

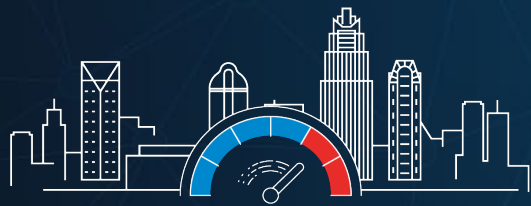


NS2022

ACCELERATING INNOVATION

Project Engineering 2

Accelerated Engineering Using Templates and Provisioning

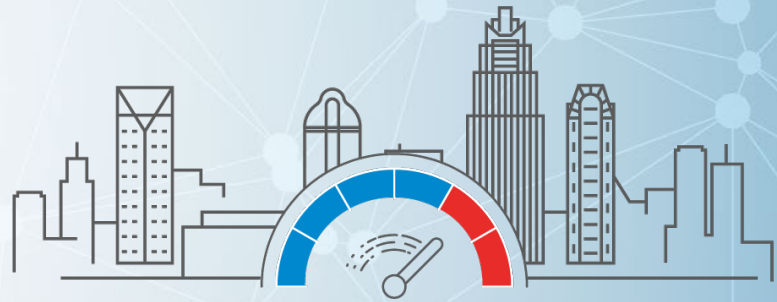


NS2022
ACCELERATING INNOVATION

Accelerated Engineering Using Templates and Provisioning

*Learn how the latest
provisioning tools make
commissioning JACE and EDGE
controllers a breeze in a deep
dive demonstration.*





NS2022

ACCELERATING INNOVATION
CHARLOTTE, NC | APRIL 4-6

Kyle Sardinia

*Senior Application System Sales
Engineer*

Tridium



Time Flies...

April 2018 Niagara
Summit

July 2018 Niagara 4.6

October 2018 Niagara
4.7

August 2019 Niagara 4.8



July 2020 Niagara 4.9

March 2021 Niagara 4.10

December 2021 Niagara 4.11

Overview - Templates

- A deployable package of Niagara objects which might include station components, images and px files.
- Contained in a file that has an *.ntpl (Niagara Template) extension.
- Stored in either the stationTemplates or templates directories under the Niagara User Home.
- Designed to eliminate unnecessary repetition when deploying multiple instances of components with similar functionality.
- Compared to using palettes or partial bog files, provides versioning and better portability.

Template Planning

- Identify external **inputs** such as schedules, global set points or data values.
- Identify **outputs** such as global data values.
- Identify **relations** that need to be created upon deployment.
- Identify which **tag dictionaries** are required.
- Ideally before creating a template all tags and relations should be assigned, control logic tested and graphics designed.

Template Types

- **Station**

- The entire station is templated.
- During commissioning of a new station, you can choose the template to apply

- **Device**

- A device template, during commissioning of a new device you can apply a template.

- **Component**

- Any component, that you can then drag-and-drop to apply

- **Application**

- Similar to station templates, but application templates can be installed to a running station and upgraded.

Template Creation

- Right click a component and select Make Template
- Launches the Template View used to configure the template

Tabs

- Template Info
- Component
- Configuration
- Relations
- Template I/O
- Graphics
- Subtemplates

Template Info

- Filename – a unique name for the ntpl file.
- Title – preferred name for the template displayed in the Workbench.
- Vendor – name of the organization or manufacturer.
- Version – a unique number for versioning control.
- Description – a short description of the template usage or purpose.

Template Info

Template: VTR835xAxxxx-56 Vendor: Tridium Version: 1.2

Template Info Component Configuration Relations Template I/O Graphics Subtemplates

Filename	VTR835xAxxxx-56
Title	VTR835xAxxxx-56
Vendor	Tridium
Version	1.2
State	Ready
Description	Thermostat
Info	Viconics Thermostat Device Tempalte
Icon	NO ICON SELECTED

Component Tab

- Component tree displayed which provides access to property sheet, wire sheet and slot sheet of the components.
- Allows making changes such as adding, editing or deleting properties.
- Allows creating links or relations as needed.

Component Tab

Template: VTR835xAxxxx-56 Vendor: Tridium Version: 1.2

Template Info Component Configuration Relations Template I/O Graphics Subtemplates

- VTR835xAxxxx-56
 - Alarm Source Info
 - Points
 - Virtual
 - Alarms
 - Schedules**
 - Retry Trigger
 - Trend Logs
 - Config
 - Device Object
 - Device Address Binding
 - activeCovSubscriptions
 - templateConfig

Property Sheet

VTR835xAxxxx-56 (Bacnet Device)

Status	{ok}
Enabled	<input type="radio"/> false
Fault Cause	
Health	Fail [null]
Alarm Source Info	Alarm Source Info
Address	Network Number: 0 MAC Address: null MAC Address Style: Unknown
Points	Bacnet Point Device Ext
Virtual	Bacnet Virtual Gateway
Alarms	Bacnet Alarm Device Ext
Schedules	Bacnet Schedule Device Ext
Trend Logs	Bacnet History Device Ext
Config	device:83056 config
Enumeration List	Extensible Enum List
Use Cov	<input checked="" type="radio"/> true
Use Cov Property	<input type="radio"/> false
Max Cov Subscriptions	max
Cov Subscriptions	0
Character Set	Iso10646_UTF8
HMI Color_out	0 {ok}
HMI Color_in101	- {null}
HMI Color_in10	- {null}
templateConfig	Template Config

Configuration Tab

- Allows exposing specific properties which the user is prompted to edit when deploying the template.
- Assign default values to configuration properties.

Configuration Tab

Template: VTR835xAxxxx-56 Vendor: Tridium Version: 1.2

Template Info Component Configuration Relations Template I/O Graphics Subtemplates

+ Add

- VTR835xAxxxx-56
 - Attributes
 - Enabled
 - Alarm Source Info
 - Address
 - Points
 - Attributes
 - Light Sensor Level
 - Room Humidity
 - Room Temperature
 - CO2 Level
 - HMI Color
 - Display Language
 - Occupied Cool Setpoint1
 - Attributes
 - Facets
 - Proxy Ext
 - Fallback**
 - Occupied Cool Setpoint
 - Occupied Heat Setpoint
 - Unoccupied Cool Setpoint
 - Unoccupied Heat Setpoint
 - Occupied Heat Setpoint1
 - Unoccupied Cool Setpoint1
 - Unoccupied Heat Setpoint1
 - GreaterThan
 - FAn
 - New Scheduleds
 - BooleanSchedule1

Rename Remove Set Value

Slot	Ord	Value	User Tip
HMI Color_fallback	/points/HMIS20Color/fallback	-{null}	What color should the display be?
Display Language_fallback	/points/Display\$20Language/fallback	-{null}	
Occupied Cool Setpoint1_fallback	/points/Occupied\$20Cool\$20Setpoint1/fallback	-{null}	
BooleanSchedule_DisplayName	/points/BooleanSchedule/#DisplayName	New Scheduleds	What are you scheduling

Relations Tab

- Allows defining a relation to be created during template deployment
- Relate Hints (NEQL) helps filter list of entities in the station.
- Relation Ids are displayed from modules with tag dictionaries and from tag dictionaries under the Niagara User Home.
- Relation can be inbound or outbound.

Relations Tab

Template: VTR835xAxxxx-56 Vendor: Tridium Version: 1.2

Template Info Component Configuration Relations Template I/O Graphics Subtemplates

+ Add Reverse Remove

RelationId	Direction	RelateHints	UserTip
n:child	← n:parentNetwork		
n:childDevice	← hs:siteRef	hs:site	Relate to Site Component
n:childPoint			
n:childNullProxyPoint			
n:parent			
n:parentDevice			
n:parentNetwork			
n>tagGroup			
hs:ahuRef			
hs:chilledWaterPlantRef			
hs:device1Ref			
hs:device2Ref			
hs:elecMeterLoad			
hs:elecMeterRef			
hs:elecPanelOf			
hs:equipRef			
hs:gasMeterLoad			
hs:hotWaterPlantRef			
hs:networkRef			
hs:siteRef			
hs:steamMeterLoad			
hs:steamPlantRef			

Template IO tab

- Allows for you to create hints and searches to help the user connect internal points within the template to external points at deployment
- Link any IO points that reference any External points
- Tags can help!

Template IO tab

Template: VTR835xAxxxx-56 Vendor: Tridium Version: 1.2

Template Info Component Configuration Relations Template I/O Graphics Subtemplates

Reverse Rename Remove

Direction	Slot	Ord	
▶ Out	HMI Color_out	/points/HMIS20Color/out	The BindHints content is empty.
▶ Out	HMI Color_in101	/points/HMIS20Color/in10	The BindHints content is empty.
◀ In	HMI Color_in10	/points/HMIS20Color/in10	The BindHints content is empty.
▶ Out	out	/points/NumericSchedule/o	The BindHints content is empty.

Dictionary Niagara Tag ShowAll

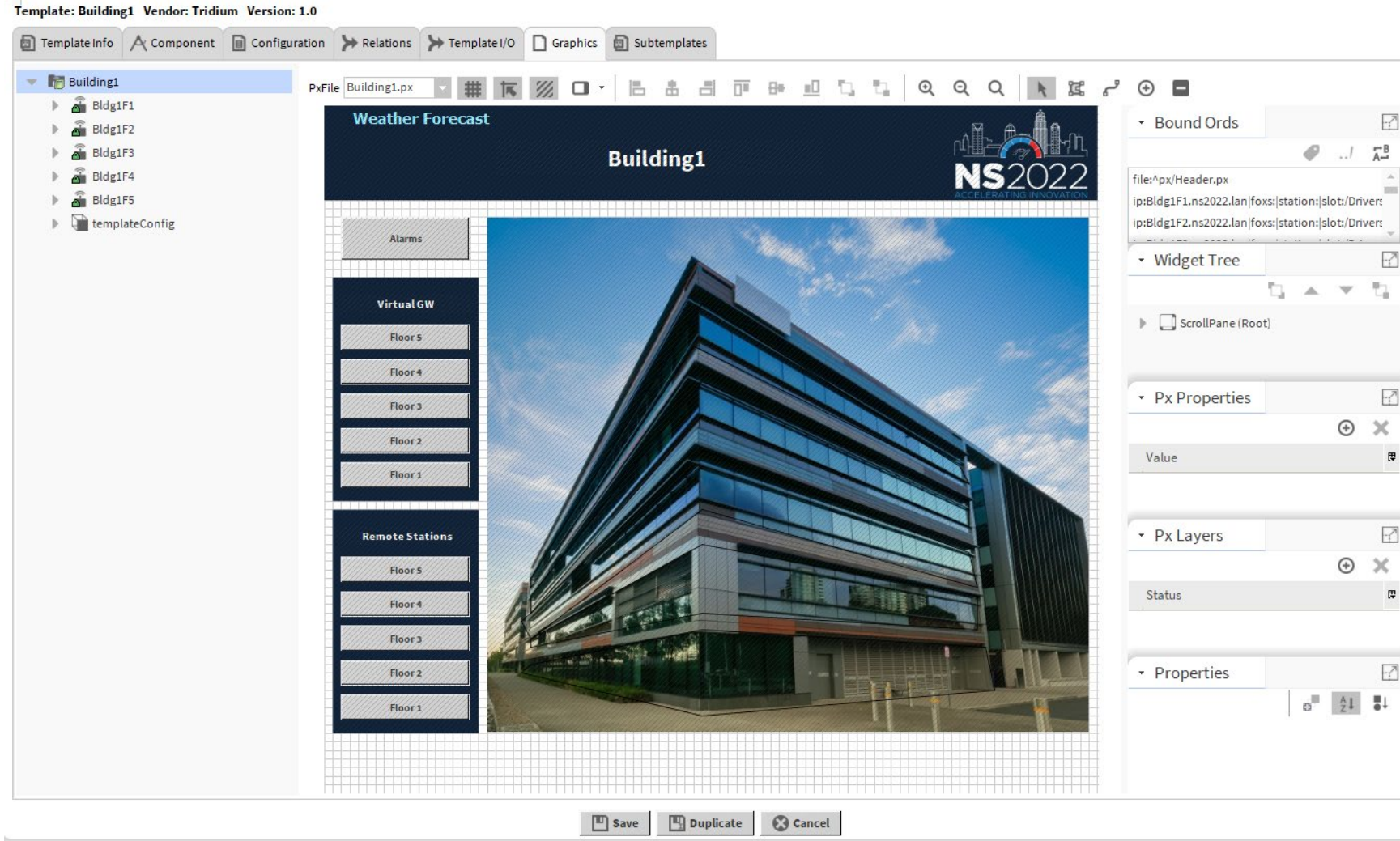
NameSpace	TagName	Type	value
n	input	Marker	M
n	name	String	
n	network	Marker	M
n	node	Marker	M
n	output	Marker	M
n	point	Marker	M
n	schedule	Marker	M
n	station	String	
n	targetSlotHint	String	
n	template	Marker	M

NameSpace	TagName	Type	value
n	output	Marker	M
n	userTip	String	
n	targetSlotHint	String	
n	bindHints	String	
n	schedule	Marker	M

Save Duplicate Delete Delete All

Graphics

- Allows viewing and editing the Px view if desired.



Subtemplates Tab


- Shows any contained subtemplates.
- Initially add subtemplates using the wiresheet view on the component tab of the parent template.
- Tab provides provisioning tools to upgrade or detach subtemplates.

Subtemplates Tab

Application Template: Edge72 Vendor: Tridium Version: 1.2

Template Info Component Configuration Graphics **Subtemplates**

AX Template Manager

Path	TemplateName	Vendor	Version	Inputs	Outputs	Relations	DefaultPasswords	Avail. Version	Modified
 /Edge72/Drivers/BacnetNetwork/VTR835xAxxxxS2d56	VTR835xAxxxx-56	Tridium	1.2	1	2	1	0	Tridium	- Updated

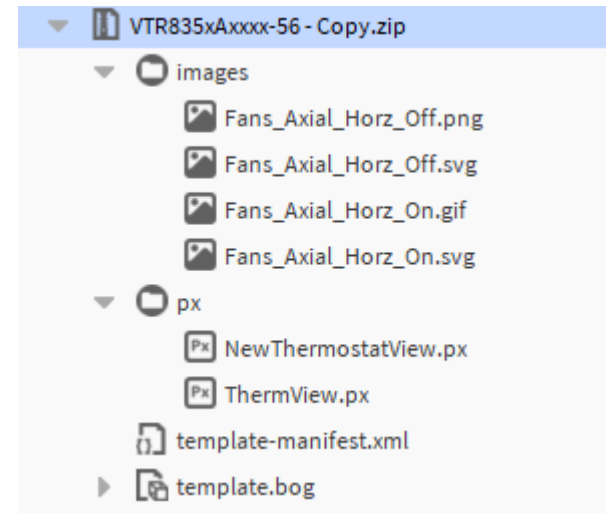
Detach Upgrade All Out Of Date Upgrade Reset Commit

Template Files

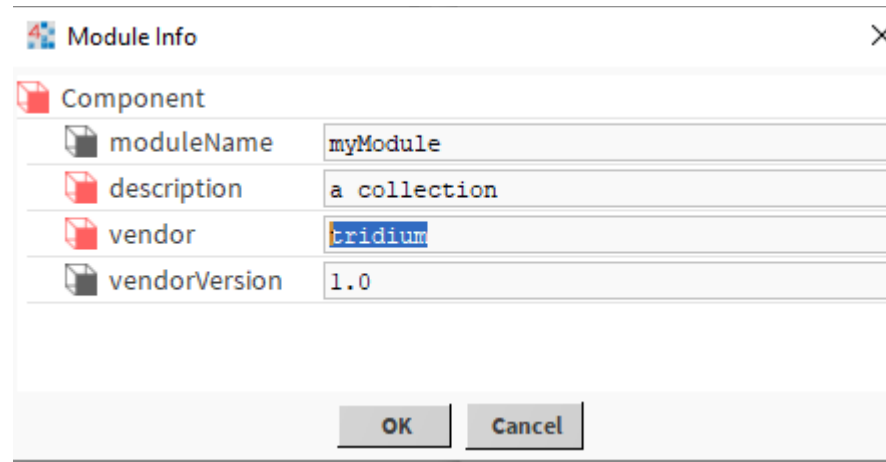
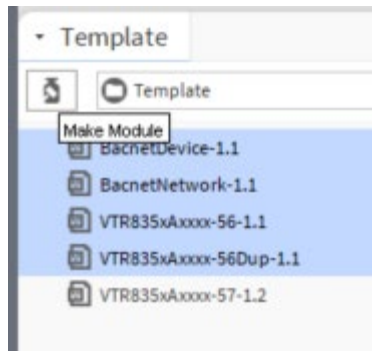
- Template side bar displays templates from modules and Niagara
- User Home sub folder.
- Allows access to the Template View.
- Template View allows viewing current template configuration and making changes to save an updated template version.
- Template file contains all required Px files, images and component bog file.

Template Files

zip	
Name	Description
images	
px	
template-manifest.xml	3kb 07-Apr-21 3:40 PM EDT
template.bog	55kb 07-Apr-21 3:40 PM EDT



Template Tools



Template Service

- Provides management support for templates that are deployed in the station.
- Required in a station to use templates.
- Displays status of data links (Inputs and Outputs) and relations.
- Used to detach and upgrade deployed templates.
- Use to bulk deploy templates using Excel files.

Template Service

The screenshot displays the AX Template Manager interface. On the left, a navigation pane shows a tree structure of services, with 'TemplateService' selected. Below it, a 'Palette' section shows 'edgelo' and a 'Template' section lists several template versions, with 'VTR835xAxxxx-57-1.2' selected. The main area shows a table of templates with columns for Path, TemplateName, Vendor, Version, Inputs, Outputs, Relations, DefaultPasswords, Avail. Version, and Modified. At the bottom, there are buttons for 'Detach', 'Upgrade All Out Of Date', 'Redeploy', 'Reset', 'Commit', 'Bulk Deploy From Excel', and 'Update Configs From Excel'.

Path	TemplateName	Vendor	Version	Inputs	Outputs	Relations	DefaultPasswords	Avail. Version	Modified
/Drivers/BacnetNetwork/BacnetDevice	BacnetDevice	Tridium	1.1	0	0	0	0	Tridium 1.1	- Up to Date
/Drivers/BacnetNetwork/VTR835xAxxxx\$2d56	VTR835xAxxxx-56	Tridium	1.1	1	1	0	0	Tridium 1.1	- Up to Date
../BacnetDevice	BacnetDevice	Tridium	1.1	0	0	0	0	Tridium 1.1	- Up to Date
/Drivers/BacnetNetwork/VTR835xAxxxx\$2d56Dup	VTR835xAxxxx-56Dup	Tridium	1.1	1	1	0	0	Tridium 1.1	- Up to Date
../VTR835xAxxxx\$2d57	VTR835xAxxxx-57	Tridium	1.2	1	1	0	0	Tridium 1.2	- Up to Date
/Drivers/BacnetNetwork/VTR835xAxxxx\$2d57/BacnetDevice	BacnetDevice	Tridium	1.1	0	0	0	0	Tridium 1.1	- Up to Date
/Drivers/BacnetNetwork1	BacnetNetwork	Tridium	1.1	1	1	0	0	Tridium 1.1	- Up to Date

Deploy Station Template

- Tools > New Station

New Station Wizard

Station Name

Station Directory

Station Templates

Name	Vendor	Version	Description
NewControllerStation.ntpl	Tridium	1.6	
NewJACEProvisioningStation.ntpl	Tridium	1.4	
NewSupervisorStationLinux.ntpl	Tridium	1.8	
NewSupervisorStationWindows.ntpl	Tridium	1.8	

◀ Back ▶ Next ✓ Finish ✕ Cancel

Deploy Device/ Component Template

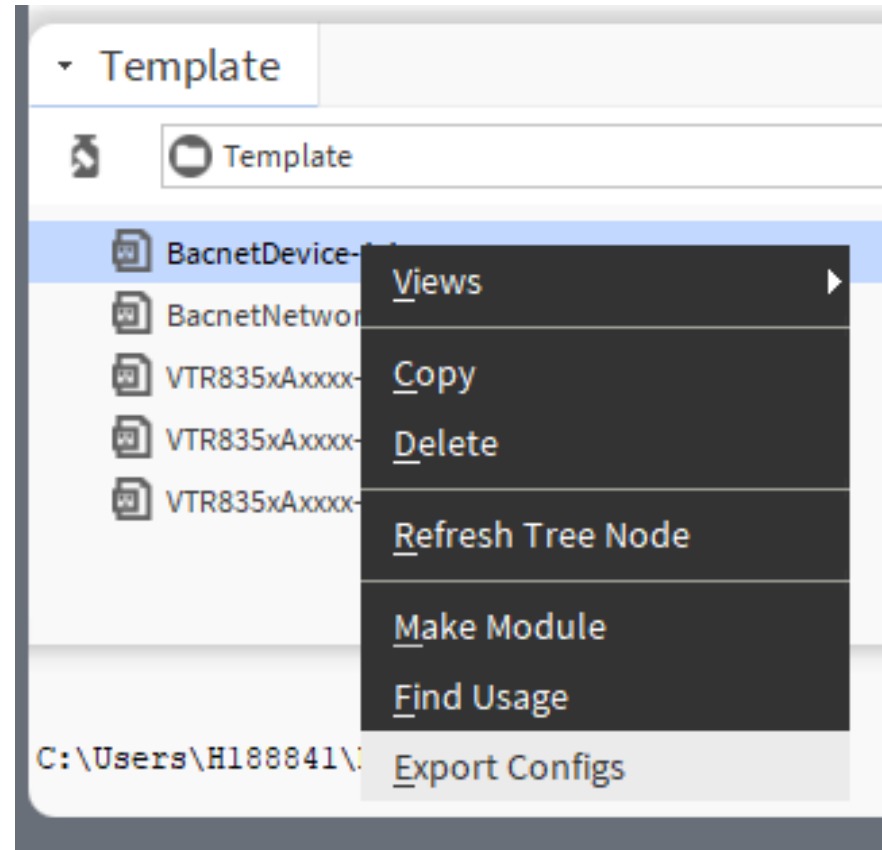
- Drag from Template Pane

The screenshot displays a software interface with several panels:

- Nav Panel:** Shows a tree view under 'Station (Edge10_4EF4_CDA2_1EE6)'. The 'Drivers' folder is expanded, and 'BacnetNetwork' is selected.
- Palette Panel:** Shows a search bar with 'edgelo' and a list of templates.
- Template Panel:** Shows a list of templates, with 'BacnetDevice-1.1' selected.
- Property Sheet Panel:** Shows the configuration for 'BacnetNetwork (Bacnet Network)'. The 'Status' is '{ok}', 'Enabled' is 'true', and 'uploadOnStart' is 'true'.

A red arrow points from the 'BacnetDevice-1.1' template in the Template Panel to the 'BacnetDevice-1.1' component in the main workspace area.

Bulk Deploy From Excel



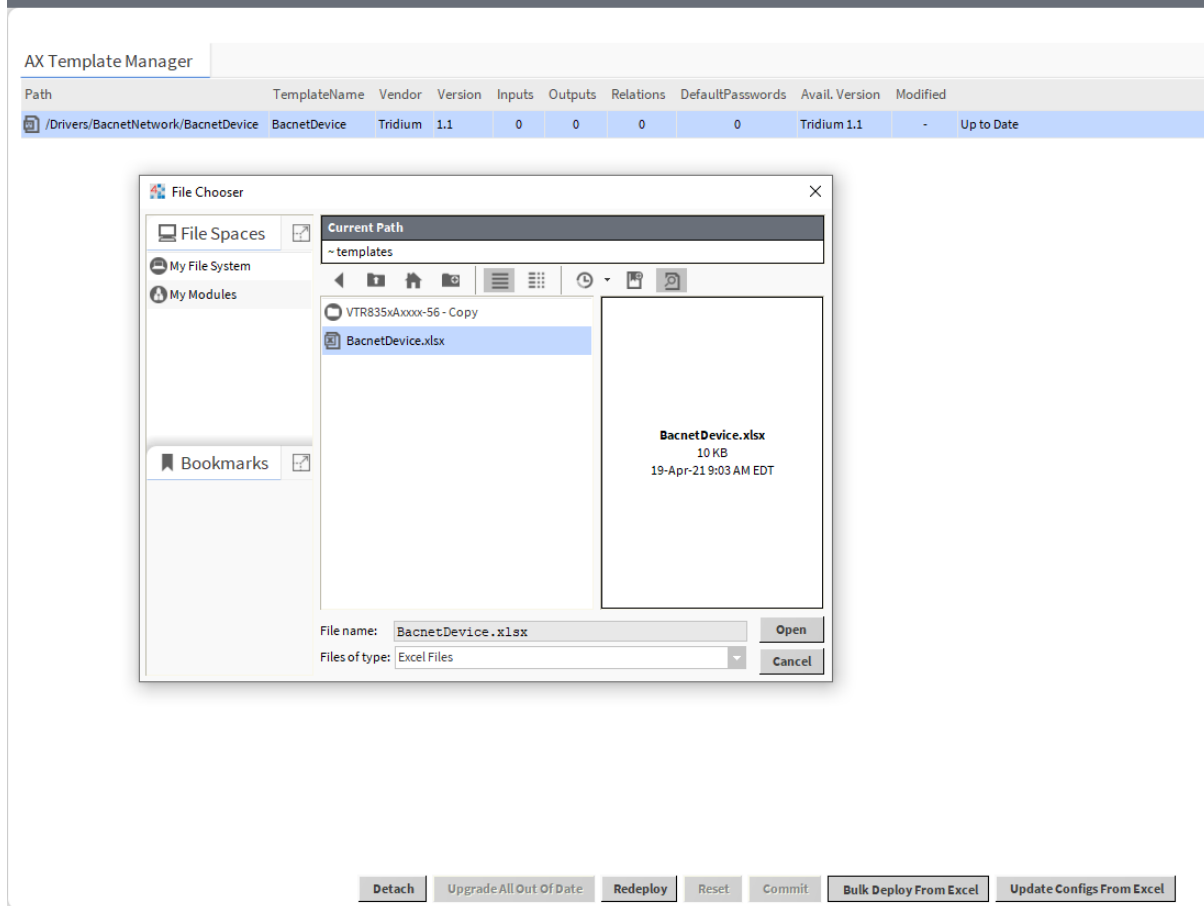
Bulk Deploy From Excel

Parent Component Slot Path	Deployed Name	Display Name	Position	Unique Device	Description
Drivers/BacnetNetwork	BacnetDevice1	BacnetDevice1			true
Drivers/BacnetNetwork	BacnetDevice2	BacnetDevice2			false
Drivers/BacnetNetwork	BacnetDevice3	BacnetDevice3			true
Drivers/BacnetNetwork	BacnetDevice4	BacnetDevice4			false
Drivers/BacnetNetwork	BacnetDevice5	BacnetDevice5			true
Drivers/BacnetNetwork	BacnetDevice6	BacnetDevice6			false
Drivers/BacnetNetwork	BacnetDevice7	BacnetDevice7			true
Drivers/BacnetNetwork	BacnetDevice8	BacnetDevice8			false
Drivers/BacnetNetwork	BacnetDevice9	BacnetDevice9			true
Drivers/BacnetNetwork	BacnetDevice10	BacnetDevice10			true
Drivers/BacnetNetwork	BacnetDevice11	BacnetDevice11			false
Drivers/BacnetNetwork	BacnetDevice12	BacnetDevice12			true
Drivers/BacnetNetwork	BacnetDevice13	BacnetDevice13			false
Drivers/BacnetNetwork	BacnetDevice14	BacnetDevice14			true

BacnetDevice.xlsx
Cannot display this file type. Launch with external application:

Launch

Bulk Deploy From Excel



The screenshot displays the AX Template Manager interface. At the top, there is a tab labeled "AX Template Manager". Below it is a table with the following columns: Path, TemplateName, Vendor, Version, Inputs, Outputs, Relations, DefaultPasswords, Avail. Version, and Modified. The table contains one row of data:

Path	TemplateName	Vendor	Version	Inputs	Outputs	Relations	DefaultPasswords	Avail. Version	Modified
/Drivers/BacnetNetwork/BacnetDevice	BacnetDevice	Tridium	1.1	0	0	0	0	Tridium 1.1	- Up to Date

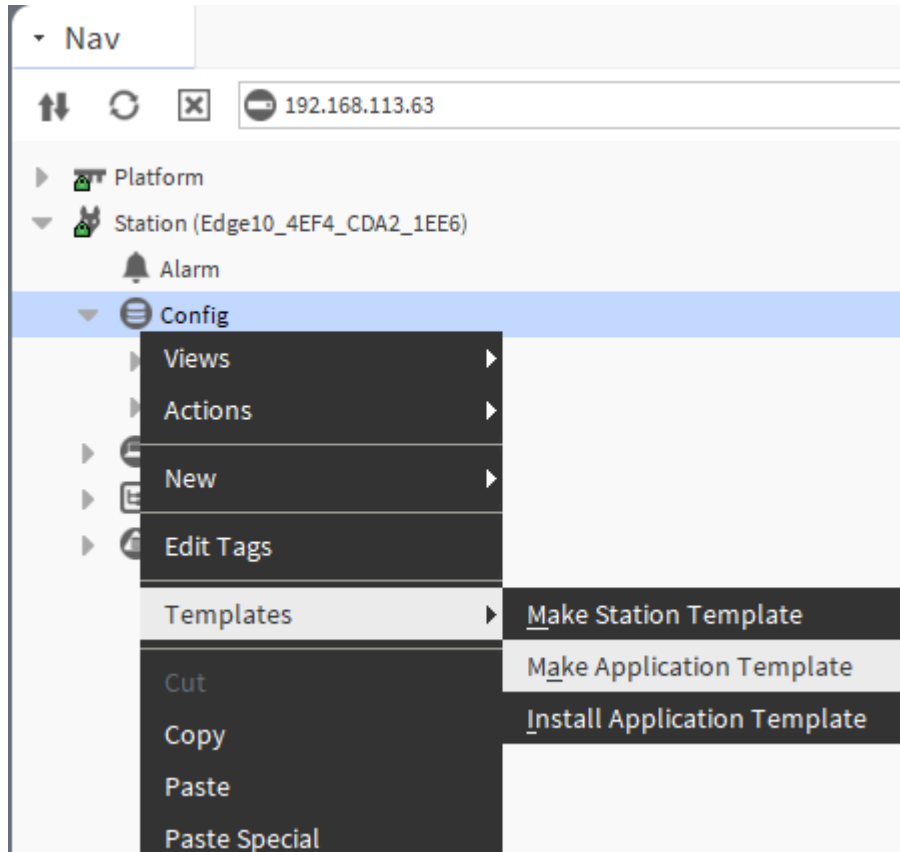
Overlaid on the table is a "File Chooser" dialog box. The dialog shows the current path as "~templates" and lists two files: "VTR835xAxxxx-56 - Copy" and "BacnetDevice.xlsx". The "BacnetDevice.xlsx" file is selected. A preview pane on the right shows the file name "BacnetDevice.xlsx", its size "10 KB", and its modification date "19-Apr-21 9:03 AM EDT". At the bottom of the dialog, the "File name" field contains "BacnetDevice.xlsx" and the "Files of type" dropdown is set to "Excel Files". There are "Open" and "Cancel" buttons.

At the bottom of the AX Template Manager interface, there is a row of buttons: "Detach", "Upgrade All Out Of Date", "Redeploy", "Reset", "Commit", "Bulk Deploy From Excel", and "Update Configs From Excel".

Application Templates

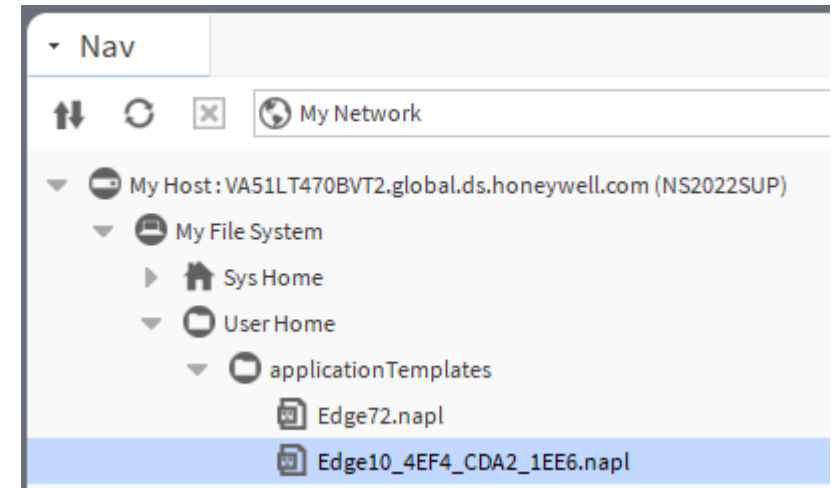
- Mechanism to deploy and entire station application to a running station, used primarily with Edge devices.
- Similar to station templates, but application templates can be installed to a running station and upgraded.
- Use an NAPL file extension to differentiate from station and device templates.
- Stored in applicationTemplates sub folder under Niagara user home.
- Right click root Config node in station and select Templates menu item allows making an application template from current station or installing an application template to the Edge device.

Application Templates



Application Template: Edge10_4EF4_CDA2_1EE6 Vendor: Tridium Version: 1.0

A screenshot of the 'Template Info' form. The form has a title bar with tabs for 'Template Info', 'Component', 'Configuration', 'Graphics', and 'Subtemplates'. The form fields are: 'Filename' (Edge10_4EF4_CDA2_1EE6), 'Title' (Edge10_4EF4_CDA2_1EE6), 'Vendor' (Tridium), 'Version' (1.0), 'State' (Draft), 'Description' (empty), 'Info' (empty), and 'Icon' (NO ICON SELECTED).



Provisioning

Beyond Templating



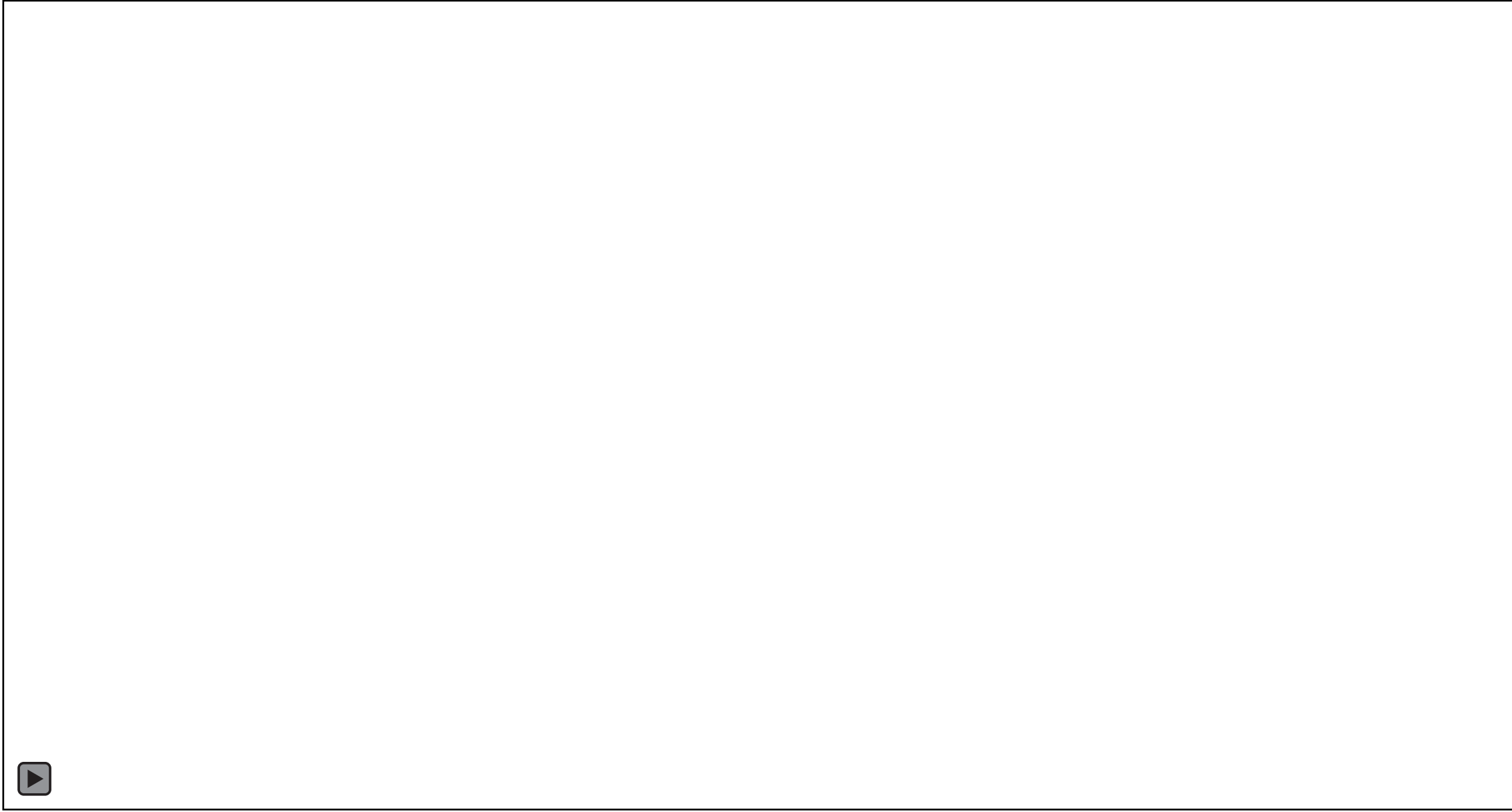
Overview - Provisioning

- Niagara Provisioning is a **service** in the Supervisor station used to **automate specific Workbench tasks**.
- Tasks can be **triggered manually** or **scheduled** for later execution.
- Station components located in the **provisioningNiagara** palette.

Setup - Batch Job Service

- Requires the **Batch Job Service** to be in the services container of the Supervisor station.
- The **Job Queue Max Threads** defaults to 1 thread but can be adjusted to allow multiple jobs to run concurrently.
- The **Alarm Class** property should be set to a specific alarm class to facilitate routing provisioning related alarms.

Setup - Batch Job Service



Setup – ProvisioningNwExt

- **ProvisioningNwExt** must be added to the Niagara Network in the Supervisor station.
- Results in additional extensions being automatically added to Niagara station device.
- Use the **Provisioning Manager**, alternate view on the Niagara Network, to configure the platform credentials to be used by the station to connect to the platform of each JACE.

Provisioning Device Extensions

- **Platform Connection** – properties used to configure credentials for the Supervisor to make automated platform connections to the remote hosts.
- **Station Proxy** – provides access to the application director for the remote host via the Supervisor station.
- **Software** – provides a Software Manager view of the remote host via the Supervisor station.
- **Backup** – displays information regarding the last backup of the remote host.

Provisioning Device Extensions

- **Licenses** – provides basic information about the remote hosts's licenses and certificates such as the host ID, what licenses and certificates are installed and their expiration.
- **Templates** – provides functionality to deploy templates to remote station.
- **Device Bootstrap** – enables provisioning remote devices with default platform credentials and passphrase.

Provisioning Device Extensions

Property Sheet

Bldg1F5 (Niagara Station)

Status	{unackedAlarm}
Enabled	<input checked="" type="checkbox"/> true
Fault Cause	
Health	Ok [01-Apr-22 2:51 AM EDT]
Alarm Source Info	Alarm Source Info
Address	IP bldg1f5.ns2022.1
Client Connection	Fox Client Connection
Server Connection Ord	h:29d97
Host Model	TITAN
Host Model Version	
Version	4.12.0.98
Points	Niagara Point Device Ext
Histories	Niagara History Device Ext
Alarms	Niagara Alarm Device Ext
Schedules	Niagara Schedule Device Ext
Users	Niagara User Device Ext
Sys Def	Niagara Sys Def Device Ext
Virtual	Niagara Virtual Device Ext
Virtuals Enabled	<input checked="" type="checkbox"/> true
Files	Niagara File Device Ext
Security Dashboard Ext	Security Dashboard Device Ext
System Indexer	Niagara System Index Device Ext
Platform Connection	Platform Connection
StationProxy	Station Proxy
Software	Software Station Ext
Backup	Backup Station Ext
Licenses	License Station Ext
Templates	Template Station Ext
Device Bootstrap	Device Bootstrap
Station Info	Station Information

ProvisioningNwExt

- **Software** – manages modules installed on the Supervisor and remote hosts.
- **Licenses** – displays license summary information for all remote hosts.
- **Poll Scheduler** – configures polling of the station proxy extensions.



































Niagara Network Job Builder

- **Primary view** on the **ProvisioningNwExt** component.
- May generate an **alarm** when a **step fails** or when a **job completes successfully**.
- Select from various **job steps** and select the **desired hosts** to run the job against.
- **Niagara Network Job List** is a secondary view on the **ProvisioningNwExt** component which displays a list of completed jobs.

Jobs

New Job Step

Select the type of step to add to the job from the list below:

Type	Description
 Add Station User	Add a new user to the station.
 Backup Stations	Back up each station in the job
 Configure Niagara IdP and SAML Scheme	Configure the remote SAML Authentication Schemes and local SAML IdP Service
 Copy Local File	Copy a local file to each station in the job
 Copy Supervisor File	Copy a file from the supervisor's filesystem to each station in the job
 Deploy Template	Deploy a template file to each station in the job
 Enable Bootstrap Mode	Enable bootstrap mode for the stations.
 Export Application Template Configuration	Exports an application template configuration as an xlsx file
 Export Certificate Signing Request	Export a CSR from each device for external signing
 Generate Certificate	Generate and install a certificate on each station
 Import Signed Certificate	Import a signed certificate for each device
 Install Application Template	Install an application template file to each station in the job
 Install Certificate	Install a certificate to the user trust store of each station
 Install Clean Distribution	Install clean distribution file to each system platform in the job
 Install Software	Install software to the stations in the job
 Reboot	Reboot each station in the job
 Remove Platform User	Remove a user from the platform.
 Remove Property	Remove a dynamic property
 Remove Station User	Remove a user from the station.
 Rename Device Station	This step will change the name of the station to match the name that it was given in the Niagara network.
 Run Robot	Run a robot on each station
 Security Job Steps	Add all security related job steps
 Set Certificate Alias	Set the certificate alias for platform, FoxService, and WebService
 Set Platform Credentials	Create a new platform account and remove default platform account
 Set Platform User Password	Change password for an existing platform user
 Set Property	Set or add a property
 Set Station Connection Credentials	Set the station credentials used to connect to the remote station.
 Set Station User Password	Set the password of the current station user
 Set System Passphrase	Set System Passphrase
 Set TLS Level	Set the minimum TLS level for platform, FoxService, and WebService
 Set Time	Set the time for each device
 Setup Reciprocal Connection	Setup the Niagara Network connection from remote station to supervisor station
 Sign Certificate	Sign a certificate on each station
 Update Connections Using Niagara Network Discoverv	Update station connections using Niagara Network discoverv.

OK Cancel

Jobs

Type	Description
Add Station User	Add a new user to the station.
Backup Stations	Back up each station in the job
Configure Niagara IdP and SAML Scheme	Configure the remote SAML Authentication Schemes and local SAML IdP Service
Copy Local File	Copy a local file to each station in the job
Copy Supervisor File	Copy a file from the supervisor's filesystem to each station in the job
Deploy Template	Deploy a template file to each station in the job
Enable Bootstrap Mode	Enable bootstrap mode for the stations.
Export Application Template Configuration	Exports an application template configuration as an xlsx file
Export Certificate Signing Request	Export a CSR from each device for external signing
Generate Certificate	Generate and install a certificate on each station
Import Signed Certificate	Import a signed certificate for each device
Install Application Template	Install an application template file to each station in the job
Install Certificate	Install a certificate to the user trust store of each station
Install Clean Distribution	Install clean distribution file to each system platform in the job
Install Software	Install software to the stations in the job
Reboot	Reboot each station in the job
Remove Platform User	Remove a user from the platform.
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Type	Description
Run Robot	Run a robot on each station
Security Job Steps	Add all security related job steps
Set Certificate Alias	Set the certificate alias for platform, FoxService, and WebService
Set Platform Credentials	Create a new platform account and remove default platform account
Set Platform User Password	Change password for an existing platform user
Set Property	Set or add a property
Set Station Connection Credentials	Set the station credentials used to connect to the remote station.
Set Station User Password	Set the password of the current station user
Set System Passphrase	Set System Passphrase
Set TLS Level	Set the minimum TLS level for platform, FoxService, and WebService
Set Time	Set the time for each device
Setup Reciprocal Connection	Setup the Niagara Network connection from remote station to supervisor station
Sign Certificate	Sign a certificate on each station
Update Connections Using Niagara Network Discovery	Update station connections using Niagara Network discovery.
Update Connections Using Provisioning Station's DHCP Server	Update station connections using the provisioning station's DHCP server leases.
Update Licenses	Update all of the station(s), importing licenses from the licensing server
Update Template or Application Configuration	Update configuration of deployed templates or installed applications on each station in the job
Upgrade Application Template	Upgrade an application template installed on stations in the job
Upgrade Out-of-date Software	Upgrade out-of-date software for each station in the job
Upgrade Template	Upgrade deployed template instances on each station in the job

My Host : VA51LT470BVT2.global.ds.honeywell.com (NS2022SUP)

: Station (NS2022SUP)

Station Summary

Nav

My Network

- My Host : VA51LT470BVT2.global.ds.honeywell.com (NS2022SUP)
 - My File System
 - My Modules
 - My Tools
 - Platform
 - Station (NS2022SUP)

Palette

provisioningNiagara

- BatchJobService
- ProvisioningNwExt
- NiagaraNetworkJobPrototype
- TriggerSchedule
- ProvisioningRobot

Station (NS2022SUP)

7 objects

Name	Description
Home	Navigation tree defined by nav file
Alarm	Alarm Database
Config	The station configuration database
Files	File System accessed over Fox session
Spy	Diagnostics information for remote VM
Hierarchy	Hierarchy views of remote station
History	History database

Summary Properties

11 objects

Property	Value
Station Name	NS2022SUP
Host	/192.168.1.169
Host Model	Workstation
Host Model Version	
Host Product	
Host Id	Win-E2CE-B245-4A19-A6FA
Niagara Version	4.12.0.98
Java Version	Java HotSpot(TM) 64-Bit Server VM 25.321-b07
OS Version	amd64 Windows 10 10.0

C:\Users\H188841\Niagara4.12\tridium>

System Upgrade Using Provisioning

Niagara Provisioning may be used to upgrade an enterprise system of JACEs.

- **Upgrade the Supervisor** to the new build.
- Run a job to **update licenses on all hosts** if needed.
- Verify all host licenses updated successfully.
- Run a job to **Upgrade Out-Of-Date Software** on all hosts.
- Verify all hosts upgraded successfully.

System Upgrade Using Provisioning

Generate an alarm when any step fails or is canceled

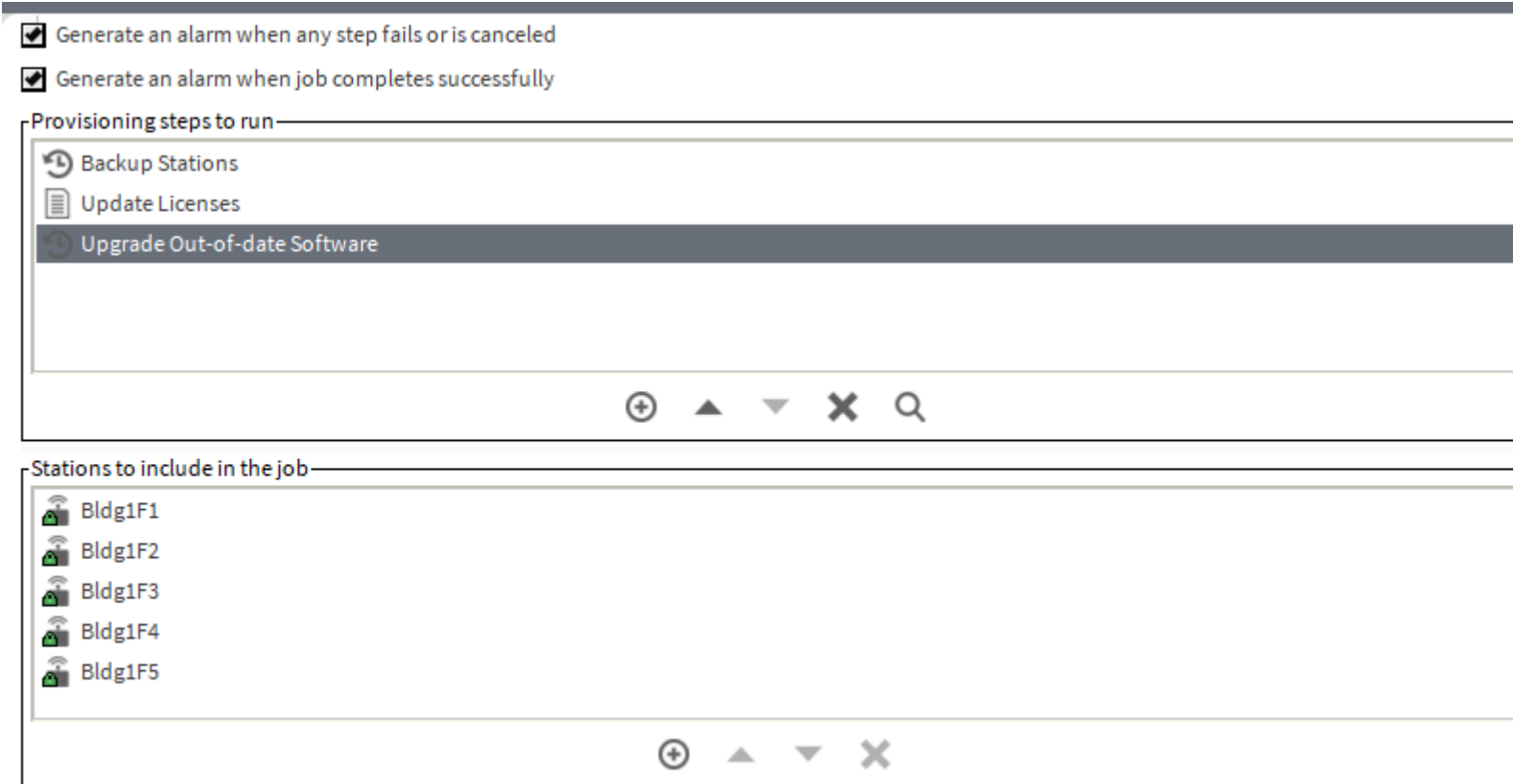
Generate an alarm when job completes successfully

Provisioning steps to run

- Backup Stations
- Update Licenses
- Upgrade Out-of-date Software

Stations to include in the job

- Bldg1F1
- Bldg1F2
- Bldg1F3
- Bldg1F4
- Bldg1F5

The image shows a software interface for system provisioning. At the top, there are two checked checkboxes: 'Generate an alarm when any step fails or is canceled' and 'Generate an alarm when job completes successfully'. Below these is a section titled 'Provisioning steps to run' which contains a list of three steps: 'Backup Stations', 'Update Licenses', and 'Upgrade Out-of-date Software'. The 'Upgrade Out-of-date Software' step is currently selected and highlighted. At the bottom of this list are icons for adding (+), up arrow, down arrow, and delete (X), along with a search icon. Below this is another section titled 'Stations to include in the job' which contains a list of five building identifiers: 'Bldg1F1', 'Bldg1F2', 'Bldg1F3', 'Bldg1F4', and 'Bldg1F5'. Each identifier is preceded by a small icon of a building with a signal tower. At the bottom of this list are icons for adding (+), up arrow, down arrow, and delete (X).

Security Job Steps

Generate an alarm when any step fails or is canceled
 Generate an alarm when job completes successfully

Provisioning steps to run

- Backup Stations
- Set Platform Credentials Job Step (Username=integrator, FIPS=false)
- Set Station User Password Job Step (Username=admin)
- Set Platform User Password Job Step (Username=kSardinia, FIPS=false)
- Set System Passphrase Job Step

Stations to include in the job

- Bldg1F1
- Bldg1F2
- Bldg1F3
- Bldg1F4
- Bldg1F5

New Job Step

Remove Platform User	Remove a user from the platform.
Remove Property	Remove a dynamic property
Remove Station User	Remove a user from the station.
Rename Device Station	This step will change the name of the station to match the name that it was given in the Niagara network.
Run Robot	Run a robot on each station
Security Job Steps	Add all security related job steps
Set Certificate Alias	Set the certificate alias for platform, FoxService, and WebService
Set Platform Credentials	Create a new platform account and remove default platform account
Set Platform User Password	Change password for an existing platform user
Set Property	Set or add a property
Set Station Connection Credentials	Set the station credentials used to connect to the remote station.
Set Station User Password	Set the password of the current station user
Set System Passphrase	Set System Passphrase
Set TLS Level	Set the minimum TLS level for platform, FoxService, and WebService

Run Now Save Refresh

Disaster Recovery Backups

- Many customer IT groups **require disaster recovery backup plans** to be formalized.
- Recovery plans typically apply to **servers and specific files on client PCs**, but often **don't include building automation controllers**.
- Should coordinate with customer to determine required **frequency of backups** and what **time of day** is considered **off-peak** for network traffic.
- Coordinate with IT group to **backup the Supervisor station** and potentially move JACE backups off disk.

Disaster Recovery Backup Job

- Create one or more **Niagara Network Job Prototypes** with a **job step to backup a select group of stations**.
- Use **multiple jobs** to backup stations during **off-peak** network usage times.
- Add a **Trigger Schedule** and link to the **Submit Job** action.
- Configure the **Retention Policy** on the Job Prototype to automatically dispose of old jobs.

Disaster Recovery Backup Job

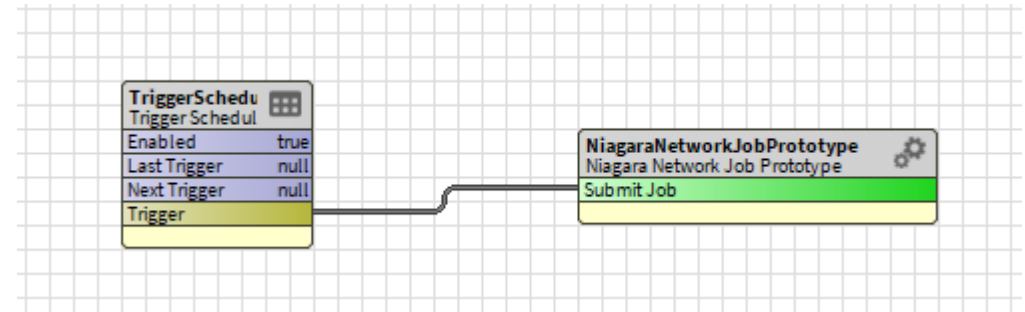
Provisioning steps to run

Backup Stations

Stations to include in the job

- Bldg1F1
- Bldg1F2
- Bldg1F3
- Bldg1F4
- Bldg1F5

Run Now Save Refresh



Property Sheet

NiagaraNetworkJobPrototype (Niagara Network Job Prototype)

Retention Policy	Retain permanently
Retention Policy Check Frequency	+00001h 00m 00s
Job Prototype	Niagara Network

Template Jobs

- Use Niagara Network Job Builder view to **Copy Templates** from Workbench to the Supervisor's file space.
- When initially deploying, must copy both the template ntpl file and Excel spreadsheet to the Supervisor.
- When upgrading, only the template ntpl file is required.

Copy Templates

Generate an alarm when any step fails or is canceled
 Generate an alarm when job completes successfully

Provisioning steps to run

Stations to include in the job

Copy Templates

Copy Templates
Select Template and Excel files to copy to supervisor

- logging
- pictures
- registry
- security
- shared
- stations
- stationTemplates
- sw
- tagDictionaries
- temp
- templates
- trash
- Niagara4.12
- Niagara4.2

templates

Name	Size	Last Modified
AceEdgeNetwork.ntpl	60 KB	25-Mar-22 9:25 AM EDT
VTR835xAxxxx-56.ntpl	23 KB	25-Mar-22 9:22 AM EDT

OK Cancel

Run Now Copy Templates Refresh

Template Jobs

Generate an alarm when any step fails or is canceled
 Generate an alarm when job completes successfully

Provisioning steps to run—

- Deploy Template Step: Excel File Ord Path = "file:^templateCache/AHU_01_Floor3.xlsx"
- Upgrade Template Step for Vendor: Title = "file:^templateCache/AHU_01.ntpl"
- Update Template or Application Configuration Step with "file:^templateCache/AHU_01_Floor4.xlsx"
- Install Application Template Step: Excel File Ord Path = "file:^templateCache/Edge73.xlsx"
- Upgrade Application Template: File = "file:^templateCache/b100Ahu_1.napl"
- Export Application Template Config Job Step

Stations to include in the job—

- Bldg1F1
- Bldg1F2
- Bldg1F3
- Bldg1F4
- Bldg1F5

Run Now Copy Templates Refresh

Set Up SAML SSO

Configure Niagara IdP and SAML Scheme ✕

Configure Niagara IdP and SAML Scheme
Enter the desired aliases for the remote IdP and SAML Server certificates, and optionally generate new SAML Server certificates

Login Button Text Format (required)

IdP Certificate Alias Use SAMLIdPService Certificate Alias

SAML Signing Certificate Alias (required)

SAML Encryption Certificate Alias (required)

Generate new remote SAML signing certificate

Common Name (CN) (required)
* this may contain the host name or address of the server

Generate new remote SAML encryption certificate

Common Name (CN) (required)
* this may contain the host name or address of the server

Organizational Unit (OU)

Organization (O) (required)

Locality (L)

State/Province (ST)

Country Code (C) (required)

Not Before

Not After

Key Size 1024 bits 2048 bits 3072 bits 4096 bits

Certificate Usage Server Client CA Code Signing

Alternate Server Name

Alternate Server URI

Email Address

Key Usage Digital signature Non-repudiation Key encipherment
 Data encipherment Key agreement Certificate signing
 CRL signing Encipher only Decipher only

Certificate Management Jobs

Generate an alarm when any step fails or is canceled
 Generate an alarm when job completes successfully

Provisioning steps to run—

- Generate Certificate Job Step (Alias="alias", Common Name="<hostname>", Organization="Tridium")
- Export CSR Job Step (File Naming Identifier="Hostname", Certificate Alias="alias")
- Sign Certificate Job Step (Server Certificate Alias="alias")
- Import Signed Certificate Job Step (File Naming Identifier="Hostname", Certificate Alias="alias")
- Install certificate "niagara 4 root certificate", Policy="Install Unique"

Stations to include in the job—

- Bldg1F1
- Bldg1F2
- Bldg1F3
- Bldg1F4
- Bldg1F5

Run Now Copy Templates Refresh

Set Properties

Generate an alarm when any step fails or is canceled
 Generate an alarm when job completes successfully

-Provisioning steps to run—

Set Property Job Step on: Target "ORD= station:|slot:/Services/WebService/httpsOnly", Property Name = "httpsOnly", Value = "true", Add If Missing =

Set Property

Set or add a property

Use NEQL false

Target ORD

Property Name

Property Type Boolean

Add If Missing false

Unique Value per Station false

Property Value:

true

OK Cancel

-Stations to include in the job—

- Bldg1F1
- Bldg1F2
- Bldg1F3
- Bldg1F4
- Bldg1F5

Run Now Copy Templates Refresh

Provisioning Step Evolution

4.4

- Backup Stations
- Copy Local File
- Copy Supervisor File
- Install Certificate
- Install Software
- Reboot
- Run Robot
- Update licenses
- Upgrade out of date software

4.6

- Deploy Template
- Generate Certificate
- Import Signed Certificate
- Set Certificate Alias
- Set Platform Credentials
- Set System Passphrase
- Set TLS Level
- Setup Reciprocal Connection
- Sign Certificate
- Upgrade Template

4.7

- Enable Bootstrap Mode
- Update Connections Using Niagara Network Discovery
- Update Connections Using Provisioning Station's DHCP Server
- Export Certificate Signing Request
- Install Application Template
- Rename Device Station
- Set Station User Password
- Set Time

4.8

- Add Station User
- Remove Station User
- Set Property
- Set Station Connection Credentials

Provisioning Step Evolution

4.9

Update Template or
Application Configuration
Upgrade Application
Template
Configure Niagara IdP and
SAML Scheme

4.10

Export Application Template
Configuration

4.12

Remove Platform User
Remove Property
Set Platform User Password

Edge 10 and Niagara Provisioning

- **Bootstrap Mode** – enables provisioning station to connect to Edge controllers out of the box without having to change default passphrase or platform/station credentials while using a default self-signed certificate.
- **Update Connections** – updates IP connection for Edge controllers
 - Utilize Niagara network discovery (broadcast UDP)
 - Utilize DHCP server lease information (JACE-8 secondary network port)
- **Install Application Template** – deploys application templates to Edge controllers utilizing Excel spread sheet to specify unique configuration properties.
- Standard steps for updating licenses, upgrading/installing software and managing PKI certificates.

Summary - Provisioning

- The **Niagara Provisioning feature** is included with every Supervisor license.
- **Every Supervisor** should have provisioning setup.
- Should **at least setup backup jobs** to maintain disaster recovery backups of all JACEs.
- There are many jobs which can be used to automate performing repetitive tasks such as **deploying templates, managing TLS certificates and configuring platform and station security.**