

WYKON

by **TRIDIUM**

niagara 4.14

FEATURES OVERVIEW

AGENDA

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Niagara 4.14
Overview

02

New HTML5
Web Views

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Connectivity
Upgrades

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Brick
Schema
Support

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Compliance
Upgrades

06

Cyber
Defense
Upgrades

niagara

ALWAYS EVOLVING ACROSS FIVE DIMENSIONS

DEPLOYMENT



- Provisioning Web Views
- Category Service Views
- GAuth Enrollment Workflow
- Added JACE 9000 features
 - DHCP on secondary port
 - 802.1x Support

INTEROPERABILITY



- Core Driver Views
- Niagara Network History Views
- Brick Schema Tag Dictionary
- OnCall Service Views

CONNECTIVITY



- Rdb History Views
- Weather Service Views
- Unit Test Public APIs
- OPC-UA Driver Refresh

CYBER DEFENSE



- Certificate Signing Service
- Multi-Tiered Security Dashboard
- SAML Authentication
- WindowsAuth for msSQL

COMPLIANCE

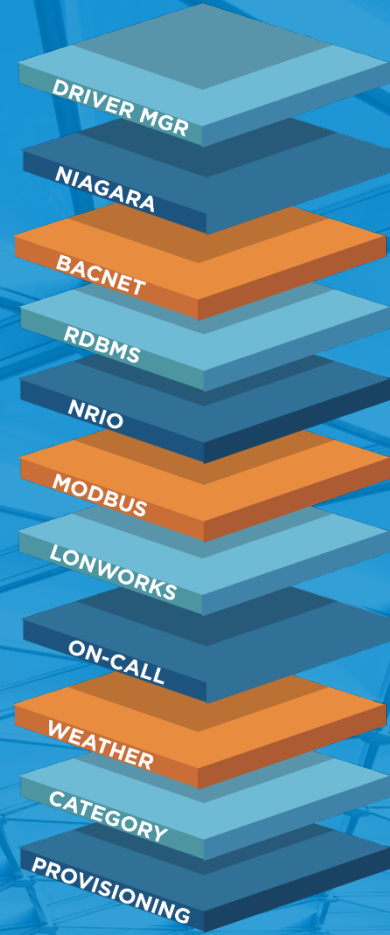


- BACnet Protocol Revision 16 Update
- ISA 62443 Process Certification

niagara 4.14

New Web Views

NEW HTML5 WEB VIEWS



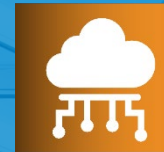
A Significant Step-Up in



**DEPLOYMENT
EASE**



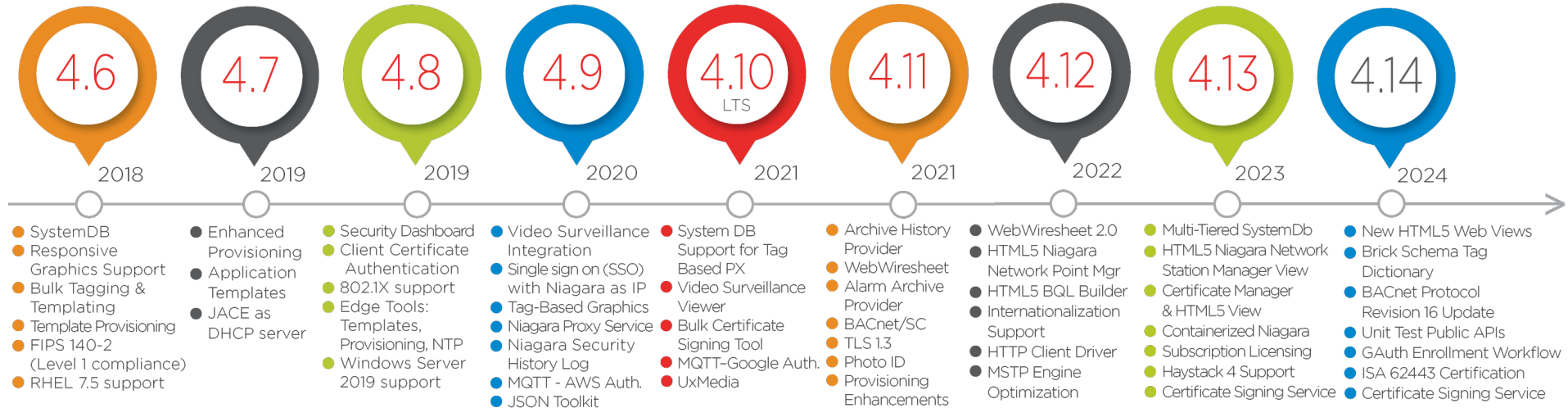
**VISUALIZATION
CHOICES**



**SECURE
CONNECTIVITY**

WORKBENCH INTO CORE

With every version of Niagara Framework®, we are adding more Workbench functionality into the core so you can take advantage of **browser-based remote engineering.**



NEW HTML5 WEB VIEWS

Save Time Engineering Niagara Stations through a web browser.



Accessible
and
Open

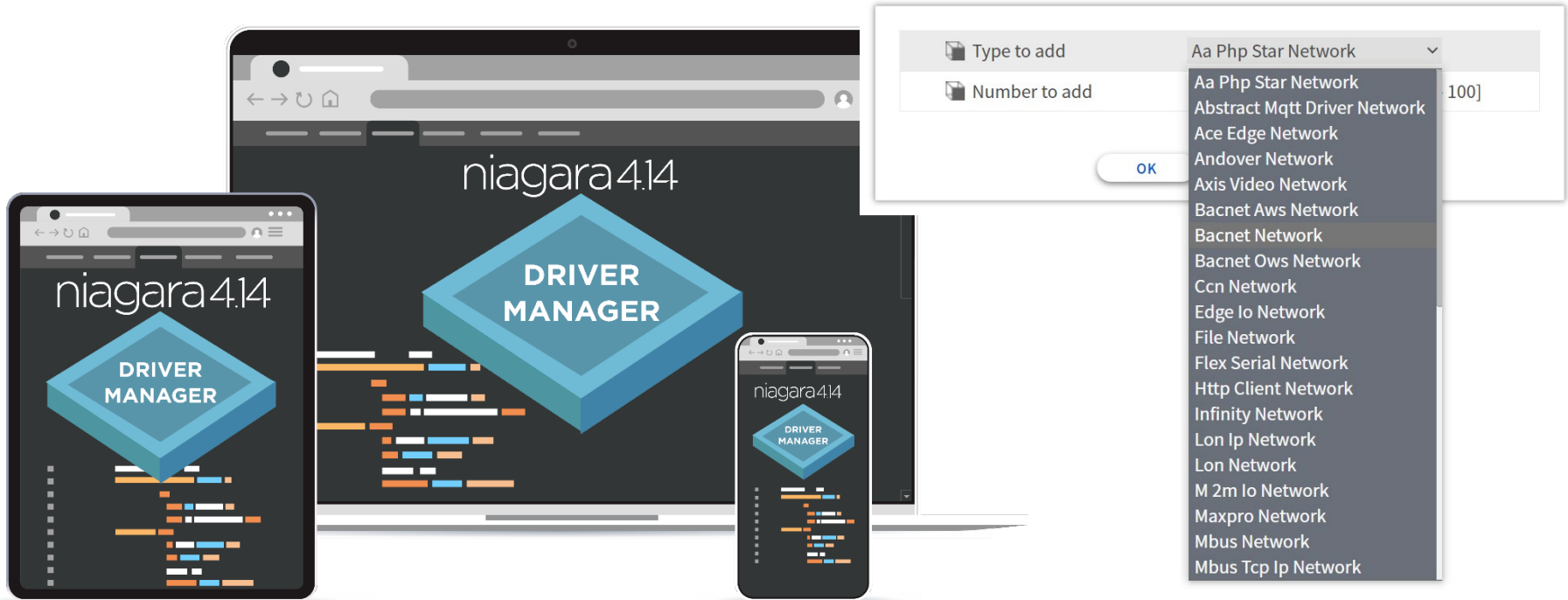
Client Version
+ Brand
Agnostic

Niagara Cloud
Suite: Remote
functionality

Workbench
Functionality
via Browser or
Dedicated App

DRIVER MANAGER WEB VIEW

Deploy a selection of drivers to create interoperability between communication protocols. Bring devices into a Niagara ecosystem to leverage everything the Framework has to offer.





NIAGARA NETWORK HISTORY COLLECTION WEB VIEW

Control where your building's data goes from a browser

Name	History Id	Execution Time	Enabled	Capacity	Full Policy	On Demand Poll Enabled	On Demand Poll Frequency	System Tag Patterns
OATmp	^OATmp	2:00 AM {Sun Mon Tue Wed Thu Fri Sat}	true	Unlimited	Roll	true	Normal	
Name	OATmp							
History Id	^	OATmp						
Execution Time	Daily: 2:00 AM {Sun Mon Tue Wed Thu Fri Sat}							
Enabled	true <input checked="" type="checkbox"/>							
Capacity	Unlimited <input type="text"/>							
Full Policy	Roll <input type="text"/>							
On Demand Poll Enabled	true <input checked="" type="checkbox"/>							
On Demand Poll Frequency	Normal <input type="text"/>							
System Tag Patterns	Cannot Edit							

Collect Data From All Stations

Flexible Archive Scheduling

Import and Export Managers for Data

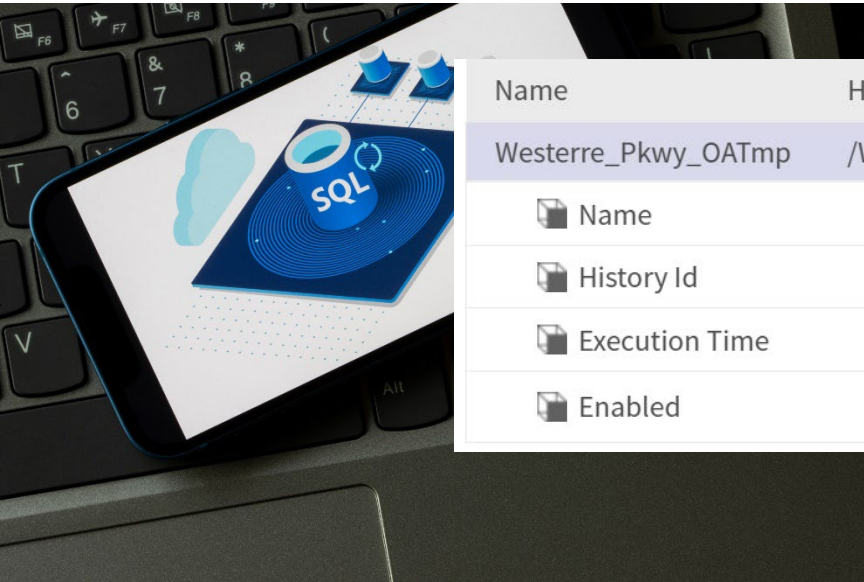


RDBMS NETWORK HISTORY COLLECTION WEB VIEW

Send your building data to **mySQL**, **MSSQL**, or **OracleDb** via browser.

Store Data

Schedule Operation

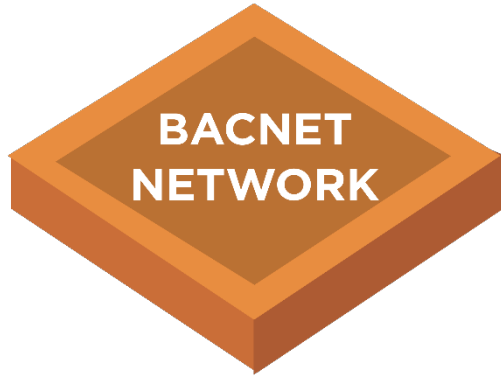


Name	History Id	Execution Time	Enabled
Westerre_Pkwy_OATmp	/Westerre_Pkwy/OATmp	2:00 AM {Sun Mon Tue Wed Thu Fri Sat}	true
Name	<input type="text" value="Westerre_Pkwy_OATmp"/>		
History Id	<input type="text" value="/Westerre_Pkwy"/>	<input type="text" value="/OATmp"/>	
Execution Time	<input type="text" value="Daily: 2:00 AM {Sun Mon Tue Wed Thu Fri Sat}"/>		
Enabled	<input checked="" type="checkbox"/> true		

Import & Export Archives

STANDARD BUILDING PROTOCOL WEB VIEWS

Save time, gain flexibility when integrating field devices and energy meters into Niagara.



**BACNET
NETWORK**

ASHRAE Standard 135 open communication protocol of choice for field devices.

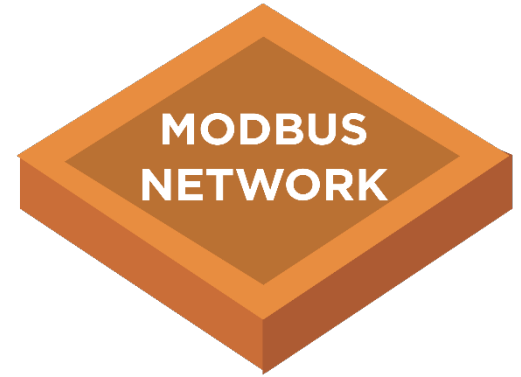
- Export Table
- Schedule Managers
- History Import Manager



**LONWORKS
NETWORK**

Echelon networking platform communicating over FTT-10 twisted pair.

- Device Manager
- Router Manager
- Link Manager
- Utilities Manager
- Point Manager



**MODBUS
NETWORK**

TCP- and Serial-based communications protocol commonly used with energy metering.

- Device Manager
- Point Manager

BRING YOUR PREFERRED DEVICES INTO NIAGARA

- Nav
- Config
 - Services
 - Drivers
 - NiagaraNetwork
 - BacnetNetwork
 - Local Device
 - Bacnet Comm
 - Monitor
 - Tuning Policies
 - BACnet Device
 - LonNetwork
 - Local Lon Device
 - ModbusAsyncNetwork..
 - Modbus Async Device1
 - Apps
 - Files
 - Histories

BacnetNetwork

Database

Name	Exts	Device ID	Status	Netwk	MAC Addr	Vendor	Model	Firmware Rev
BACnet Device		device:838601	{ok}	14101	1	Functional Devices Inc	RIB[*]W[*]240[*]B-BC	1.03R2

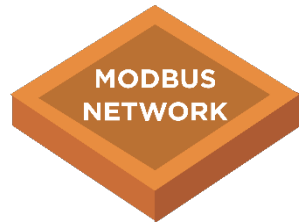
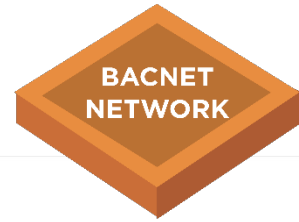
LonNetwork

Database

Name	Type	Exts	State	Subnet	Node	Fault Cause	Manufacturer	Program Id
Local Lon Device	Local Lon Device		Config Online	1	127		Tridium	90 00 8e 01 03 80 00 03

ModbusAsyncNetwork

Name	Exts	Status	Device Address
Modbus Async Device1		{unackedAlarm}	1



NRIO NETWORK WEB VIEW

Connect a station operating on a JACE 8000, JACE 9000, or Edge10 to native Niagara Remote-I/O devices and **operate equipment directly through Niagara.**

- NRIO-16
- NRIO-34



Discover,
Configure, Add
IO Devices

Discover,
Configure, Add
IO Points

ON-CALL SERVICE WEB VIEW

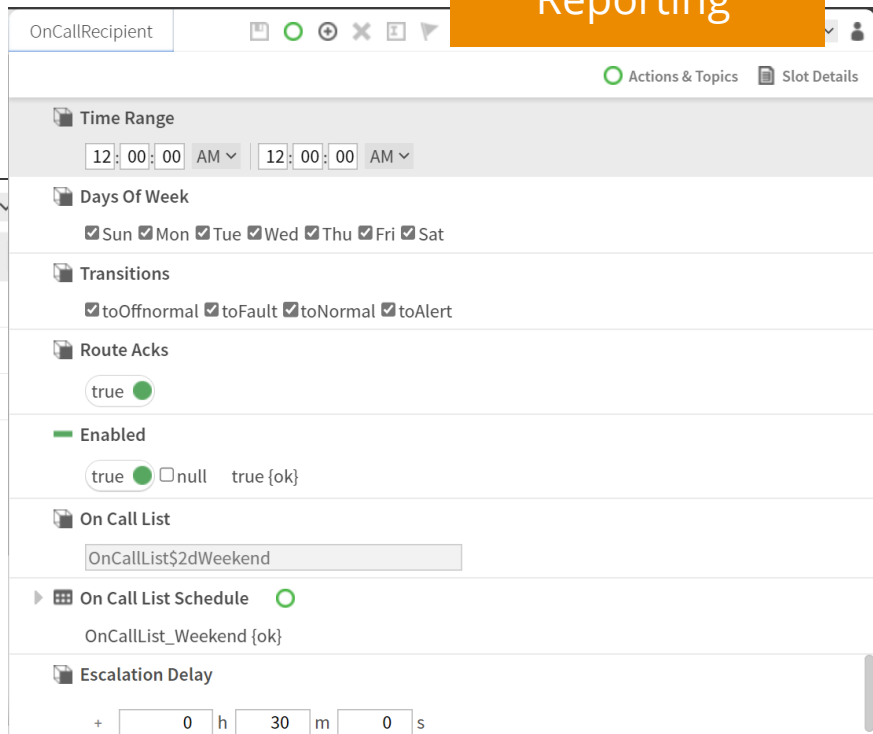
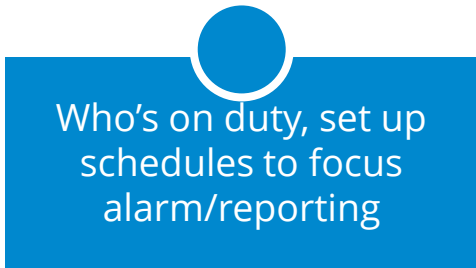


Text or email alarm notifications to the right person at the earliest possible time automatically.

Set up a flexible user contact list and schedule that list using the standard scheduler interface.



Name	Status	Enabled	Priority	User	User Alarm Recipient
chris_Email	{ok}	true	1	chris	Email
michael_Sms	{ok}	true	2	michael	Sms
stephen_Email	{ok}	true	3	stephen	Email



OnCallRecipient

Actions & Topics Slot Details

Time Range
12:00:00 AM - 12:00:00 AM

Days Of Week
 Sun Mon Tue Wed Thu Fri Sat

Transitions
 toOffnormal toFault toNormal toAlert

Route Acks
true

Enabled
true null true {ok}

On Call List
OnCallList\$2dWeekend

On Call List Schedule
OnCallList_Weekend {ok}

Escalation Delay
+ 0 h 30 m 0 s

WEATHER SERVICE WEB VIEW



Maintain awareness of current and forecasted weather conditions in the U.S. via the National Weather Service

WeatherService Weather Manager

Name	Current	Today	Tomorrow	Advisory	Sunrise/Sunset
Richmond, VA	51.0 °F, A Few Clouds {ok}	53.0 °F/31.0 °F, Mostly Sunny, 0 percent {ok}	49.0 °F/24.0 °F, Partly Sunny, 7 percent {ok}	none	7:21 AM/5:12 PM
Chicago	20.0 °F, Windy {alarm}	26.0 °F/-6.0 °F, Snow, 59 percent {ok}	0.0 °F/-8.0 °F, Unknown, 6 percent {ok}	Winter Weather Advisory {ok}	8:15 AM/5:43 PM
New York City	48.0 °F, A Few Clouds {ok}	60.0 °F/33.0 °F, Windy, 10 percent {ok}	40.0 °F/22.0 °F, Snow, 14 percent {ok}	none	7:16 AM/4:51 PM
Los Angeles	59.0 °F, Partly Cloudy {ok}	63.0 °F/51.0 °F, Mostly Sunny, 2 percent {ok}	63.0 °F/51.0 °F, Partly Sunny, 0 percent {ok}	none	9:57 AM/8:05 PM
Miami	84.0 °F, Mostly Cloudy {ok}	85.0 °F/64.0 °F, Rain, 36 percent {ok}	72.0 °F/69.0 °F, Rain, 31 percent {ok}	none	7:09 AM/5:49 PM

Adjust
Operations Per
Weather
Conditions

Adjust
Operations Per
Outside Air
Quality

See Current
and Future
Forecast Data

CATEGORY SERVICE WEB VIEW

Configure and manage authorization to station components by category



CategoryService	Inherit	User	Admin	Category 3
▶ Alarm	n/a	●		
▼ Config	n/a	●		
▶ Services	✓	●		
▼ Drivers	✓	●		
▼ NiagaraNetwork	✓	●		
▶ Globals	✓	●		
▶ Westerre_Floor1	✓	●		
▶ ProvisioningNwExt	✓	●		
▶ RdbmsNetwork	✓	●		
▼ Files	n/a		●	
▶ publicCertCopy	✓		●	
▼ px		●	●	
▶ img	✓	●	●	
▶ AHU.px	✓	●	●	
▶ DemoNiagaraSystemDiagram.px	✓	●	●	
▶ Schedule.px	✓	●	●	
▶ VAV.px	✓	●	●	
▶ History	n/a	●		



Categories play an integral role in station security, helping in the practice of *Least Privilege Principle* whereby access to data is only granted to users based on their need for it to serve in their role.

NIAGARA PROVISIONING WEB VIEW

Automate Workflows **AT-SCALE!**



Execute the same series of tasks (job steps) on any number of target hosts

Run a provisioning job from anywhere you can open the Supervisor station.



Add

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

Type	Description
Add Station User	Add a new user to the station.
Backup Stations	Back up each station in the job
Convert To Perpetual License Mode	Converts all the stations' licensing mode from subscription to perpetual
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
Import Signed Certificate	Import a signed certificate for each device from the station's CSR generation
Install a Signed Certificate for an Individual Service (Fox, Web, etc)	Install an Individual Signed Cert Config to onboard/renew a signed certificate for a particular service
Install a Signed Certificate for Fox/Web/Platform to share	Install a Combined Signed Cert Config to onboard/renew a signed certificate for Fox, Web, and Platform
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 N
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 Time	Set the time for each device
Set TLS Level	Set the minimum TLS level for platform, FoxService, and WebService
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

NIAGARA 4.14 CONNECTIVITY UPGRADES





OPC-UA DRIVER REFRESH

Now you can more easily choose the datatypes of exported OPC UA points

Property Sheet

Display Name	Value
Station Name	Westerre_Pkwy
Sys Info	
Services	Service Container
Drivers	Driver Container

The left sidebar shows the following configuration tree:

- Config
 - Files
 - Histories
- Palette
 - opcUaClient
 - OpcUaNetwork
 - OpcUaDevice
 - OpcUaDeviceFolder
 - OpcUaClientPointFolder
 - opcUaServer
 - OpcUaServer
 - OpcUaNamespace
 - OpcUaServerDeviceFolder
 - OpcUaServerPointFolder
 - OpcUaAlarmClass
 - OpcUaAlarmRecipient
 - OpcUaAuthenticationScheme

Integrate more easily with one of the most basic and familiar protocols used in industrial automation.

NIAGARA 4.14 BRICK SCHEMA SUPPORT

INTEROPERABILITY

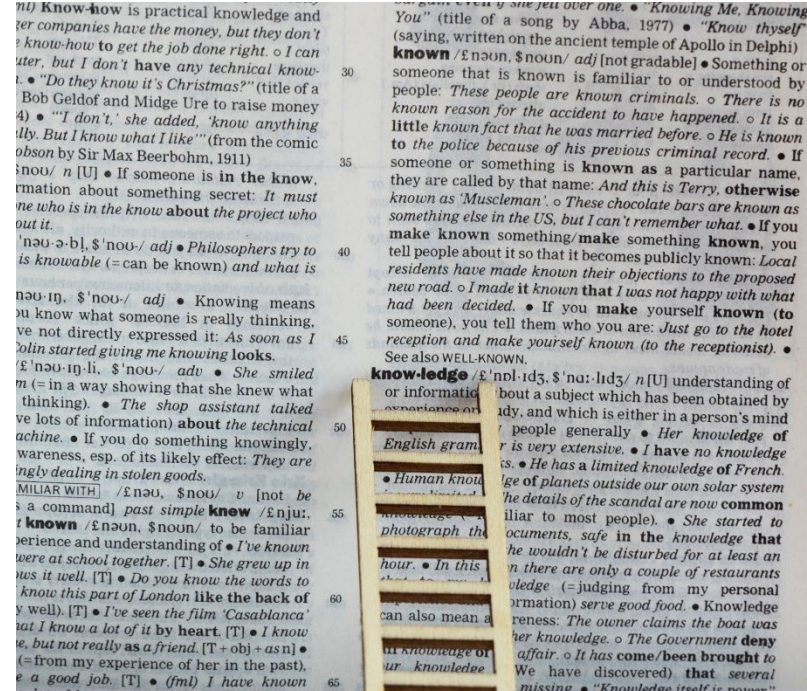


BRICK SCHEMA TAG DICTIONARY

- Energy management consultants and others doing sophisticated analytics want the foundation of building data enriched with standardized tagging!
- Brick Schema is an ontology specified for more and more projects due to its knowledge graph methodology and descriptive relation definitions.
- Built-in dictionary support makes tagging an easier lift!
- Add standardized tags as you go about the job of systems integration with Niagara.
- Augments Haystack support.

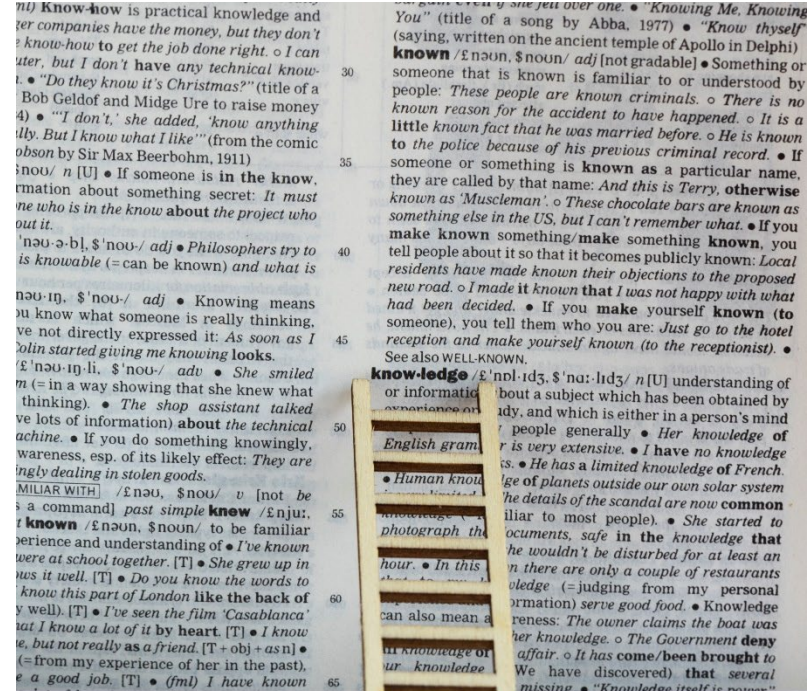
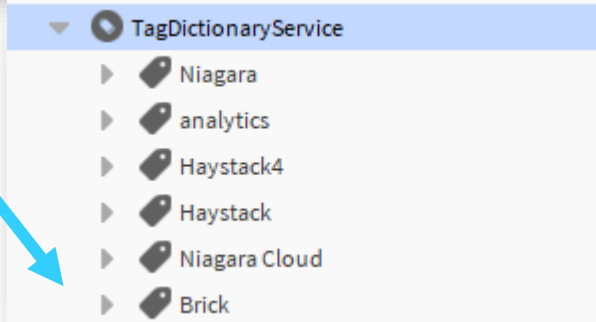
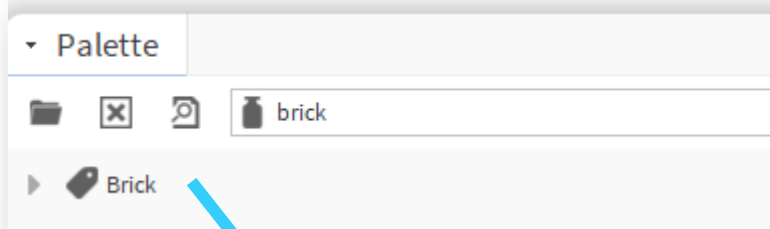


<https://brickschema.org/>



NIAGARA TAG DICTIONARY SERVICE

- The Tag Dictionary Service was designed to accommodate several ontologies.
- Just Drag and Drop the Brick Dictionary to the service.



BRICK SCHEMA METHODOLOGY

Tag Definitions

- ▶ aed
- ▶ ahu
- ▶ ablutions
- ▶ absorption
- ▶ acceleration
- ▶ access
- ▶ activated
- ▶ activation
- ▶ active
- ▶ adjust
- ▶ aid
- ▶ air
- ▶ alarm

Tag Group Definitions

- ▶ ablutionsRoom
- ▶ absorptionChiller
- ▶ accelerationTimeSetpoint
- ▶ accessControlEquipment
- ▶ accessReader
- ▶ activeChilledBeam
- ▶ activePowerSensor
- ▶ adjustSensor
- ▶ airAlarm
- ▶ airDifferentialPressureSens
- ▶ airDifferentialPressureSetp

Relation Definitions

- ▶ feeds
- ▶ hasInputSubstance
- ▶ hasLocation
- ▶ hasOutputSubstance
- ▶ hasPart
- ▶ hasPoint
- ▶ hasQuantity
- ▶ hasSubMeter
- ▶ hasSubstance
- ▶ isFedBy
- ▶ isLocationOf
- ▶ isMeteredBy

Tag Rules

- ▶ aed
- ▶ ahu
- ▶ air
- ▶ alarm
- ▶ atrium
- ▶ auditorium
- ▶ basement
- ▶ battery
- ▶ blind
- ▶ boiler
- ▶ breakroom
- ▶ building

Tags

Groups

Relations

Rules

NIAGARA 4.14 COMPLIANCE UPGRADES

CERTIFICATIONS



BACNET PROTOCOL REVISION 16 UPDATE

ASHRAE Standard 135 open communication protocol of choice for field devices



Protocol Revision 16
Certification Testing in Progress!

B-BC Profile for Supervisor, Jace 9000, & Jace 8000
with BACnet Secure Connect link layer!

- Configuration Support New Protocol Revision 16 Types
 - Examples: Binary Output Lighting Config Type, Access Door, Load Control, Pulse Converter
- Added Interface Value Property
- Added "Change of State Alarm" Offnormal Algorithm for Numeric Points
- Added "Change of Discrete Value" Algorithm
- Exposing "Fault Out of Range" Algorithms
- Enhanced Loop Algorithm
- Can Set "Change of State Count" and "Elapsed Active Time" to Non-Zero Values
- Duplicate Time Values No Longer Allowed

ISA 62443-4-1-2018 CERTIFICATION

Tridium processes have met all requirements defined by ISA “Security for industrial automation and control systems

Part 4-1: Secure product development lifecycle requirements”

This lifecycle includes:

- Security requirements definition
- Secure design
- Secure implementation (including coding guidelines)
- Verification and validation
- Defect management
- Patch management
- Product end-of-life



NIAGARA 4.14 CYBER DEFENSE FEATURES



CERTIFICATE SIGNING SERVICE

Establish, monitor, and renew Niagara installation's PKI **at scale** and **with ease** to enforce secure communication and maintain a strong security posture.

Individual Signing Requester

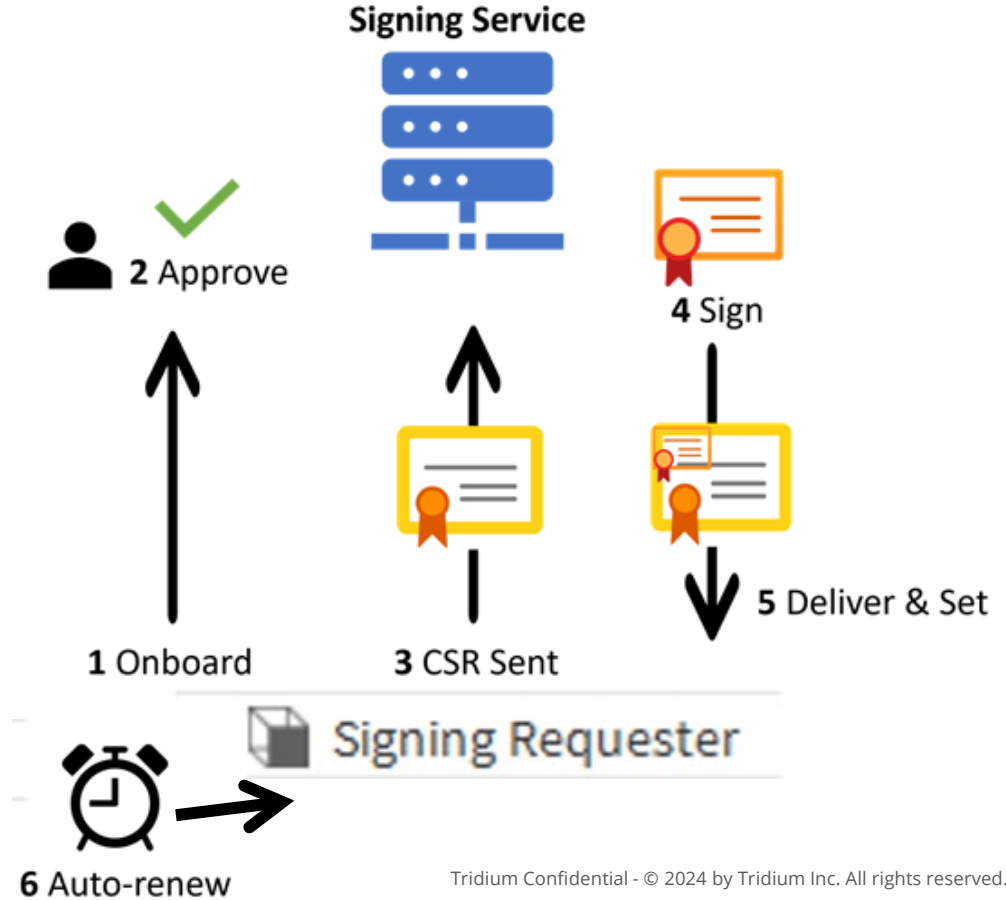
Combined Request:
Fox Service, Web Service, Platform

Provisioning Jobs for Deployment



CERTIFICATE SIGNING PROCESS

Signing Request



MULTI-TIERED SECURITY DASHBOARD

Quickly assess the security posture of a Niagara Network at-scale!

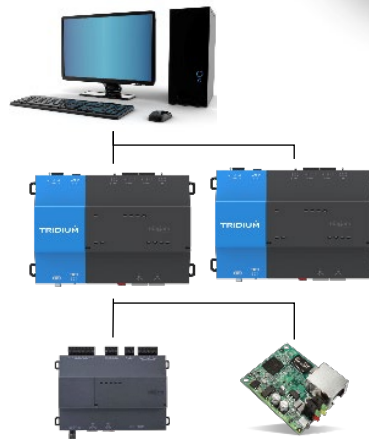
Niagara Security Dashboard (intro'd 4.6)

Quickly assess the security posture of a Niagara Network of any layout, at scale



...Not since Peanut Butter met Chocolate has there been a combo like...

Multi-Tiered Navigation



Reachable Stations introduced in 4.13



SAML AUTHENTICATION TYPE CONFIGURATION

Meet stricter single sign-on authentication security requirements with support for specifying the authentication type requirement.

Provide the required or minimum required type from these options:



Password,
PasswordProtectedTransport,
TimeSyncToken



SSL/TLS Certificate, Kerberos



Smartcard, Smartcard PKI,
Unspecified



WINDOWS AUTHENTICATION for MS SQL

Meet strict authentication requirements set by Microsoft database administrators for accessing a Microsoft SQL Rdb Server.



Overcome IT hurdle! Database administrator preferred method of access!



Convenience! Users can be authenticated via standard Windows domain accounts and utilities.

New Microsoft Authentication Mode!

NIAGARA 4.14 DEPLOYMENT FEATURES

DEPLOYMENT
EASE



G AUTH ENROLLMENT

Setup Google Multi-Factor Authentication (MFA) token upon the next login
Enhanced Security by reinforcing MFA for Niagara users

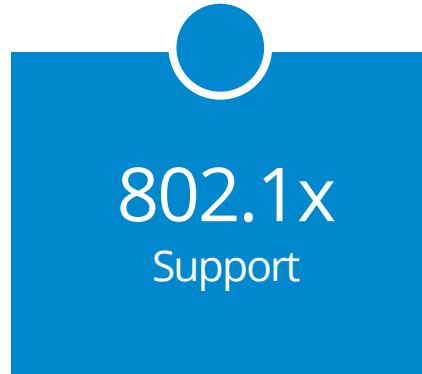
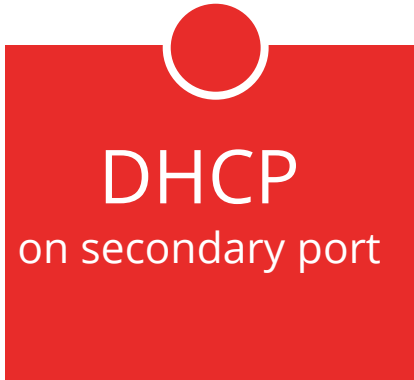
Improves
Workflow Enrolling
Users With G Auth

This new workflow will allow the admin to configure the authentication scheme to allow users to login with just their password if they do not have a private key set up yet, but force them to create a private key at next login



NEW JACE 9000 FEATURES

Powerhouse controller and server platform for connecting multiple and diverse devices and sub-systems via Niagara Framework just got better!



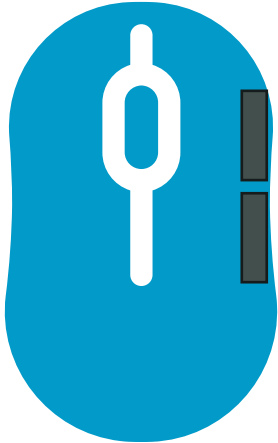
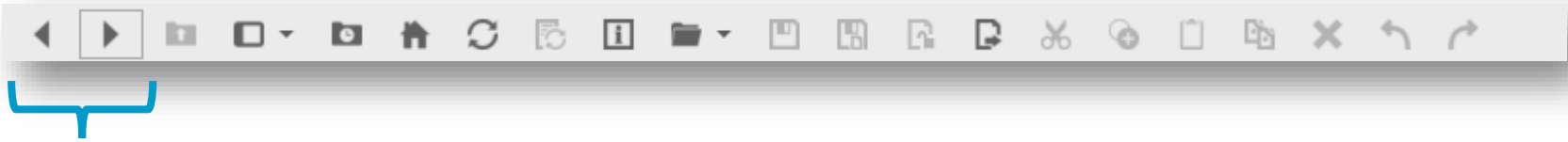
**HIDDEN-GEM
FEATURES**

**DEPLOYMENT
EASE**





WORKBENCH NOW SUPPORTS MOUSE BUTTONS



- ▶ Forward navigation
- ◀ Backward navigation

Maps to buttons 4 and 5

STRONGER PASSWORD PROTECTION

Updating a non-admin user password now requires old password

UserService			●
▶ User Prototypes	✓		●
▶ admin	✓		●
▶ kevin	✓		●
▶ BACnet	✓		●
▶ M2M	✓		●
▶ Bluejay		●	

Before you could overwrite the password.

Property Sheet

Bluejay (User)

Email

Authenticator Password

Confirm

Facets Time Format (default)

Unit Conversion None

Cell Phone Number

NEW PASSWORD UPDATE PROCESS

UserService			●
▶ User Prototypes	✓		●
▶ admin	✓		●
▶ kevin	✓		●
▶ BACnet	✓		●
▶ M2M	✓		●
▶ Bluejay		●	



Right-click on Authenticator
Use Action: Update password

Property Sheet

Bluejay (User)

Email

Authenticator Password

Facets

Cell Phone Number

Views

Actions

Update Password

Copy Ctrl+C

version None

NEW PASSWORD UPDATE PROCESS

Update Password

User Password Change Params

Current Password

New Password Password

Confirm

OK Cancel

Current password is required before new password is accepted.

Property Sheet

uejay (User)

Email

Password

Authenticator

Facets

Cell Phone Number

Views

Actions

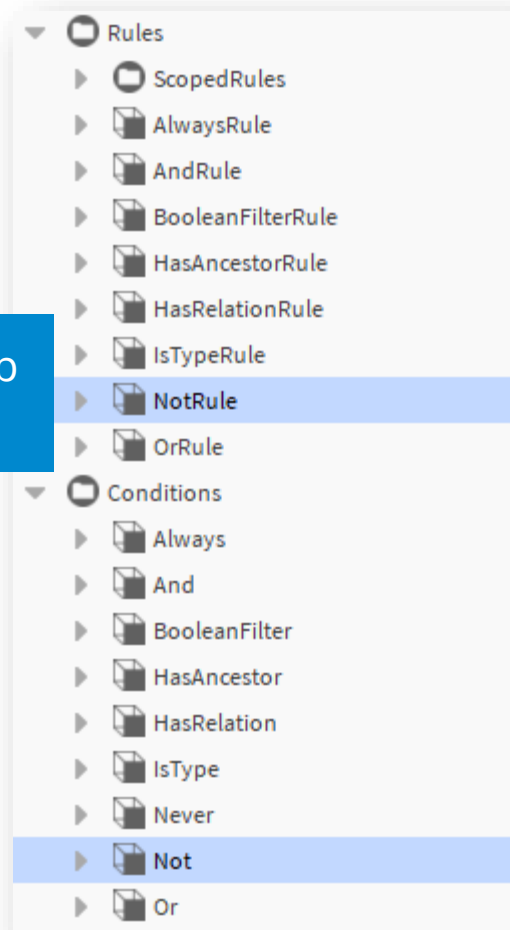
Copy Ctrl+C

Update Password

TAGGING EDITOR ENHANCEMENT

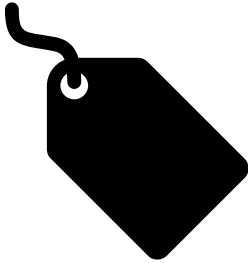
Additional flexibility to create rules with new tagDictionary Service: **NotRule**

Examples: NOT hs:equip
NOT hs:vav



TAGGING EDITOR ENHANCEMENT

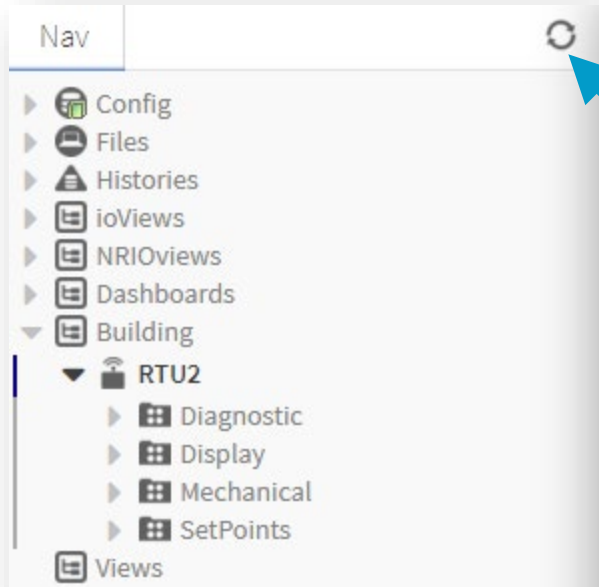
A new implied tag rule will imply a tag to indicate when a control point has an alarm extension.



Implied tag rule: n:alarmablePoint

HTML5 EDITOR ENHANCEMENT

Added the ability to Sync your navTree to the currently displayed page



UNIT TEST PUBLIC APIs

New public APIs available to the developer community to assist in writing unit testing, particularly for testing within a running Niagara station



UNIT TEST API: BTestNgStation (4.14)

```
@NiagaraType
@Test
public class BMyComponentTest extends BTestNgStation
{
    public void myComponentDoesXInARunningStation()
    {
        BMyComponent myComponent = new BMyComponent();
        stationHandler.getStation().add("MyComponent", myComponent);
        ...
    }
}
```



THANK YOU