Technical Document

JACE Niagara 4 Install and Startup Guide

August 18, 2015

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Tridium, Inc.
3951 Westerre Parkway, Suite 350
Richmond, Virginia 23233
U.S.A

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About this guide

This document covers the initial Niagara 4 software installation and configuration for a QNX-based JACE controller, using Niagara 4 Workbench (4.0.n). Applicable controllers include the JACE-3,-6,-7 series (models including JACE-3E, JACE-6, JACE-6E, JACE-603, JACE-645, and JACE-7).

The information in this document is intended for an engineer, technician, or service person who is performing control system installation. All information in this document is also online in Niagara 4 Workbench help, providing that the `docJaceN4Startup` module was installed.

NOTE: A separate *JACE-8000 Niagara 4 Install & Startup Guide* covers this topic for a JACE-8000 controller. In addition, if you are migrating or converting an already-commissioned JACE controller from NiagaraAX to Niagara 4, see the document *AX to N4 Migration Guide.*

For physical mounting and wiring details for any JACE controller, please 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 Niagara 4 online help and various other Niagara 4 software documents.

In summary, for a new JACE-3,-6,-7 controller you want to install and start up as a Niagara 4 controller, you have an extra initial step: *conversion from AXto N4.* Note if a JACE-8000 controller, this step is unneccessary; such controllers ship with a bare minimum of Niagara 4 (N4) software already installed.

JACE commissioning notes for Niagara 4

If you already familiar with NiagaraAX commissioning of new JACE controllers, the basic process is the same when commissioning units with Niagara 4using the platform **Commissioning Wizard**.

However, before using the **Commissioning Wizard** with Niagara 4 Workbench, first you must convert the controller from an AX unit to a N4 unit. You use the platform **Distribution File Installer** for this, selecting the appropriate AxtoN4-qnx-jace-host-etfs2048.dist file. After the controller reboots from this dist installation, it is then ready for Niagara 4 commissioning.

Data and security

- Conversion clears all data in the controller, including AX licenses and certificates, SSL certificates and key files, along with all station data and NiagaraAX software. Only the controller's IP configuration is retained. Further, you must use the default platform credentials to regain access.

  In the case of a new unit, this makes no difference. However, if you are migrating or converting an already-commissioned unit from NiagaraAX, make note of this.

- The "AxtoN4" conversion dist file is not the same as a regular "cleanDist" file. It is selectable only once, when converting a controller from AX to N4. Thereafter, at any point (if necessary), you can choose to install a regular N4 "clean dist" file, to wipe the unit back to a known "near factory state". However, note in this case that any installed N4 licenses are retained, along with configured platform admin accounts, as well as TCP/IP configuration.

Document change log

Initial release document, August 18, 2015.

Related documents

Following is a list of related guides.

- *Niagara 4 Platform Guide*

Chapter 1 Overview

Topics covered in this chapter

♦ Commissioning differences from NiagaraAX
♦ SSL commissioning notes
♦ Limitations to NiagaraAX platform operations
♦ Factory-shipped state

As shipped from the factory, new JACE-3,-6,-7 series controllers are shipped with a bare minimum of *Niagar-aAX* (AX) software to run a platform daemon, along with a Tridium certificate, but *not* all items needed to run any type of station. Using Niagara 4 Workbench, you open a platform connection to the JACE to begin the commissioning process, similar to how you would if using NiagaraAX Workbench.

However, as already noted you must first convert the controller from AX to N4, using the platform **Distribution File Installer** view.

Following the controller reboot from this, you re-establish a platform connection to the new JACE and *commission it* to install the necessary Niagara 4 core software, selected modules, license(s), and do other platform configuration. Some important related tasks include setting the JACE'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)

This document provides step-by-step instructions for these and other tasks. As described ahead, to do this you use the platform **Commissioning Wizard**.

NOTE: The Commissioning Wizard is the *only way to install the neededNiagara 4core software* in a JACE 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* a JACE. For more details see the "Niagara platform" section in the *Platform Guide*.

However, always use the Commissioning Wizard to commission a new JACE for Niagara 4, as well as to upgrade any JACE from one Niagara 4 point release to another—and make sure a license file is available!

Commissioning differences from NiagaraAX

Apart from the necessary conversion of a new JACE controller from AX to N4, the following items have changed or been added during the **Commissioning Wizard** process in Niagara 4:

- The "Module Content Filter" step has been replaced by a "Configure Runtime Profiles" step. This reflects differences in software modules, as refactored for N4. However, the basic premise for installing only the types of modules needed for the intended application (preserving storage space on the controller) remains the same.

- The wizard no longer lets you commission and install a unit with the factory-default platform user credentials. Instead, a step requires you to replace this default platform admin user with a different user name, and specify a "strong" password for this admin account.

  Optionally, you can now create additional platform admin accounts in the controller (up to 20). Each platform admin account must have a unique user name, and also use a strong password. Note each account has the same (full) platform admin access—users can change their password, even create additional platform admin accounts.

- The "FTP/Telnet" enable/disable choice in the **Platform Administration** view has been replaced by a more secure "SFTP/SSH" choice, specifying a common port (22 by default, also disabled). Although SFTP

and SSH protocols are more secure than FTP and Telnet available for AX JACEs, disabling is still recommended, except for troubleshooting or upon request by technical support.

SSL commissioning notes

When using Niagara 4 Workbench, note that default "**Open Platform**" and "**Open Station**" operations initially assume 🖳 **Platform SSL Connection** and 🐱 **Fox SSL Connection** types, respectively. This is intended to help encourage this SSL 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

Note any new JACE controller requires a "non-SSL" platform connection for initial access. However, once it is converted to an N4 controller, SSL platform connections are always supported. This even applies if at some future point an N4 "clean dist" file is installed.

Note that 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 4 Station Security Guide* for complete details on related SSL tasks and concepts.

Limitations to NiagaraAX platform operations

Niagara 4 Workbench *does not support NiagaraAXcommissioning* of JACE controllers, i.e. you cannot use the **Commissioning Wizard** to configure AX JACE platforms. Instead, you must use the appropriate NiagaraAX Workbench, say AX-3.8, and run the **Commissioning Wizard** on such platforms.

NiagaraAX Workbench is generally recommended for *all* platform operations with AX-3.x JACE controllers. If needed, however, you can use Niagara 4 Workbench to perform some platform operations on AX JACE controllers. Examples include modifying TCP/IP configuration, or installing AX software modules. Note the latter requires you to import the "software database" of a recent (AX-3.8) Supervisor or engineering workstation into your Niagara 4 software database.

Other platform views/operations that are *unavailable* using Niagara 4 Workbench for a platform connection to an AX-3.x JACE controller are:

- **DDNS Configuration**
- **GPRS Modem Configuration**
- **WiFi Configuration** (for JACE-700 with installed WiFi option)
- Also unavailable are following operations from the **Platform Administration** view:
  - **Update Authentication**
  - **FTP/Telnet**
  - **Set Module Filter**

Use the appropriate NiagaraAX Workbench to perform such NiagaraAX platform configuration.

Factory-shipped state

The factory- shipped state of a controller has the following default settings for IP address, HTTP port and Platform credentials.

IP address

When shipped, a new JACE-3,-6,-7 series controller is pre-configured with an IPv4 address in the range:

`192.168.1.12n`   (*primary* "LAN1" port; the "LAN2" port is disabled).

where the last numeral (n) in the IP address matches the last numeral in the JACE's *serial number*.

The default subnet mask is: `255.255.255.0`

You change these IPv4 network settings during your startup commissioning of the JACE.

HTTP port for platform access

When shipped, the JACE's platform daemon is configured to listen on HTTP port 3011. Often, this is left at default. However, if a *different* port is needed for a platform connection (perhaps for firewall reasons), you can change this during the commissioning of the JACE.

Platform daemon credentials

Any JACE controller is shipped with default platform daemon (administrator) credentials, for example:

Username: `tridium`   Password: `niagara`

Initially, you use these default credentials to open (login) a platform connection to the JACE. Like the factory-assigned IP address, default credentials are *temporary*. Following conversion of the controller to Niagara 4, and during your startup commissioning, you must *replace* this platform admin account with at least one different platform admin user. Be sure to *guard the credentials for such platform users closely*.

NOTE: Unlike in NiagaraAX, the Niagara 4 Commissioning Wizard does not allow you to commission and startup a controller while retaining the factory platform user.

Chapter 2   Preparation

Topics covered in this chapter

♦ Provide power and connectivity
♦ Niagara and PC Requirements
♦ Connect to the JACE

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

Provide power and connectivity

In most cases, you perform the initial Niagara 4 software installation and startup of a JACE (as described in this document) *in your office*, before physically mounting it in place at a job site. Please refer to the "Wiring Details" section of the appropriate *nc-1-xxx Mounting and Wiring Instructions* document for details on making (temporary) power wiring and Ethernet wiring connections.

The remainder of this document assumes that you have the JACE nearby, and are able to power it on and off as needed. After you complete the commissioning process described in this document, you can mount and wire the JACE controller at the job site, making permanent mounting and wiring connections.

Niagara and PC Requirements

These instructions assume that you have a PC running a licensed copy of Niagara 4 Workbench or later, installed with the "installation tool" option. That option copies distribution files needed for commissioning various models of JACE controllers. This PC is referred to as "your PC."

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

For this initial Ethernet connection, you can use either:

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

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

To prepare for new JACE commissioning

To prepare for new JACE commissioning, do the following steps:

Step 1   If not already installed, install the Niagara 4 (N4.0 or later) software on your PC, including its permanent license.

Step 2   Typically, the license file for the JACE 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 JACE, 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 JACE), 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 *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 on the JACE.

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 JACE.

Step 6   Record you 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 JACEs. In this case, configure this second NIC to use the settings in the *remainder of this step*. This method offers an advantage over the serial shell method below, as you do not need to reboot a JACE in a special mode, i.e. change its serial shell jumper.
>
> • Use a serial shell mode connection to the JACE to re-assign its factory IP address settings. After making this change and rebooting the JACE, you can continue commissioning using Workbench. This requires proper serial cabling and a special power-up mode for the JACE.
>
> For this initial connection to a factory-shipped JACE, configure your PC's NIC to use an IP address in the same subnet as the JACE, 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: `255.255.255.0`
>
> **NOTE:** Do not assign your PC the identical IP address as the JACE'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**.

Connect to the JACE

Once the JACE has powered up, connect to it with Workbench using "Open Platform." A platform connection to any JACE is required for *most host-level operations*. This includes installing Niagara 4 core software and modules and performing various other platform tasks.

After you open a platform connection, you can convert the controller from a NiagaraAX (AX) unit to a Niagara 4 (N4) unit, and then run the Commissioning Wizard.

Opening a platform connection to a JACE

Prerequisites:

NOTE: For a new JACE-3,-6,-7, you need to convert it from an AX controller to an N4 controller after making a connection, as described below, or the Commissioning Wizard will not be available.

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:** Workbench may default to ▤ **Platform SSL Connection**. If so, for any *new* JACE, change type to a regular (non-SSL) platform connection. After conversion to an N4 controller, you can always use the recommended SSL platform connection.
>
> • Host — Leave at default **IP**, and type in the default IP address of the new JACE.
>
> • Port — Leave at default 3011.

- Credentials, which may be:
  - Username — Type in default username, for example: `tridium`
  - Password — Type in default password, for example: `niagara`

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

The Platform opens in the tree, and its Nav Container View displays in the view pane.

Figure 1   Connected JACE platform
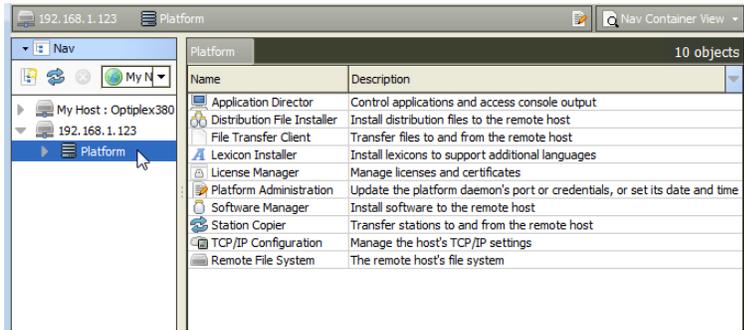
Converting a JACE controller from NiagaraAX to Niagara 4

New JACE-3,-6,-7 series controllers are shipped with a minimal install of *NiagaraAX* to support a platform connection from either Niagara 4 or NiagaraAX. If installing as a Niagara 4 device, you must first *convert the unit* to Niagara 4 (N4) before you can run the **Commissioning Wizard**.

Prerequisites:

CAUTION: Conversion erases all licenses, certificates, and configuration data in the unit except TCP/IP configuration. Prior to converting, you should successfully backup and migrate the controller's AX station using the N4 migration tool, have a N4.0 license specific to the unit, and also (if applicable) export any SSL certificate Trust Stores and Private Key Stores in use. For details see the *AX to N4 Migration Guide*.

Prerequisites: New JACE-3,-6,-7 series controller, or ready-to-convert existing unit.

Step 1   In a platform connection to the controller, double-click **Distribution File Installer**.

The **Distribution File Installer** view appears.
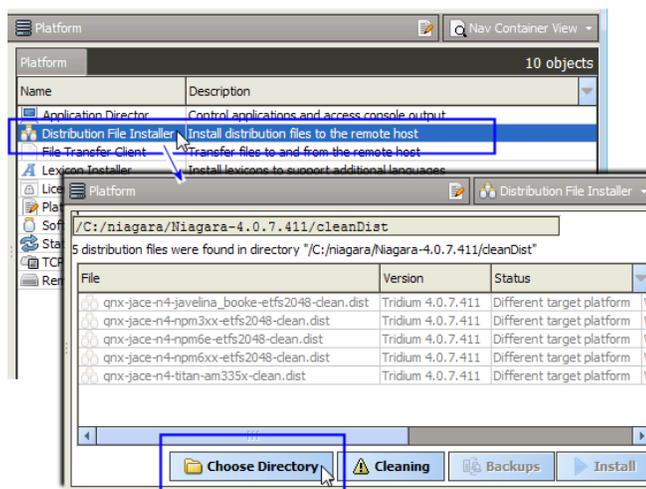
By default, this view may show N4 "clean dist" files as shown above—none of which are selectable.

Click **Change Directory**. A popup directory chooser (**Change Directory** dialog) appears.

Step 2   In the directory chooser, expand the sw folder under **Sys Home**, and select the N4buildNumber
folder.
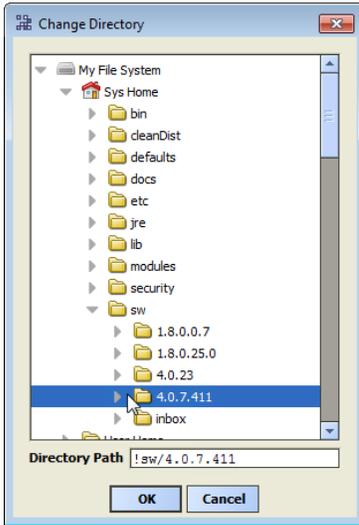
For example. in a Niagara 4.0.7.411 installation, to !sw/4.0.7.411 (as shown above). Click **OK**.

Dist files in that folder are parsed, with several "AXtoN4-" ones listed at the top. *Only one is
selectable.*
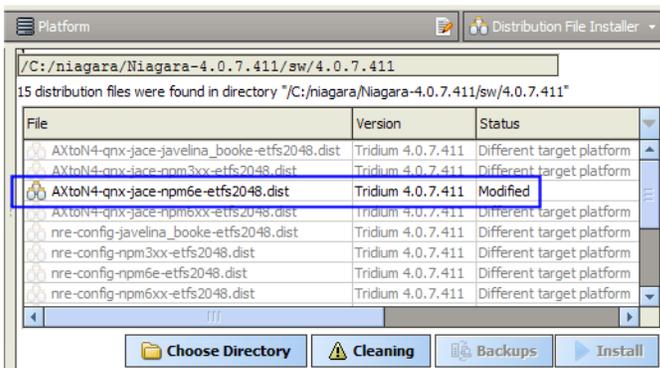
Step 3   Click to select the "AXtoN4-" dist file and then click ▶**Install**.

Dist file installation begins, with a popup **Installing Distribution** dialog shown.
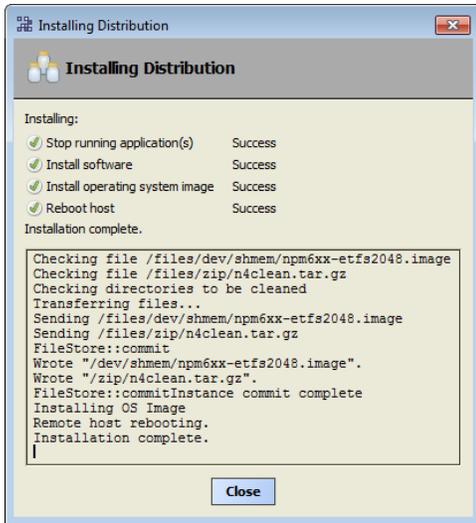
As shown above, the **Close** button becomes available when installation is complete.

Step 4   Click **Close**.

Step 5   Allow a minute or two for the controller to reboot, then re-open a platform connection. Again, you will need to use the factory default platform user credentials.

NOTE: This time you can select a Platform SSL Connection, if desired (if so, you need to accept the default Niagara 4 certificate it presents to your Workbench).

Step 6   After making a platform connection, start commissioning with the platform **Commissiong 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
♦ Setting the enabled runtime profiles
♦ Specifying a station database to install
♦ Install lexicons
♦ Select modules
♦ Install/upgrade core software
♦ TCP/IP configuration
♦ Remove platform default user account
♦ Configure additional platform daemon users
♦ Review and finish wizard

As shown below, the Commissioning Wizard is a right-click option on any connected N4 JACE platform in the Nav tree. You can also launch the wizard from the **Platform Adminstration** view.
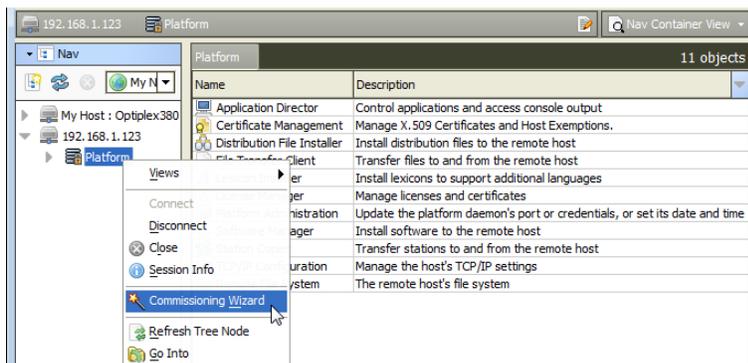
Figure 2   Commissioning Wizard as right-click platform option

Use this wizard when installing a *new Niagara 4 JACE*, 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 a JACE, at some future time. See "Upgrading a JACE" in the *Platform Guide*.

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

Prerequisites: Using Niagara 4 Workbench, a platform connection open to a JACE controller that has been converted from AX to N4.

Step 1   In the Nav tree, right-click on Platform and select **Commissioning Wizard**.

The dialog box **Commissioning for "<IP address>"** displays as shown below.

Figure 3   Commissioning Wizard (default selections shown for new JACE)
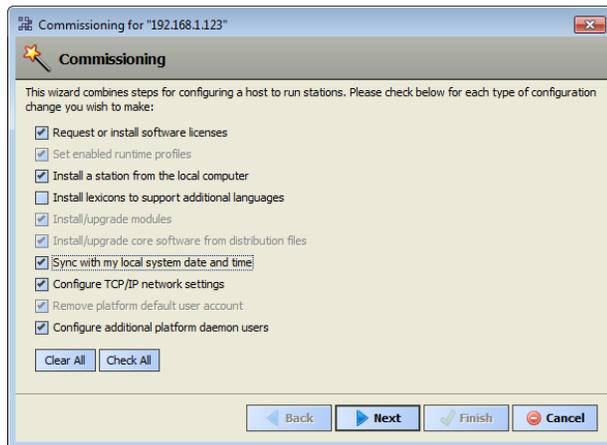
By default, all steps are preselected except lexicon installation (for file-based lexicons). Steps are executed in the order listed in the wizard.

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

Commissioning steps include:

- Request or install software licenses — Preselected and read-only for any new JACE controller.

- Set enabled runtime profiles — Also preselected and read-only for any new unit.

- Install a station from the local computer — Recommended.

- Install lexicons to support additional languages — Option to install file-based lexicon sets (alternative to lexicon modules). Typically you *leave this cleared*—lexicon modules are recommended 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 JACE 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 admin 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 priviliges).

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 JACE controller. You typically select the option to get and install licenses from the licensing server.

Prerequisites:

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

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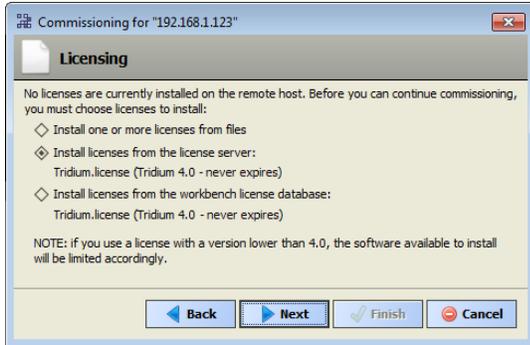
For license files validated against the Tridium certificate, installation can be automated from Workbench. All such purchased licenses (including JACE, Supervisor, or Workstation-only) are stored and available to Workbench through the licensing server.

Providing that your PC *currently has Internet connectivity* while running a platform connection to any Niagara host, Workbench provides an install option (get and install the licenses for the host from the license server). When selected, Workbench silently searches the Tridium web portal 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 *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 JACE 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 JACE.) Workbench locates the license, and the wizard advances to the next step.

- If you have the JACE 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 4 host, to verify the license file. If other licenses are installed, additional certificates may also be required.

Prerequisites:
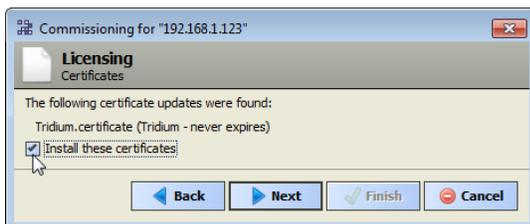
Select to install the certificate(s) and click **Next** to advance to the next Enabled Runtime Profiles step.

Step 1   At the License step, select "Install one or more licenses from files".

Step 2   Click the **Next** button.

> The "Choose license files to install" step appears .

Step 3   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 *highlight* 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 *highlight* it.
>
>   **NOTE:** The licensing tool prevents selection of a wrong license (*different hostid*) to install in the JACE.

Step 4   Click the **OK** button.

> The "Choose license files to install" dialog appears with the selected license(s).

Step 5   If necessary, click the **Add** button again to add additional license files.

Step 6   When all needed licenses are listed in the "Choose license files" dialog, click the **Next** button to go to the last (review) dialog in the Commissioning Wizard.

Figure 4   License dialog (choose files)
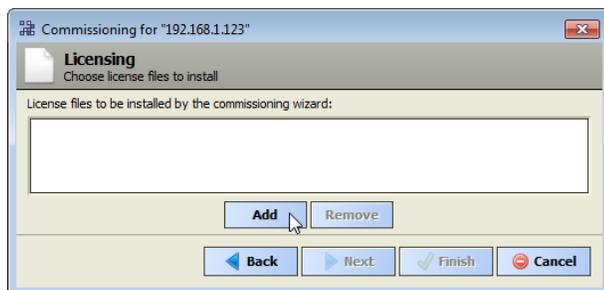
Select Files dialog from Add in Licensing
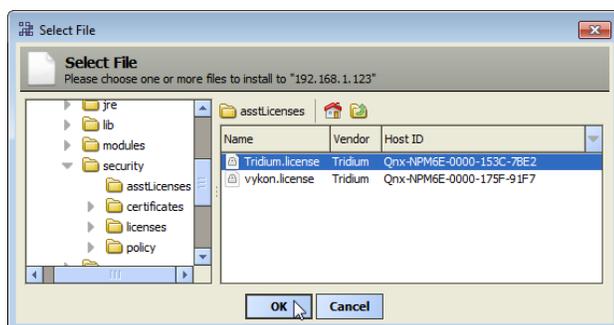
License dialog with file selected
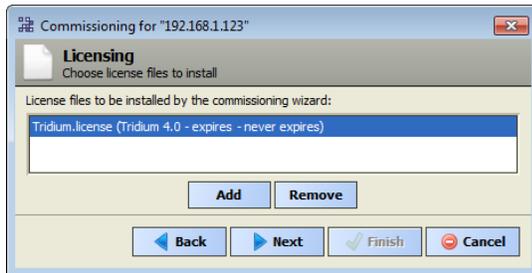
Setting the enabled runtime profiles

Enabled runtime profiles specify what *types* of N4 software module JAR are to be installed. It is similar to the former "module filter" setting for NiagaraAX JACE platforms, in that it affects the total file space consumed by the installed module JAR files.

Prerequisites:

Figure 5   Enabled Runtime Profiles (new in Niagara 4)
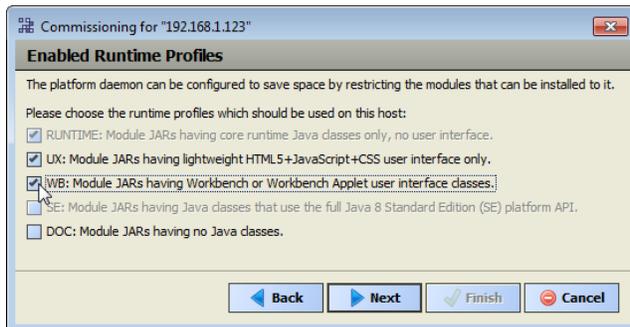
All Niagara 4 platforms require the base "RUNTIME" (-rt) module JARs, so it is pre-selected/read-only.

For QNX-based JACE platforms (which run the "Java 8 compact 3" VM), 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 "Configure Runtime Profiles" in the *Niagara 4 Platform Guide*.

At the Enabled Runtime Profiles step:

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

NOTE: For N4.0, the selection of UX will automatically includes WB, and vice-versa. This is likely to change in a future Niagara 4 release.

- RUNTIME — Always selected. Note if UX (or UX and WB) are *not* selected, the JACE 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 JACE).

- WB — Select (in addition to UX) if the JACE must also support browser "Web Workbench" access from Java-enabled clients, using the WbApplet.

- SE — Not available for QNX-based JACE controllers.

- DOC — Selectable, but *not recommended* for file space reasons on a JACE controller.

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 JACE, 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**.)

Prerequisites:

Figure 6   Station Installation dialog (default)
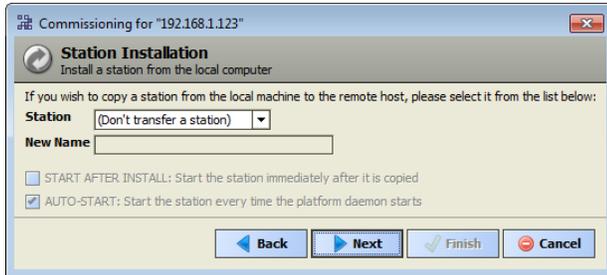
At the Station Installation step, do the following:

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

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

Step 2   If you select a station, the following additional options are available:
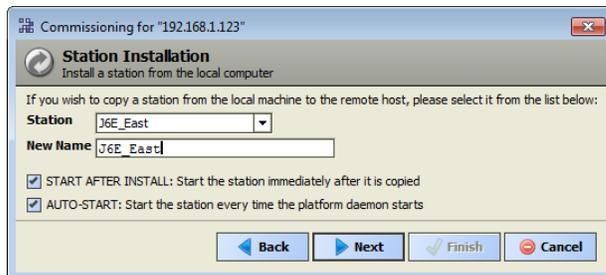
- New Name

  Either leave at same station name as local copy, or type in a new station name.

- 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 JACE (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 this option is *selectable*, unlike when using copying an AX station (replaced by a later dialog with an option to reboot the JACE, in the case where commissioning does not require a reboot). Note in Niagara 4, it is possible to start or restart a station *without rebooting* the host JACE controller.

- AUTO-START

  If enabled (the default), the station starts every time the JACE 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 JACE 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 following:
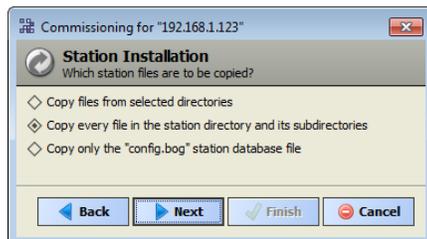
- Copy files from selected directories

  Allows you to specify which subfolders under that local station that are copied. It produces a "tree" selection dialog upon **Next** button.
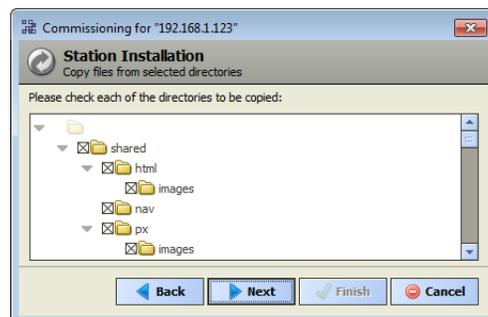
  – If you choose this, click folder controls to expand and contract as needed.

  – 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: This selection may be *unavailable* (missing) if the source station folder contains alarm and/or history data. In this case, you should choose the first option (copy files from selected directories), and decide if copying the alarm and/or history data is appropriate.

  The valid use case for this is when "migrating" a JACE controller from AX to N4. However, note that copying the identical alarm/history data to *multiple* JACE controllers is a *bad practice*.

- 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".

Install lexicons

At the Lexicon Installation step, you can install one or more text-based lexicon file sets in the JACE, providing you have any in a !lexicons folder under your Niagara 4 **Sys Home** (niagara_home). Lexicons provide support for *non-English languages* in the JACE. Lexicons are identified by java locale *codes*, such as "fr" (French) or "de" (German). In some domestic (U.S.) installations, an English lexicon ("en") is added and configured to globally "customize" items such as property descriptions in Workbench.

Prerequisites:

NOTE: For Niagara 4, we recommend you *skip this step*. Instead, make one or more *modules* of customized lexicons and install them in the next (Select modules) step. Otherwise, issues may occur in browser access of the hosted station. For complete details on working with lexicons and the **Lexicon Module Builder**, refer to the *Lexicon Guide*.

Prerequisite: Lexicon file sets must be under a lexicons subdirectory under your Niagara 4 Workbench **Sys Home**. See the Note above before proceeding.
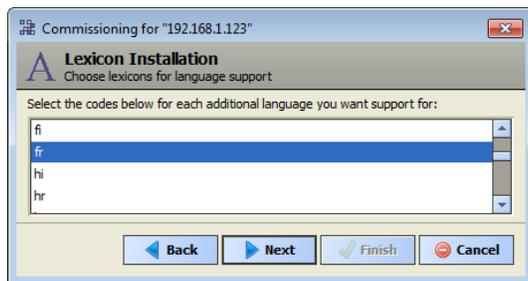

Step 1   Click a language code to select (highlight) it.

If multiple lexicons are needed, hold down the Ctrl key while you click.

Step 2   When needed lexicons are selected, click the **Next** button.

Select modules

At the select modules step, a popup "Rebuilding software list" dialog briefly appears as the dependencies of the JACE are compared against the available software modules in your Workbench PC's "software database." During commissioning, you 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 **PlatformServices**. Or, you may know that the JACE controller 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 7   Module installation dialog (default)
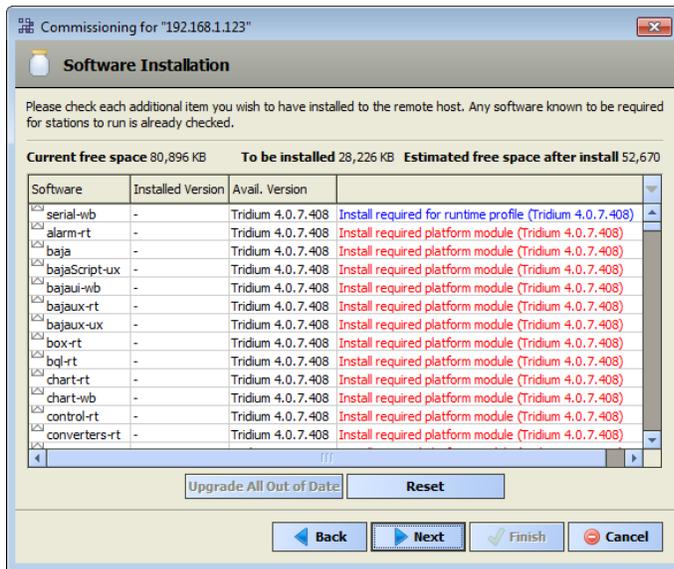
NOTE: For cases described below, install the following additional module(s) to enable options.

- 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).

  This may necessary only during N4 Beta testing, as theme-related modules should be automatically selected as needed by N4.0 product release.

- If a JACE-6 or JACE-7 controller equipped with the "SRAM option card" (for battery-less operation), select the `platDataRecovery-rt` and `-wb` modules for installation, to provide the "Data Recovery Service" in the station's **PlatformServices**. (Note if a JACE-3E or any NPM6E-based controller, such as a JACE-6E, JACE-603, or JACE-645, this is unnecessary—these modules are automatically included in the core "config" distribution file for those platforms).

- If you want any installed station to have the "Hardware Scan Service" in its **PlatformServices**, select the appropriate `platHwScanType` modules. For example, select `platHwScanNpm-rt` and `-wb` modules if commissioning a JACE-3E, JACE-6, or JACE-6E, or select the `platHwScanJvln-rt` and `-wb` modules if commissioning a JACE-7 controller. See the "JACE Hardware Scan Service" engineering notes document for related details.

- 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 "Tridium buildNumber"

  – Install module required by station "Tridium buildNumber"

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 "Tridium buildNumber" (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.

The following figure shows the dialog after modules were selected and the list resorted alphabetically.
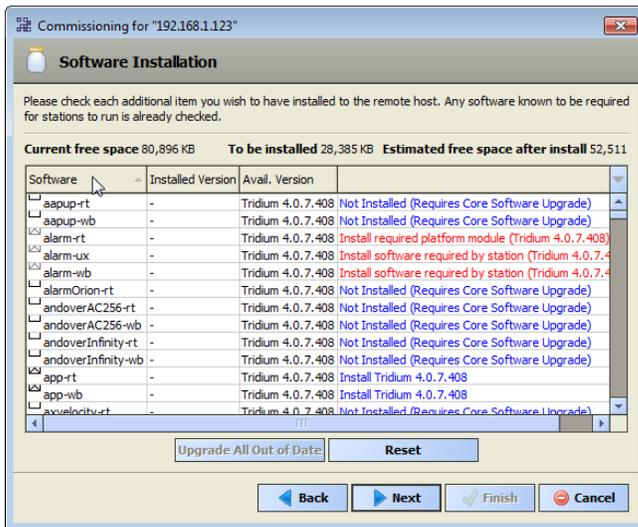
Step 2   Click the **Next** button to go to the next step.

Install/upgrade core software

At the install/upgrade core software step, the dependencies of the JACE platform are compared against the distribution (dist) files available in your Workbench PC's "software database." The wizard determines what dist file(s) need to be selected for installation, and then informs you in a dialog.

Selecting the core distribution files

To select the core distribution files for installation, do the following:

Prerequisites:
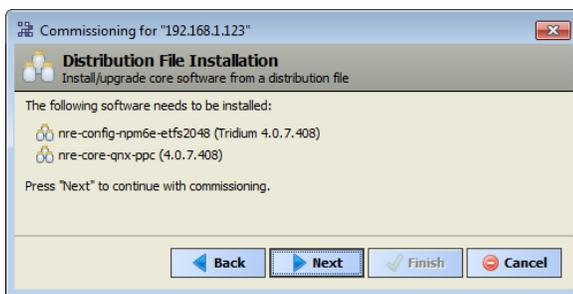
Step 1   Click **Next** to select the distribution files.

TCP/IP configuration

Figure 8   TCP/IP Configuration dialog
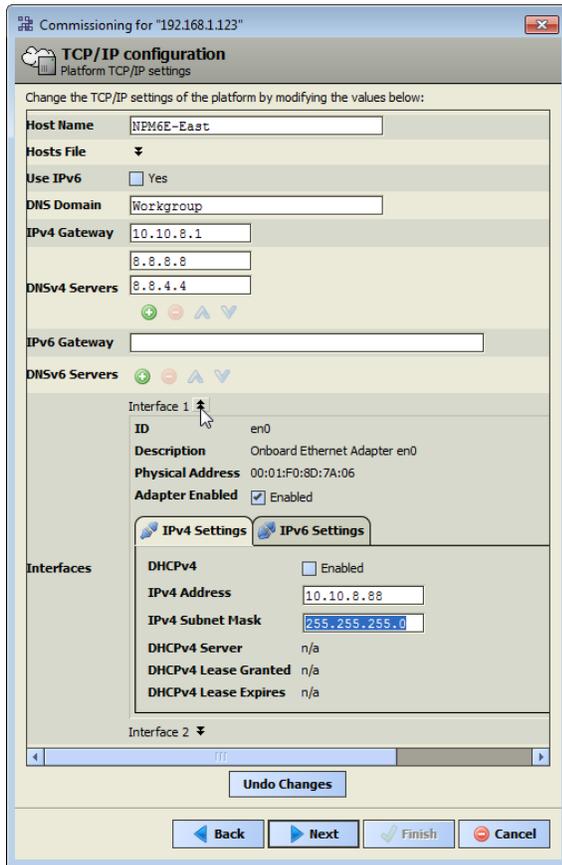
NOTE: IPv6 support is available; however this document focuses on IPv4 configuration. For details on IPv6, refer to the *Platform Guide* section on **TCP/IP Configuration**.

Configuring TCP/IP settings

At the TCP/IP Configuration step, do the following:

Step 1   Review the **Interface 1** settings on the **IPv4 Settings** tab, which include the temporary factory-shipped IP address.

Step 2   Assign the JACE 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.

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: In general (for stability), static IP addressing is recommended over DHCP.

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

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

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

- 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.

  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.

Step 4   To add a line, click at the end of the last line and press **Enter**.

Step 5   Type in the required data on the new line.

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

Step 6   Click the **Next** button to go to the next step.

NOTE: JACE-3,-6,-7 controllers have two Ethernet ports, where "**Interface 2**" is available for configuring the LAN2 (secondary) Ethernet port. By default, this port is *disabled*, that is without a "default" address. Intended usage is for:

- 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 JACE 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 typically specify another (network) static IP address and the appropriate subnet mask.

  Also note the following:

- If enabling both LAN ports, note that the LAN1 IP address and LAN2 IP address must be 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*.

- A JACE *does not* provide IP routing or bridging operation between different Interfaces (LAN ports, GPRS, dialup).

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

Remove platform default 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 JACE controller.

Figure 9   Initial dialog to replace the factory-default platform user account

Note the Commissioning Wizard in Niagara 4 prevents the commissioning of a JACE controller that retains the factory default platform user account. To proceed, you must enter a *different* user name, along with a "strong" password (currently, this means a minimum of 8 characters, including 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 Workbench 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 commissiong, 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.

Specifying a platform user to replace the factory-default platform user

You see this dialog only in the initial commissioning of a new JACE controller, or possibly at some future point after installing an N4 "clean dist" file.

Prerequisites:

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 8 characters*, using *at least one digit* (numeral).

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, as below.

Platform user rules and guidelines

When adding any N4 JACE controller 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 as-
  terisks (*). Password must be a *minimum of 8 characters*, using *at least one digit* (numeral). An error pop-
  up 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 miminum 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 descrip-
  tion purposes only (note you *cannot re-edit it after adding a user*, unlike with a user's password).

  NOTE: Make careful note of your platform user credentials, and guard them carefully! Consider the plat-
  form daemon as the highest-level access to the JACE controller.

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

Configure additional platform daemon users

This Commissioning Wizard step lets you add *additional* platform admin users in the JACE controller, and also delete users and change passwords.

NOTE: Access this same configuration via the "**User Accounts**" button in the **Platform Administration** view, available any time after commissioning.

Configuring additional platform daemon users

Platform daemon authentication lets you create additional (up to 20 total) platform admin users.

Prerequisites:
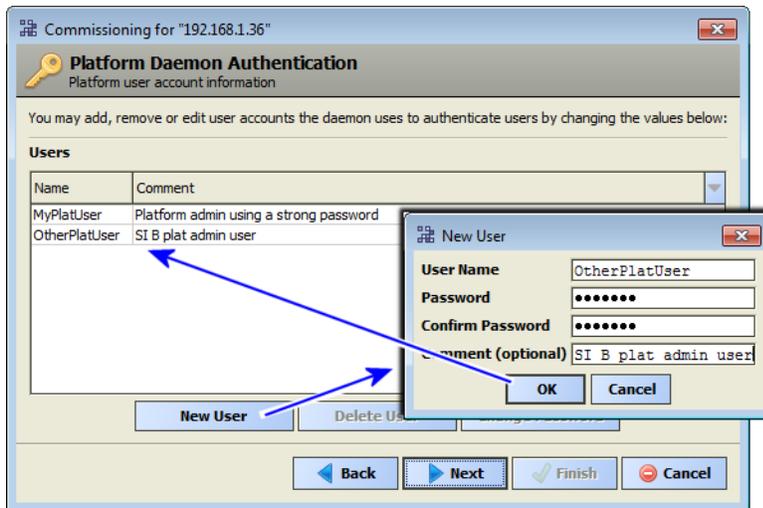
Step 1   Click **New User** for the popup **New User** dialog, as shown above.

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 8 characters*, using *at least one digit* (numeral).

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.

Review and finish wizard

The final step in the Commissioning Wizard provides a review of changes, as shown below.

Figure 10   Review Commissioning Wizard dialog
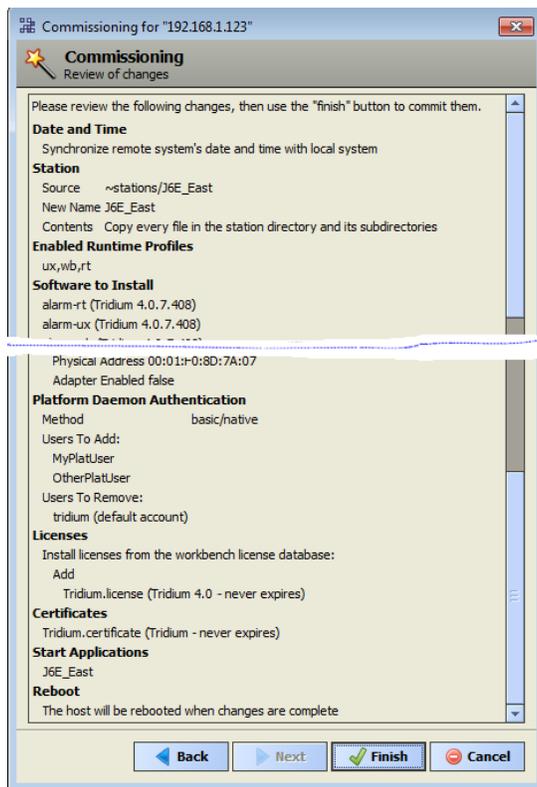
Reviewing and finishing the Commissioning Wizard

A summary is shown for all the actions to be performed by the wizard. Before proceeding:

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 the **Finish** button 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 JACE, and a "**Close**" button is available.
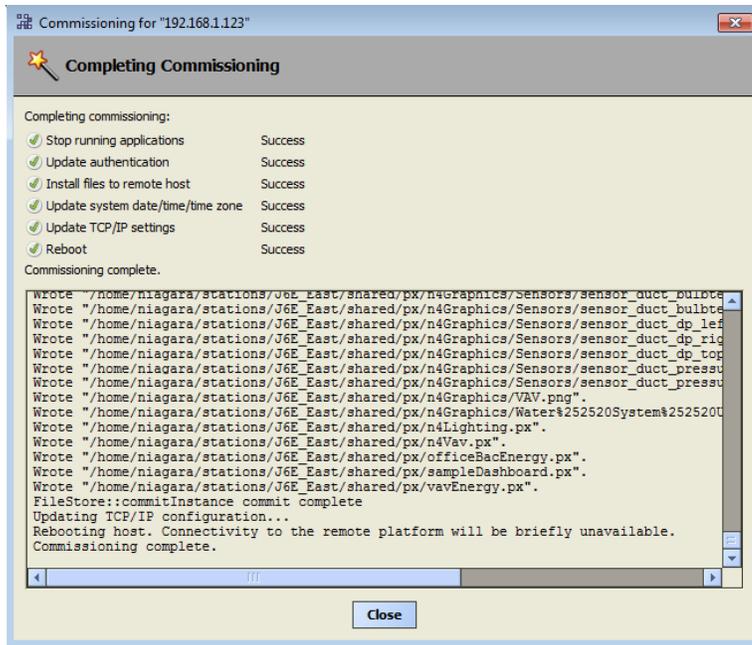
Do not remove power from the controller during this reboot, which may take up to 7 or more minutes to complete. Removing power could make the unit unrecoverable. If desired (and convenient), you can use a serial shell connection to the controller to monitor progress as files are installed and the unit is prepared.

Note also that if applicable, possible "automatic firmware upgrades" to any attached IO-16 or IO-34 modules (NDIO) may occur during this reboot. It is critical that such firmware upgrades to NDIO modules complete without interruption—otherwise, IO modules could also be "bricked".

Note that IO firmware upgrades occur *before* the platform daemon starts in the JACE controller. Therefore, it is safe to interrupt power anytime after you can re-open a platform connection to the controller.

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

When the JACE reboots, your platform connection to it drops. Notice that in the Nav tree, the platform instance for that JACE is now dimmed ▤.

Step 4   Assuming that you changed the JACE's IP address in commissioning, right-click and *close that platform* instance, as this would make that connection instance invalid.
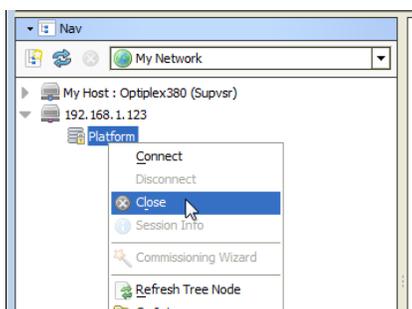
If you did not change its IP address, after several minutes you should be able to double-click the platform instance again to reconnect.

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

Figure 11   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 JACE, 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 (station) and administration

Topics covered in this chapter

♦ About Platform Services
♦ JACE power monitoring configuration
♦ PlatformServices properties
♦ Controller-specific PlatformServices properties
♦ JACE SRAM support enabling/disabling
♦ Optional platform administration

A *few* platform configuration items in a JACE are not directly accessible in a 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 on the JACE (*any station*), and that station *running*.

Then using Workbench, you open a station (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 NiagaraAX station has a PlatformServices container.

Figure 12   Example JACE station's PlatformServices
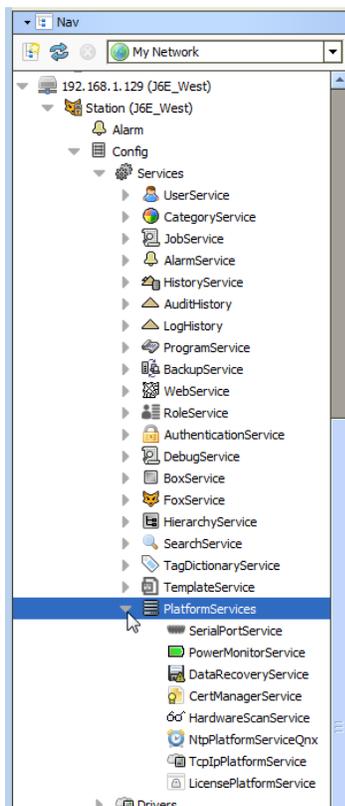
PlatformServices is *different from all other components* in a station in the following ways:

- It acts as the station interface to specifics about the host platform (whether JACE 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 dialogs used in platform views, for instance the **TCP/IP Configuration** dialog box. These services support installations where *all* configuration must be possible using only a browser connection (and not Workbench connected to the JACE's platform daemon).

PlatformServices items of interest for JACE commissioning

For any QNX-based N4 JACE, the following child platform services in the station's PlatformServices are of chief importance when commissioning a new controller.

- 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 4 Station Security Guide*.

- DataRecoveryService — For operation/monitoring of the ongoing SRAM backups for most (SRAM-equipped) JACE controllers. It includes a "Service Enabled" *configuration* property, such that you can disable it, if needed. This is viable only if a backup battery is installed, or the unit is powered by an external UPS. For details.

- PowerMonitoringService — Holds properties for configuration and status of the JACE's battery monitoring and primary power monitoring, and power-fail shutdown.

Also, you may wish to review the parent container's PlatformServices properties and adjust, if needed. The following are two such examples.

- For any SRAM-equipped JACE-3,-6,-7 controller that is installed "battery-less" (without any backup battery), you *must* adjust its "Battery Present" property from (the default) true to false.

- PlatformServices in a JACE-700 (JACE-7 series) station include properties for an onboard "tamper switch" CI.

JACE power monitoring configuration

A JACE's "power monitoring" options may require adjustment from default settings. These parameters define the JACE's backup-battery monitoring and AC power-fail shutdown routines.

NOTE: If an NPM6E-based JACE with "onboard SRAM" (JACE-3E, JACE-6E, JACE-603, or JACE-645), or another JACE with an installed "SRAM option card", you have several backup options that involve the **PowerMonitorService** under its station's **PlatformServices**.

For details on the **DataRecoveryService**, refer to the *JACE Data Recovery Service (SRAM support) - Engineering Notes* document.

To review and configure a JACE's power monitoring options, expand the station's **PlatformServices** and double-click on the **PowerMonitorService**.

Figure 13   PowerMonitorService default view in a JACE-6E station
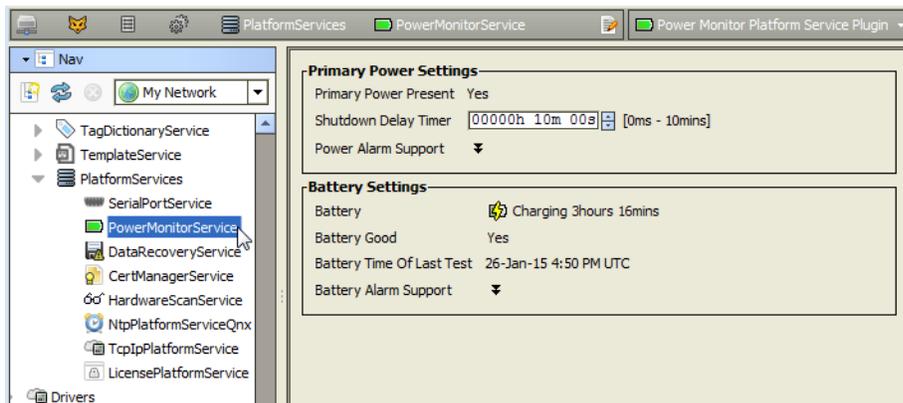
- If you are commissioning a JACE-6 without installed SRAM, see the procedure "Configuring power monitoring for a JACE with backup battery (but no SRAM)" on page 23, page 37.

- If commissioning any JACE equipped with SRAM *and* a backup battery, see "Configuring power monitoring for a JACE with SRAM and backup battery" on page 23, page 38.

  NOTE: For any SRAM-equipped JACE controller that is installed "battery-less", there is *no power monitoring*. Instead, see "Reviewing/adjusting PlatformServices properties for the JACE" on page 27, page 42.

- If commissioning a JACE-700 (JACE-7 series) controller, a special PowerMonitorService applies, with several configuration options. Some of these relate to onboard contact inputs (CIs) intended to monitor normally-closed alarm contacts on an external UPS. This JACE also supports (charges and monitors) an optional, external 12V sealed lead-acid battery. See "Configuring power monitoring for a JACE-700" on page 24, page 39, and also tamper switch CI details for a "JACE-700" on page 28, page 44.

Configuring power monitoring for a JACE with backup battery (but no SRAM)

With a station in the JACE running, and that station opened in Workbench, do the following:

Step 1   In the Nav tree, click to expand the station's Services, PlatformServices, containers to reveal all contained services.

Step 2   Double-click PowerMonitorService.

        Its Power Monitor Platform Service Plugin displays in the view pane.

Step 3   As needed, change configuration properties stored in the JACE platform, which include:

- Shutdown Delay Timer

  Defines the period that the JACE waits between detecting loss of AC power and performing a *graceful shutdown* (backs up database and powers board off). Depending on JACE model, using either a nickel metal hydride (NiMH) battery or sealed lead-acid (Sla) battery, this varies.

  – For JACE-6 models (NiMH), the default value is 30 seconds, the valid range is 0 to 60 seconds (1 minute), maximum.

    NOTE: Unless specifically needed longer, the default 30 seconds can be better in the case of multiple power outages that occur in quick succession. In that case, the NiMH battery may not become fully recharged, introducing a greater risk of the controller to be unable to complete a graceful shutdown upon loss of power.

  – For JACE-603 or JACE-645 models (Sla), the default period is 10 minutes, range is 0 to 15 minutes. Generally, for "Sla battery" models, the default value is recommended, as longer periods means more time running on battery power. Otherwise, in some scenarios with multiple lengthy power failures (in succession) the battery may become completely discharged.

- Power Alarm Support

- ⬇

    Expand to access properties that define how "primary power alarms" are handled in the station, including alarm class to use and other "alarm source info" type parameters.

- Battery Alarm Support

- ⬇

    Expand to access properties that define how "battery alarms" are handled in the station, including alarm class to use and other "alarm source info" type parameters.

    NOTE: Several settings reflect read-only status properties:

    – Primary Power Present — Boolean, Yes (true) if AC power is currently supplied to JACE.

    – Battery — container that shows two values concatenated on a single line:

     ◆ State — (with icon) enumerated descriptor, typically "Idle" if fully charged, else "Charging", "Discharging", or "Unknown".

     ◆ If "Charging", the estimated charge time left until fully charged (Charge Time Left).

    – Battery Good — Boolean, Yes (true) if last JACE backup battery test was good.

    – Battery Time of Last Test - provides a timestamp (in AbsTime format) of the last battery test performed by the JACE.

Step 4   Click **Save** to write the configuration to host platform.

Configuring power monitoring for a JACE with SRAM *and* backup battery

This applies to any SRAM-equipped JACE controller that *also has a backup battery installed*. Controller types are JACE-3E, JACE-6E, any other NPM6E-based type (JACE-603, JACE-645), or any other JACE model with "SRAM option card". The controller must be licensed with the "`dataRecovery`" feature.

Prerequisites:

If the controller is installed "battery-less", do not use this procedure. Go instead to ["Reviewing/adjusting PlatformServices properties for the JACE" on page 27, page 42](#).

With a station running in the JACE and opened in Workbench, do the following:

Step 1   In the Nav tree, click to expand the station's Services, PlatformServices, containers to reveal all contained services.

Step 2   Double-click PowerMonitorService.

    Its Power Monitor Platform Service Plugin displays in the view pane.

Step 3   As needed, change configuration properties stored in the JACE platform, which include:

- Shutdown Delay

    Defines the period that the JACE waits between detecting loss of AC power and performing a *graceful shutdown* (backs up database and powers board off). Depending on JACE model, using either a nickel metal hydride (NiMH) battery or sealed lead-acid (Sla) battery, this varies.

    – For models with a NiMH backup battery (JACE-3E, JACE-6E, or JACE-6 or JACE-7 with an SRAM option card), the default value is 10 minutes, the valid range is:

    0 to 10 minutes, maximum— Providing the **DataRecoveryService** is enabled, *else:*

    0 to 60 seconds (1 minute maximum) — If the DataRecoveryService is disabled or absent.

    If the controller's **DataRecoveryService** (for SRAM support) is enabled and operating, and the NiMH battery is known to be good, the default (and maximum) Shutdown Delay value of

10 minutes is typically reasonable. This provides extra time for continuous operation during a power outage of up to 10 minutes.

Note the NiMH battery charge is monitored during this delay period, and if necessary, the shutdown is initiated *before* this timer expires. Further, even if the battery had insufficient charge to complete a "graceful shutdown", the DataRecoveryService would successfully restore the runtime station data from SRAM upon controller bootup (when power is restored).

– For JACE models with a sealed lead-acid (Sla) battery, such as a JACE-603 or JACE-645, the default period is 10 minutes, with a range from 0 to 15 minutes maximum.

Again, providing the SLA battery is known good and the station's **DataRecoveryService** is enabled and running, the default (maximum) shutdown delay of 15 minutes is typically reasonable, for reasons noted above.

In either case, the "Battery Present" property in the station's PlatformServices container must be set to true (the default).

Furthermore, if at some point you disable the station's DataRecoveryService, (either set its "Service Enabled" property to false, or else uninstall its `platDataRecovery` module), it is recommended that you first set the Shutdown Delay no higher than the default 30 seconds (NiMH) or 1 minute (SLA).

- Battery Alarm Support

- ⊻

Expand to access properties that define how "battery alarms" are handled in the station, including alarm class to use and other "alarm source info" type parameters.

- Power Alarm Support

- ⊻

Expand to access properties that define how "primary power alarms" are handled in the station, including alarm class to use and other "alarm source info" type parameters.

NOTE: Several settings reflect read-only status properties:

– Primary Power Present — Boolean, Yes (true) if AC power is currently supplied to JACE.

– Battery — container that shows two values concatenated on a single line:

♦ State — (with icon) enumerated descriptor, typically "Idle" if fully charged, else "Charging", "Discharging", or "Unknown".

♦ If "Charging", the estimated charge time left until fully charged (Charge Time Left).

– Battery Good — Boolean, Yes (true) if last JACE backup battery test was good.

– Battery Time of Last Test - provides a timestamp (in AbsTime format) of the last battery test performed by the JACE.

Step 4   Click **Save** to write the configuration to host platform.

Configuring power monitoring for a JACE-700

Prerequisites:

- Setup of the onboard "tamper switch" contact input (CI "TMP") is at a different location.

- With a station in the JACE-7 series controller running, and that station opened in Workbench, do the following:

Step 1   In the Nav tree, click to expand the station's Services, PlatformServices, containers to reveal all contained services.

Step 2   Double-click PowerMonitorService for its Javelina Battery Platform Service Plugin.

Figure 14   Javelina Battery Platform Service Plugin view for JACE-700
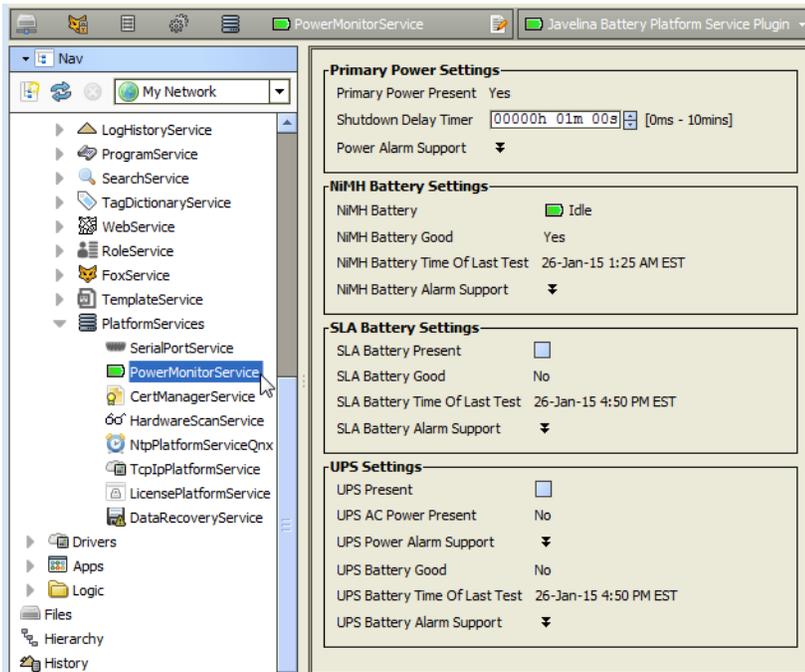
Step 3   As needed, change configuration properties stored in the JACE-700 platform, which include:

- Primary Power Settings

  - Shutdown Delay Timer

    Defines the period that the JACE-7 waits between detecting loss of AC power and perform-ing a graceful shutdown (backs up database and powers board off).

    NOTE: At shutdown, 12V battery power wired to any external I/O modules is also turned off.

    Depending on whether a sealed lead-acid (SLA) battery is connected, and also that battery's capacity (as well as the loading factor of any attached remote I/O modules), the maximum recommended time can vary, Longer periods means more time running on battery power.

    If no external SLA battery is present, a value from 30 seconds to 1 minute (default) is recommended.

    If an external SLA battery is present, a time of one fourth or less than the "total possible" battery run time is conservative. Otherwise, in a scenario with multiple lengthy power fail-ures (in succession) the SLA battery may become completely discharged.

  - Power Alarm Support

  - Expand to access properties that define how "primaryPower" alarms are handled in the sta-tion, including alarm class and other "alarm source info" type parameters.

- NIMH Battery Settings

  - Nimh Battery Alarm Support

  - Expand to access properties that define how "nimhBattery" alarms are handled in the sta-tion, including alarm class and other "alarm source info" type parameters. Such alarms apply to the onboard NiMH battery pack in the controller, which is always periodically tested.

- SLA Battery Settings

  - Sla Battery Present

Boolean (checkbox) to specify if an external SLA battery is connected. If set to true (checked), the JACE-7 supplies trickle charge voltage, and also periodically tests this battery. Default value is false for no SLA battery (checkbox cleared).

– Sla Battery Alarm Support

– Expand to access properties that define how "slaBattery alarms" are handled in the station, including alarm class and other "alarm source info" type parameters. Such alarms apply to the external 12V sealed lead-acid battery connected to (and trickle charged by) the controller, if "Sla Battery Present" is true (checked).

• UPS Settings

– Ups Present

Boolean (checkbox) to specify if one or two normally-closed (N.C.) alarm contacts are wired to onboard contact inputs (CIs) labeled "PWR" and "BAT" on the JACE-7 . Default value is false (checkbox cleared) for no monitoring.

– Ups Power Alarm Support

– Expand to access properties that define how "upsPower" alarms are handled in the station (based upon "open" at controller's onboard CI "PWR" (UPS PWR)), including alarm class and other "alarm source info" type parameters.

– Ups Battery Alarm Support

– Expand to access properties that define how "upsBattery" alarms are handled in the station (based upon an "open" at the controller's onboard CI "BAT" (UPS BATT)), including alarm class and other "alarm source info" type parameters.

**NOTE:** Several settings reflect read-only status properties, as follows:

♦ Primary Power Present — Boolean, Yes (true) if 15Vdc power is currently supplied to the JACE.

♦ NiMH Battery — container for NiMH battery values concatenated on a single line:

◊ State — (with icon) enumerated descriptor, typically "Idle" if fully charged, else "Charging", "Discharging", or "Unknown".

◊ If "Charging", the estimated charge time left until fully charged (Charge Time Left).

♦ NiMH Battery Good — Boolean, Yes (true) if last JACE NiMH battery test was good.

♦ NiMH Battery Time of Last Test - provides a timestamp (in AbsTime format) of the last NiMH battery test performed by the JACE.

♦ SLA Battery Good — Boolean, Yes (true) if last JACE test of the external SLA battery was good.

♦ SLA Battery Time of Last Test - provides a timestamp (in AbsTime format) of the last NiMH battery test performed by the JACE.

♦ UPS AC Power Present — Boolean, Yes (true) if the JACE-7 controller's onboard CI "PWR" (UPS PWR) is closed.

♦ UPS Battery Good — Boolean, Yes (true) if the JACE-7 controller's onboard CI "BAT" (UPS BATT) is closed.

♦ UPS Battery Time of Last Test - provides a timestamp (in AbsTime format) of the last poll of all onboard contact inputs on the JACE-7 controller.

Step 4   Click **Save** to write the configuration to the JACE-7 controller.

PlatformServices properties

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

Figure 15   PlatformServices property sheet in JACE
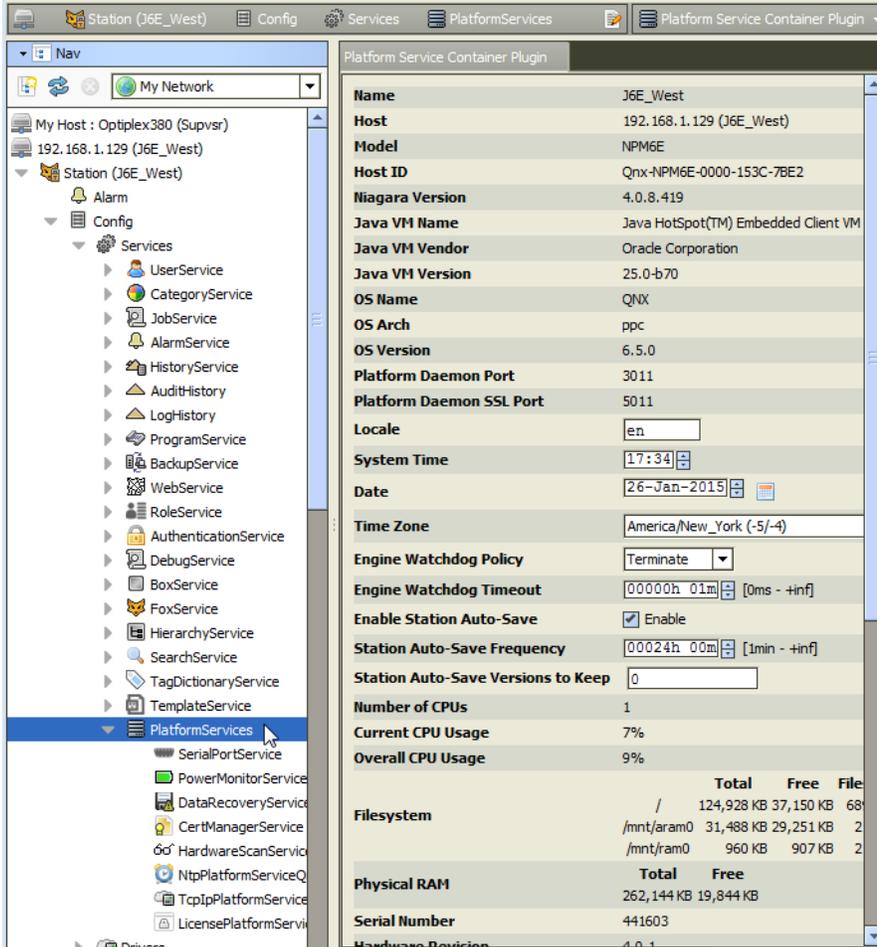
Reviewing/adjusting PlatformServices properties for the JACE

Prerequistes: A station in the JACE is running, and that station opened in Workbench.

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

Its "Platform Service Container Plugin" displays in the view pane.

Some properties are read-only status types, similar to many seen in the Platform Adminstration view. Other configuration properties are available. A group of 3 config properties allow adjustment of the time, date, and time zone settings for the host JACE (alternately accessible using a platform connection to the JACE). Access to these properties is useful if the installation requires all setup access using a browser only.

Step 2   Scroll down to the "Battery Present" property.
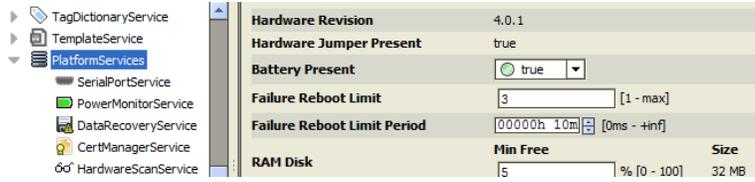
By default, the Battery Present property is `true`. This is the proper setting for any JACE controller, *unless*:

• It is SRAM-equipped, and has *no backup battery installed* (NiMH and/or external 12V), and:

• It has the **DataRecoveryService** running and enabled (license includes a dataRecovery feature).

In this case only, set the "Battery Present" value to `false` and click **Save**. After the next reboot (required), this prevents "battery bad" nuisance alarms from re-occurring.

Step 3   As needed, review other platform service configuration properties, which include the following:

NOTE: You should leave the following properties at *default values*, unless otherwise directed by Systems Engineering.

- **Locale** — Determines locale-specific behavior such as date and time formatting, and also which lexicons are used. A string entered must use the form: `language ["_" country ["_" variant]]`

  For example U.S. English is "`en_US`" and traditional Spanish would be "`es_ES_ Traditional`".

  See Oracle documentation at http://docs.oracle.com/javase/1.4.2/docs/api/java/util/Locale. html for related details.

- **Engine Watchdog Policy** — Defines response taken by the platform daemon if it detects a station engine watchdog timeout. With the watchdog, the station periodically reports to the platform daemon its updated engine cycle count. The watchdog purpose is to detect and deal with a "hung" or "stalled" station, and is automatically enabled when the station starts.

  Watchdog policy selections include:

  - Log Only — Generates stack dump and logs an error message in the system log. (The station should ultimately be restarted if a watchdog timeout occurs with the "Log Only" setting).

  - Terminate — (Default) Kills the VM process. If "restart on failure" is enabled for the station (typical), the station is restarted.

  - Reboot — Automatically reboots the host JACE platform. If "auto-start" is enabled for the station, the station is restarted after the system reboots.

- **Engine Watchdog Timeout** — Default is 1 minute, and range is from 0 ms to infinity.

  If the station's engine cycle count stops changing and/or the station does not report a cycle count to the platform daemon within this defined period, the platform daemon causes the VM to generate a stack dump for diagnostic purposes, then takes the action defined by the Engine Watchdog Policy.

- **Engine Station Auto-Save** — Either Enable (default) or Disable.

  Allows for "auto save" of running station to "`config_backup_<YYMMDD>_<HHMM>.bog`" file at the frequency defined in next property. Auto-saved backup files are kept under that station's folder.

- **Station Auto-Save Frequency** — Default is every 24 hours for any embedded JACE, range is from 1 to many hours.

- **Station Auto-Save Versions to Keep** — Default is 0. Oldest of kept backups is replaced upon next manual save or auto-save backup, once the specified limit is reached. Significant flash space is saved by keeping this 0 or perhaps 1.

- **RAM Disk Size** — In MB, where default is 32 for a JACE-3E or JACE-6 or JACE-6E series, or 48 for a JACE-7 series. Specifies size of RAM disk used to store history and alarm files.

For further details on these and other PlatformServices properties, refer to the "PlatformService-Container parameters" section in the *Platform Guide*.

Step 4 Click **Save** to write any configuration change to the host JACE platform.

# Controller-specific PlatformServices properties

As newer JACE platforms are introduced, hardware-specific properties may be appended to the collection of a station's PlatformServices properties. Examples are given below.

JACE-700

A JACE-700 (JACE-7 series) controller includes properties for an onboard contact input (CI) intended for use with a nearby normally-closed (N.C.) "tamper switch".

To see the three properties associated with this CI, double-click the station's **PlatformServices**, for the **Platform Service Container Plugin** view, and scroll down to the bottom.

Figure 16   Tamper switch properties (for JACE-7 controller) at bottom of PlatformServices properties
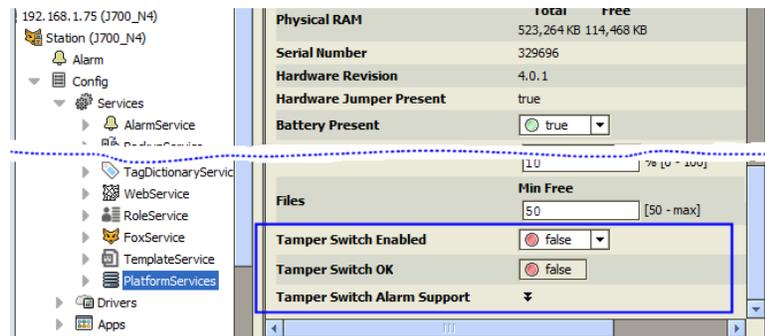
The three properties related to this tamper switch CI are as follows:

- Tamper Switch Enabled

  Default is `false`. If set to `true`, the onboard CI labeled "TMP" is polled once a second for a normally-closed (shorted) input. An open results in a "tamperSwitch" alarm from the default source "SystemService".

- Tamper Switch OK

  Read-only boolean that reflects tamper switch status as good (`true`) or bad (`false`). If the tamper switch is enabled, status is `true` while the "TMP" CI reads a closure (short), else `false` if the CI is open, which generates an alarm.

- Tamper Switch Alarm Support

- Expand to access properties to define how "tamperSwitch" alarms are handled in the station, including alarm class and other "alarm source info" parameters. Applies if "Tamper Switch Enabled" is `true`.

JACE SRAM support enabling/disabling

SRAM support is provided by the DataRecoveryService, a platform service that applies to SRAM-equipped JACE controllers. This service has only a single configuration property: "Service Enabled".

NOTE: The main use case for this property is for a JACE-3E or NPM6E-based controller (JACE-6E, JACE-603, or JACE-645) *with an installed backup battery*, where you *do not* want it to use SRAM. This property setting is retained in any future controller upgrades. For more details, including scenarios where this configuration may be best, refer to the Engineering Notes II document *JACE Data Recovery Service (SRAM support)*.

Enabling or disabling SRAM support in the DataRecoveryService

Prerequisite: Station running in the JACE, and that station opened in Workbench.

Step 1   In the Nav tree, click to expand the station's Services, then PlatformServices container to reveal all contained services.

Step 2   Double-click DataRecoveryService. The **Data Recovery Service Editor** displays.
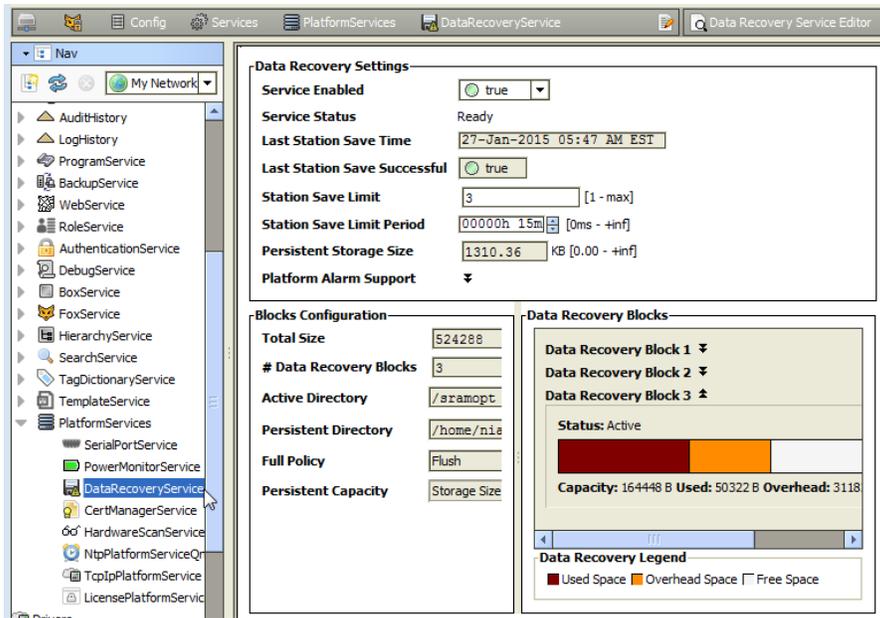
Step 3   By default, the Service Enabled property is `true`. This is appropriate if the controller has no backup battery installed—for example, a JACE-3E or JACE-6E as factory shipped "battery-less".

If the controller *has a backup battery* installed, you can optionally set this to `false`, providing:

- The "Battery Present" property in the station's PlatformServices container is set to true.
- The backup battery is known good. If disabling SRAM support, is recommended that you set the PowerMonitorService's "Shutdown Delay" time no higher than the default 1 minute.

Alternatively, if a "battery-less" JACE controller is powered from a battery-backed UPS, you could also choose to set Service Enabled to `false`.

NOTE: If you set "Service Enable" to false, the DataRecoveryService no longer records runtime database changes to SRAM. The controller *depends entirely on its backup battery* to preserve station data upon a power loss!

Step 4   Click **Save** to write the configuration to host platform.

You are prompted to reboot now to apply the changes. Click **Yes** to reboot with the change in the DataRecoveryService (disabled or enabled) made effective.

Optional platform administration

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

Figure 17   Platform Administration is one of several platform views
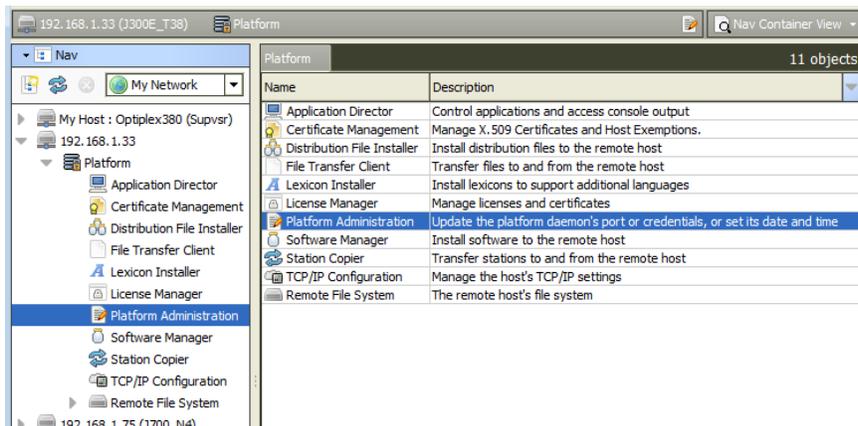
Example Platform Administrator view for a JACE controller
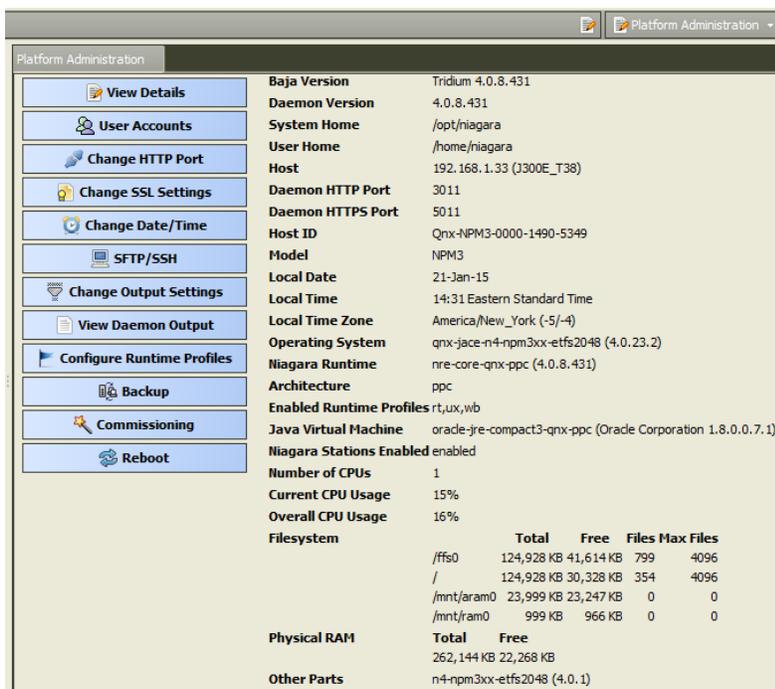
Included in this view are commands and related dialogs in which you can:

- Set the date and time in the JACE controller.

  Typically, this is automatically handled by the Commissioning Wizard.

- Change the HTTP port used by the JACE for the Niagara platform daemon (platform server).

  The default port is 3011.

- Change SSL settings used by the JACE for secure "platformssl" access, including configured state, software port used, PKI certificate used, and TLS protocol used. The default platformssl port is 5011.

- Enable or disable SFTP (Secure File Transfer Protocol) and SSH (Secure Shell) access to the JACE controller. 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 you *keep this access disabled*, unless otherwise directed by Systems Engineering. Upon completion of any use, such access should be disabled once again.

• View a simple text summary of the JACE's current software configuration, including its model number, OS level, JVM version, installed modules, lexicons, licenses, certificates, and so on.

• Use debug-level tools to change logging levels and view platform daemon output.

• Perform other platform tasks previously available using 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 *Platform Guide*.

Performing platform administration

Prerequisite: The JACE controller is already commissioned using the Commissioning Wizard:

Step 1   Using Workbench, open a platform connection to the JACE controller. Use the platform credentials you specified when creating a platform user while commissioning the JACE.

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

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

  • **View Details** — For a platform summary that you can copy to the Windows clipboard.

  • **User Accounts** — For a platform daemon authentication dialog to add, delete, or manage platform users (as previously available as step in the Commissioning Wizard).

  • **Change HTTP Port** — For a dialog to change the HTTP port for the JACE's platform daemon from port 3011 to some other port.

  • **Change SSL Settings** — For a dialog to specify platform SSL settings, including port to use, certificate to authenticate by, and secure protocol to use. Details are beyond the scope of this document. For an overview, see "Change SSL Settings" in the Platform Guide. For complete information, refer to the *Niagara 4 Station Security Guide*.

  • **Change Date / Time** — For a dialog to change the JACE's current date, time, and time zone (as previously included as step in commissioning wizard).

  • **SFTP / SSH** — For a dialog to enable/disable SFTP and SSH access to the JACE, or change the default port number that these protocols use/share.

  • **Change Output Settings** — Provides a dialog to change the log level of different processes that can appear in the platform daemon output

  • **View Daemon Output** — Provides a window in which you can observe debug messages from platform daemon processes in real time. Also includes ability to pause or load.

  • Configure Runtime Profiles — Provides a dialog to change the types of runtime profiles for software modules installed on the JACE (as previously included as step in commissioning wizard).

  • **Backup** — Make a complete backup of all configuration on the connected host platform, including all station files, plus other Niagara configuration (typically unnecessary for any JACE just started up).

  • **Commissioning** — Another way to re-launch the Commissioning Wizard, as previously used in the initial commissioning of the JACE.

  • **Reboot** — Provides a method to reboot the JACE platform, which restarts all software including the OS and JVM, then the platform daemon, then if so configured in the Application Director (Station Director), the installed station. If you click this, a confirmation dialog appears.

  If you reboot, your platform connection is lost, and it is typically a few minutes until you can reconnect to this JACE.

Chapter 5   Recovery tips

Topics covered in this chapter

♦ IP changes history
♦ System shell
♦ About JACE serial shell mode
♦ About the JACE system shell menu

During JACE commissioning, it is possible to run into problems. For instance, you may mis-type an IP ad-
dress 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:

• IP changes history (a Workbench feature)

• System shell (a feature of any QNX-based JACE)

IP changes history

Your Workbench PC records "before and after" TCP/IP settings made from your Niagara platform connec-
tions in an ipchanges.bog file. If necessary, you can review changes made from your Workbench using the
following procedure.

Reviewing TCP/IP changes made from your Workbench PC

From your PC with Workbench started, do the following:

Step 1   In the Nav tree, expand "My Host" and then "My File System."

Step 2   Expand "User Home", then expand "ipchanges.bog."

Child folders are "date-named" using the following convention:

<yyyymmddhhmmss>   for example, "d20150113153640" for 2015 Jan 13 3:36pm

Step 3   Expand any folder of interest (right-click, select **Views→ →Property Sheet**). Note the included de-
coded "modTime" value, for example, "`13-Jan-2015 03:36 PM EST`" (vs "d20150113153640").

Underneath each folder are two objects:

• priorValue — TCP/IP settings that existed before this change.

• newValue — TCP/IP settings that existed *after* this change.

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

NOTE: If you have a platform connection open (to *any host*), you can also review this same history
of IP changes made from your Workbench to remote platforms. At the *bottom* of the **TCP/IP Con-
figuration** view, click the "**Audit**" button.

This shows this 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-2015
03:36 PM EST`" (vs "d20150113153640"). Expand a "priorValue" or "newValue" in the view to
see the settings.

Figure 18   Accessing ipchanges.bog in Workbench User Home
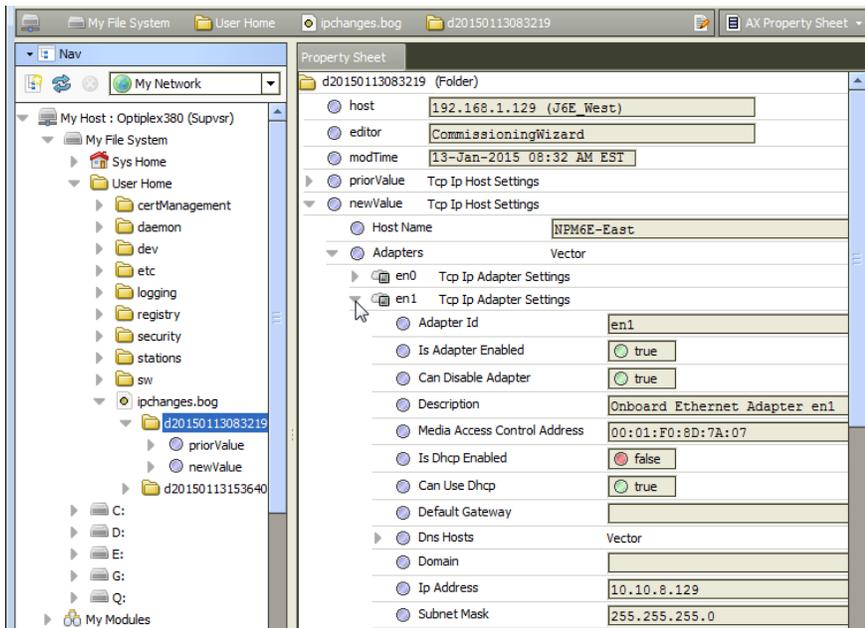
System shell

Any QNX-based JACE has a "system shell," providing low-level access to a few basic platform settings. Using a special JACE power-up mode, you can access this system shell using a *serial connection* to the JACE's onboard RS-232 port. Note that system shell is also available via SSH (providing that SSH is enabled in the JACE).

Typical usage is for troubleshooting. However, in the case of IP address mis-configuration, 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 a JACE's IP address, as an *alternative* to reconfiguring your PC's IP address in Windows (to initially connect to a new JACE). If done as the first step, afterwards you could connect normally (Ethernet/IP) and perform all other Niagara software installation/platform configuration using Workbench and the Commissioning Wizard. This method would save you from having to re-configure your PC's IP address settings in Windows: first to connect to the JACE as shipped from the factory, and then back again to its original settings.

The following sections provide more details.

About JACE serial shell mode

Any JACE circuit board has a small 4-pin jumper connector, commonly called the mode jumper. To put the JACE in serial shell mode, you put a 2-pin jumper on certain connector pins, and cycle power to the unit. Upon system boot, this makes the system shell available at the JACE's primary RS-232 (COM1) port, at a pre-defined serial rate: 115200, 8, N, 1.

Using a serial terminal program such as PuTTY, you can then login using 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 (or reposition) the mode jumper. The JACE reboots using the changed IP address parameters, and its COM1 port operates as normally configured.

NOTE: If using COM1 for any other application, be sure to *move the 2-pin jumper* from the "Serial Shell" position to the "Normal" position before rebooting from the serial system shell.

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

- A working RS-232 port on your PC.

  Usually this is a DB-9 connector with a specific Windows `ComN` assignment (say `Com1` or `Com2`). However, newer notebook PCs may require a USB-to-RS-232 adapter, installed with a Windows driver.

- Terminal emulation software, such as PuTTY (free open source application).

- A serial cable to connect between your PC's serial ComN port to the JACE's RS-232 port, plus any adapter, if necessary.

  – A JACE-3E, JACE-6E, or JACE-2,-6,-7's RS-232 port uses a DB-9 connector.
    Use a standard DB-9 to DB-9 "null modem" cable.

  – For JACE controllers with RS-232 ports that use RJ-45 connectors, such as a JACE-603 or JACE-645, the following parts, listed by Tridium part number, apply:

    10148 — Adapter, RJ-45 to DB-9, null modem type

    10181 — Silver satin RJ-45 patch cable, 10 ft. (connects adapter to RJ-45 type RS-232 port)

    Patch cables are also available in lengths 4 ft. (10180) and 25 ft. (10182)

    NOTE: If sourcing your own RJ-45 to DB-9 adapter, refer to the Mounting and Wiring Guide for the appropriate JACE controller for the pinouts used on the RS-232 port.

- A 2-pin jumper block for the JACE's "Serial Shell" jumper pins—in most cases this should already be installed on the "Normal" position pins.

Connecting to the JACE serial system shell

The following procedure provides steps to use serial system shell. Examples are given based on the PuTTY program.

Prerequisites:

CAUTION: In serial shell mode, normal COM1 port usage is overridden!

Prerequisites: Physical access to the JACE controller, with all items needed.

Step 1   Connect the necessary serial cable and adapter between the controller's RS-232 port and the RS-232 COM 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 RS232 COM port to use. For example, `COM1`

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 JACE serial sessions. To do this, type in a connection name in the "Saved Sessions" field (for example, "JACE-S"), and click **Save**.

When you start PuTTY again to serially connect to a JACE, select this name and click **Load**.

Step 7   At the bottom of the **PuTTY Configuration** dialog, click **Open**.

Step 8   On the JACE controller, locate the 4-pin "Serial Shell" connector and put a 2-pin jumper on the appropriate pins. See the label on the JACE to locate the mode or "serial shell" connector pins.

Step 9   With your terminal (PuTTY) session active, remove power from the JACE, let it cycle down, then reapply power. After a few seconds, text should appear in your terminal software window similar to:

```
Press any key to stop auto-boot...
```

Do not press any key, wait for the login prompt.

NOTE: If you did press a key to stop auto-boot, select option 1 (Boot from on-board nand flash).

Step 10   At the login prompt, enter a platform user name, and at the password prompt, the platform password.

If login is successful, a prompt appears as:

```
$
```

Step 11   At the $ prompt, type: syssh

```
$ syssh
```

The system shell menu appears.

Step 12   When finished making platform changes from the serial system shell, do the following:

- On the controller, move the 2-pin jumper block back to the "Normal" position.
- From the system shell menu, 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, and the connection is dropped.

Step 13   Click the Close control (upper right corner) in the terminal session (PuTTY) window.
Click **OK** in the "PuTTY Exit Confirmation" popup dialog.

About the JACE system shell menu

The system shell of a JACE 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 JACE to another host.

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

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

CAUTION: Be careful when changing items from the system shell, in particular platform account (login credentials) 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 serial shell connection, reboot the JACE, and then be careful to press a key at the appropriate time during JACE boot up.

Following, is an example main JACE system shell menu.

Figure 19   JACE system shell menu (serial shell or Telnet access)

NPM6E System Shell
_____
_____

hostid: Qnx-NPM6E-0000-175F-91F7
serial number: 576465
build version: 4.0.23.2
build date: built on 2015-01-16 19:31:47

system time: Tue Jan 27 19:22:45 UTC 2015
niagara daemon port: 3011
en0: inet 192.168.1.36 netmask 0xffffff00 broadcast 192.168.1.255
    inet6 fe80::201:f0ff:fe91:97a2%en0 prefixlen 64 scopeid 0x2
en1: <disabled>
_____
_____

  1. Update System Time
  2. Update Network Settings
  3. Ping Host
  4. Enable/Disable SSH/SFTP
  5. Update Platform Account
  6. Reboot

  L. Logout
Enter choice:

To select a menu option, type the associated number (1 to 6) or "L" for logout, then press Enter. For exam-
ple, type 2 (Update Network Settings) to recover IP access, or to set the IP settings of a new JACE.

Update Network Settings

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

Figure 20   Update Network Settings example in JACE system shell

JACE Network Configuration Utility

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

Hostname <NPM6E-357714> : J6E_East
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 stateless 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 IPv5 Autoconfiguration) <> :

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

Confirm new configuration
Hostname : J6E_East
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:
IP Address : 192.168.1.36
Subnet Mask : 255.255.255.0
IPv6 Addressing assigned via Autoconfiguration

NET2 settings:
IP Address : 172.15.16.36
Subnet Mask : 255.255.255.0
IPv6 Addressing assigned via Autoconfiguration

Save these settings? (Y/n) :

NOTE: After you save the network settings, they do not become active until you perform a reboot of the JACE controller. You can do this when you return to the main system shell menu, by selecting menu option 6 (Reboot).