

JACE-NXS Niagara^{AX} Install & Startup Guide

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This document covers the initial NiagaraAX software configuration for a JACE-NXS with NiagaraAX.

Note: *AX-3.1 or later (NiagaraAX build 3.1.16 or higher) is required by a JACE-NXS.*

Instructions assume that you are an engineer, technician, or service person who is performing control system installation. This document is also online in Workbench help, via the “docJaceNxsStartup” module.

Note: *For physical mounting and wiring details for any JACE® controller, please refer to its specific hardware installation document. For example, see the JACE-NXS Mounting and Wiring Guide. Also, this document does not cover station configuration or NiagaraAX components. For more information on these topics, please refer to NiagaraAX online help and the NiagaraAX User Guide.*

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- “JACE-NXS Windows notes” on page 1-2
- “Preparation” on page 1-3
- “Connect to the JACE” on page 1-4
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Overview

As shipped from the [factory](#), a JACE-NXS with NiagaraAX has Windows XP Embedded pre-installed, but only the bare minimum of software to run the Niagara platform daemon (niagarad). It does *not* contain the Sun Java VM, Niagara runtime environment or software modules, lexicons, license, certificate, stations, and so on.

To install this software, you must use Workbench to open a platform connection to the JACE-NXS and install Niagara distribution files, software 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 credentials (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, the most straightforward way is to use the [Commissioning Wizard](#).

Note: *Most steps in the Commissioning Wizard are also available as separate platform views. For example, there is a [Distribution File Installer](#), [Software Manager](#), [License Manager](#) and many others. For more details, see the section “Niagara platform” in the Platform Guide.*

JACE-NXS factory-shipped state

The following default settings are in effect for a factory-shipped JACE-NXS:

- IP address
- HTTP port for platform access
- Platform daemon credentials

Note: *As factory-shipped on any JACE-NXS, the default Windows Firewall settings may also require adjustment, depending on its intended Niagara configuration. These topics are briefly covered in this document. See the section “JACE-NXS Windows XPE security” on page 1-24.*

JACE-NXS factory IP address

When shipped, a new JACE-NXS controller with NiagaraAX has the following TCP/IP settings for its two Ethernet ports:

- Primary (*left*) port 1: 192.168.1.19*n* (static IP) with subnet mask: 255.255.255.0 where the last numeral (*n*) matches the last numeral in the JACE’s *serial number*
- Secondary (*right*) port 2: enabled for DHCP in the Windows OS.

Note: *Intended usage of the secondary port is for isolating a “driver’s” Ethernet traffic from the primary port.*

The primary factory-assigned IP address should also be listed on the packing slip that accompanied the JACE. You change these IP network settings during your startup commissioning of the JACE.

JACE-NXS factory 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.

JACE-NXS factory platform daemon credentials

A JACE-NXS controller is shipped using “basic platform authentication,” meaning by native Windows OS user accounts, with a default Windows administrator user with credentials:

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 intended to be *temporary*. During your startup configuration, you should change these credentials to be something unique, and *guard them closely*.

Note: *You can also add additional Windows users, assign/modify privileges, or change Niagara platform access to use “digest authentication” (a single non-Windows user, as for any QNX-based JACE).*

JACE-NXS Windows notes

Any JACE-NXS uses Windows XP Embedded (XPE), pre-installed as the operating system (no option for “Full” XP Professional). No Windows CD is included. However, a Windows “Certificate of Authenticity” sticker is affixed near the model number label.

When a JACE-NXS is ordered with NiagaraAX, the OS is installed differently, depending on model:

- J-NXS-AX-FL model: 1GB CompactFlash. This flash drive has 3 partitions:
 - C: System (512MB) — has the Windows OS
 - D: Niagara (400MB) — with NiagaraAX release folder, station (Config) database, station graphics files
 - History (80MB) — for the station’s NiagaraAX history space.
- J-NXS-AX-HD model: 40GB hard drive, as an alternative to the CompactFlash-based model.

Windows XP Embedded on a JACE-NXS supports a “local desktop environment,” meaning the attachment of a (USB) keyboard, (USB) mouse, and (DVI-capable) monitor.

Note: *Although a local console is supported, the typical method to apply Windows updates (and/or make changes in Windows security) is to access the JACE-NXS using a “Remote Desktop Connection.” This is done through Microsoft’s “Remote Desktop” client software. This software is usually installed on any PC with Windows XP, and is available for download for use with Windows 95, 98, NT 4.0, or 2000. At the time of this document, the link to the Microsoft download page for the remote desktop client is <http://www.microsoft.com/windowsxp/pro/downloads/rdclientdl.asp>.*

On any JACE-NXS, Windows XP Embedded requires periodic updates to ensure proper security. This can apply even to a new JACE-NXS. See “JACE-NXS Windows XPE security” on page 1-24 for more details.

Preparation

Two areas of preparation are required before proceeding:

- [Provide power and connectivity](#)
- [Niagara and PC Requirements](#)

Provide power and connectivity

Invariably, you perform the initial Niagara 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 *JACE-NXS Mounting & Wiring Guide* 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 NiagaraAX Workbench (AX-3.1 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: *AX-3.1 or later (NiagaraAX build 3.1.16 or higher) is required. 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:

- A “crossover” cable connected directly between your PC and the JACE, 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-NXS commissioning

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

- Step 1 If not already installed, install the NiagaraAX software on your PC, including its permanent license.
- Step 2 Typically, the license file for the JACE-NXS 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-NXS, 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-NXS), make the file available to Workbench first, as follows:*
- If using AX-3.3 or later Workbench, copy the file to your !licenses/inbox folder, then restart Workbench. For more details, refer to the section “[Local license inbox](#)” in the Platform Guide.
 - If using an earlier Workbench revision, and you were sent a license file, it is recommended that you create a subfolder *different* than your existing licenses subfolder, and copy the JACE-NXS license file there. For example, create a subfolder “JACElicenses”, under your working NiagaraAX directory, and copy the file there. In this case, the complete file path to the JACE-NXS license file might be D:\niagara\Niagara-3.2.17\JACElicenses\NXS-B7F3-1125-5AD3-8895.license. Note that if you received a license archive (.lar file), this is a “zipped” file that contains the JACE-NXS’s “.license” file. Use WinZip or a similar utility to unzip the license archive first.
- Step 3 Attach one end of a standard category-5 Ethernet unshielded twisted pair (UTP) patch cable to the left RJ-45 Ethernet connector (**Ethernet 1**) on the JACE-NXS.
- 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 LAN adapter (if necessary, refer to Windows online Help for information about configuring TCP/IP settings).
For this initial connection to a factory-shipped JACE, configure your PC 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 NiagaraAX core software and modules, establishing network and TCP/IP settings, and performing various other tasks.

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

- [Open a platform connection](#)
- [Start the Commissioning Wizard](#)

Open a platform connection

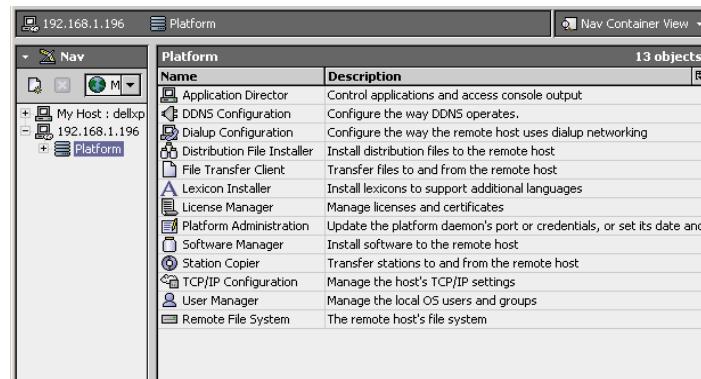
To open a platform connection to a JACE-NXS

To open a platform connection from Workbench to the JACE-NXS, do the following:

- 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:
- Host — Leave at default IP, and type in the default IP address of the new JACE.
 - Port — Leave at default 3011.
 - Credentials (see “[JACE-NXS factory platform daemon credentials](#)” on page 1-2), which include:
 - Username — Type in default username: tridium
 - Password — Type in default password: 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 1-1](#)).

Figure 1-1 Connected JACE-NXS platform



Note: After you commission a JACE and it reboots, in future platform sessions you will need to login using any new (changed) parameters, such as IP address, Port, Credentials. If you changed your PC's IP address in order to connect to the JACE's factory-assigned IP address, you will first need to reconfigure your PC to the appropriate TCP/IP settings (to communicate to the now-commissioned JACE).

Run the Commissioning Wizard

The following sections describe using the Commissioning Wizard for a new JACE:

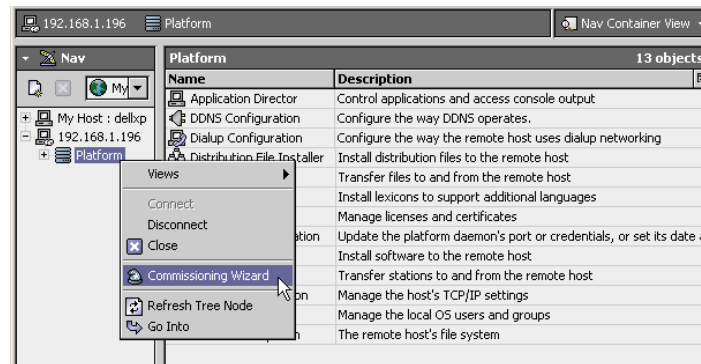
- [About the Commissioning Wizard](#)
- [Start the Commissioning Wizard](#)
 - [Set module content filter level](#)
 - [Install/upgrade core software](#)
 - [Station installation](#)
 - [Select modules](#)
 - [TCP/IP configuration](#)

- [Platform daemon authentication](#)
- [Install lexicons](#)
- [Install license](#)
- [Review and finish wizard](#)

About the Commissioning Wizard

As shown in [Figure 1-2](#), the Commissioning Wizard is a right-click option on any connected platform in the Nav tree. You can also launch the wizard from the [Platform Administration view](#).

Figure 1-2 Commissioning Wizard as right-click platform option



Typically, you use this wizard when installing a *new JACE*, as it provides a “checklist” method to perform essential (and often “one time”) platform tasks. Using the wizard is also recommended whenever you *upgrade* the core software in a JACE, at some future time. See “[Upgrading a JACE](#)” in the *Platform Guide*.

Note: *The same tasks executed as steps in the wizard can also be performed in separately available platform views. However, you may find the wizard to be more convenient.*

Important Commissioning Wizard notes

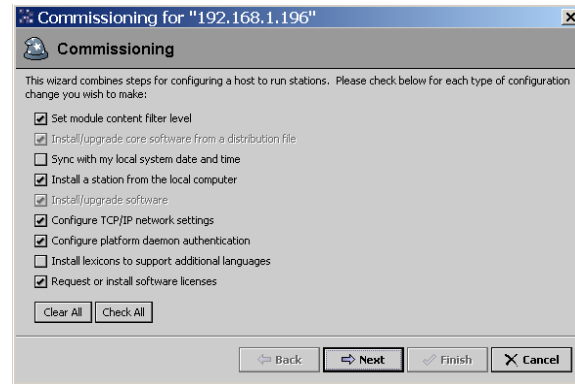
- The first part of the wizard is to select the installation steps needed and then install the core software (distribution file)—core software *must* be installed for a new JACE. After this portion completes, the wizard steps you through remaining steps in a second sequence.
- Throughout the wizard’s dialogs, use the buttons **Back** and **Next**, as needed, to retrace (or skip) steps. Also, the **Cancel** button stops any unfinished operations, and exits the wizard after your confirmation.
- Before committing to the final sequence of steps, the wizard provides a summary for you to review.

Start the Commissioning Wizard

To start the Commissioning Wizard

From Workbench with the JACE platform open, to start the Commissioning Wizard do the following:

- Step 1 In the Nav tree, right-click on Platform and select **Commissioning Wizard**.
The dialog box **Commissioning for “<IP address>”** appears ([Figure 1-3](#)).
By default, all steps are preselected except local time synchronization and lexicon installation (for language support). 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*, plus add (check) “Sync with my local system date and time.”
Commissioning steps include:
 - Set module content filter level — Recommended.
 - Install/upgrade core software from a distribution file — Preselected for any new JACE.
 - Sync with my local system date and time — Recommended.
 - Install a station from the local computer — Recommended.
 - Install/upgrade software modules — (always preselected, whenever wizard is run).
 - Configure TCP/IP network settings — Recommended.
 - Configure platform daemon authentication method — Recommended.
 - Install lexicons to support additional languages — Recommended for non-English language support.
 - Request or install software licenses — Recommended.
- Step 3 Click the **Next** button to continue. With wizard selection defaults, this is [Set module content filter level](#).

Figure 1-3 Commissioning Wizard (default selections shown)

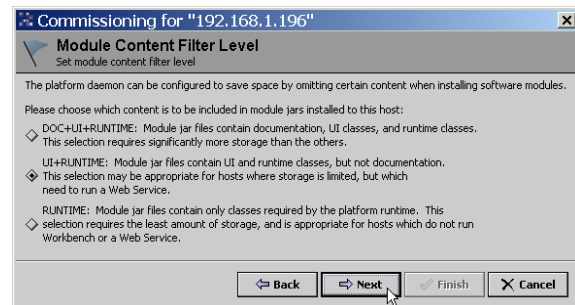
Set module content filter level

Module content filter level affects how much storage space is used when installing Niagara modules. Usually, the default (preselected) level is appropriate for the opened JACE-NXS platform.

To specify the module content filter level

At the Module Content Filter Level step (Figure 1-4) in the Commissioning Wizard, do the following:

- Step 1 Click the desired level of content in Niagara modules to be installed in this JACE. Module content level is *one* of the following:
- DOC+UI+RUNTIME — Typically *not appropriate* for a JACE-NXS (unless a hard drive model).
 - UI+RUNTIME — Appropriate for *most* JACE-NXS installations, to provide the Web Service.
 - RUNTIME — Typically chosen only if the JACE-NXS will *not* be running the Web Service.
- Step 2 Click the **Next** button for the next step, which for a new JACE is always [Install/upgrade core software](#).

Figure 1-4 Module Content Filter Level

Install/upgrade core software

At the install/upgrade core software step, a popup dialog briefly appears as the dependencies of the 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 installed, and then informs you in a dialog (Figure 1-5).

Note: For related details, see the section [“About your software database”](#) in the Platform Guide.

To install the distribution file

To install the selected distribution file, do the following:

- Step 1 Click **Next** to install the distribution file. The distribution file install process begins, with the necessary substeps shown in the dialog. Each substep has a status that changes from “Not Running” to “Started” to “Success” as it completes. The entire process can take several minutes until it completes (Figure 1-6).

Note: For a new JACE-NXS, the first step “Install distribution file” can take up to 5 minutes by itself.

- Step 2 After the distribution file is installed, click the **Next** button to go to the next commissioning step. Using wizard defaults, this is [Station installation](#).

Figure 1-5 Distribution File Installation (beginning)

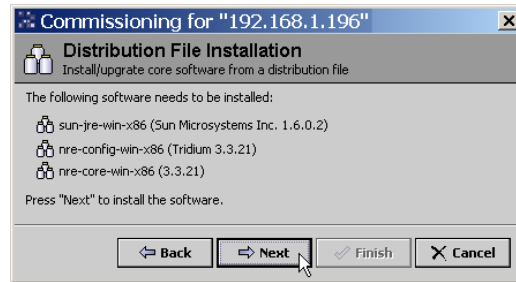
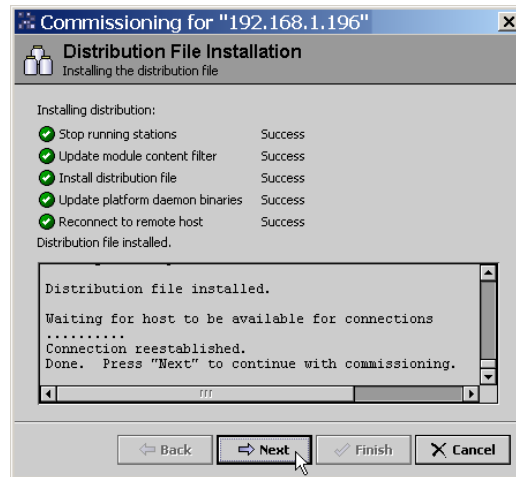


Figure 1-6 Distribution File Installation (completed)



Note: When doing future Niagara upgrades to this JACE-NXS, it is recommended that you relaunch the Commissioning Wizard. See [“Upgrading a JACE”](#) in the Platform Guide for details.

Station installation

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](#).)

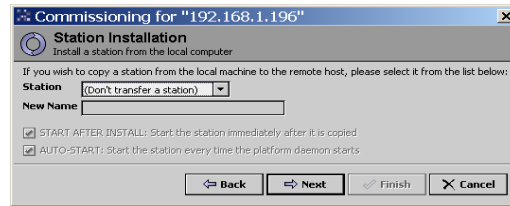
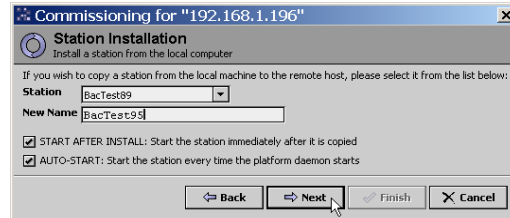
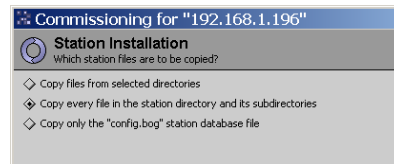
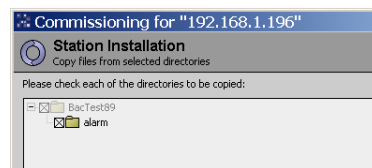
To specify a station database to install

At the Station Installation step ([Figure 1-7](#)) in the Commissioning Wizard, 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 your PC’s local Niagara stations folder.
- Step 2 If you select a station, the following additional selections are available ([Figure 1-8](#)):
 - New Name — Either leave at same station name as local copy, or type in a new station name.
 - START AFTER INSTALL — If enabled, the station starts after the commissioning completes.
 - AUTO-START — If enabled, the station starts every time the JACE is rebooted.
- Step 3 Click the **Next** button to continue.

A dialog asks which station files to copy ([Figure 1-9](#)), 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 ([Figure 1-10](#)) 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 subdirectory — The default, most typically used.
 - 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, [Select modules](#).

Figure 1-7 Station Installation dialog (default)**Figure 1-8** Station Installation dialog (station selected)**Figure 1-9** Station Installation dialog (copy options)**Figure 1-10** Station Installation dialog (select subfolders)

Select modules

During commissioning, you can change modules that are preselected for installation. Often, you do not make any changes, as the wizard preselects all necessary “core” modules, plus any additional modules needed by the station you previously selected (see “[Station installation](#)” on page 1-7).

However, if you did not previously select a station to install, you may wish to select modules to support a station you have in mind. Or, you may know that the JACE will need a module in the future (say for a driver), and you wish to install it now.

Note: In general, do not select modules if you are not sure they are needed. You can manage 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.

To select modules

At the Module Installation step ([Figure 1-11](#)) in the Commissioning Wizard, do the following:

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

Note the following:

- Modules preselected from “core” need or station database reasons each have a *red text* descriptor, which may read as:
 - Install required platform module
 - Install module required by station “<stationName>”
 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.

Figure 1-12 shows the dialog after modules have been selected and the list resorted alphabetically.

Step 2 Click the **Next** button to go to the next step. Typically, this is [TCP/IP configuration](#).

Figure 1-11 Module installation dialog (default)

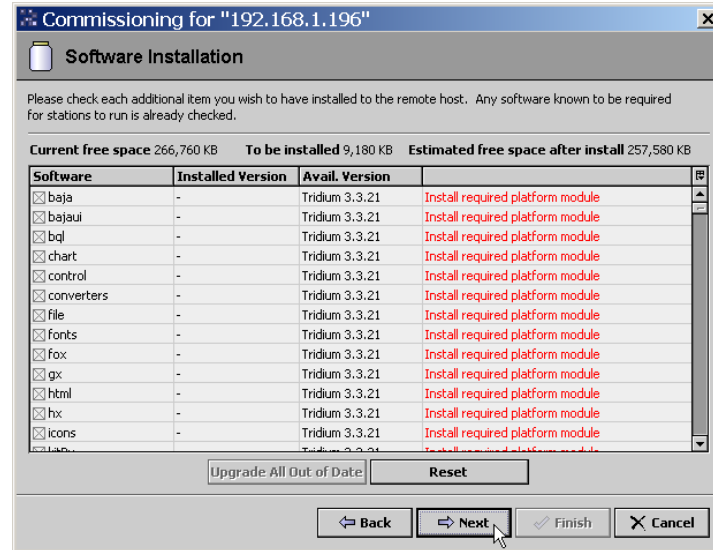
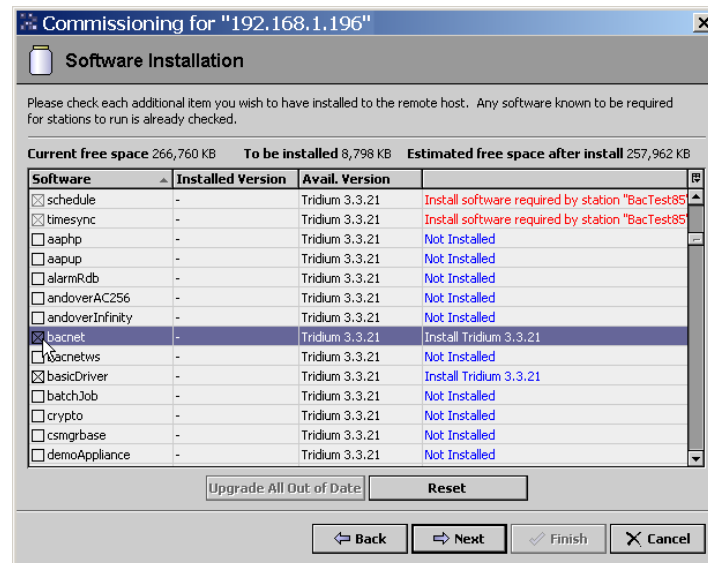


Figure 1-12 Module installation dialog (scrolling and selecting modules)



TCP/IP configuration

Note: On the CompactFlash-based J-NXS-AX-FL model, any changes you make to TCP/IP configuration do not become permanent until the JACE-NXS is rebooted at the end of the Commissioning Wizard, because the OS resides on an overlay-protected partition of the CompactFlash card. Therefore, simply pulling the power plug from the JACE will result in any previously-made changes to become lost.

To configure TCP/IP settings

At the TCP/IP Configuration step (Figure 1-13) in the Commissioning Wizard, do the following:

Step 1 Click the **"Interface 1"** control to review its TCP/IP settings, which include the temporary factory-shipped IP address.

- Step 2 Assign the JACE a unique IP address for the network you are installing it on. No other device on the network should use the same IP address. Include the appropriate subnet mask used by the LAN. 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:
- Gateway — The IP address for the device that forwards packets to other networks or subnets.
 - DNS Domain Name — Type name of network domain, or if not applicable, leave blank.
 - Hostname — Default is string similar to “OEM-32F5-2F37,” or enter another name you want to use for this host.
 - 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 1 To add a line, click at the end of the last line and press **Enter**.

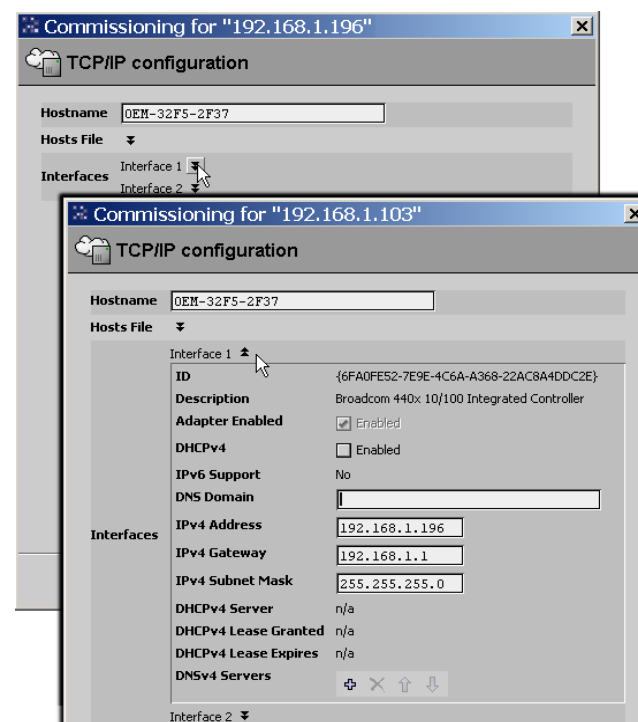
- Step 2 Type in the required data on the new line.

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

- Step 3 Click the **Next** button to go to the next step.

Note: *An “Interface 2” is also available, for configuring its (separate) TCP/IP settings. By default, this port is configured for DHCP. Intended usage is for isolating a “driver’s” Ethernet traffic from the primary interface. Although DHCP is supported in the TCP/IP configuration of both ports, typically static IP addresses are used, for stability. In general, it is recommended that you check with Systems Engineering before engineering a JACE-NXS solution dependent on the secondary (Ethernet 2) port, and otherwise leave it at default values.*

Figure 1-13 TCP/IP Configuration dialog



Platform daemon authentication

At the platform daemon authentication step (Figure 1-14) in the wizard, you specify whether to use “basic” (Windows XP user) or “digest” authentication for platform login access to the JACE-NXS. The default is basic authentication. If you select digest instead, you can further specify the “one-only” user name and password. Always consider platform daemon access as the highest-level access to the JACE.

Figure 1-14 Platform Daemon Authentication dialog (choose method)



Caution Regardless of chosen platform authentication method, it is strongly recommended that you change the default administrator-level Windows XP user password (user name=Tridium, password=niagara). You can do this after the wizard completes, via the platform's User Manager view. See [“Additional JACE-NXS platform configuration”](#) on page 1-16 for more details.

Furthermore, when making credential changes, make careful note of your changes. If you lose or forget platform credentials, Tridium cannot provide you with an alternative means to access the unit. In this case, the JACE-NXS may need to be returned to Tridium for re-commissioning.

The following procedures apply to both authentication methods:

- [To specify basic platform daemon authentication](#)
- [To specify digest platform daemon authentication](#)

Note: Following your initial commissioning of the JACE-NXS, you can always change the platform authentication method, using the [Update Authentication](#) option in the [Platform Administration](#) view.

To specify basic platform daemon authentication

To specify *basic* platform daemon authentication, do the following:

Step 1 In the choose method dialog ([Figure 1-14](#)), leave the top (“Use basic”) selection checked, and click **Next**. A dialog for selecting Windows user groups appears, as shown in [Figure 1-15](#).

Note: Typically, you accept all defaults in the initial commission, then after managing Windows users, return (if necessary) to re-assign user and admin platform access to the appropriate groups.

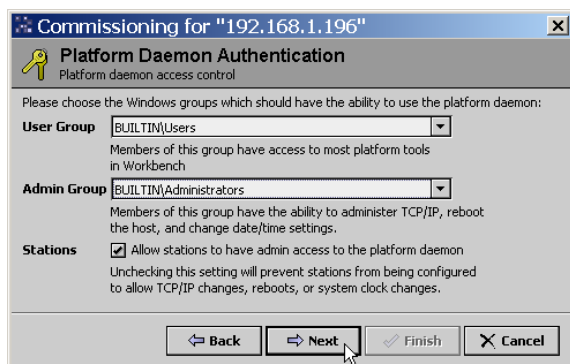
Step 2 In the **User Group** field, select the Windows user group to have access to most platform tools (default selection is BUILTIN\Users).

Step 3 In the **Admin Group** field, select the Windows user group to have access to *all* platform tools, including the ability to modify TCP/IP settings, reboot the JACE-NXS, and change date and time (default selection is BUILTIN\Administrators).

Step 4 Click the **Next** button.

Step 5 Click the **Next** button for the next step. Unless installing lexicons, this is typically [Install license](#).

Figure 1-15 Platform Daemon Authentication (Use basic)

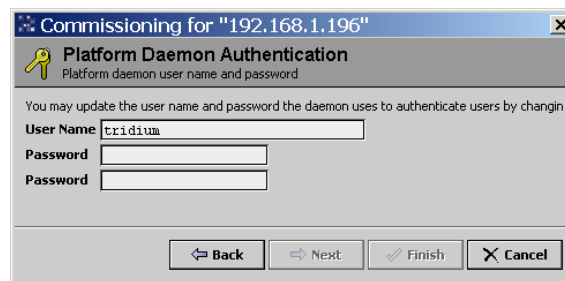


To specify digest platform daemon authentication

To specify *digest* platform daemon authentication, do the following:

- Step 1 In the choose method dialog (Figure 1-14), check the *bottom* (“Use digest”) option, then click **Next**. A dialog for entering the digest credentials appears, as shown in Figure 1-16.
- Note:** *Digest user name and password entries are both case sensitive.*
- Step 2 In the **User Name** field, type in the desired user name for platform login.
The digest platform user name in a JACE-NXS be any “non-empty” combination of characters, including alphanumeric (a - z, A - Z, 0 - 9), spaces, and/or punctuation.
- Step 3 In the **Password** fields, type in the desired password (it must *match* in both password fields).
Entry characters display only in asterisks (*).
Password can be any desired length and mix of characters (“strong” passwords are supported).
- Step 4 Click the **Next** button for the next step. Unless installing lexicons, this is typically [Install license](#).

Figure 1-16 Platform Daemon Authentication (Use digest)



Install lexicons

To install lexicons

At the Lexicon Installation step (Figure 1-17) in the Commissioning Wizard, you can install one or more lexicon files in a new JACE. Lexicons provide support for *non-English languages* in the JACE.

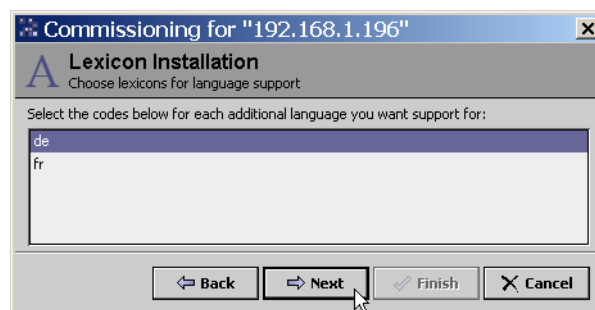
- Note:** *In order to select lexicons, you must have installed them as part of the NiagaraAX Workbench installation on your PC. You will see only those lexicons you selected at that time. Typically, after installing those lexicons on your PC, you customize (edit) them using the Lexicon Editor in Workbench. Afterwards, you install them in JACEs, so that each JACE has the proper changes.*

Lexicons are identified by java locale codes, such as “fr” (French) or “de” (German).

To install lexicons, do the following:

- Step 1 Click a language code to select (highlight) it.
If multiple lexicons are also needed, hold down the Ctrl key while you click.
- Step 2 When needed lexicons are selected, click the **Next** button to the next step. Typically, this is [Install license](#).

Figure 1-17 Lexicon Installation dialog



Install license

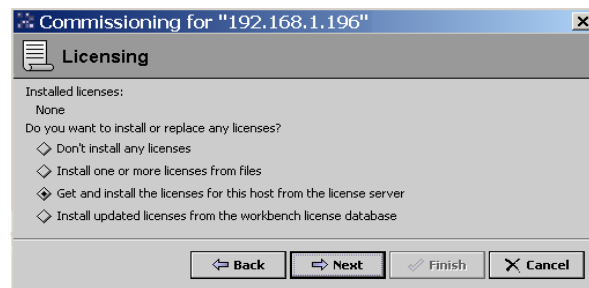
To automatically install or update licenses

At the License step ([Figure 1-18](#)) in the Commissioning Wizard, you install one or more license files in a new JACE-NXS. You typically select the option to get and install licenses from the licensing server.

Note: *At least one license file specific to any JACE-NXS is stored on the licensing server. Providing you have Internet connectivity, this is the recommended method to install or update a license. See [“About the Licensing Server”](#) on page 1-14 for more details.*

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.

Figure 1-18 License dialog (select method)



Step 1 Select “Get and Install the licenses for the host from the license server.”

Step 2 Workbench silently searches the licensing server, locates the license(s), and the wizard advances to the next step. See [“Review and finish wizard”](#) on page 1-14.

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 are using AX-3.3 or later Workbench, and you already have a license for this JACE-NXS in your “local license database,” select the *last* option shown in [Figure 1-18](#), that is to install from your “workbench license database.” Workbench locates the license, and the wizard advances to the next step. See [“Review and finish wizard”](#) on page 1-14. Please note this option will be missing if your local license database does not include a license for this JACE-NXS, or if you are using an older (pre-AX-3.3) revision of Workbench. For related information, refer to the section [“About the local license database”](#) in the Platform Guide.
- If you have the JACE-NXS license file(s), use the next procedure [“To install or update licenses from files”](#). If necessary, you can also install license(s) later, either from your local license database or from license files.

To install or update licenses from files

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 ([Figure 1-19](#)).

Step 3 Click the **Add** button.

A “Select File” dialog appears ([Figure 1-19](#)). 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.

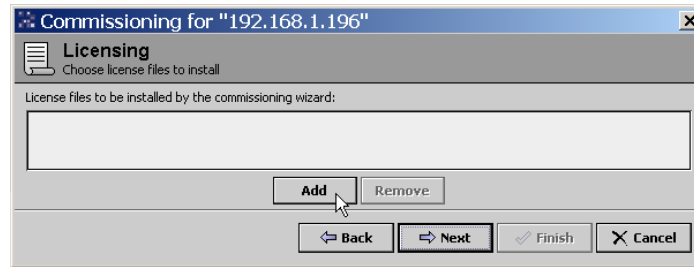
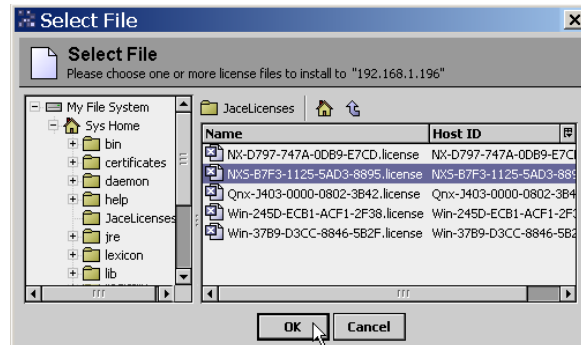
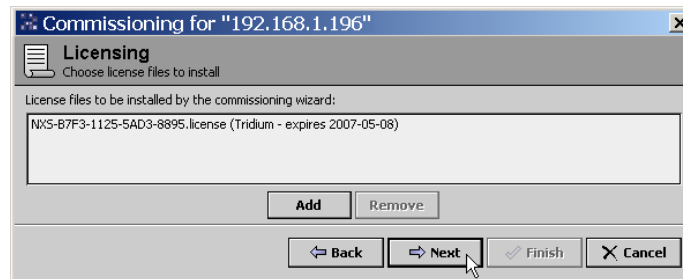
Note: *The licensing tool prevents selection of a wrong license (different hostid) to install in the JACE.*

Step 4 Click the **OK** button.

The “Choose license files to install” dialog appears ([Figure 1-20](#)) with the selected license(s).

Step 5 If necessary, click the **Add** button again ([step 3](#)) 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 1-19 License dialog (choose files)**Figure 1-20** Select Files dialog from Add in Licensing**Figure 1-21** License dialog with file selected

About the Licensing Server

For license files validated against the Tridium certificate, installation can be automated from Workbench. All such purchased licenses (including JACE-NXS, JACE, AxSupervisor, 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*.

Review and finish wizard

To review and finish the Commissioning Wizard

After the final selected step in the Commissioning Wizard, a “Review of changes” dialog appears, as shown in [Figure 1-22](#). It lists a summary of all remaining 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 ([Figure 1-23](#)).
- 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 Right-click and *close that platform* instance (Figure 1-24), as it is now invalid due to changed IP address.

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. See ["IP changes history"](#) on page 1-24. Also, remember to login using its new assigned platform credentials, see ["Platform daemon authentication"](#) on page 1-10.

Note: If you changed the IP address of your PC to commission the JACE, you also 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.

Figure 1-22 Review Commissioning Wizard dialog

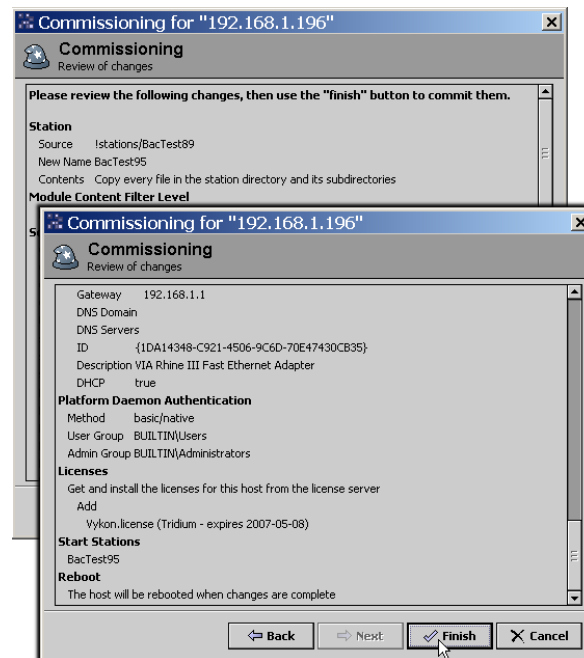


Figure 1-23 Commissioning Wizard complete dialog

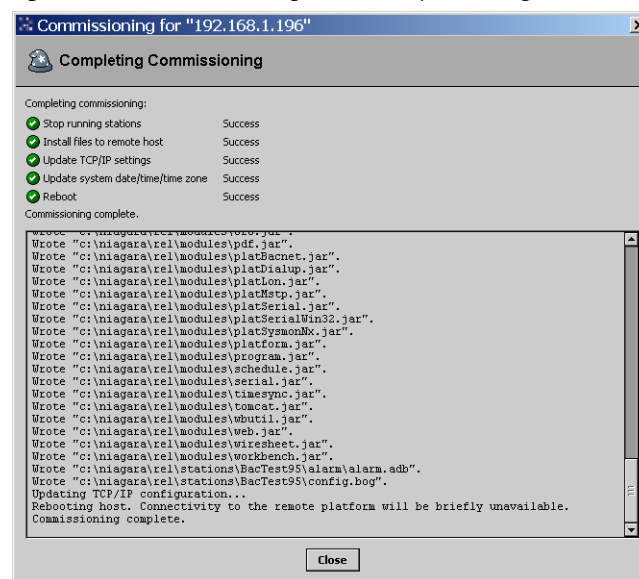
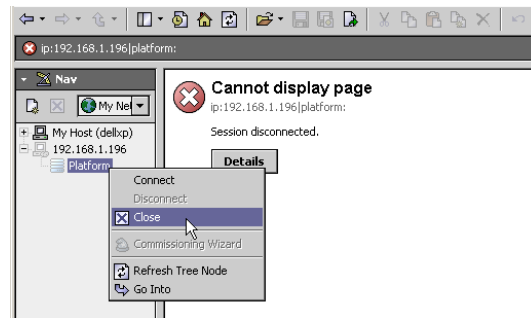


Figure 1-24 Closing now-invalid platform instance

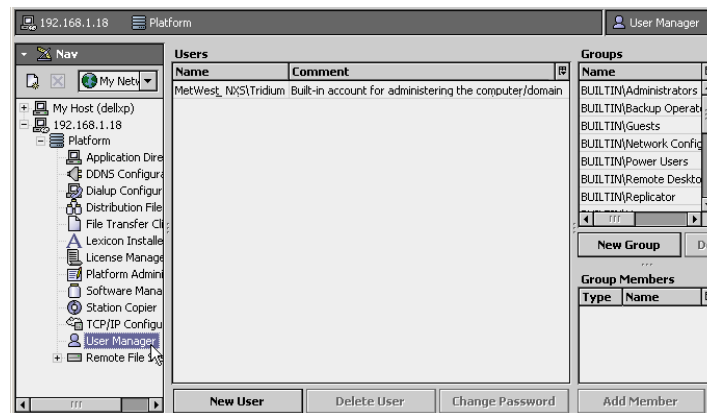
Additional JACE-NXS platform configuration

The [Commissioning Wizard](#) performs most, but not all, needed configuration for a new JACE-NXS platform. There are some items you should review (and in one case, always change) in a follow-up platform connection to the JACE, using two different platform views: the [User Manager view](#) and [Platform Administration view](#).

JACE-NXS user management

After running the Commissioning Wizard to install and configure NiagaraAX in the JACE-NXS, you should open another platform connection and use the **User Manager** view to do the following:

- *Change the password* of the default administrator user (Tridium) from “niagara” to something else. Otherwise, the JACE-NXS is exposed to unauthorized access by anyone familiar with this well-known username/password convention. This applies to both general Windows host access, and (if using basic authentication) NiagaraAX platform access.
- Optionally, add other Windows users and/or groups, if needed.

Figure 1-25 User Manager is one of several platform views

For more details, see the “[User Manager](#)” section in the *Platform Guide*. For a procedure specific to a new JACE-NXS, see the next section “[Change the default Windows password](#)”.

Change the default Windows password

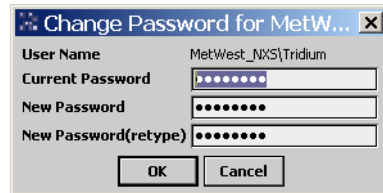
To change the default Windows password

With your Workbench PC re-configured with its working IP address, and the JACE already commissioned using the [Commissioning Wizard](#):

- Step 1 Open a platform connection to the JACE-NXS.
Use the procedure “[Open a platform connection](#)” on page 1-4, *except* use the JACE IP address and platform credentials (username and password) that you configured when running the wizard.
- Step 2 In the JACE platform’s Nav Container View, double-click **User Manager**.
The **User Manager** view appears ([Figure 1-25](#)).
- Step 3 In the **Users** pane, click the **Tridium** user to highlight it.
- Step 4 Click the **Change Password** button (bottom of view).

- A “Change Password” dialog appears, as shown in [Figure 1-26](#).
- Step 5 In the **Current Password** field, type in the default password.
Typically, this is: `niagara`
- Step 6 In the **New Password** fields, type in the desired password (it must *match* in both password fields).
Entry characters display only in asterisks (*).
Password can be any desired length and mix of characters (“strong” passwords are supported).
- Note:** Remember this password—no one else can provide it back to you.
- Step 7 Click **OK**.
The new password becomes immediately effective. If the JACE-NXS is configured to use basic platform authentication, and you click on another platform view, you are challenged for platform login again.

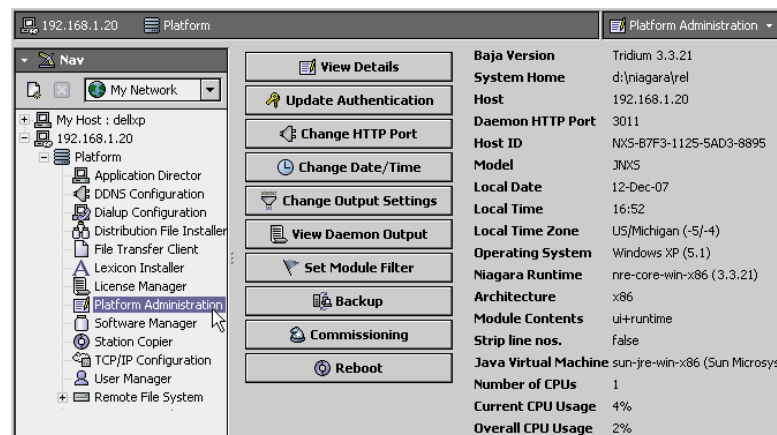
Figure 1-26 Change password dialog



JACE-NXS platform administration

The Platform Administration view is one of several views for any platform, listed under the platform in the Nav tree side bar ([Figure 1-27](#)).

Figure 1-27 Platform Administration is one of several platform views



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

- Set the date and time in the JACE.
Typically, this is needed only if you did *not* choose to “sync” with your local system date and time when running the Commissioning Wizard.
- Change the HTTP port used by the JACE for the Niagara platform daemon (platform server).
The default port is 3011.
- 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 available using the Commissioning Wizard, such as changing platform authentication (platform’s username and password), and so on.

For more details, see the [Platform Administration](#) section in the *Platform Guide*. For a procedure specific to a new JACE-NXS, see the next section “[Administer the JACE-NXS platform](#)”.

Administer the JACE-NXS platform

To perform platform administration

With your Workbench PC re-configured with its working IP address, and the JACE already commissioned using the [Commissioning Wizard](#):

- Step 1 Open a platform connection to the JACE, if not already opened.
Use the procedure [“Open a platform connection”](#) on page 1-4, *except* use the JACE IP address and platform credentials (username and password) that you configured when running the wizard, and if using basic authentication, the changed Windows password (see [“Change the default Windows password”](#) on page 1-16).
- Step 2 In the JACE platform’s Nav Container View, double-click Platform Administration.
The Platform Administration view appears ([Figure 1-27](#)).
- Step 3 As needed, click the following buttons to review or make changes:
- **View Details** — For a platform summary that you can copy to the Windows clipboard.
 - **Update Authentication** — For platform daemon authentication dialog to change platform login authentication method (as previously included as step in commissioning wizard).
 - **Change HTTP Port** — For dialog to change the HTTP port for the JACE’s platform daemon from port 3011 to some other port. See [“Change HTTP Port”](#) on page 1-18.
 - **Change Date / Time** — For dialog to change the JACE’s current date, time, and time zone (as previously included as step in commissioning wizard).
 - **Change Log Settings** — Provides dialog to change the log level of different processes that can appear in the platform daemon output
 - **View Daemon Output** — Provides window in which you can observe debug messages from platform daemon processes in real time. Also includes ability to pause or load.
 - **Set Module Filter** — Provides dialog to change the module content level of 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 as well as 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](#)) the installed station. If you click this, a confirmation dialog appears.
If you reboot, your platform connection is lost, and it is typically a couple of minutes until you can reconnect to this JACE. Note that a reboot is *not necessary* if you manually stopped the JACE-NXS station from the Application Director (Station Director)—unlike with a QNX-based JACE, you can **Start** it again without a reboot.

Change HTTP Port This step is optional, and the default port 3011 is typically used in many Niagara installations. However, for reasons of additional security or perhaps firewall issues, you may need to change the HTTP port used by the JACE’s platform daemon.

Note: *If you change this port, you will be unable to reopen a platform connection without first accessing the **Windows Firewall** on the JACE-NXS, and making the corresponding change in the exception named “admin.” See [“Review the Windows XP Firewall”](#) on page 1-27 for more details.*

To change HTTP port

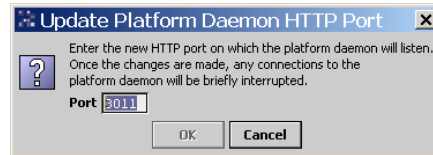
From the Platform Administration view ([Figure 1-27](#)):

- Step 1 Click the **Change HTTP Port** button.
A dialog appears showing the current HTTP port number highlighted ([Figure 1-28](#)).
- Step 2 Type in the new HTTP port number.
- Step 3 Click **Ok**.
Your current platform connection is dropped, and the JACE platform appears ghosted in the Nav tree, showing the new HTTP port number (:n) in parenthesis by the platform icon.
- Step 4 Access the JACE-NXS’s firewall. See [“To access the Windows Firewall in a JACE-NXS”](#) on page 1-27.
On the **Exceptions** tab, edit the “admin” exception to allow access to the same TCP port.
Save and exit the firewall.

- Step 5 Back in the Platform Administration view, double-click the ghosted JACE platform to get the platform login (Authentication) dialog, and enter the commissioned platform username and password. Click **OK**.
- Step 6 From the platform's container view, double-click Platform Administrator to return to its view.

Note: Before closing the host (removing it from Nav tree), carefully note the new (non-default) port number you entered. You must always specify that port number whenever reopening the JACE's platform. Note that in AX-3.1, you can also see this port number listed in a running station on that JACE, by going to the property sheet of its PlatformServices container.

Figure 1-28 Change Platform Daemon HTTP Port dialog



JACE-NXS platform services

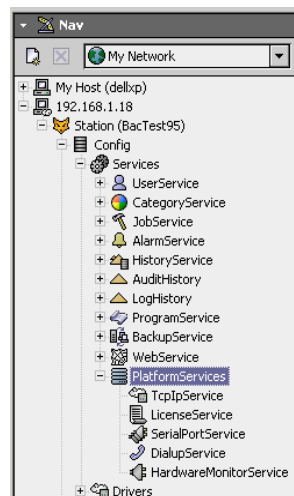
Some platform configuration is possible only by accessing *platform services* in a *station* running on that JACE. Although such configuration for a JACE-NXS may be optional, you may want to do it during the initial commissioning. The following sections explain further:

- [About JACE-NXS Platform Services](#)
- [Hardware monitoring JACE-NXS configuration](#)
- [Power monitoring JACE-NXS configuration](#)
- [PlatformServices properties in a JACE-NXS](#)

About JACE-NXS Platform Services

Under its Services container, every NiagaraAX station has a PlatformServices container ([Figure 1-29](#)).

Figure 1-29 JACE-NXS 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!

For any JACE-NXS, the platform service items of interest during commissioning are as follows:

- **HardwareMonitorService** — Holds two internal JACE-NXS environmental values: CPU temperature and board temperature. Included for each is an adjustable alarm limit, with a “default” value. See [“Hardware monitoring JACE-NXS configuration”](#) on page 1-20.
- **PowerMonitorService** — Provides monitoring of the SITOP UPS module connected via USB cable to the JACE-NXS, including alarms in the event of a power failure, battery test failure, or USB connectivity problem. See [“Power monitoring JACE-NXS configuration”](#) on page 1-21.

Also, you may review the parent container's [PlatformService](#) properties and optionally adjust, if needed.

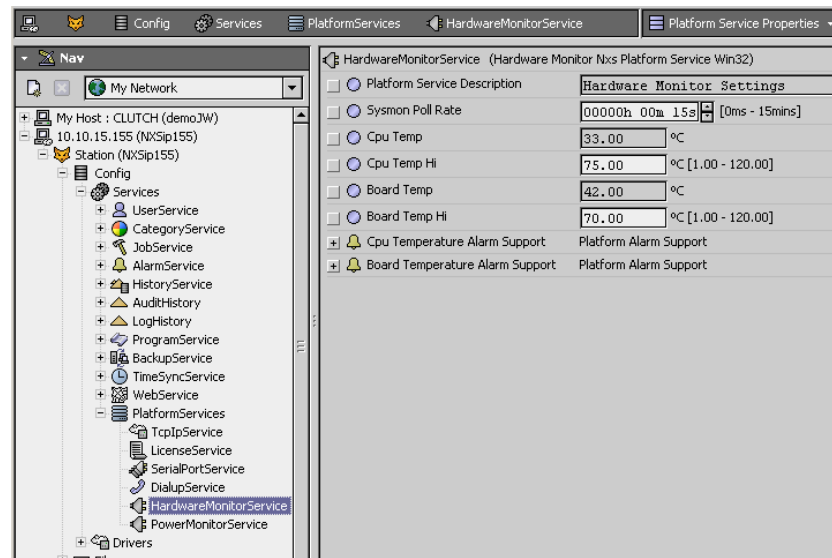
Note: Unlike in a station running on a [QNX-based](#) JACE, the child **SerialPlatformService** contains read-only properties—JACE-NXS serial port setup is done in the operating system, Windows XP.

However, there is also a **TcpIpService** and **LicenseService**, providing station (Fox) access to dialogs used in platform views, for instance the TCP/IP Configuration dialog (as shown in [Figure 1-13](#) on page 10). These platform services support installations where all configuration must be possible using only a browser connection (and not Workbench connected to the JACE's platform daemon).

Hardware monitoring JACE-NXS configuration

The JACE-NXS provides “system monitoring” (sysmon) of *internal temperatures* of its CPU and main printed circuit board. These values can be indicators of the physical “health” of the device. Each temperature has a high alarm limit, used for offnormal alarming. Using Workbench, you can modify these limits and related parameters in a *running station* on the JACE, by accessing its **HardwareMonitorService** (under the station's [PlatformServices](#) container).

Figure 1-30 Property sheet of HardwareMonitorService in JACE-NXS station



To configure hardware system monitoring for the JACE-NXS

With a station in the JACE-NXS 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 the **HardwareMonitorService**.

Its property sheet displays in the view pane, as shown in [Figure 1-30](#).

Two of the slots are read-only status monitoring properties, using a “float” datatype, as follows:

- **Cpu Temp** — Temperature of main board below the CPU.
- **Board Temp** — Temperature from sensor mounted elsewhere on the PC board. This provides a more general state of the environmental conditions inside the JACE-NXS.

If needed, you can link either of these properties into station database logic or Px graphics.

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

- **Sysmon Poll Rate**
Defines the interval between system measurements. In normal operation, alarms are not generated or reset any faster than this. The default value is every 15 seconds.
- **CPU Temp Hi**
High limit for CPU temperature, above which an alarm occurs.
- **Board Temp Hi**
High limit for PC board temperature, above which an alarm occurs.
- **CPU Temperature Alarm Support, Board Temperature Alarm Support**
Each is a container for properties that define how the different “platSysmonNx” alarms are handled in the station, including the alarm class to use and other “alarm source info” type parameters.

- Step 4 Click **Save** to write the configuration to the JACE-NXS platform.

Power monitoring JACE-NXS configuration

If the CompactFlash-based model (J-NXS-AX-FL) or any JACE-NXS model used with the NXS-UPS option (SITOP UPS and companion battery modules), a running station provides “platPower” monitoring of UPS-sourced power and battery values, including alarming capabilities. Using Workbench, access these values in a *running station* via its **PowerMonitorService** (under the station’s **PlatformServices** container).

Note: *The only UPS supported by the **PowerMonitorService** is the Siemens SITOP UPS, as furnished with a J-NXS-AX-FL model, and connected via USB cable to the JACE-NXS. If the JACE-NXS is installed without this UPS, this platform service child has no application, and can be safely ignored.*

To configure power monitoring for the JACE-NXS

With a station in the JACE-NXS 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 the **PowerMonitorService**.

Its property sheet displays in the view pane, as shown in [Figure 1-31](#).

Many slots are read-only status monitoring properties, using either a “boolean” or “string” datatype. If needed, you can link any of these (or other) properties into station database logic or Px graphics.

These read-only monitoring properties include:

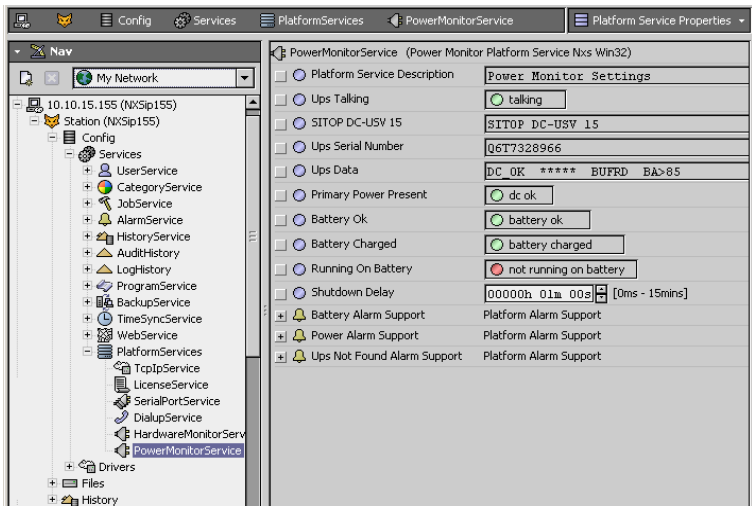
- **Ups Talking**
Boolean with values of either “talking” or “no comm”, it indicates that the service was able to establish communications with the SITOP UPS through the USB cable. If the UPS is disconnected, a “Ups Not Found Alarm” is generated (see **Ups Not Found Alarm Support** container to configure).
- **Ups Model**
Text string that indicates model number read from UPS, which should read “SITOP DC-USV 15” if Ups Talking property is “talking.”
- **Ups Serial Number**
Text string that indicates the serial number read from the UPS.
- **Ups Data**
Text string displaying the latest raw data string received from the UPS—typically, used only to diagnose problems.
- **Primary Power Present**
Boolean that indicates if DC power is present at the input to the UPS (“dc ok”). An alarm is generated upon a transition to “dc low”. See **Power Alarm Support** to configure for this alarm.
- **Battery Ok**
Boolean that indicates how the last battery test performed by the UPS was evaluated (“battery ok” or “battery failed”). An alarm is generated upon transition to “battery failed”. See **Battery Alarm Support** to configure for this alarm.
- **Battery Charged**
Boolean that indicates the charged state of the UPS battery pack, where either “battery charged” if a charge >85%, or “battery not charged” if <85%. No alarms are generated.
- **Running On Battery**
Boolean that indicates whether the UPS is supplying power from the DC power supply (“not running on battery”) or from the battery pack (“running on battery”). No alarms are generated.

- Step 3 As needed, change configuration properties stored in the JACE-NXS platform, which include:
- **Shutdown Delay**
Defines the period that the JACE-NXS waits after detecting loss of primary power (Primary Power Present is “dc low”) before initiating a graceful shutdown. If primary power is restored before this shutdown expires, no shutdown is performed.
The default value is 1 minute, with a possible range of 1 to 15 minutes.
 - **Battery Alarm Support**
A container for properties that define how platPower “battery alarms” are handled in the station, including the alarm class used, and other “alarm source info” type parameters.
 - **Power Alarm Support**
A container for properties that define how platPower “primary power alarms” are handled in the station, including the alarm class used, and other “alarm source info” type parameters.

- Ups Not Found Alarm Support
A container for properties that define how platPower “UPS not found alarms” are handled in the station, including the alarm class used, and other “alarm source info” type parameters.

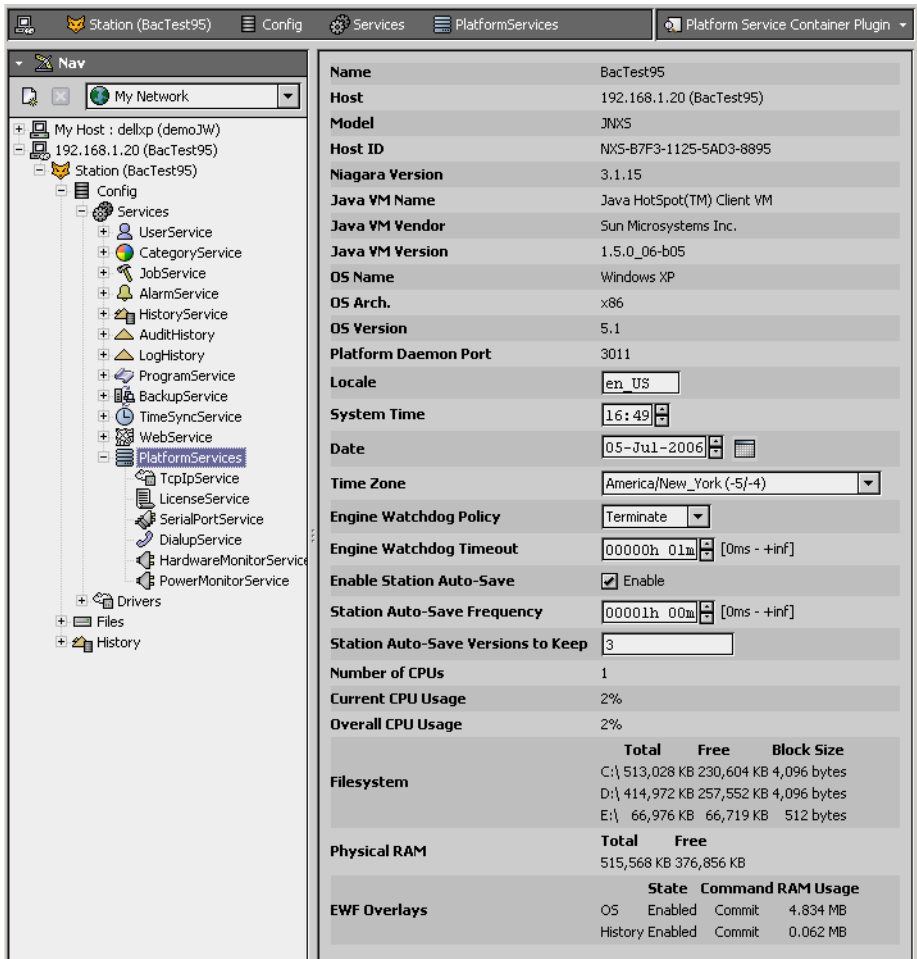
Step 4 Click **save** to write the configuration to host platform.

Figure 1-31 Property sheet of PowerMonitorService in JACE-NXS



PlatformServices properties in a JACE-NXS

Figure 1-32 PlatformServices property sheet in JACE-NXS



To review PlatformServices properties for the JACE-NXS

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

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

Its property sheet displays in the view pane, as shown in [Figure 1-32](#).

Many are read-only status types, similar to what is available in the [Platform Administration 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 As needed, review other platform service configuration properties, which include the following:

Note: *It is strongly recommended that you leave the following properties at default values, unless otherwise directed by Tridium 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".
For details, see Sun documentation at <http://java.sun.com/j2se/1.4.2/docs/api/java/util/Locale.html>.
- **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 restart 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.
 - **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 (1) hour for the JACE-NXS, the range is from 1 to many hours.
- **Station Auto-Save Backups to Keep** — Default is 3. Oldest of kept backups is replaced upon next manual save or auto-save backup, once the specified limit is reached.
Note: *The remaining properties are read-only status properties, and provide statistics on platform resources including CPU, RAM, and file storage. However, the following property is unique (and appears) only if the CompactFlash-based JACE-NXS (J-NXS-AX-FL model).*
- **EFW Overlays** — Should contain two entries representing the RAM overlays of partitions on the CompactFlash card, named "OS" and "History". For each, the listed "State" should *always* be "Enabled," and the listed "Command" should *always* be "Commit." If not, please contact technical support.
If not "Enabled" and "Commit," then some changes to the OS and/or NiagaraAX histories will not be preserved across reboots.

- Step 3 Click **Save** to write any configuration change to host platform.

Modem configuration

Unlike some other JACEs, the JACE-NXS cannot be equipped with an integral dialup modem. Contact technical support if an external modem is desired.

Recovery tips

During JACE commissioning, it is possible to run into problems. For instance, you may mis-type an IP address when entering it, and as a result be unable to regain access. In this scenario, you should know about the [IP changes history](#) kept by Workbench.

IP changes history

Your Workbench PC records “before and after” TCP/IP settings made from Niagara platform connections in an `ipchanges.bog` file. If necessary, you can review changes from Workbench using the following procedure.

To review TCP/IP changes made from your Workbench PC

From your PC with Workbench started, do the following:

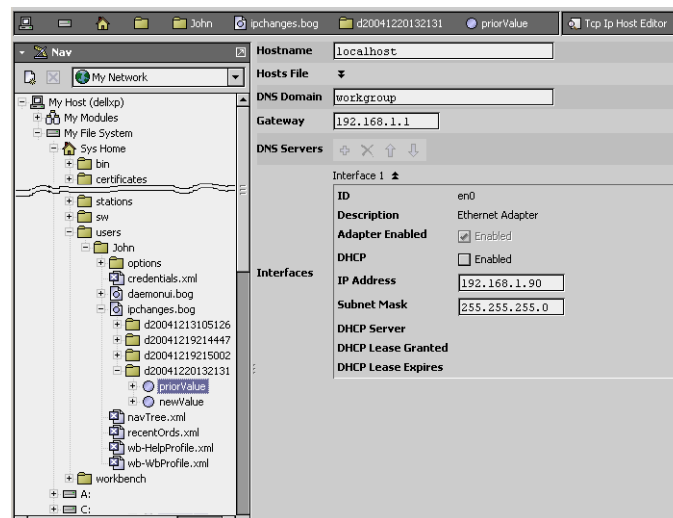
- Step 1 In the Nav tree, expand “My Host” and then “My File System.”
- Step 2 Expand “Sys Home” and then “users.”
- Step 3 Expand your user folder, then expand “ipchanges.bog.”
Child folders are “date-named” using the following convention:
`d<yyyymmddhhmmss>` for example, “d20041220171000” for 2004 Dec 20 5:10pm
- Step 4 Expand any folder of interest. 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 5 Double-click a priorValue or newValue to see settings in the “Tcp Ip Host Editor” (see [Figure 1-33](#)).

Note: If you have a platform connection open (to any host), you can also review the history of any IP changes (made by your Workbench) from its [TCP/IP Configuration](#) view. Click the “Audit” button.

This shows your `ipChanges.bog` folder and all child change entries. Expand a change folder to see a decoded “modTime” value, for example, “19-Dec-2004 09:50 PM” (vs. “d20041219215002”).

Double-click a “priorValue” or “newValue” in the view to see the settings in the “Tcp Ip Host Editor.”

Figure 1-33 Accessing `ipchanges.bog` in Workbench



JACE-NXS Windows XPE security

Currently, any JACE-NXS ships with the SP2 (service pack 2) version of Windows XP Embedded (XPE). As shipped, Windows XPE on the JACE-NX may need to be updated with the latest security patches. In addition, a feature of Windows XPE SP2 is the **Windows Firewall**, which is factory-configured to permit network access to only selected TCP/IP ports used in NiagaraAX.

This section provides a brief overview about updating Windows XPE and reviewing Windows Firewall settings.

- [Update Windows XPE on JACE-NXS](#)
- [Review the Windows XP Firewall](#)

Update Windows XPE on JACE-NXS

Tridium prepares special Windows XP Embedded *security update* files on an ongoing basis for you to download and copy to the C: drive of the JACE-NXS. You can then logon as the Windows administrator to the JACE-NXS and execute the update(s). The update process uses a “Device Update Agent” (DUA).



Caution Typically, installation of Microsoft OS updates and/or security patches ends with a system reboot. Although this does not matter for a new JACE-NXS (without a working station), please keep this in mind whenever installing future Windows XP updates

- Before installing updates, use the NiagaraAX backup feature to backup the JACE-NXS to your PC!
- In addition, make sure any controlled equipment is in a safe, manual mode of operation.

The following subsections provide more details:

- [About Windows security updates for the JACE-NXS](#)
- [Check JACE-NXS Windows XPE update level \(listUpdates\)](#)
- [Apply an NxsXpeUpdate to a JACE-NXS](#)
- [Notes on NxsXpeUpdates](#)

About Windows security updates for the JACE-NXS

Windows XP Embedded updates and security patches are released by Tridium as self-extracting executable files. When copied to (and executed on) the JACE-NXS, they extract files to the correct directories on that host. This includes the files belonging to the security patches as released by Microsoft, as well as a special “update.dup” device program file, which works with the [DUA](#) service running on the JACE.

Tridium-prepared update files are numbered sequentially, and must be applied one at a time, in numerical order. The naming convention used for updates is:

NxsXpeUpdate_SPn_y.exe

where *n* is XP Service Pack level (2, for example) and *y* is update sequence number.

For example: NxsXpeUpdate_SP2_5 can be applied to any JACE-NXS already running the earlier (NxsXpeUpdate_SP2_4) update. See the next section, “[Check JACE-NXS Windows XPE update level \(listUpdates\)](#)” and also “[Apply an NxsXpeUpdate to a JACE-NXS](#)” for a typical installation procedure.

About the Windows Device Update Agent (DUA) The Device Update Agent (DUA) is a service which runs in the background of Windows XP Embedded. This service starts whenever the JACE-NXS boots, and remains running. The tasks performed by the DUA service on a JACE-NXS are simple:

1. On a regular poll cycle, it checks for the existence of any “.dup” file in the C:\dua directory. Note that a “.dup” file is a “device update program,” and is actually a compiled version of a script file with instructions to move/copy/rename/delete files, add/remove/modify registry keys, reboot, and so on.
2. If this special file exists, it executes it. If it does not exist, it does nothing but wait until the next poll cycle.

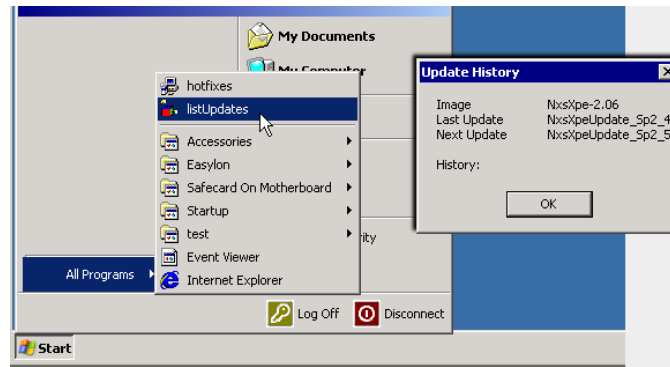
Note: The update.dup file, along with all the necessary Microsoft patch files, are automatically copied under the target C:\dua directory when you execute a self-expanding NxsXpeUpdate.exe file. See the section “[Apply an NxsXpeUpdate to a JACE-NXS](#)” for the installation procedure.

Check JACE-NXS Windows XPE update level (listUpdates)

Use a **Remote Desktop Connection** to the JACE-NXS (or local console) to check its original Windows XP Embedded image level, current update level, *next update* required, as well as its update history.

To check Windows XP Embedded update level

- Step 1 Logon as an administrator to Windows XP running on the JACE-NXS, using either a **Remote Desktop Connection**, or a local console.
- Step 2 From the **Start** menu, click **All Programs > listUpdates**.
As shown in [Figure 1-34](#), a popup **Update History** dialog lists all currently applied security updates.
- Step 3 After carefully noting the “*Next Update*” to be applied, click **OK** to close the dialog.

Figure 1-34 Checking Windows XPE update level

You can check for available JACE-NXS Windows security updates on the Tridium portal (Niagara Central) or secure website. If the “Next Update” is not yet available, no action is necessary. If more than one update is needed, download them all, and apply them in numerical sequence. See the next section, [“About Windows security updates for the JACE-NXS”](#).

Apply an NxsXpeUpdate to a JACE-NXS

After checking the JACE-NXS’s update level (see [“Check JACE-NXS Windows XPE update level \(listUpdates\)”](#) on page 1-25), you should compare its “Next Level” needed to what security updates are available for download for the JACE-NXS, on the Niagara Central portal. If a needed update (or updates) are available, use the following procedure to install each one.

To apply an NxsXpeUpdate to a JACE-NXS

- Step 1 Download the NxsXpeUpdate_SPn_y.exe file from the Niagara Central portal to your PC.
 - Step 2 With your PC on a LAN with the JACE-NXS, transfer the downloaded update file to it. Typically, you use a NiagaraAX platform connection and the [File Transfer Client](#). The target destination is not critical—for example, you can copy the NxsXpeUpdate_SP2_y.exe file to the C:\ (root) of the JACE-NXS.
- Note:** *If desired, you can copy the downloaded NxsXpeUpdate file to a USB flash drive, and simply insert the drive into the JACE-NXS, where it will appear on a new logical drive.*
- Step 3 If not already started, open a **Remote Desktop Connection** to the JACE-NXS, logging on with a Windows administrator-level account.
 - Step 4 Open Windows Explorer on the JACE-NXS, then navigate to the location of the copied update .exe file. The location of the file will depend on the file transfer method chosen.



Caution *Within 1 minute of completing the next step, the update script file will execute, and will typically result in a reboot of the JACE-NXS. Make sure it is safe to reboot before performing this action!*

- Step 5 Double-click the NxsXpeUpdate .exe file to launch the WinZip self extractor, and select **Unzip**.

Note: *Leave the target “Unzip to folder” at “C:\dua” to ensure proper extraction. Do not change “Unzip to folder”.*

Click **OK** when the WinZip Self-Extractor finishes, and close the WinZip dialog.
- Step 6 The JACE-NXS will execute the security update on the next **DUA** poll cycle, which by default occurs once per minute. When completed, the JACE-NXS will reboot.
Any connections to the JACE-NXS (Remote Desktop Connection, NiagaraAX Workbench, browser connections, etc.) will be lost.
- Step 7 After waiting sufficient time for the reboot, open another **Remote Desktop Connection** to the JACE-NXS. Verify the update successfully applied. See [“Check JACE-NXS Windows XPE update level \(listUpdates\)”](#) on page 1-25.

Notes on NxsXpeUpdates

Additional notes about applying Windows XP Embedded security updates to a JACE-NXS are as follows:

- Each NxsXpeUpdate .exe file should also have a companion “readme.txt” file, which contains a list of all contained Microsoft hotfixes, as well as a list of prerequisites for installing the update.
- Note that you can see the list of already-applied Microsoft hotfixes in a JACE-NXS. With a Remote Desktop Connection established, from the **Start** menu, click **All Programs > hotfixes**.

Review the Windows XP Firewall

As shipped from the factory, a JACE-NXS has its Windows Firewall configured to block incoming network connections, save for a few program and service “exceptions.” Typically, each exception corresponds to one or more TCP/IP *ports*.

The following sections provide more details:

- [Review current Windows Firewall settings](#)
- [JACE-NXS Windows Firewall \(port\) defaults](#)
- [Using optionalLockdown.bat](#)

Review current Windows Firewall settings

Depending on the drivers and features that are intended to be used on the station running on the JACE-NXS, you may need to make adjustments or additions to Windows Firewall exceptions. For example, if you changed the platform daemon port in the [Platform Administration view](#) (see “[Change HTTP Port](#)” on page 1-18), you will need to make the same change to the firewall exception named “admin.” Or, if you intend to use the drivers for either Modbus TCP or SNMP, you will need to make additions in order for those drivers to work.

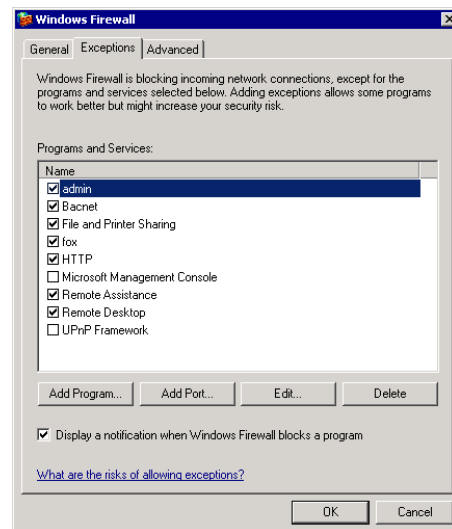
Note: *The JACE-NXS has a batch file that you can edit and run to simplify making certain firewall changes. See “[Using optionalLockdown.bat](#)” on page 1-28.*

Access the Windows Firewall in the JACE-NXS using the following procedure:

To access the Windows Firewall in a JACE-NXS

- Step 1 Logon as administrator to Windows XP running on the JACE-NXS, using either a **Remote Desktop Connection** or via a local console.
- Step 2 Click **Start > Control Panel** to open the **Windows Control Panel**.
- Step 3 Double-click the **Windows Firewall** applet to launch the Windows Firewall application. It opens displaying the **General** tab, showing the firewall **On (recommended)**.
- Step 4 Click the **Exceptions** tab, as shown in [Figure 1-35](#). This is where you view or edit most settings. See [Table 1-1](#) for a listing of default Windows Firewall exceptions for a new JACE-NXS.
- Step 5 To see the configuration for any exception, click to highlight it, then click the **Edit** button.
- Step 6 If you make changes to any exception, click **OK** to save and exit the dialog.

Figure 1-35 Windows Firewall in a JACE-NXS



For related details, see the next two sections, [JACE-NXS Windows Firewall \(port\) defaults](#) and “[Using optionalLockdown.bat](#)” on page 1-28.

JACE-NXS Windows Firewall (port) defaults

As shipped, [Table 1-1](#) summarizes the factory-shipped Windows Firewall exceptions for a new JACE-NXS.

Table 1-1 Windows Firewall exceptions in a factory-shipped JACE-NXS

Exception Name	TCP port	UDP port	Protocol/Program	Description (Scope is “all computers” unless noted)
admin	3011	—	TCP, HTTP	Niagara platform connection
Bacnet	—	47808	UDP	BACnet/IP (conventional)
File and Printer Sharing	139, 445	137, 138	NetBIOS, SMB	Windows file and printer sharing <i>Note: Scope for each port is local subnet only.</i>
fox	1911	—	Fox over TCP	Niagara Fox Service (Workbench, station-to-station)
HTTP	80	—	HTTP	HTTP, Hx access to a station
Remote Assistance	—	—	system32\sessmgr.exe	Microsoft Remote Desktop Help Session Manager
Remote Desktop	3389	—	Terminal Server	Remote access using Remote Desktop Connection client
UPnP Framework (disabled)	2869	1900	SSDP	Universal plug-and-play framework, i.e. addition of PNP devices connected through Ethernet port

In addition, ICMP protocol “ping” requests are enabled, from all computers (on the Windows Firewall’s **Advanced** tab, this is under **ICMP Settings**, “allow incoming echo request”).

Note: By default, both FTP and Telnet are disabled on a JACE-NXS, as each of these typically poses a significant security risk. However, if needed, you can enable these using [optionalLockdown.bat](#).

Using optionalLockdown.bat

The JACE-NXS’s system drive (C:) has a directory named “lockdown.” It contains two files as shipped from the factory:

- **lockdown.bat**
A batch file executed at the factory (system installation time) that implemented default firewall settings.
- **optionalLockdown.bat**
A batch file which you can first edit and then execute to implement additional firewall exceptions, if needed. See the next section, “[To use the optionalLockdown.bat file on a JACE-NXS](#)”.

Note: Updates to JACE-NXS lockdown batch files may occur. Check the Niagara Central portal for details.

To use the optionalLockdown.bat file on a JACE-NXS

- Step 1 Logon as administrator to Windows XP running on the JACE-NXS, using either a **Remote Desktop Connection**, or a local console.
- Step 2 Open a command prompt window.
To do this, click **Start > Run...**, type “cmd”, then click **OK**.
- Step 3 In the command window, navigate to the C:\lockdown directory.
To do this, type “cd C:\lockdown”, then press Enter. The prompt should now be: C:\lockdown>
- Step 4 Edit the file by typing “notepad optionalLockdown.bat” and pressing Enter.
The optionalLockdown.bat file opens in **Notepad** for editing. This batch file has several pre-edited command lines which have been commented out with the “rem” (remark) syntax.
- Step 5 In the Notepad window, cursor down to the line in the file which contains the appropriate firewall command line, and remove the leading “rem” from that line.
Note: Review all the firewall command lines to be sure only the ones which apply to this specific installation are uncommented. All lines without the leading “rem” are valid command lines, and will result in a new exception being added to the Windows Firewall.
- Step 6 **Save** the file, and exit Notepad.
- Step 7 Run the optionalLockdown.bat batch file.
To do this, in the command window, type optionalLockdown and press Enter.
Commands in the batch file appear in the command window as they run, and any changes become immediately effective.
- Step 8 Close the command window and review the Windows Firewall settings. See “[To access the Windows Firewall in a JACE-NXS](#)” on page 1-27.

Document Change Log

Updates (changes/additions) to this JACE-NXS *Niagara^{AX} Install and Startup Guide* document are listed below.

- Updated: December 11, 2007
Applied “new look” formatting to print (PDF) version of this document, reducing total page count yet adding “sidehead” white space to most pages. Updated several screen capture images. Revised licensing discussions to cover related changes in Workbench starting in AX-3.3, including the “local license database” and “license archive” files (affected sections “[Niagara and PC Requirements](#)” on page 1-3 and “[Install license](#)” on page 1-13). For more details on AX-3.3 and later Workbench license tools, refer to the “[License Tools and Files](#)” appendix in the *Platform Guide*.
- Publication: November 13, 2006
Revised licensing discussions to describe typical use of the licensing server, versus emailed license files (sections “[Niagara and PC Requirements](#)” on page 1-3, “[Install license](#)” on page 1-13, “[About the Licensing Server](#)” on page 1-14). Updated some screen captures and made numerous minor edits.
- Draft: July 11, 2006
Added several “notes” to clarify that AX-3.1 is required by the JACE-NXS.
- Draft: July 7, 2006
Initial draft document.

