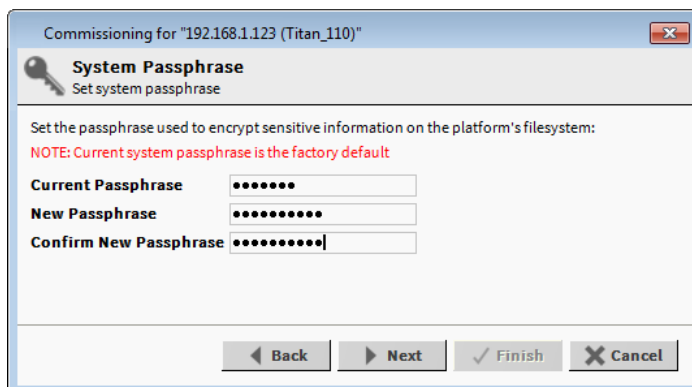
The system passphrase is used to protect sensitive information stored on all Niagara systems. The system passphrase is assigned as the file passphrase for “portable” files, such as backups and station copies, and is used to encrypt those files. During operations in which you transfer encrypted files to a system (restoring backups, transferring a station, etc.) you are prompted to enter the file passphrase if it doesn’t match the system passphrase for the target system. For more details, see “System passphrase” in the *Niagara Platform Guide*.

Step 1 Enter the **Current Passphrase** for the Edge device (typically the factory default passphrase).

Step 2 Enter a strong password in the **New Passphrase** and **Confirm New Passphrase** fields.

The entries in both of these fields must match.

Step 3 Click **Next** to continue.



CAUTION: When you create a system passphrase be sure to make a note of it and guard it carefully! If you lose the system passphrase, you will lose access to encrypted data. You can change the system passphrase using the Platform Administration tool.

CAUTION: When you create a system passphrase be sure to make a note of it and guard it carefully! If you lose the system passphrase, you will lose access to encrypted data. You can change the system passphrase using the Platform Administration tool.

Remove default platform user account

In this Commissioning Wizard step, you specify platform login credentials (user name and password) to replace the factory-default platform user in this Edge device.

Figure 10 Initial dialog to replace the factory-default platform user account

Platform Daemon Authentication
Create a new platform user account

Please create a new platform user account.
The platform session's credentials will automatically update to this account when the commissioning wizard completes.

User Name: MyPlatUser
Password:
Confirm Password:
Comment (optional): Platform admin user

◀ Back ▶ Next ✓ Finish ✕ Cancel

Note that the Commissioning Wizard in Niagara 4 prevents commissioning the Edge device that retains the factory default platform user account. To proceed, you must enter a different user name, along with a “strong” password (this means a minimum of 10 characters including: at least one uppercase character, at least one lowercase character, and at least one digit).

Following your entry in this dialog, another step (if pre-selected) lets you create additional platform admin users, if needed. Each platform user must have a unique user name and use a “strong” password. Up to 20 total users are supported. Note each platform user account has the same (full) platform admin access—users can change their password, and even create additional platform admin accounts.

NOTE: User name and password entries are case sensitive.

If you are not changing the controller’s IP address during commissioning, the credentials for your replacement platform user are “remembered” in the current session. This can simplify platform reconnection to the controller after it reboots from commissioning. This is useful in a “migration” scenario.

However, if changing the IP address in commissioning, you need to remember/re-enter the new credentials for a platform user in order to reconnect. Always make careful note of any changed platform credentials, and guard them closely—as they provide the highest security level access to any Niagara 4 platform.

Platform user rules and guidelines

When adding any N4 Edge device platform admin user, the following rules apply:

- User Name
User Name can be a maximum of 14 alphanumeric characters (a - z, A - Z, 0 - 9), where the first character must be alphabetic, and following characters either alphanumeric or underscore (_).
- Password
A strong password is required (it must match in both password fields). Entry characters display only in asterisks (*). Password must be a minimum of 10 characters including: at least one uppercase character, at least one lowercase character, and at least one digit. An error popup reminds you if attempt to enter a password that does not meet minimum rules.

NOTE: Some basic guidelines on strong passwords:

Use both upper and lower case.

Include numeric digits (a minimum of one).

Include special characters.

Don't use dictionary words.

Don't use company name.

Don't make the same as the user name.

Don't use common numbers like telephone, address, birthday, and so on.

- **Comment**

This is an optional alphanumeric field you can use when adding a new platform admin user, for description purposes only (note you cannot edit it after adding a user, unlike with a user's password).

CAUTION: Make note of your platform user credentials, and guard them carefully! Consider the platform daemon as the highest-level access to the Edge device.

If you lose or forget these credentials, you may be unable to complete commissioning and startup of this controller. In this case, you can restore the factory default platform user, providing you can serially connect to the controller (make serial shell connection), and press a key at the prompted time during controller boot up following a power cycle.

Replacing the factory-default platform user

You see this dialog only in the initial commissioning of a new Edge device, or possibly at some future point after installing a "clean dist" file.

Platform Daemon Authentication
Create a new platform user account

Please create a new platform user account.
The platform session's credentials will automatically update to this account when the commissioning wizard completes.

User Name MyPlatUser

Password

Confirm Password

Comment (optional) Platform admin user

◀ Back ▶ Next ✓ Finish ✕ Cancel

- Step 1** In the **User Name** field, type in the desired user name for platform login.
- Step 2** In the **Password** fields, type in a strong password (it must match in both password fields). Password must use a minimum of 10 characters including: at least one uppercase character, at least one lowercase character, and at least one digit.
- Step 3** In the (optional) **Comment** field, you can enter an alphanumeric descriptor for this platform admin user, where it is seen in the "Users table" if there are more than one platform user.
- Step 4** Click the **Next** button. You proceed either to the final commissioning (review changes) step, or if you selected to configure additional platform daemon users, you see your replacement user in the **Users** table of the **Platform Daemon Authentication** dialog.

Resetting platform credentials

Occasionally a situation will arise where you have a functional Edge 10 ACE controller but no valid credentials or system passphrase. This could be due to a change in building ownership or control contractors. In

Niagara 4.13 and later, the Platform Account Recovery feature provides you with a secure method of regaining access to the Edge 10 ACE without losing station data and configuration.

Prerequisites:

- A USB-to-micro USB cable (same cable as that used to connect a smart phone to a computer) connects the controller to your PC.
- A terminal emulator (system shell) program, such as PuTTY, is installed on your PC.
- During the procedure, you will be prompted to provide the hostid and “proof of ownership” for this controller.

Resetting platform credentials is accomplished via a multi-stage process that involves using serial shell software plus contacting your Support channel, and interacting with Tridium in order to initiate a secure method of validating that you (the serial shell user) are authorized to reset the platform credentials and system passphrase.

NOTE: The controller must be powered off to initiate this procedure. Additionally, you must be able to communicate with Tridium via phone or email. Also, this process could conceivably take several hours to complete, depending on your access to cell phone or internet service.

Step 1 Power off the controller.

Step 2 Using the serial shell program on your PC, open a serial connection to the controller.

Step 3 Power up the controller and during the boot sequence, press **ESC** to enter the recovery mode which presents alternate boot options.

Step 4 While viewing the **Alternate Boot Options** menu in the serial shell window, enter **8** to select the option to “Reset Platform Credentials”, and when prompted to confirm that you intend to reset platform credentials and system passphrase, enter **Y** to continue.

The **Platform Access Recovery** screen displays the controller’s hostId, and OS version, as well as a randomly generated token and additional instructions, as shown.

Step 5 Contact your appropriate Support channel and request credential/system passphrase reset for the hostid shown on-screen.

Step 6 When prompted, provide the support representative with the required “proof of ownership” for the controller.

Once proof of ownership is established the support representative will notify Tridium.

Step 7 When prompted In the **Platform Access Recovery** screen, enter the customer name. For example, Joe NewBuildingOwner.

Step 8 Contact Tridium (either via phone or email) and provide the generated token, the hostid and the customer name entered in the previous step.

The Tridium representative validates your customer identity via Edge 10 ACE Licensing, and generates a “Signature” for the token/hostid/customer name that includes a **Reset Authorization Key**. This Signature is sent to you either by phone or email.

CAUTION: The **Reset Authorization Key** is valid only for 24-hours from the time it is generated. If you do not enter the key in the **Platform Access Recovery** screen within the 24-hour period, you must start over with step 1 of this procedure to obtain another Key.

Step 9 Once you have received the Signature, in the **Platform Access Recovery** screen indicate your preference for entering the **Reset Authorization Key** in the serial shell window, enter one of the following:

- Enter1 for Single Line (best when the Key is copied from email), and at the “Enter Key” prompt paste the Reset Authorization Key. After checking the key enter **v** to verify it (or if necessary, enter 1 to edit the key and then **v** to verify it.)
- Enter2 for Multiple Line (best when receiving the Key over voice), and at the “Enter line x” prompts enter the string of characters as instructed. After checking your entries enter **v** to verify the key.

The controller uses the previously installed `tridium` certificate to verify that this Signature was generated by private key for the given token/hostid/customer name values. Afterwards, the system software generates the factory default username/password credentials and default system passphrase.

The serial shell window displays the following text and reboots after the specified amount of time:

```
Verification Passed
```

```
System user credentials are reset
Shutdown in 10 seconds
```

Step 10 Make a serial or platform connection to the controller. On detecting default credentials, the system prompts you to change the default credentials and default system passphrase before completing the platform connection.

On completion, you can login and access the station data and configuration as you normally would.

Configuring additional platform daemon users

This step in the Commissioning Wizard lets you add additional platform admin users in the Edge device, and also delete users and change passwords. Platform daemon authentication lets you create up to 20 (total) additional platform admin users.

Platform Daemon Authentication
Platform user account information

You may add, remove or edit user accounts the daemon uses to authenticate users by changing the values below:

Users	
Name	Comment
MyPlatUser	Platform admin using strong password

Buttons: New User, Delete User, Change Password

Navigation: Back, Next, Finish, Cancel

NOTE: You can access this same window via the **User Accounts** button in the **Platform Administration** view, available any time after commissioning.

- Step 1** Click **New User** for the popup **New User** dialog, as shown above.
- Step 2** In the **User Name** field, type in the desired user name for platform login.
- Step 3** In the **Password** fields, type in a strong password (it must match in both password fields). Password must use a minimum of 10 characters, using at least one uppercase character, at least one lowercase character, and at least one digit.
- Step 4** In the (optional) **Comment** field, you can enter an alphanumeric descriptor for this platform admin user, where it is seen in the “**Users** table”.
- Step 5** Click **OK**. The user is added to the **Users** table.
- Step 6** To add another user, repeat the previous steps or else click the **Next** button for the final step.

Reviewing and finishing the Commissioning Wizard

The final step in the **Commissioning Wizard** provides a summary of all the actions to be performed by the wizard.

- Step 1** Read through the summary of changes, using the scroll bar to see those steps near the end.

- If no change is needed, click **Finish** to initiate the rest of the **Commissioning Wizard**.
- If any change is needed, click the **Back** button until the step dialog appears, then make the change. Then, click the **Next** button until this review dialog appears again.

Step 2 While the wizard is working, progress updates are posted in a "Completing Commissioning" dialog. When completed, the wizard reboots the Edge device, and a "**Close**" button is available.

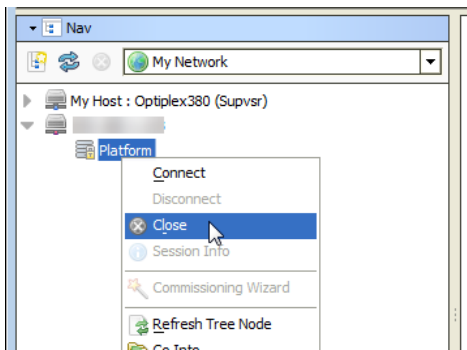
Do not remove power from the controller during this reboot, which may take up to 7 or more minutes to complete. Removing power could make the unit unrecoverable. If desired (and convenient), you can use a serial shell connection to the controller to monitor progress as files are installed and the unit is prepared (for details refer to the "System Shell" section in this guide).

Note that firmware upgrades occur before the platform daemon starts in the Edge device. Therefore, it is safe to interrupt power any time after you can re-open a platform connection to the device.

Step 3 Click the **Close** button to exit the wizard.

When the Edge device reboots, your platform connection to it closes. Notice that in the Nav tree, the platform instance for that device is now dimmed.

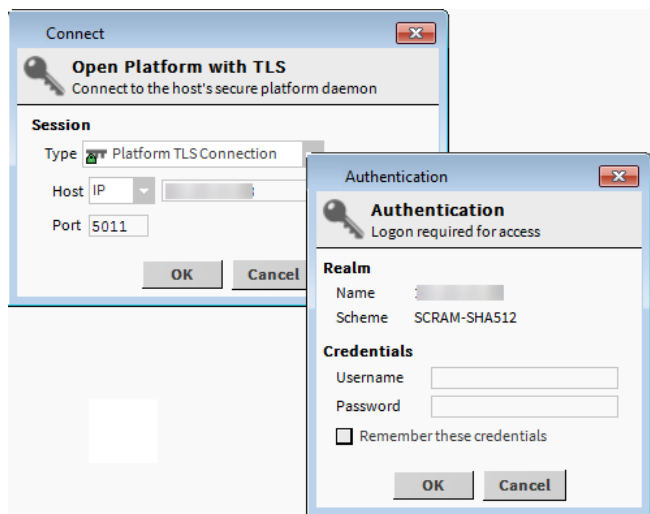
Step 4 Assuming that you changed the Edge device's IP address in commissioning, right-click and close that platform instance in the Nav Tree, as this would make that connection instance invalid.



If you did not change its IP address, after several minutes you should be able to double-click the platform instance again to reconnect.

NOTE: Going forward, you must access the Edge device by its new (assigned) IP address. Note that your Workbench keeps a history of TCP/IP changes made.

Reopening a platform connection using the new (changed) IP address



Also, you must use the credentials for the new platform user you created (to replace the factory-default platform user), or if you created additional platform users, credentials for one of them.

If you changed your PC's IP address in order to commission the Edge device, you usually need to reconfigure your PC's TCP/IP settings back to appropriate settings (now) to communicate with it. Otherwise, you will be unable to connect to it for other commissioning.

Chapter 4 Platform services configuration

Topics covered in this chapter

- ◆ About Platform Services
- ◆ Secure Platform Communication
- ◆ PlatformServices properties
- ◆ Optional platform administration
- ◆ Performing platform administration

A few platform configuration items in the Edge device are not directly accessible in the Workbench platform connection to that controller—that is, via the **Commissioning Wizard** or any of the platform views. Instead, you must have a station installed and running on the controller (any station).

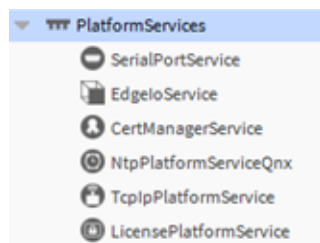
Then using Workbench, you open a (Fox) connection to that station, and configure these platform-related items by accessing services under the station's PlatformServices container.

About Platform Services

Under its Services container, every station has a PlatformServices container.

NOTE: In Niagara, there is added support for the IEEE 802.1X wired authentication standard for the JACE-8000, JACE-9000, Niagara Edge 10 and Edge platforms. For more details, see the *Niagara IEEE 802.1X Configuration Guide*.

Figure 11 Example device station's PlatformServices



PlatformServices is different from all other components in a station in the following ways:

- It acts as the station interface to specifics about the host platform (whether Edge device or a PC).
- It is built dynamically at station runtime—you do not see PlatformServices in an offline station.
- Any changes you make to PlatformServices or its child services are not stored in the station database.

Instead, changes are stored in other files on the host platform, such as its `platform.bog` file.

NOTE: Do not attempt to edit `platform.bog` directly; always use PlatformServices' views.

Included services are a `TcpIpService` and `LicenseService`, providing station (Fox) access to windows used in platform views, for instance the **TCP/IP Configuration**. These services support installations where all configuration must be possible using only a browser connection and not Workbench connected to the Edge device's platform daemon.

Secure Platform Communication

For any QNX-based Niagara Edge 10, the following child platform services in the station's PlatformServices are of chief importance when commissioning a new controller. The **CertManagerService** manages the edge device's PKI certificate stores and/or allowed host exceptions.

- The Niagara Station Security Guide documents communication security using TLS.
- **CertManagerService** — For management of PKI certificate “stores” and/or allowed host exceptions, used in certificate-based SSL (TLS) connections between the station/platform and other hosts. For details, see the *Niagara Station Security Guide*.

PlatformServices properties

The default view of the **PlatformServices** container, the **Platform Service Container Plugin**, provides access to numerous properties, as shown below.

Figure 12 Platform Service Container Plugin

The screenshot displays the 'Platform Service Container Plugin' configuration window. The left sidebar shows a tree view of services, with 'PlatformServices' selected. The main panel lists various properties and their values:

Property	Value															
Name	JACE_815															
Host	172.31.66.15 (JACE_815)															
Model	TITAN															
Model Version																
Product	JACE-8000															
Host ID	Qnx-TITAN-D47B-AC36-3843-848A															
Niagara Version	4.13.0.20															
Java VM Name	OpenJDK ClientVM															
Java VM Vendor	Azul Systems, Inc.															
Java VM Version	25.322-b06															
OS Name	QNX															
OS Arch	aarch32															
OS Version	7.0.X															
Platform Daemon Port	3011															
Platform Daemon TLS Port	5011															
Locale	en															
System Time	05:38															
Date	02-May-2023															
Time Zone	America/New_York (-5/-4)															
Engine Watchdog Policy	Terminate															
Engine Watchdog Timeout	00:00:00h 03m [0 ms - +inf]															
Enable Station Auto-Save	☒ Enable															
Station Auto-Save Frequency	00:02:40h 00m [1 minute - +inf]															
Station Auto-Save Versions to Keep	0 [1 - 10]															
Number of CPUs	1															
Current CPU Usage	3%															
Overall CPU Usage	3%															
Filesystem	<table border="1"> <thead> <tr> <th></th> <th>Total</th> <th>Free</th> <th>Files</th> <th>Max Files</th> </tr> </thead> <tbody> <tr> <td>/</td> <td>3,492,848 KB</td> <td>3,254,877 KB</td> <td>540</td> <td>109152</td> </tr> <tr> <td>/mnt/ram0</td> <td>8,176 KB</td> <td>7,724 KB</td> <td>17</td> <td>256</td> </tr> </tbody> </table>		Total	Free	Files	Max Files	/	3,492,848 KB	3,254,877 KB	540	109152	/mnt/ram0	8,176 KB	7,724 KB	17	256
	Total	Free	Files	Max Files												
/	3,492,848 KB	3,254,877 KB	540	109152												
/mnt/ram0	8,176 KB	7,724 KB	17	256												
Physical RAM	<table border="1"> <thead> <tr> <th>Total</th> <th>Free</th> </tr> </thead> <tbody> <tr> <td>1,048,576 KB</td> <td>345,124 KB</td> </tr> </tbody> </table>	Total	Free	1,048,576 KB	345,124 KB											
Total	Free															
1,048,576 KB	345,124 KB															
Serial Number	80075241															
Hardware Revision	4.8.0															
Failure Reboot Limit	3 [1 - max]															
Failure Reboot Limit Period	00:00:00h 10m [0 ms - +inf]															
RAM Disk	<table border="1"> <thead> <tr> <th>Min Free</th> <th>Size</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>5 % [0 - 100]</td> <td>-1 MB</td> <td>Ok</td> </tr> </tbody> </table>	Min Free	Size	Status	5 % [0 - 100]	-1 MB	Ok									
Min Free	Size	Status														
5 % [0 - 100]	-1 MB	Ok														
Java Heap	<table border="1"> <thead> <tr> <th>Min Free</th> <th>Max</th> <th>Free</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>16 MB</td> <td>371 MB</td> <td>230 MB</td> <td>Ok</td> </tr> </tbody> </table>	Min Free	Max	Free	Status	16 MB	371 MB	230 MB	Ok							
Min Free	Max	Free	Status													
16 MB	371 MB	230 MB	Ok													
Open File Descriptors	<table border="1"> <thead> <tr> <th>Min Free</th> <th>Max Open</th> <th>Free</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>50 [50 - max]</td> <td>8000</td> <td>7788</td> <td>Ok</td> </tr> </tbody> </table>	Min Free	Max Open	Free	Status	50 [50 - max]	8000	7788	Ok							
Min Free	Max Open	Free	Status													
50 [50 - max]	8000	7788	Ok													
Free RAM	<table border="1"> <thead> <tr> <th>Min Free</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>1024 [512 - max] KB</td> <td>Ok</td> </tr> </tbody> </table>	Min Free	Status	1024 [512 - max] KB	Ok											
Min Free	Status															
1024 [512 - max] KB	Ok															
Disk Space	<table border="1"> <thead> <tr> <th>Min Free</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>10 % [0 - 100]</td> <td>Ok</td> </tr> </tbody> </table>	Min Free	Status	10 % [0 - 100]	Ok											
Min Free	Status															
10 % [0 - 100]	Ok															
Files	<table border="1"> <thead> <tr> <th>Min Free</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>50 [50 - max]</td> <td>Ok</td> </tr> </tbody> </table>	Min Free	Status	50 [50 - max]	Ok											
Min Free	Status															
50 [50 - max]	Ok															

At the bottom of the window, there are 'Refresh' and 'Save' buttons.

Number of CPUs	1				
Current CPU Usage	8%				
Overall CPU Usage	7%				
Filesystem		Total	Free	Files	Max Files
	/	1,355,760 KB	1,247,392 KB	340	42368
	/mnt/aram0	65,520 KB	62,968 KB	10	2048
	/mnt/ram0	4,080 KB	3,812 KB	10	128
Physical RAM	Total	Free			
	523,264 KB	96,328 KB			
Serial Number	107				
Hardware Revision	0.0.0				
Failure Reboot Limit	3 [1 - max]				
Failure Reboot Limit Period	00000h 10m [0ms - +inf]				
RAM Disk	Min Free		Size	Status	
	5	% [0 - 100]	64 MB	Ok	
Java Heap	Min Free		Max	Free	Status
	8	MB	185 MB	148 MB	Ok
Open File Descriptors	Min Free		Max Open	Free	Status
	50	[50 - max]	2000	1911	Ok
Free RAM	Min Free		Status		
	1024	[512 - max] KB	Ok		
Disk Space	Min Free		Status		
	10	% [0 - 100]	Ok		
Files	Min Free		Status		
	50	[50 - max]	Ok		

Configuring PlatformServices properties

Some properties are read-only status types, similar to many seen in the Platform Administration view. Other configuration properties can be edited. A group of three configuration properties adjust time, date, and time zone settings for the host Edge device (alternately accessible using a platform connection to the Edge device). Access to these properties is useful if the installation requires all setup access using a browser only.

Prerequisites:

- You are using Workbench connected to a running station in an Edge device.

Step 1 In the Nav tree, expand **Services** and double-click **PlatformServices**.

Its **Platform Service Container Plugin** opens in the view pane.

Some properties are read-only status types, similar to many seen in the Platform Administration view. Other configuration properties can be edited. A group of three configuration properties adjust time, date, and time zone settings for the host Edge device (alternately accessible using a platform connection to the Edge device). Access to these properties is useful if the installation requires all setup access using a browser only.

Step 2 As needed, review the platform service configuration properties and update them as needed.

NOTE: Leave the following properties at default values unless otherwise directed by Systems Engineering: **Locale**, **Engine Watchdog Policy**, **Engine Watchdog Timeout**, **Enable Station Auto-Save**, **Station Auto-Save Frequency**, **Station Auto-Save Versions to Keep**, **RAM Disk**

Step 3 Click **Save** to write any configuration change to the host Edge device platform.

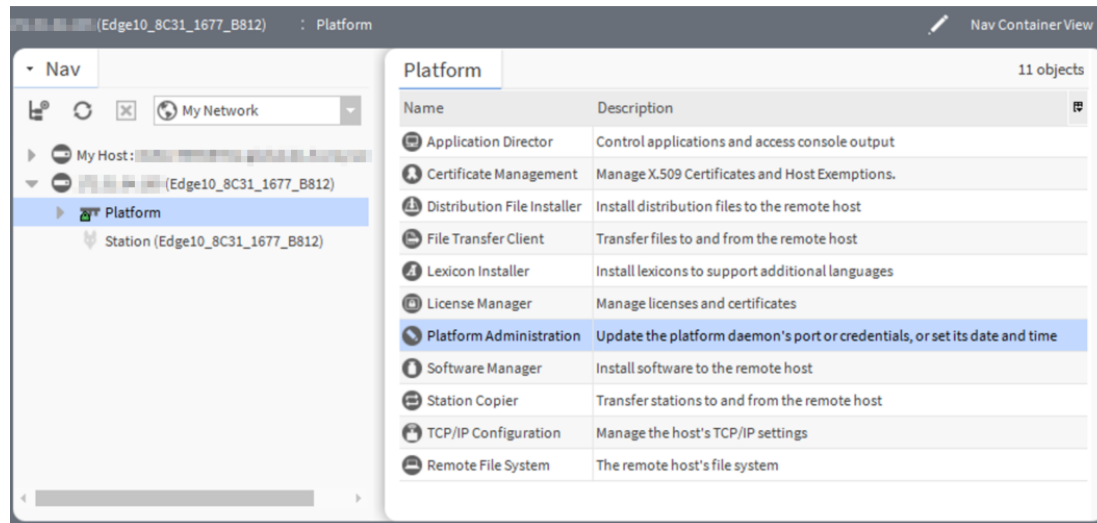
As newer Edge device platforms are introduced, hardware-specific properties may be appended to the collection of a station's PlatformServices properties.

Optional platform administration

The **Commissioning Wizard** performs most, but sometimes not all, needed configuration for a new Edge 10 platform. There are several items you should review (and optionally change) in a follow-up platform connection to each Edge device, using the **Platform Administration** view.

As shown below, the **Platform Administration** view is one of several views for any platform, listed under the platform in the Nav tree and in the platform's Nav Container View. This view provides a text summary of the Edge device's current software configuration, including its model number, OS level, JVM version, installed modules, lexicons, licenses, certificates, and so on.

Figure 13 Platform Administration is one of several platform views



Platform Administration

- View Details
- User Accounts
- System Passphrase
- Change HTTP Port
- Change TLS Settings
- Change Date/Time
- Advanced Options
- Change Output Settings
- View Daemon Output
- View System Log
- Configure Runtime Profiles
- Configure NRE Memory
- Backup
- Commissioning
- Reboot

Baja Version Tridium 4.7.109.10.29
Daemon Version 4.7.109.10.29
System Home /opt/niagara
User Home /home/niagara
Host (Edge10_8C31_1677_B812)
Daemon HTTP Port 3011 (disabled in TLS settings)
Daemon HTTPS Port 5011
Host ID Qnx-EDGE10-8C31-1677-B812
Model EDGE10
Product EDGE10
Local Date 14-Sep-18
Local Time 20:02 Coordinated Universal Time
Local Time Zone UTC (+0)
Operating System tridium-qnx7-n4-edge10-open (4.7.109.5)
Niagara Runtime nre-core-qnx7-armle-v7 (4.7.109.10.29)
Architecture armle-v7
Enabled Runtime Profiles rt,ux,wb
Java Virtual Machine azul-zre-compact3-qnx7-arm (Azul Systems, Inc. 1.8.0.181.123)
Niagara Stations Enabled enabled
Number of CPUs 1
Current CPU Usage 6%
Overall CPU Usage 39%

Filesystem	Total	Free	Files	Max Files
/	1,355,760 KB	1,226,112 KB	395	42368
/mnt/aram0	65,520 KB	62,980 KB	10	2048
/mnt/ram0	4,080 KB	3,812 KB	10	128

Physical RAM
Total 523,264 KB
Free 99,988 KB

Other Parts
 hsm-ecc508 (Tridium 0.1.50)
 n4-edge10-open (0.0.0)
 tridium-qnx7-n4-edge10-open-maint (2018.8.29)

Included in this view are commands and related window in which you can:

- Set the date and time in the Edge device.
- Change TLS settings used by the Edge device for secure communication, including configured state, platformssl port (HTTPS Port), PKI certificate, and TLS protocol. The default port is 5011.

In Niagara 4, "SSL" is always implemented using the TLS (Transport Layer Security) protocol. See the *Niagara Station Security Guide* for complete details.

- Enable or disable SFTP (Secure File Transfer Protocol) and SSH (Secure Shell) access to the Edge device. By default, such access is disabled, where both protocols use TCP port 22.

CAUTION: Although SFTP and SSH are more secure than FTP and Telnet access, enabling still poses security risks. We strongly recommend that you **keep this access disabled**, unless otherwise directed by Systems Engineering. Upon completion of any use, such access should be disabled once again.

- View daemon output and change logging levels.
- Enable debug access for temporary browser access to platform daemon diagnostic tools
- Perform other platform tasks initially performed with the **Commissioning Wizard**, such modifying platform admin users (User Accounts), configuring runtime profiles, and so on.

For more details, see the "Platform Administration" section in the *Niagara Platform Guide*.

Performing platform administration

Each edge device requires configuration including setting its date and time, port configuration, and preparation for debugging when connections fail.

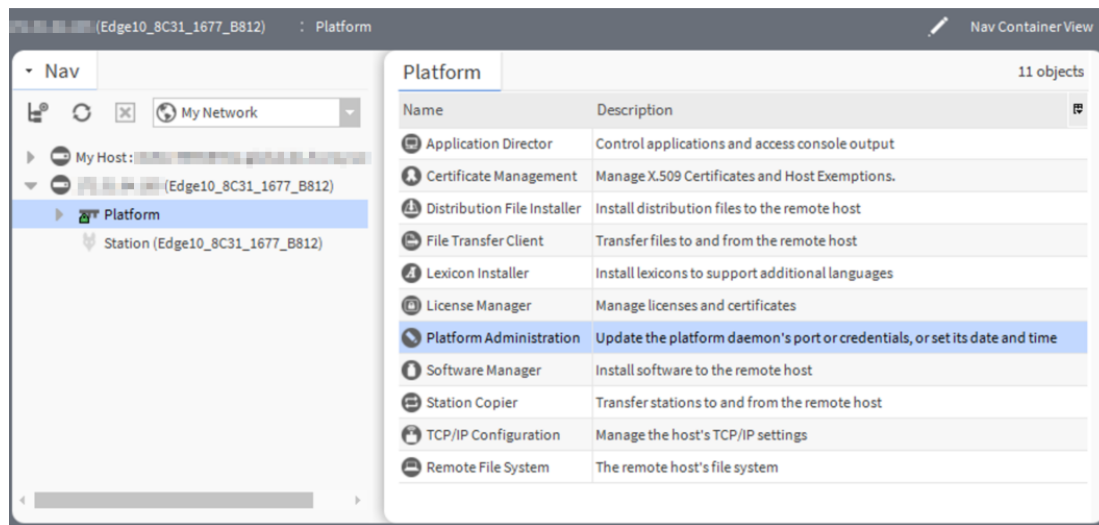
Prerequisites:

The Edge 10 device is already commissioned using the **Commissioning Wizard**.

Step 1 Using Workbench, open a platform connection to the Edge device.

Use the platform credentials you specified when creating a platform user while commissioning the device.

The Edge device platform's **Nav Container View** opens.



Step 2 In the Edge device platform's Nav Container View, double-click **Platform Administration**.

The **Platform Administration** view opens.

Platform Administration

View Details	Baja Version	Tridium 4.7.109.10.29				
User Accounts	Daemon Version	4.7.109.10.29				
System Passphrase	System Home	/opt/niagara				
Change HTTP Port	User Home	/home/niagara				
Change TLS Settings	Host	[Redacted] (Edge10_8C31_1677_B812)				
Change Date/Time	Daemon HTTP Port	3011 (disabled in TLS settings)				
Advanced Options	Daemon HTTPS Port	5011				
Change Output Settings	Host ID	Qnx-EDGE10-8C31-1677-B812				
View Daemon Output	Model	EDGE10				
View System Log	Product	EDGE10				
Configure Runtime Profiles	Local Date	14-Sep-18				
Configure NRE Memory	Local Time	20:02 Coordinated Universal Time				
Backup	Local Time Zone	UTC (+0)				
Commissioning	Operating System	tridium-qnx7-n4-edge10-open (4.7.109.5)				
Reboot	Niagara Runtime	nre-core-qnx7-armle-v7 (4.7.109.10.29)				
	Architecture	armle-v7				
	Enabled Runtime Profiles	rt,ux,vb				
	Java Virtual Machine	azul-zre-compact3-qnx7-arm (Azul Systems, Inc. 1.8.0.181.123)				
	Niagara Stations Enabled	enabled				
	Number of CPUs	1				
	Current CPU Usage	6%				
	Overall CPU Usage	39%				
	Filesystem		Total	Free	Files	Max Files
		/	1,355,760 KB	1,226,112 KB	395	42368
		/mnt/aram0	65,520 KB	62,980 KB	10	2048
		/mnt/ram0	4,080 KB	3,812 KB	10	128
	Physical RAM	Total	Free			
		523,264 KB	99,988 KB			
	Other Parts	hsm-ecc508 (Tridium 0.1.50)				
		n4-edge10-open (0.0.0)				
		tridium-qnx7-n4-edge10-open-maint (2018.8.29)				

Step 3 In the **Platform Administration** view, click any of the following to review or make changes.

Chapter 5 Application Configuration

Topics covered in this chapter

- ◆ Architectural considerations
- ◆ Device provisioning
- ◆ Provisioning configuration
- ◆ Configuration steps
- ◆ Executing the job
- ◆ Update system software
- ◆ Install device application
- ◆ Template setup
- ◆ Copying template and Excel files to Supervisor
- ◆ Deploy bulk template
- ◆ Update device application

Edge devices in a factory out-of-the box state must be configured to install appropriate software modules and application components in order to be a productive part of a Niagara installation. It is possible to commission each device individually, but this would take quite a bit of time for a system with tens or hundreds of Edge devices. In Niagara, the Provisioning environment provides a workflow to configure devices in bulk.

Architectural considerations

The Edge device can be connected in several different network topologies.

- Edge devices connected to the secondary port of a JACE-8000 or JACE-9000.
 - With or without a switch.
 - With or without an isolated DHCP server.
- Edge devices connected directly to the IT network.

For more details, see [Constructing a network with Edge devices, page 13](#).

Device provisioning

In Niagara, provisioning steps are available to simplify and enhance the provisioning workflow required to establish a functioning Edge 10 installation. These provisioning steps are all part of a complete workflow, and should be performed in the sequence in which they are described below.

In addition, the provisioning batch job management has been improved to enable provisioning jobs to concurrently run across multiple stations. By default, the number of parallel executions is derived based on the supervisor's hardware platform. This concurrency applies to any provisioning job, not just those containing these new device provisioning steps.

See the Niagara Provisioning Guide for details on existing Niagara provisioning capabilities, including the creation of a provisioning environment on a Supervisor, creating provisioning jobs to run a sequence of steps, monitoring the execution of these jobs on a set of devices, and reviewing job results.

Provisioning configuration

Use **NiagaraNetworkJobPrototype** components copied into the Supervisor station to set up device provisioning. These job prototypes will persist in the Supervisor component space and can be edited and executed as many times as needed.

See “Prototype jobs” for details on creating and managing these components. Provisioning jobs are configured using the **Niagara Network Prototype** view on a job prototype component.

Provisioning job steps are added into the **Initial steps to run only once** and **Steps to run for each station** stages of the job prototype. Stations are added into the job to complete the prototype configuration. It can be saved and run using the buttons at the bottom of the view.

Figure 14 New Job Steps, Initial steps to run only once (top window) and Steps to run for each station (bottom window)

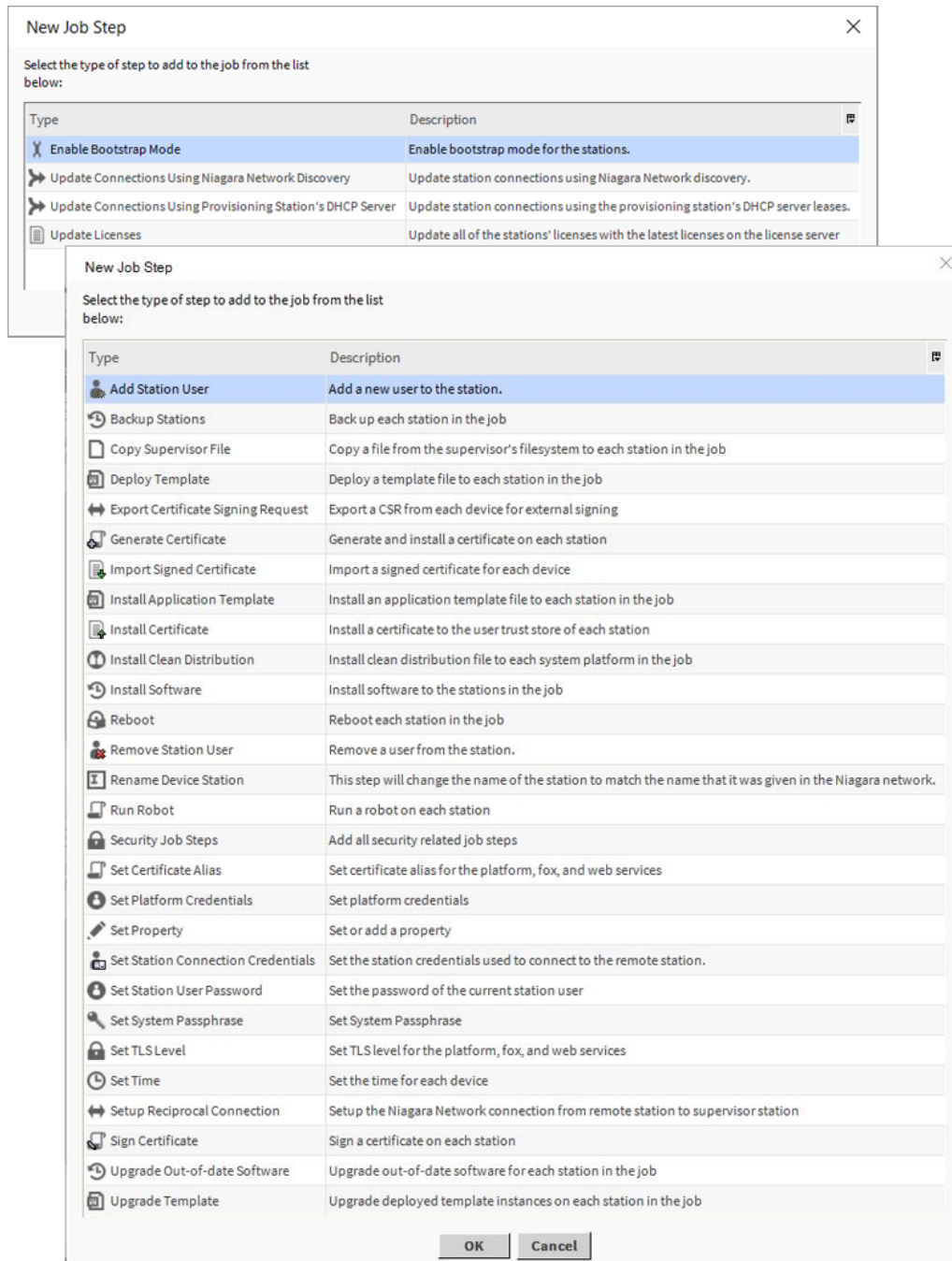
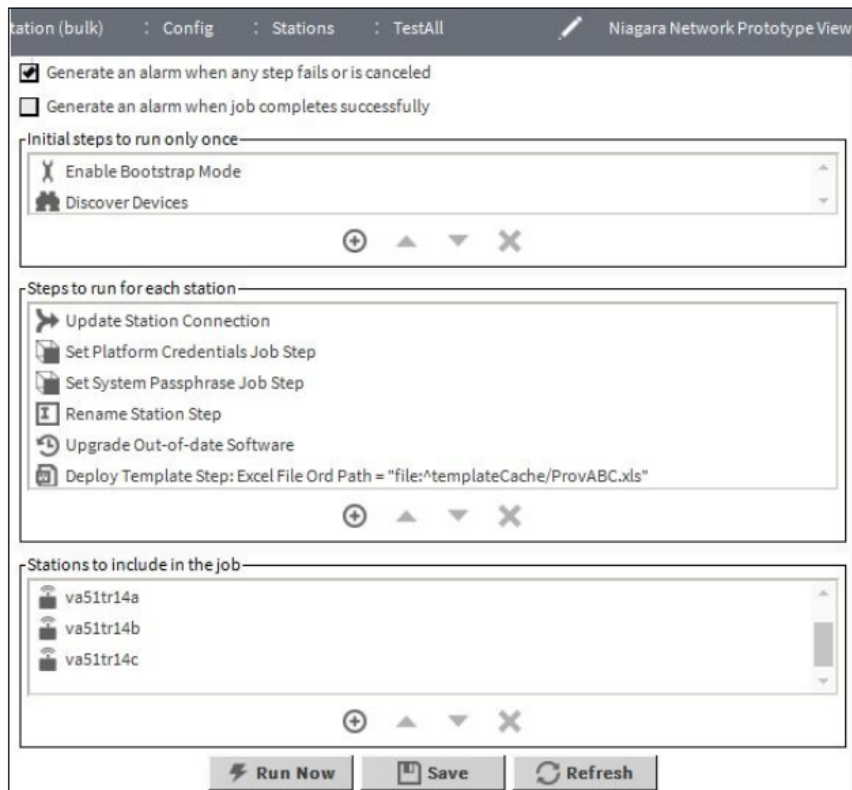


Figure 15 Example Provisioning Job Prototype



Run Results

When the job is initiated from the **Niagara Network Prototype** view, Workbench will automatically change to the **Niagara Network Job** view where job step results accumulate as the job proceeds. Each row in the table represents a single step execution on a single station. Clicking on the double arrow icon at the right end of a row will show the job execution details in the **Batch Job Step Log File** view. Entries in this table will display the first line of any progress update or failure messages for that job step. Double-click on a line to see the full text of the log message. This can be helpful in why a step might have succeeded or failed.

Figure 16 Provisioning Job Results

fig : Services : JobService : NiagaraNetworkJob3 Niagara Network Job View

User admin
Started 13-Mar-18 2:21 PM EDT
Ended 13-Mar-18 2:21 PM EDT
State Success

Device	Step	Started	Ended	
transform80	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvABC.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14a	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvABC.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14b	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvABC.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14c	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvABC.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14b	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBulk.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14c	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBulk.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14a	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBulk.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
transform80	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBulk.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14b	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBasicType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14c	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBasicType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14a	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBasicType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
transform80	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvBasicType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>
va51tr14b	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvDataType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Failed >>
va51tr14c	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvDataType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Failed >>
va51tr14a	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvDataType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Failed >>
transform80	Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvDataType.xls"	13-Mar-18 2:21 PM EDT	13-Mar-18 2:21 PM EDT	Success >>

View Log
Job List
Cancel Job
Cancel Device
Dispose

Figure 17 Job Step Success Example

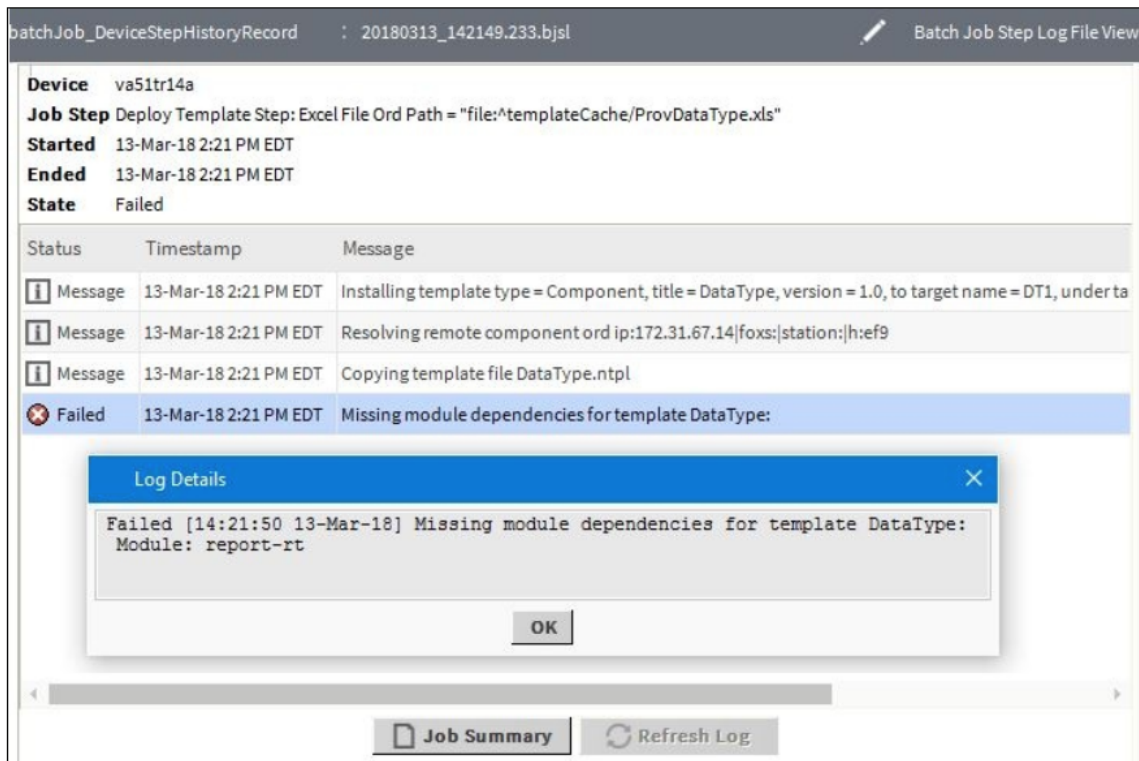
ies : batchJob : logs : batchJob_DeviceStepHistoryRecord : 20180313_142133.539.bjst Batch Job Step Log File View

Device transform80
Job Step Deploy Template Step: Excel File Ord Path = "file:^templateCache/ProvABC.xls"
Started 13-Mar-18 2:21 PM EDT
Ended 13-Mar-18 2:21 PM EDT
State Success

Status	Timestamp	Message	Detail
Message	13-Mar-18 2:21 PM EDT	Installing template type = Component, title = A, version = 1.0, to target name = A1, under target component Templates	
Message	13-Mar-18 2:21 PM EDT	Resolving remote component ord ip:172.31.66.80 foxs station h:794e	
Message	13-Mar-18 2:21 PM EDT	Copying template file A.ntpl	
Message	13-Mar-18 2:21 PM EDT	Generating components for template A	
Message	13-Mar-18 2:21 PM EDT	Installing template type = Component, title = B, version = 1.0, to target name = B1, under target component Templates	
Message	13-Mar-18 2:21 PM EDT	Resolving remote component ord ip:172.31.66.80 foxs station h:794e	
Message	13-Mar-18 2:21 PM EDT	Copying template file B.ntpl	
Message	13-Mar-18 2:21 PM EDT	Generating components for template B	
Message	13-Mar-18 2:21 PM EDT	Installing template type = Component, title = C, version = 1.0, to target name = C1, under target component Templates	
Message	13-Mar-18 2:21 PM EDT	Resolving remote component ord ip:172.31.66.80 foxs station h:794e	
Message	13-Mar-18 2:21 PM EDT	Copying template file C.ntpl	
Message	13-Mar-18 2:21 PM EDT	Generating components for template C	
Message	13-Mar-18 2:21 PM EDT	Applying input/output/relation/configurations to template A	
Message	13-Mar-18 2:21 PM EDT	Applying input/output/relation/configurations to template B	
Message	13-Mar-18 2:21 PM EDT	Applying input/output/relation/configurations to template C	
Success	13-Mar-18 2:21 PM EDT	Step successfully completed for transform80	

[Job Summary](#) [Refresh Log](#)

Figure 18 Job Step Failure Example with Log Message Details



Configuration steps

Provisioning is a flexible tool, designed for both setting up new devices, and maintaining existing devices.

Due to the number of possible network and device configurations, it is not possible to provide a list of steps for every scenario. However, for initial setup of an out-of-the-box device, the following list of steps is provided as a recommended starting point to setup the device, update the software, and establish the initial communications. Running a provisioning job containing these steps will setup the device in a similar way to commissioning.

Initial steps to run only once

Add the following step(s) to the top pane **Initial Steps to Run Only Once** section of the prototype job.

- Step 1 Add the **Enable Bootstrap Mode** step.
- Step 2 (Optional) If you have Edge devices connected to a secondary port on a JACE, and would like to update the IP addresses of the station proxies in your NiagaraNetwork, add the **Update Connections Using Provisioning Station's DHCP Server** step.
- Step 3 (Optional) If you have Edge devices on the same network as the Supervisor (connected to the primary port of a JACE, or other Supervisor), and would like to update the IP addresses of the station proxies in your NiagaraNetwork, add the **Update Connections Using Niagara Network Discovery** step.

NOTE: Both of the optional steps match the devices based on the name of the station, or the host id set in the `targetHostId` property of the BootstrapExt of the NiagaraStation in the NiagaraNetwork.

Steps to run for each station

Add the following steps to the middle pane (**Steps to run for each station**) section of the job.

Prerequisites: The **Niagara Network Prototype View** (for a prototype job) is open.

CAUTION: The ordering of the steps is important. So, these steps should be added in the order indicated here.

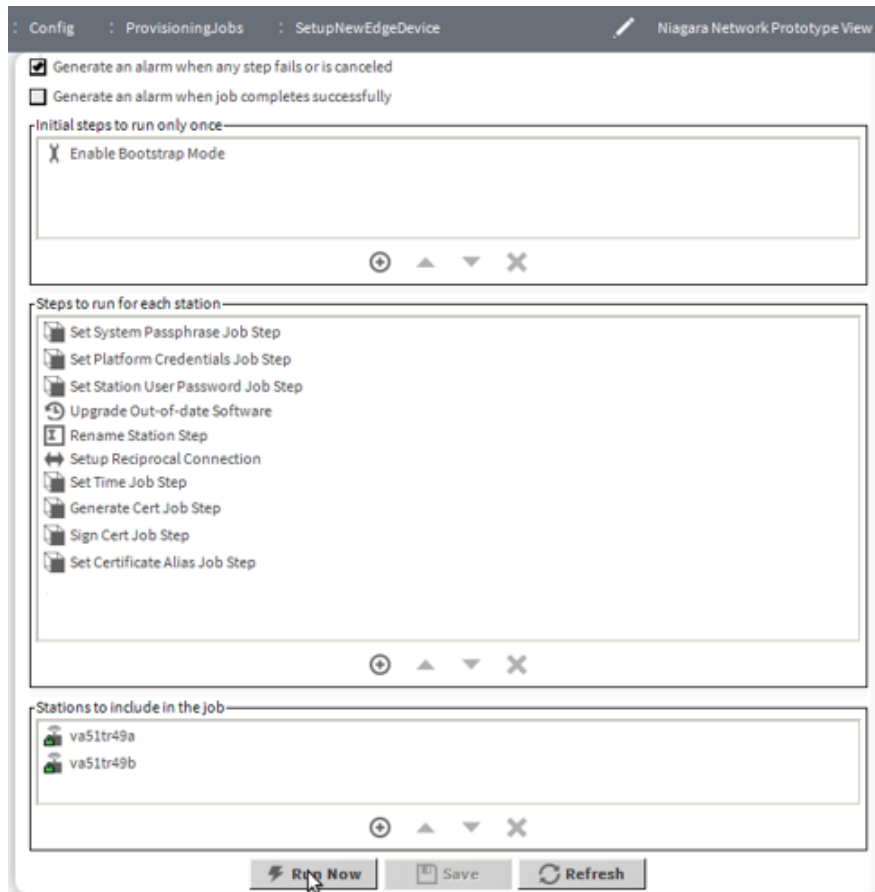
- Step 1 Add the **Set System Passphrase step**, enter the following:
- Enter the current passphrase: `niagara` (the default passphrase for out-of-the-box Edge devices).
 - Enter the new passphrase you would like to use.
- Step 2 Add the **Set Platform Credentials step**, enter the platform credentials (`username / password`) that you would like to use.
- Step 3 Add the **Set Station User Password step**, enter the password that you would like to use .
- Step 4 Add the **Upgrade Out-of-date Software step**.
- This step has no configuration options.
- Step 5 Add the **Rename Station step**.
- This step has no configuration options.
- Step 6 Add the **Setup Reciprocal Station step** and enter the `username / password` of your Supervisor station.
- You can enter the public IP address of your Supervisor station, or leave it blank to have the reciprocal connection auto-detect the IP address of the Supervisor.
- Step 7 Add the **Set Time step** and do one of the following:
- Click the checkbox option to **"Use supervisor time"** to set the Edge device to the same time as your Supervisor.
 - Deselect the checkbox and enter a time manually to set the Edge device to another time.
- Step 8 Add the **Generate Certificate step**.
- To setup secure communication with the Edge devices, you need to create a self signed certificate for the device. At a minimum, you need to enter an alias for the certificate, an Organization, and a County Code. The Common Name (CN) should be left as `"<hostname>"`.
- Step 9 Add the **Set Certificate Alias step** and enter the certificate alias of the certificate you would like to use for your device. .
- The alias should be the same alias entered for the certificate that was generated in the "Generate Certificate step".

You are finished adding steps to this provisioning job.

Executing the job

Once the job setup is complete, your provision job should appear as shown.

Figure 19 Edge device provisioning job



Update system software

Existing Niagara Provisioning includes a job step **Upgrade Out-of-date Software**. This will upgrade target devices with the latest versions of platform (.dist file) and module (.jar file) software available in the Supervisor's software database.

Also available is the **Install Software** job step which installs new modules not already running on the target device. All software **MUST** be installed on the device to support all dependencies required by the deployed station services, networks, templates, and any other components.

Remember to use the **Sync Workbench** button in the **Supervisor Software Manager** view to copy the latest software from the Workbench installation to the Supervisor station if needed. For details, see "provisioningNiagara-SupervisorSoftwareManager" in the "Components" chapter of the Niagara Provisioning Guide.

Install device application

Edge devices ship with a default station installed. In Niagara, customer applications can be deployed to multiple devices using templates.

A template contains a single component tree, so it is possible that multiple templates are needed to achieve a desired station component configuration. The provisioning steps allow templates to be deployed to a set of stations in a NiagaraNetwork, along with any defined inputs, outputs, relations, and configurations.

For more information on template creation and management, see the *Niagara Templates Guide*.

Template setup

Follow the process described in “Template Bulk Deployment” in the Niagara Templates Guide to generate and configure template bulk provisioning Excel files. These are used along with the associated template files to deploy templates in a provisioning job. Edge devices.

One important feature useful for provisioning is the **Unique Device** column in the Excel file. This allows an individual template instance to be applied to a single device (IP address or device name), making it possible to apply unique template configurations to separate devices in one provisioning job.

Copying template and Excel files to Supervisor

The configured template bulk provisioning Excel files are used along with the associated template files to deploy templates in a provisioning job. Edge devices.

Step 1 In your Supervisor, navigate to the **Drivers**→**NiagaraNetwork**→**ProvisioningNwExt** to open the **Niagara Network Job Builder** view.

Step 2 Click the **Copy Templates** button at the bottom of the view to open a File Chooser.

Step 3 In the **Template Configuration** File Chooser window, use multi-select (Shift + Control) to select the set of .xls and .ntpl files to be used for provisioning, and click **OK**.

The selected files are transferred from their source (typically inside your Niagara User Home /templates folder) to the Supervisor's templateCache folder.

Deploy bulk template

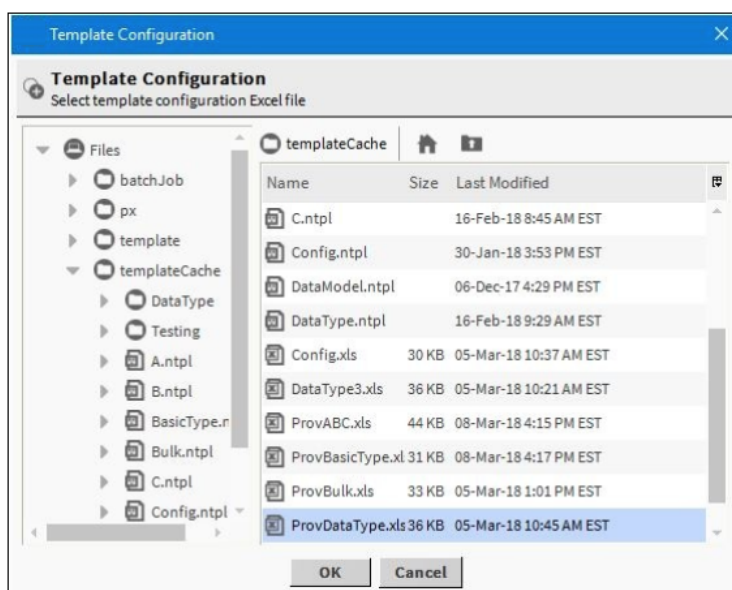
Add this job step the provisioning job prototype.

Prerequisites:

Step 1 In the **Niagara Network Job Builder** view, click + (Add) under the middle pane to add provisioning job steps.

Step 2 In the **New Job Step** window, click to select the **Deploy Template** step to open a File Chooser.

Step 3 In the **Template Configuration** File Chooser window, navigate to the **templateCache** folder and select the Excel file to use for this step.



The step will be added to the job sequence and will show the file path ORD to use.

If more than one Excel file/template file combination is needed to complete an entire application installation, multiple templates can be exported to a single Excel file, where each template configuration is generated on a separate Excel worksheet tab. Template instances would be configured on each tab in the Excel workbook.

It is also possible to include multiple Deploy Bulk Template steps in a single provisioning job.

Update device application

Provisioned templates can be updated at some later time using the **Upgrade Template** job step. Multiple **Upgrade Template** steps can be included in a single provisioning prototype to upgrade multiple templates at the same time.

Prerequisites:

- Step 1 Click the **Copy Template** button to copy the upgraded .ntpl file to the Supervisor station.
- Step 2 Set up a provisioning prototype to include the **Upgrade Template** job step and the stations to be updated.
- Step 3 Save and Run the prototype to apply the upgraded template.

The results will be the same as if you upgraded each template individually with each station's **Template Manager**.

NOTE: Initial configurations on the template will be re-applied to the upgraded template.

Chapter 6 Troubleshooting

Topics covered in this chapter

- ◆ Reviewing TCP/IP history changes
- ◆ Factory Default Recovery
- ◆ Recovering factory defaults
- ◆ System shell

During Edge commissioning, it is possible to run into problems. For instance, you may type an IP address incorrectly when entering it, and as a result be unable to regain access. In this scenario, there are a couple of things you should know about:

Reviewing TCP/IP history changes

Your Workbench PC records before and after TCP/IP setting changes made to platform connections are stored in an `ipchanges.bog` file. If necessary, you can review changes made from your Workbench using the following procedure.

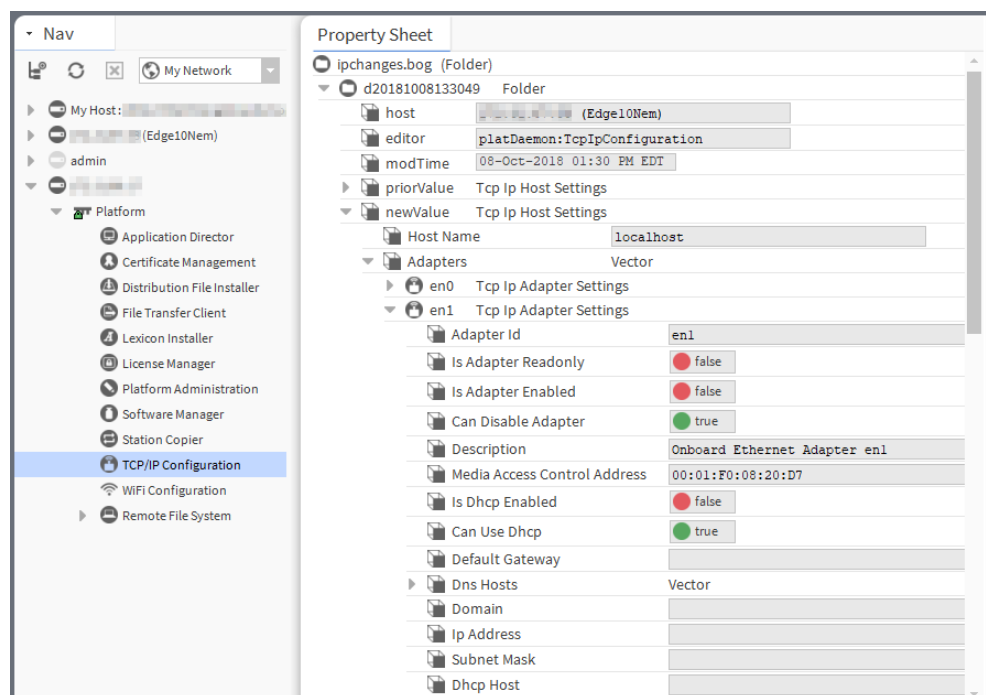
Step 1 In the Workbench Nav tree, expand **My Host**→**My File System**.

The tree expands to show the Sys Home and User Home.

Step 2 Expand **User Home**.

Child folders are date-named using the following convention:

<yyyymmddhhmmss> for example, d20280113153640 for 2028 Jan 13 3:36pm



Step 3 Expand any folder of interest, right-click and select **Views**→**Property Sheet**.

NOTE: The included decoded modTime value is, for example, 13-Jan-2018 03:36 PM EST vs d20280113153640.

Underneath each folder are two objects:

- **priorValue** displays the TCP/IP settings that existed before this change.
- **newValue** displays the TCP/IP settings that existed *after* this change.

Step 4 In the property sheet, expand a **priorValue** or **newValue** to see settings.

If you have a platform connection open (to any host), you can also review this same history of IP changes made from Workbench to the remote platform. At the bottom of the **TCP/IP Configuration** view, click **Audit**. This opens the same `ipChanges.bog` folder and all child change entry folders in a property sheet view. Expand a change folder to see a decoded `modTime` value, for example, `13-Jan-2028 03:36 PM EST(vs d20280113153640)`. Expand a **priorValue** or **newValue** in the view to see the settings.

Factory Default Recovery

There are at least two reasons why you may need to return an Edge device to its factory defaults. Performing a factory reset removes all data stored in the device.

Following are the two scenarios for which you might choose to recover factory defaults:

- While commissioning a brand new Edge device, you make an error entering the default platform daemon credentials or passphrase. The result is that you cannot commission the device. In this scenario, your only option is to recover the factory defaults.
- When decommissioning the Edge device, a best security practice is to recover the factory defaults in order to wipe all platform and station data from the device.

Recovering factory defaults

The process of recovering factory defaults returns the Edge device to the state it was in when it shipped from the factory. This procedure uses a terminal emulator program to access the device's system shell menu.

Prerequisites:

- USB-to-micro USB cable (same cable as that used to connect a smart phone to a computer) connected from the edge device to your PC. The Debug port on a controller is a standard Micro-A type USB port used to access the serial shell.
- Terminal emulator (system shell program), such as PuTTY, installed on your PC.
- Be sure to backup data prior to performing this procedure.

Factory restore involves several reboots. During reboot, the BEAT LED blinks at a rapid rate. When the BEAT LED blinks at normal rate log in with default credentials.

Do not remove power from the device while the BEAT LED blinks at a rapid rate since this causes physical stress on the equipment and prevents good connections between the device and I/O modules.

CAUTION: Recovering factory defaults removes all platform and station data from the device.

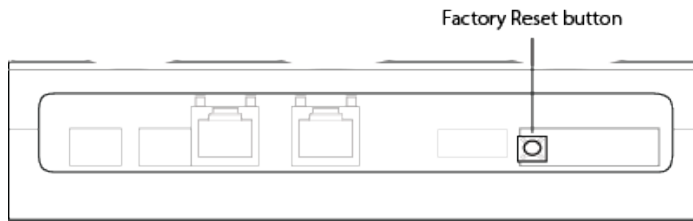
Step 1 Ensure that the device's power is off.

Step 2 Press and hold the Factory Reset button as you power up the device. You will see one of the following:

- The status LED blinks at a fast rate (5Hz)
- If you have the serial shell you will see a prompt to release the button:

```
"Restore button press detected. Please release button to initiate factory
restore.
```

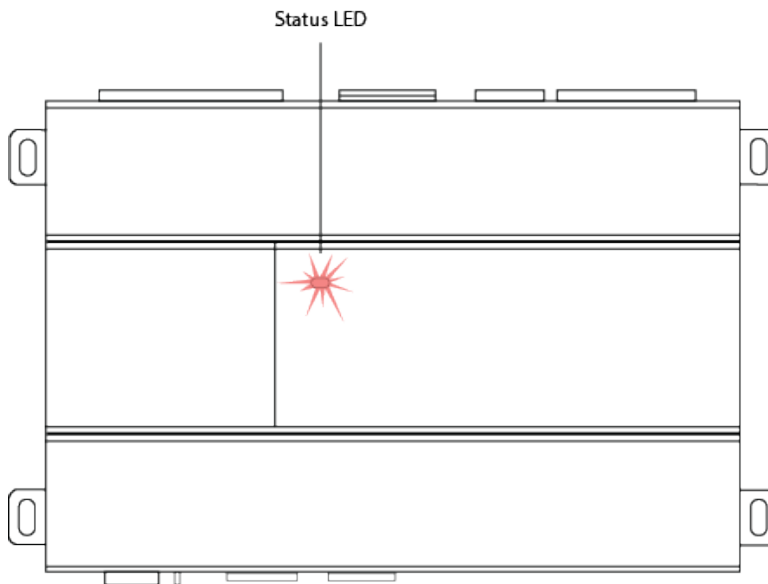
```
Restore mode is set!
```



The Factory Reset button is on the side of the device.

You will see one of the following:

The Status LED blinks at a fast rate (5Hz).



The Status LED is on the top of the device.

If you have a serial shell, it prompts you to release the button: Restore button press detected. Please release button to initiate factory restore. Restore mode is set!

Restore mode is set!

Step 3 Release the button within the five seconds of the fast blink.

Step 4 When the Edge device powers up, log in with default credentials.

System shell

Any QNX-based Edge device has a “system shell,” providing low-level access to a few basic platform settings. Using a special power-up mode and a serial connection via a USB-to-MicroUSB cable connected to the Edge device’s Debug port, you can access this system shell. Note that system shell is also available via SSH (providing that SSH is enabled in the Edge device).

Typical usage is for troubleshooting. However, in the case of IP address misconfiguration, you can use the serial system shell in order to regain access to the unit.

NOTE: Also, depending on your preference, you may wish to use the serial shell to set the Edge device’s IP address.

The following sections provide more details.

About the Edge system shell mode

To put the Edge device into the debug system shell mode, plug-in the USB-to-MicroUSB cable. This makes the system shell available at the controller's Debug port, at a pre-defined serial rate: 115200, 8, N, 1.

Using a terminal emulation program, such as PuTTY, you can login with platform credentials and access the system shell menu. After changing platform IP address parameters, a reboot command from the menu is necessary, and you remove the USB cable. The Edge device reboots using the changed IP address parameters.

Apart from physical access to the controller, you need the following items:

- A working USB port on your PC.
- VCOM or similar PC software (such as PuTTY) enabling the USB port to emulate a serial port
- A cable to connect your PC's USB port to the Edge device's Debug port.

Connecting to the debug system shell

The following procedure provides steps to use the system shell. Examples provided use the PuTTY terminal emulation program.

Prerequisites:

- Physical access to the Edge device controller
- Universal USB-to-MicroUSB connector cable

- Step 1 Connect the USB cable between the controller's Debug port and the USB port you are using on your PC.
- Step 2 On your PC, start your terminal emulation software. For example to start PuTTY from the Windows Start menu, this is typically **Programs > PuTTY → PuTTY**.
- Step 3 In the tree in the **PuTTY Configuration** dialog, expand **Connection** and click **Serial**.
- Step 4 Set the "Serial line to connect to" for your PC's (USB) COM port to use. For example, COM3.
NOTE: You can examine Ports in Windows Device Manager to determine which serial port is in use on the PC.
- Step 5 Set the "Configure the serial line" fields as follows:
 - Speed (baud): 115200
 - Data bits: 8
 - Stop bits: 1
 - Parity: None
 - Flow control: None
- Step 6 In the tree in the **PuTTY Configuration** dialog, click **Session** and then click/select the "Connection type" as **Serial**
NOTE: (Optional) You can save this configuration to reuse (load) in future PuTTY to Edge device serial sessions. To do this, type in a connection name in the "Saved Sessions" field (for example, "Edge device"), and click **Save**.
 When you start PuTTY again to serially connect to the device, select this name and click **Load**.
- Step 7 At the bottom of the **PuTTY Configuration** dialog, click **Enter**.
- Step 8 At the login prompt, enter a platform user name, and at the password prompt, the platform password.
 - a. If prompted for system passphrase, enter the platform's system passphrase.

If login is successful, the **Edge 10 System Shell** menu appears:

Step 9 When finished making platform changes from the system shell, do the following:

- If no changes, or reboot is not necessary, simply type **L** to Logout.
- If changes require rebooting, select the **Reboot** option.

Type **"y"** at the **"Are you sure you want to reboot [y/n]"** prompt, and press **Enter**.

Shutdown-related text appears in the terminal (PuTTY) window.

Step 10 Click the Close control (upper right corner) in the terminal session (PuTTY) window.
Click **OK** in the **"PuTTY Exit Confirmation"** popup dialog.

Step 11 Unplug the USB connector from the Edge device's Debug port.

About the system shell menu

The system shell of the Edge 10 device provides simple, menu-driven, text-prompt access to basic Niagara platform settings, including IP network settings, platform credentials, system time, and enabling/disabling SFTP/SSH and Telnet. Also, you can use it to perform a TCP/IP ping from the Edge device to another host.

Changes issued in the system shell become immediately effective, except for IP address settings (Update Network Settings). You must reboot the Edge device in order for any changed network settings to become effective.

If SSH is enabled in the Edge device, you can also access the controller's system shell using a remote terminal session using SSH. Platform login is still required just as with the device powered up in serial shell mode.

CAUTION: Be careful when changing items from the system shell, in particular platform account (login credentials, system passphrase) and network settings. If you change platform login credentials and then lose or forget them, you can restore the factory default platform login credentials—however, you will need to make a debug system shell connection, reboot the Edge device, and then be careful to press a key at the appropriate time during the boot up process.

Following, is an example of the system shell menu.

Figure 20 System shell menu (serial shell or Telnet access)

```
EDGE10 System Shell
-----
hostid: Qnx-EDGE10-8C31-1677-B812
serial number: 116
build version: 4.7.105.1
build date: built on 2018-07-17 18:31:49
system time: Thu Jul 26 13:48:49 GMT 2018
niagara daemon port: https 5011

en0:  inet 172.31.64.165 netmask 0xfffffc00 broadcast 172.31.67.255
      inet6 fe80::201:f0ff:fe08:20e8%en0 prefixlen 64 scopeid 0x11
en1:  <disabled>
-----

1. Update System Time
2. Update Network Settings
3. Ping Host
4. Enable/Disable SSH/SFTP
5. Change Current User Password
6. Change System Passphrase
7. Configure STP Settings
8. Reboot

L. Logout

Enter choice: [ ]
```

To select a menu option, type the associated number (1 to 9) or "L" for logout, then press `Enter`.

For example,

- type 2 (Update Network Settings) to recover IP access, or to set the IP settings of a new Edge device.
- type 6 (Change System Passphrase) to change the system passphrase of the unit. You might do this if swapping in a microSD card from a previously configured unit, in order to change the passphrase of the unit to match the passphrase that is already stored on the SD card.

Update Network Settings

Use system shell menu option 2 to access most of the same IP networking options available in the Commissioning Wizard step "TCP/IP configuration". When selected, you are prompted for each setting sequentially, starting with hostname (as shown below).

Use system shell menu option 7 to access the spanning tree protocol (STP) configuration settings to choose either standard or daisy chain network link mode. Selecting option 7 opens the following window:

Figure 21 System shell STP Configuration Utility

```
STP Configuration Utility
Enter new value, or '<cr>' to keep existing value

Network Mode
A) Daisy-Chain      B) Standard

Enter the letter for the new mode <daisychain>:B

                                Mode: standard

Save these settings? (Y/n) : ☐
```

If you intend to use the secondary Ethernet port on the Edge device, you must first configure the device for Standard network link mode.

Standard link mode

The following example shows the system shell network settings for the standard link mode

Figure 22 Example: System shell with network settings for Standard Link Mode

```
EDGE10 Network Configuration Utility

Enter new value, '.' to clear the field or '<cr>' to keep existing value

Hostname <localhost> : Edge10-standard
Domain <> : myDomain.net
Primary DNS Server <> : 8.8.8.8
Secondary DNS Server <> : 8.8.4.4
Route <> : 192.168.1.1
Primary IPv6 DNS Server <> :
Secondary IPv6 DNS Server <> :
IPv6 Route <> :

NET1 Ethernet interface (en0)
  IP address (clear to use DHCP) <> : 192.168.1.36
  Subnet mask <> : 255.255.255.0
  Enable IPv6 addressing on this adapter? (Y/n) :
  IPv6 address (clear to use IPv6 Autoconfiguration) <> :

Enable NET2 (en1) interface? (y/N) : Y
NET2 Ethernet interface
  IP address (clear to use DHCP) <> : 172.15.16.36
  Subnet mask <> : 255.255.255.0
  Enable IPv6 addressing on this adapter? (Y/n) :
  IPv6 address (only 1 adapter may use IPv6 Autoconfiguration) <> :

**** IPv6 Autoconfiguration NOT supported on NET2 interface. IPv6 on NET2 will be disabled.

Confirm new configuration
Hostname          : Edge10-standard
Domain            : myDomain.net
Default Gateway   : 192.168.1.1
Primary DNS       : 8.8.8.8
Secondary DNS     : 8.8.4.4
Default IPv6 Gateway :
Primary IPv6 DNS  :
Secondary IPv6 DNS :

NET1 settings (en0):
type              : ethernet
IP Address        : 192.168.1.36
Subnet Mask       : 255.255.255.0
IPv6 Address      : assigned via Autoconfiguration

NET2 settings (en1):
type              : ethernet
IP Address        : 172.15.16.36
Subnet Mask       : 255.255.255.0
IPv6 Address      : disabled

Save these settings? (Y/n) : ☐
```

Daisy Chain link mode

The following example shows the system shell network settings for the daisy chain mode. This is the default network mode for the device.

NOTE: If set up for Daisy Chain Mode, you cannot configure the secondary adapter, as shown below.

Figure 23 Example: System shell with network settings for Daisy Chain Mode

```
EDGE10 Network Configuration Utility

Enter new value, '.' to clear the field or '<cr>' to keep existing value

Hostname <localhost> : Edge10
Domain <> : myDomain.net
Primary DNS Server <> : 8.8.8.8
Secondary DNS Server <> : 8.8.4.4
Route <> : 192.168.1.1
Primary IPv6 DNS Server <> :
Secondary IPv6 DNS Server <> :
IPv6 Route <> :

NET1 Ethernet interface (en0)
  IP address (clear to use DHCP) <> : 192.168.1.36
  Subnet mask <> : 255.255.255.0
  Enable IPv6 addressing on this adapter? (Y/n) :
  IPv6 address (clear to use IPv6 Autoconfiguration) <> :

  *** Daisy Chain enabled for this host. NET2 will mirror primary adapter settings.

Confirm new configuration
Hostname           : Edge10
Domain             : myDomain.net
Default Gateway    : 192.168.1.1
Primary DNS        : 8.8.8.8
Secondary DNS      : 8.8.4.4
Default IPv6 Gateway :
Primary IPv6 DNS   :
Secondary IPv6 DNS :

NET1 settings (en0):
type               : ethernet
IP Address         : 192.168.1.36
Subnet Mask        : 255.255.255.0
IPv6 Address       : assigned via Autoconfiguration

NET2 disabled (en1)

Save these settings? (Y/n) : ☐
```

Update System Time

If the commissioning process hasn't been completed yet, it is often important to set the current date and time (YYYYMMDDHHMM.ss). For example: 201510231536 for 23-Oct-2015 at 3:36pm UTC or 11:36 EDT.

Chapter 7 Reference

Topics covered in this chapter

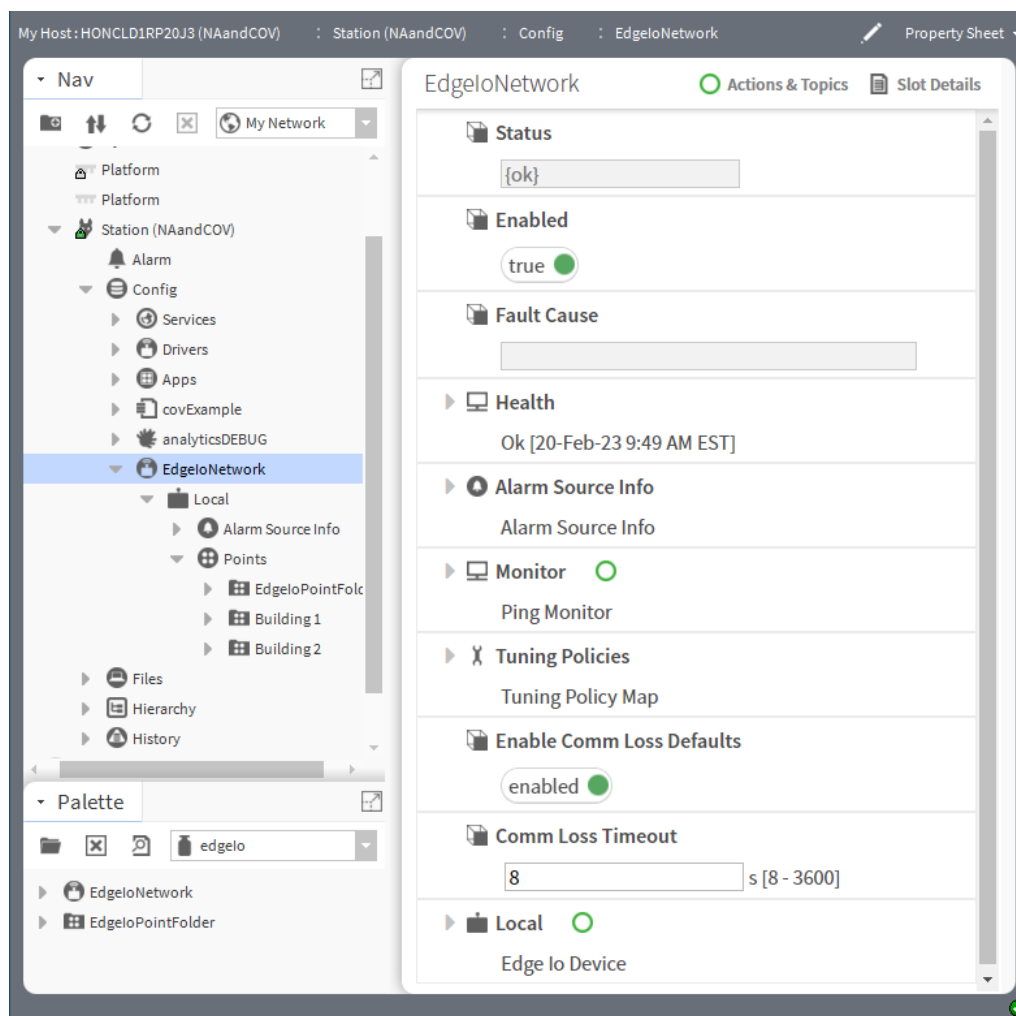
- ◆ EdgeloNetwork
- ◆ Edge Io Device Manager
- ◆ Edge Io Device
- ◆ Edge Io Point Folder
- ◆ Edge Io Point Manager
- ◆ Edge Io buttons and lights

The topics that follow provide detailed documentation for each component, plugin (view) and window that supports this system feature.

EdgeloNetwork

This component is the base container for all Edge components (devices and proxy points). If added to the station, it resides under the station's **Drivers** container. Its default view is the **Edge Io Device Manager**.

Figure 24 EdgeloNetwork properties



To access these properties, expand **Config→Drivers**, right-click **EdgeloNetwork** and click **Views→AX Property Sheet**.

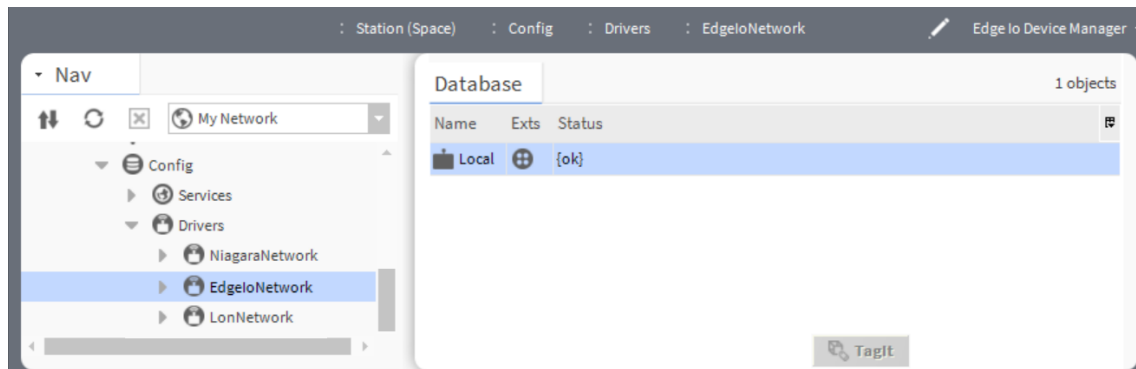
In addition to the standard properties (Status, Enabled, Fault Cause, Health, Alarm Source Info, Monitor and Tuning Policies), these properties are unique for this component.

Property	Value	Description
Enable Comm Loss Defaults	Enabled (default) and Disabled	Determines how to configure digital and analog output (DOs and AOs) after communication is lost. Enabled sets DO and AO to the value specified by Comm Loss Timeout . Disabled turns DO and AO off and sets VDC to 0.0 eight seconds after communication is lost.
Comm Loss Timeout	Seconds (default to 8–3600)	Defines the number of seconds before timing out when a communication connection fails.
Local	additional properties	Connects the network to a local device.

Edge Io Device Manager

This view is the default view of the **EdgeloNetwork**.

Figure 25 Edge Io Device Manager



To access this view, expand **Config→Drivers** and double-click **EdgeloNetwork** or right-click the **EdgeloNetwork** and click **Views→EdgeIoDeviceManager**.

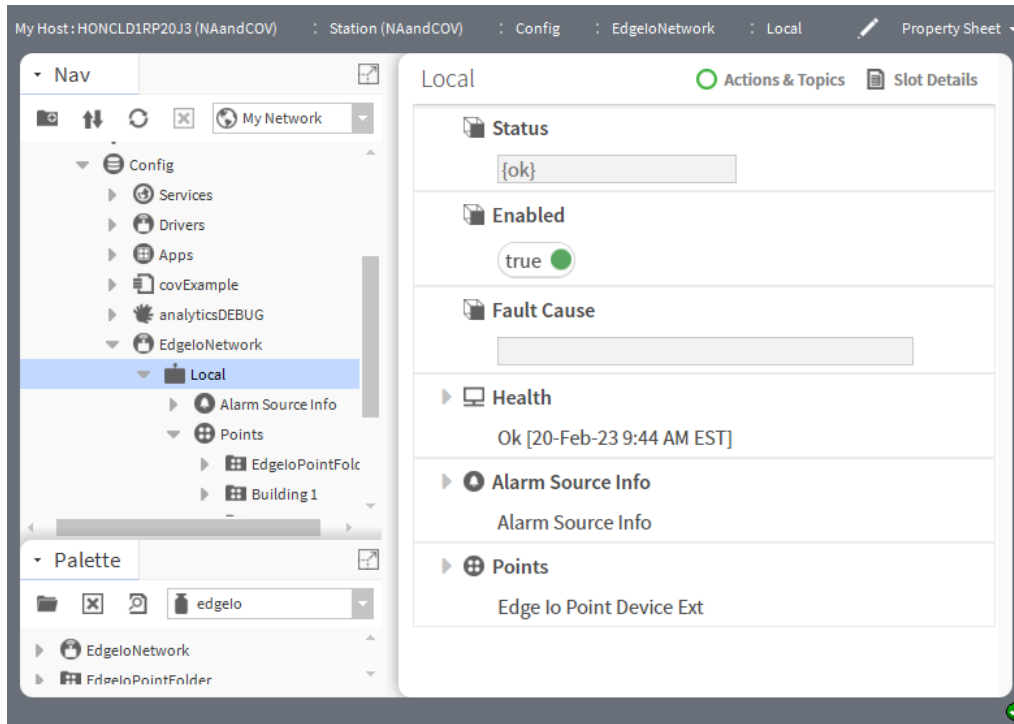
Columns

Column	Description
Name	Reports the display name of the Edge IO device, which defaults to Local. To change this name, open the Property Sheet view, right-click Local and click Set Display Name .
Exts	Links to any extensions.
Status	Reports the current condition of the entity as of the last refresh: {alarm}, {disabled}, {down}, {fault}, {ok}, {stale}, {unackedAlarm}
Enabled	Indicates if the network, device, point or component is active or inactive.
Health	Reports the current condition of the network.

Edge Io Device

This component configures the Local **Edge Io Device**.

Figure 26 Edge Io Device properties



To access this view, expand **Config**→**Drivers**→**EdgeIoNetwork** and double-click **Local**.

All the properties are standard properties and are documented in the Help system.

Edge Io Point Folder

This folder may be used to organize Edge Io points.

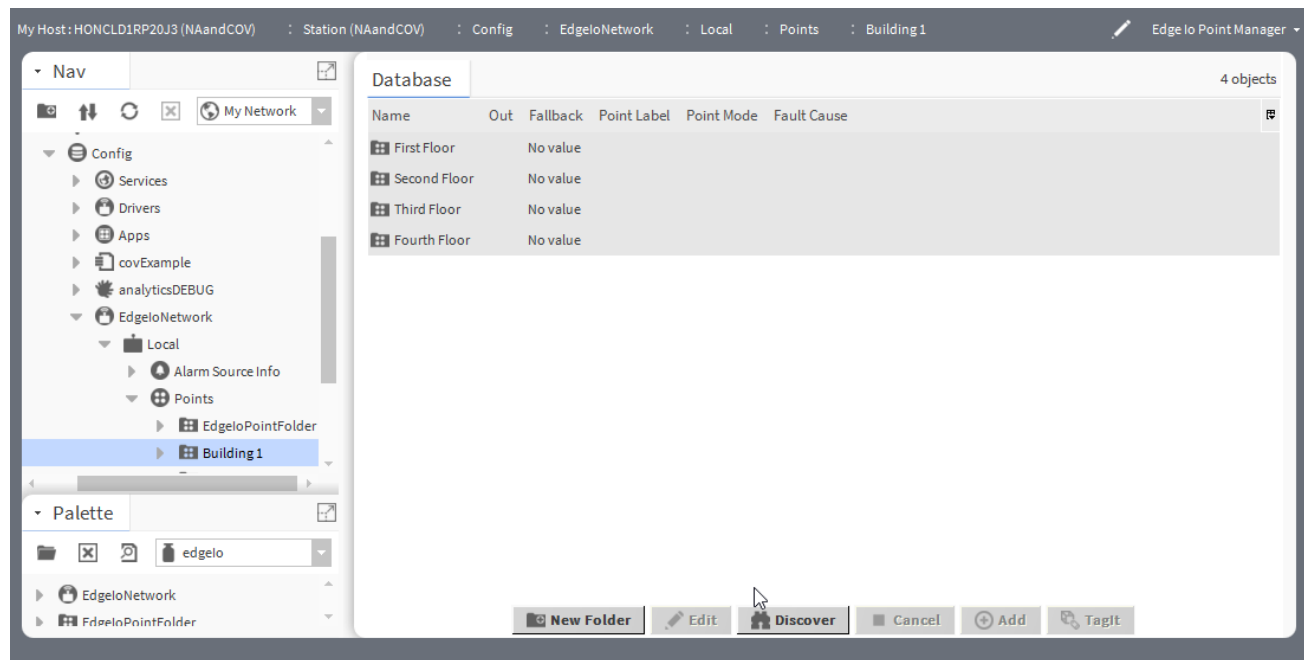
This folder resides under the **EdgeIoNetwork**'s **Points** folder.

To create this folder either drag an **EdgeIoPointFolder** component from the **edgeIo** palette to the **Points** folder or click **New Folder** under the **Points** or an **EdgeIoPointFolder** components.

Edge Io Point Manager

This view displays information about each Edge Io point

Figure 27 Edge Io Point Manager



To open this view, expand **Config→EdgeloNetwork→Local→Points** and double-click the name of the folder.

Columns

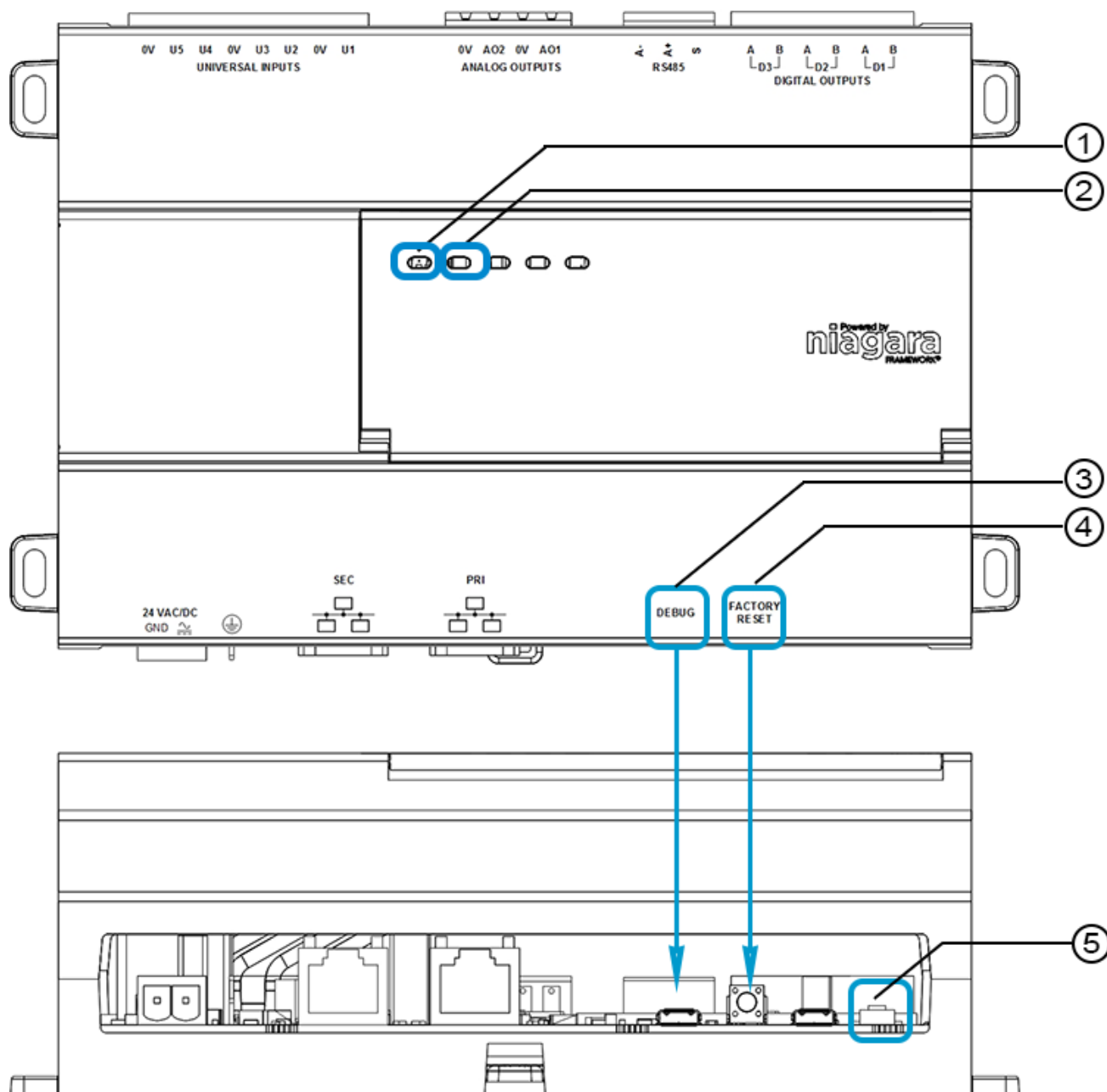
Column	Description
Conversion	Reports the units used to convert values from the device facets to point facets.
Device Facets	Reports the units used.
Export	
Enabled	Indicates if the network, device, point or component is active or inactive.
Facets	Reports the units used.
Fallback	Reports a default Out value for a point when a priority scan of inputs In2 – In7 and In9 – In16 returns a null or invalid value, and no emergency action (In1) or manual action (In8) has occurred.
Fault Cause	Indicates the reason for a fault.
Name	Reports the name of the point.
Out	Reports the point's current value.
Path	Reports the location of the device or event in the station
Point Id	Reports an ID for the point.
Point Label	Reports additional information about the point.
Point Mode	Reports additional information about the point.
Point Type	Reports the type of point.
Read Value	Displays the last value read from the device, expressed in device facets.
Type	Configures a default Out value for a point when a priority scan of inputs In2 – In7 and In9 – In16 returns a null or invalid value, and no emergency action (In1) or manual action (In8) has occurred.

Column	Description
Tuning Policy Name	Reports the network tuning policy being used.
Write Value	Displays the last value written using device facets.

Edge 10 buttons and lights

The Edge 10 device contains several buttons and lights. Be aware of what the lights indicate and when to use each button.

Figure 28 Position of the Status LEDs, Debug Port and Factory Reset



The figure with numbered call-outs, shown above, indicates the position of the USB port and pushbutton switches

NOTE: Login requires administrator level platform credentials.

1	STAT LED	Status LED, illuminated while controller is powered.
2	BEAT LED	Heartbeat LED, normally 5Hz, 50% duty cycle. Fast blink during boot process.
3	DEBUG	Micro-A USB port for serial debug communications. The DEBUG port is a standard Micro-A type USB port for serial debug communications to the device.
4	FACTORY RESET	Push-button switch to initiate a return to factory default settings.
5	RESET	Unlabeled push-button switch (located in the recessed cavity) to initiate physical reset of the device. The RESET button does an immediate shutdown of the device. It is the equivalent of removing power.

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