



Niagara Framework 4.11

Features Overview

Niagara 4.11

Features Review

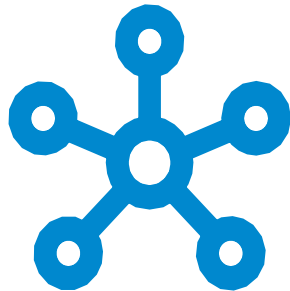
Niagara Framework[®]: Always Evolving – 4.11

Niagara 4.11 brings exciting new features that continue to evolve Niagara's key tenets of visualization, rapid deployment, security, Edge, connectivity, certification and IT compliance.



Visualization

WebWiresheet
WebChart Enhancements



Connectivity

BACnet/SC
Archive History Provider



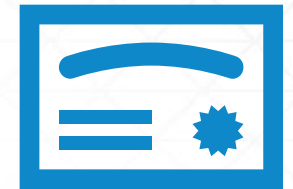
Security

Critical Support/Enhancements
TLS 1.3



Deployment

Edge Tools Updates
Optimized JACE[®] Memory
Added Support Infrastructure



Certification & Compliance

Archive Alarm Provider

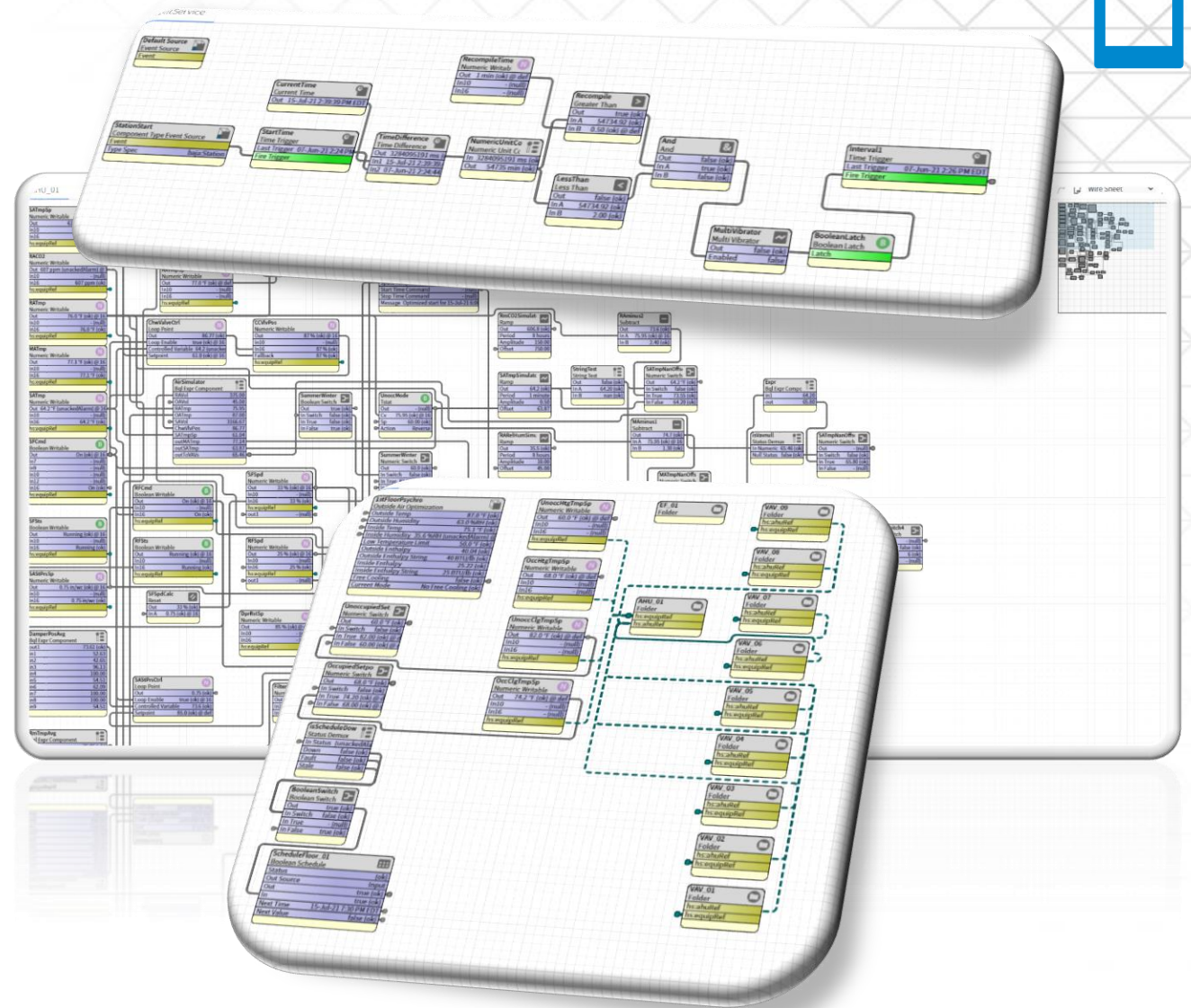
Niagara 4.11

Visualization

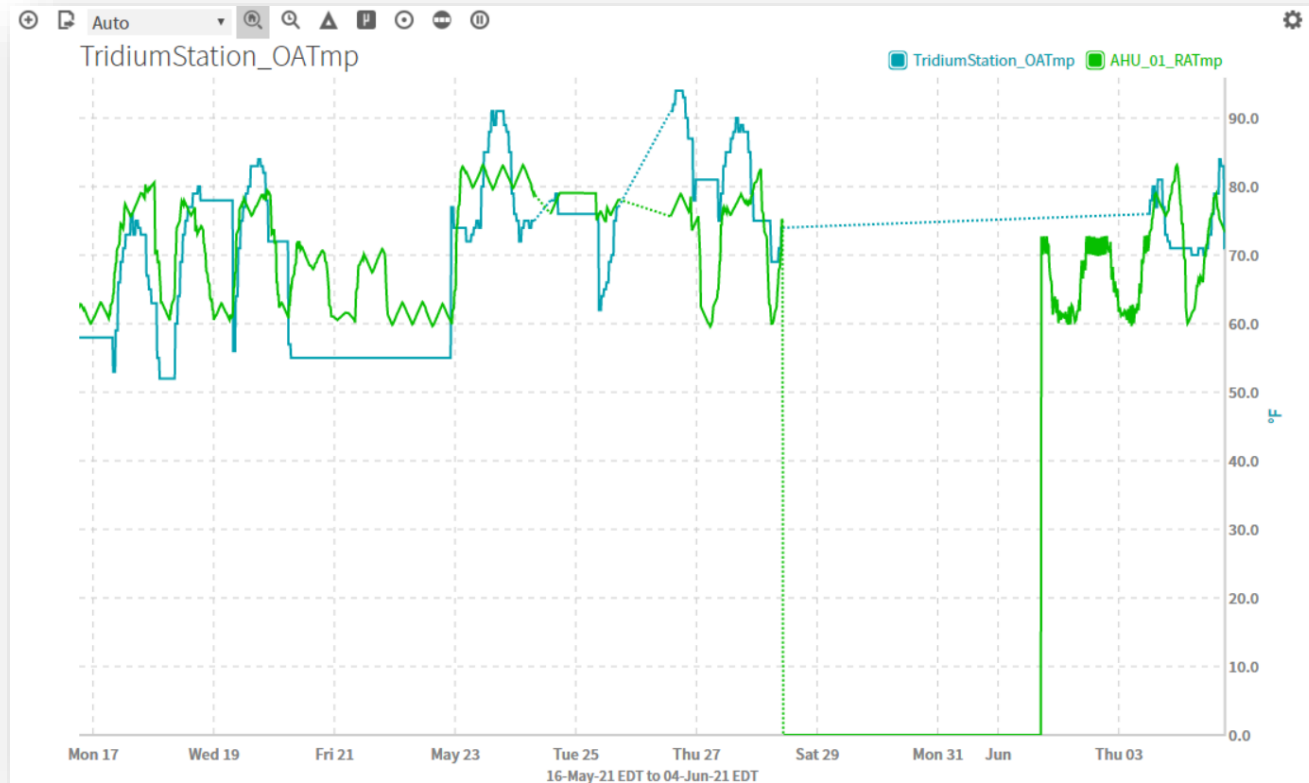
WebWiresheet

WebWiresheet is a native HTML5 configuration tool which extends the power of the Workbench Wiresheet Application into a Browser Environment

- Reduces truck rolls
- Improved user experience
- Enhances your workflow efficiency
- Provides Added Flexibility – Create and configure using a mobile device



WebChart Enhancements



In Niagara 4.11, WebChart has never been more powerful and performant!

- Provides Interpolation of Missing or Invalid Data
- Choose from a variety of visualization options
- Improved UX and workflow efficiency for end users such as Energy Managers, Building O&M Personnel, Facility Engineers

Niagara 4.11

Connectivity

Archive History Provider

The Archive History Provider streamlines access to years of historical Niagara data stored in a relational database (RDB) for rapid visualization and analysis.

- Removes the need to Import Histories to the Supervisor for Visualization
- Instantly query years of archived data and baseline against new locally stored data
- Enables well-informed analyses of equipment operation
- Improves facility systems operational efficiency

Supported using MSSQL, MySQL and Oracle DBs

All items and schedules are subject to change at Tridium's sole discretion. Tridium has no obligation to deliver any future product outlined in this document.



Niagara 4.11

BACnet/SC

What is BACnet Secure Connect?



BACnet Secure Connect (BACnet/SC) is a new BACnet datalink that eliminates many of the concerns Owners, Facility Managers, and IT professionals have with BACnet today. It eliminates the need for static IP addresses and network broadcasts, while **simplifying the configuration** of its networks' parameters.

- **Provides enhanced security for your BMS network and associated devices**
 - Features encrypted communications
 - Full compatibility with all existing BACnet systems and devices through normal BACnet routing
- **Alleviates IT concerns related to BMS network management**
 - BACnet/SC provides a sophisticated network security solution that uses standards widely accepted by the IT community
 - BACnet/SC works easily with firewall devices that are common in IT infrastructure
 - Based on TLS 1.3
 - Uses standard HTTPS ports and standard WebSocket protocols
 - No UDP
 - Fixed IP Addresses are no longer required

From ASHRAE's BACnet Secure Connect A Secure Building Infrastructure for Building Automation

How does BACnet/SC work?



The hub...

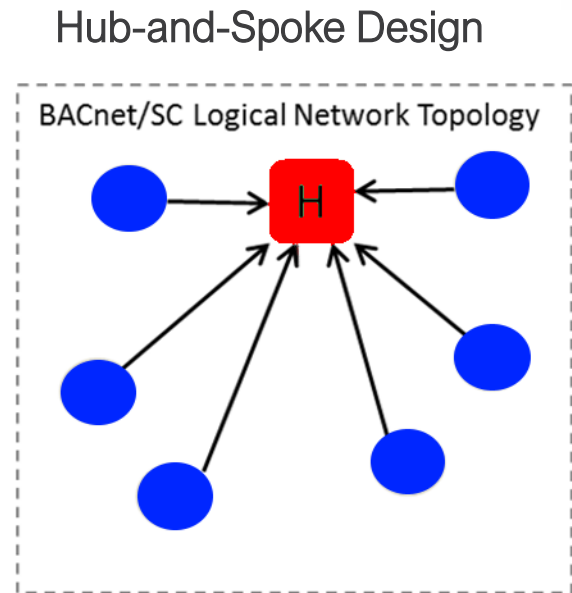
- **Directs** traffic between any number of connected nodes.
- Includes both **Primary** and **Failover**, which provides redundancy
- **Is required** for every BACnet/SC network (at least 1)

A node can be a...

- Device Controller
- A Thermostat
- Facility Workstation
- Router to an existing BACnet system

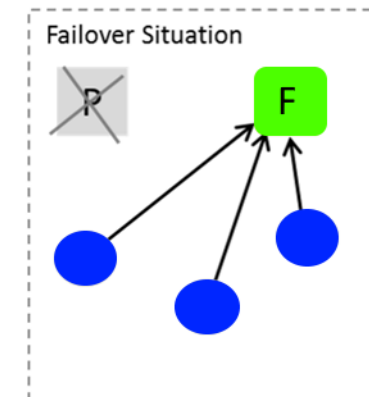
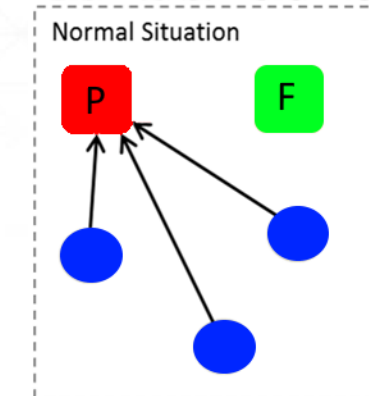
A node has the option of...

- Performing **direct** connections to **other nodes** in addition to going through a hub

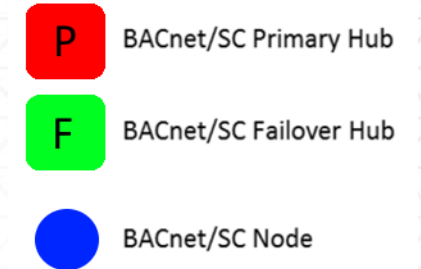


From ASHRAE's BACnet Secure
Connect A Secure Building
Infrastructure for Building Automation

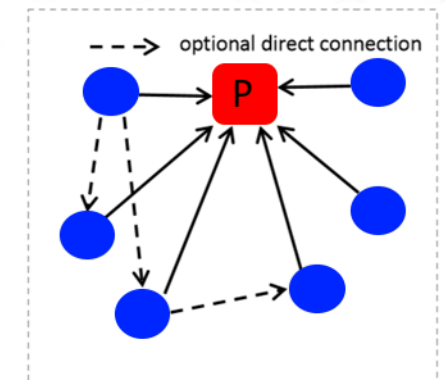
Typical Hub Operations



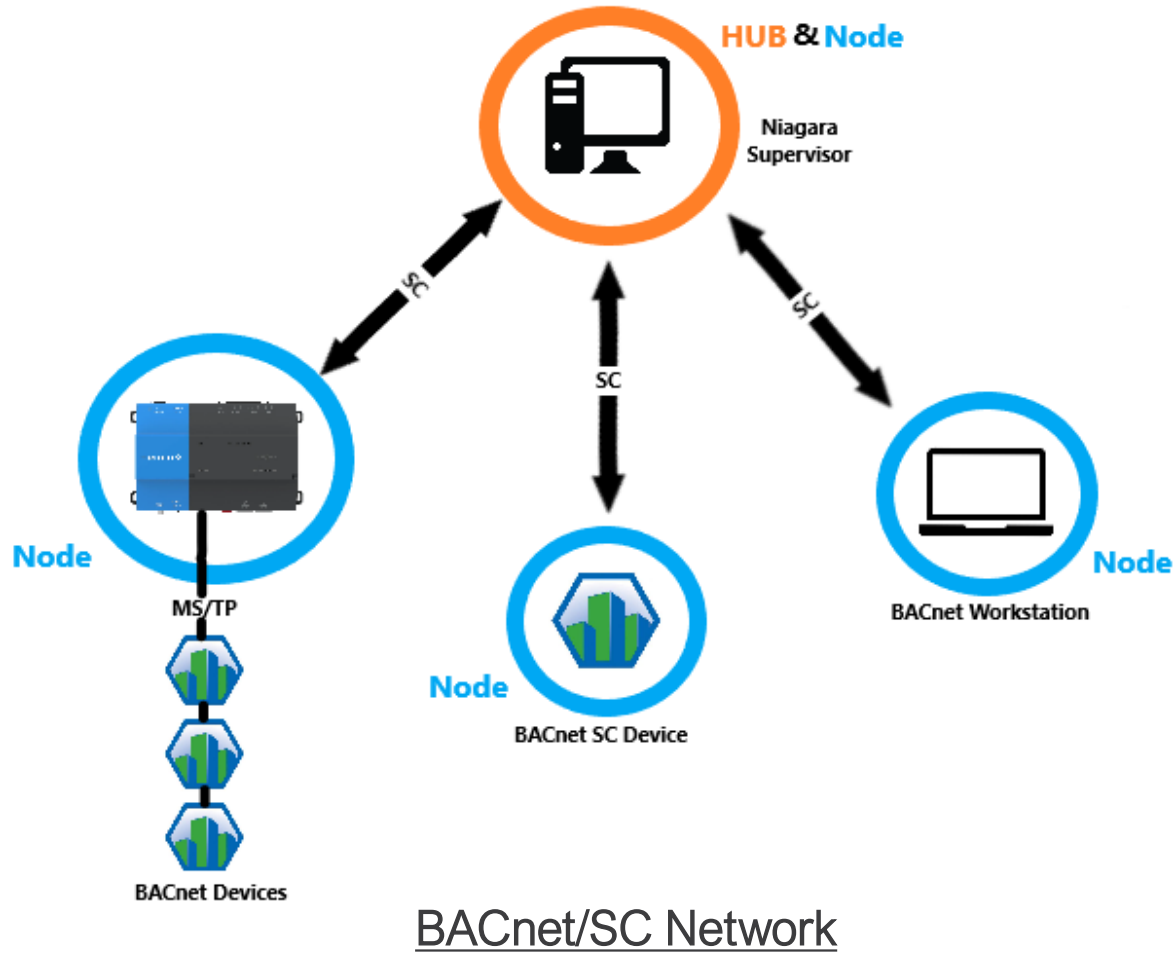
Legend



Node Direct Connections



BACnet/SC Architecture in Niagara



Includes...

- Devices that support BACnet/SC
- BACnet Operator Workstation that supports BACnet/SC
- BACnet/IP and/or BACnet MS/TP Devices – Requires BACnet/SC to BACnet/IP and/or MS/TP router(s) for legacy connections

For this scenario, **the Niagara 4 Supervisor** is the...

- Primary Hub

The JACE® 8000 can also serve as the...

- Primary OR Failover Hub

From ASHRAE's BACnet Secure Connect
A Secure Building Infrastructure for
Building Automation



Niagara 4.11

Security

TLS 1.3



WebService (Web Service)	
Status	{ok}
Fault Cause	
Enabled	<input checked="" type="checkbox"/> true
▶ Http Port	80 tcp
Http Enabled	<input type="checkbox"/> false
▶ Https Port	8443 tcp
Https Enabled	<input checked="" type="checkbox"/> true
Https Only	<input checked="" type="checkbox"/> true
Https Min Protocol	TLSv1.3

FoxService (Fox Service)	
▶ Fox Port	1911 tcp
Fox Enabled	<input type="checkbox"/> false
▶ Fogs Port	4911 tcp
Fogs Enabled	<input checked="" type="checkbox"/> true
Fogs Only	<input checked="" type="checkbox"/> true
Fogs Min Protocol	TLSv1.3

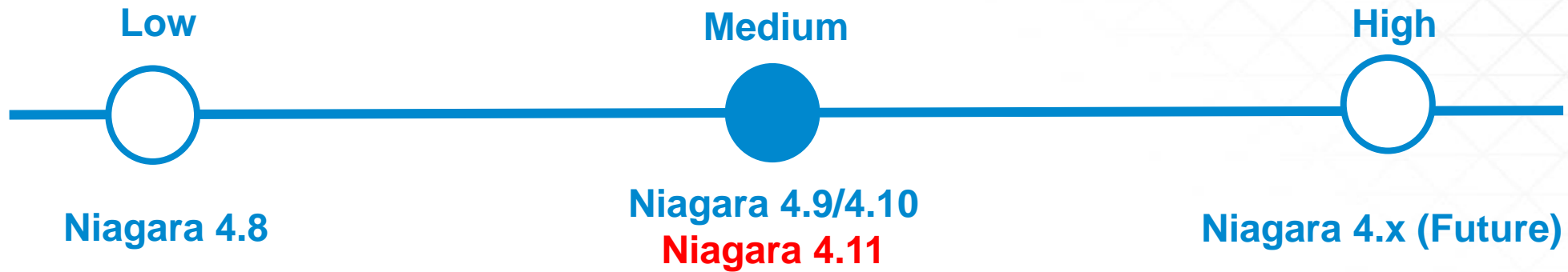
Platform TLS Settings	
State	TLSOnly
Port	5011
Certificate	tridium
Protocol	TLSv1.3
Use Extended Master Secret	<input checked="" type="checkbox"/> true
TLS Cipher Suite Group	Recommended
<input type="button" value="Save"/> <input type="button" value="Cancel"/>	

- TLS 1.3 is the latest standard for secure communications over IP
 - Enhances Station Performance
 - Critical Enabler for BACnet/SC
 - Features stronger security profile than TLS 1.2

Securing Niagara - 3rd Party Module Signing



Default Verification Mode by Version



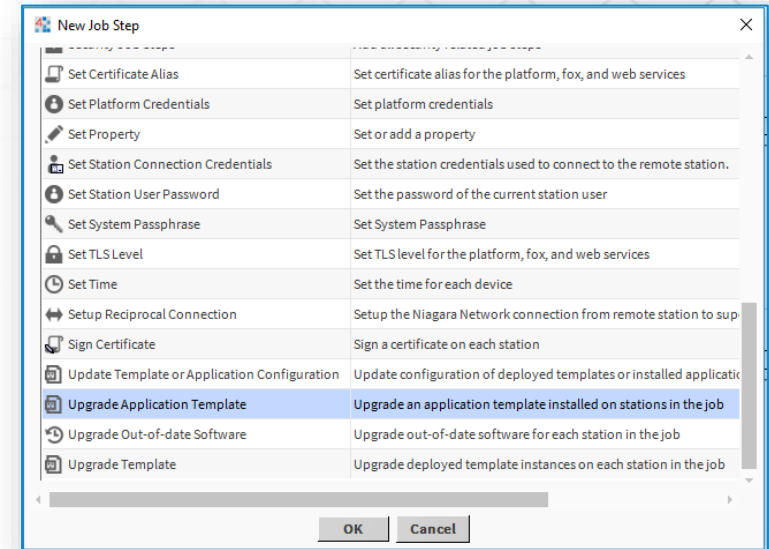
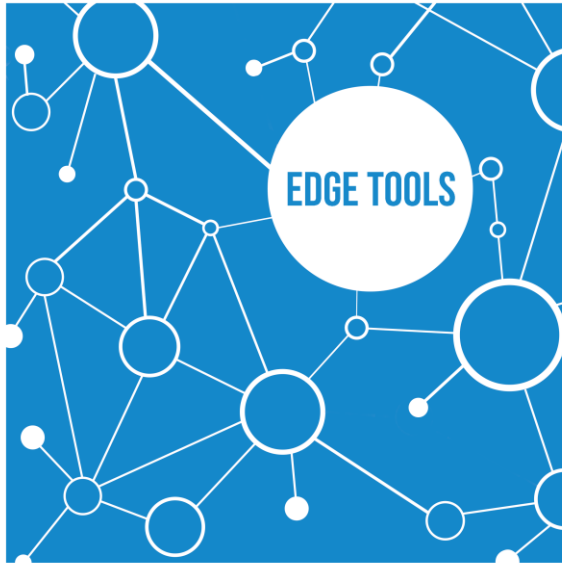
Verification Mode	Description
Low	Modules that are unsigned, untrusted, or have expired certificates will cause warnings but still function. Error if signed module modified after it was signed. Can be increased to Medium or High.
Medium	All modules must be signed by valid, trusted certificate (may be self-signed). Can be decreased to Low or increased to High.
High	All modules must be signed with CA Certificate. Can be decreased to Medium.

Niagara 4.11

Deployment



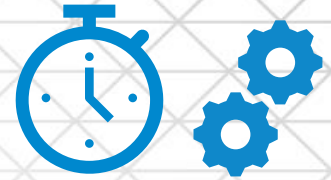
Facilitating Niagara at the Edge



Reduce time spent installing, commissioning, and configuring multiple Niagara devices with application templates and provisioning. The latest updates to Edge Tools include:

- ❑ Ability to export variety of application template configurations
- ❑ Provisioning job builder now shows more detail on job steps
- ❑ Provisioning job steps can now be edited prior to running the job

Optimized JACE[®] Performance



Configure NRE Memory Pools

Configure NRE Memory Pools
Configure the memory allocation sizes of this platform's Niagara Runtime Environment

System Reserve: The System Reserve is used to reserve system memory for background system services that otherwise would be consumed by the Niagara Runtime Environment. Increasing the System Reserve can promote overall system stability. A minimum size of 0 MB is required.

Heap Space: The Heap Space is used to allocate memory and store references for new Java Objects. Heap Space size requirements will increase with the number of components in a Niagara Station. A minimum size of 64 MB is required.

Meta Space: The Meta Space stores class and method data, static variable data, and other internal Java Virtual Machine metadata. Meta Space size requirements typically increase as more modules are installed on a platform. A minimum size of 34 MB is required.

Code Cache: The Code Cache is used to store native code produced by the Java VM Just In Time (JIT) Compiler. Increasing Code Cache may improve the performance of your Niagara Station but may risk exhausting other memory pools. A minimum size of 6 MB is required.

System Reserve Size 0 MB Heap Space Size 384 MB Meta Space Size 128 MB Code Cache Size 32 MB

Use Defaults Save Cancel

Default NRE Settings

Niagara Ver	4.9	4.10	4.11
System Reserve	192	208	480
Heap Space	384	360	384
Meta Space	48	56	128
Code Cache	16	16	32
RAM Disk	384	384	0

Prior to 4.11, alarms and histories were written to RAM disk then stored in flash. Refactoring this architecture has allowed for 384MB of RAM to be reallocated to system use.

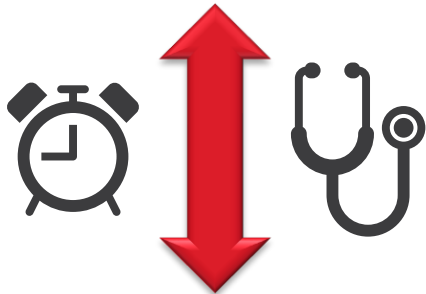
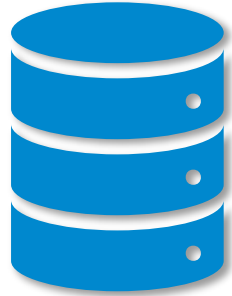
Niagara 4.11

Certification & Compliance

Archive Alarm Provider



Relational DB (RDB)



Niagara Supervisor

The Archive Alarm Provider enhances the stability of your building systems! Cleared alarms using the Alarm Orion Service will persist in a station during a loss of connectivity with your RDB. Upon reconnection, the Alarm Archive Provider will update your database tables with the application records.

- Enables more well-informed analyses of equipment operation
- Improves facility systems operational efficiency
- Provides a compliance mechanism for CFR 21 part 11
- Quickly query closed exported alarm records

Supported Infrastructure

Keeping pace with advancing infrastructure to enable more efficient, long-term support.



Supported Operating Systems

Windows	Mobile
Windows 10 64-bit Professional / Enterprise	iOS 12
Windows Server 2016	iOS 13
Windows Server 2019	Android 8 (Oreo)
Linux	Android 9 (Pie)
Red Hat Enterprise Linux 7.x 64-bit	Android 10 (Queen Cake)
RedHat Enterprise Linux 8.x 64-bit	
Ubuntu Desktop & Server 20.04 LTS	
Virtual Machine	
VMWare ESXi 6.7	

Supported Databases

SQL Database
MySQL Server 8.0 (mysql-connector-java-8.0.24)
MS SQL Server 2016 (v13)
MS SQL Server 2017 (v14)
MS SQL Server 2019 (v15)
SQL Database
Oracle 12c.1/2
Oracle 18c
Oracle 19c LTS
Niagara SystemDB
Orient v3

Supported Browsers

Browser
Chrome (v85)
Firefox (v81)
Microsoft Edge (v85)
Web Launcher
Mobile Browser
Safari on iOS (v13.1)
Chrome on Android (v85)



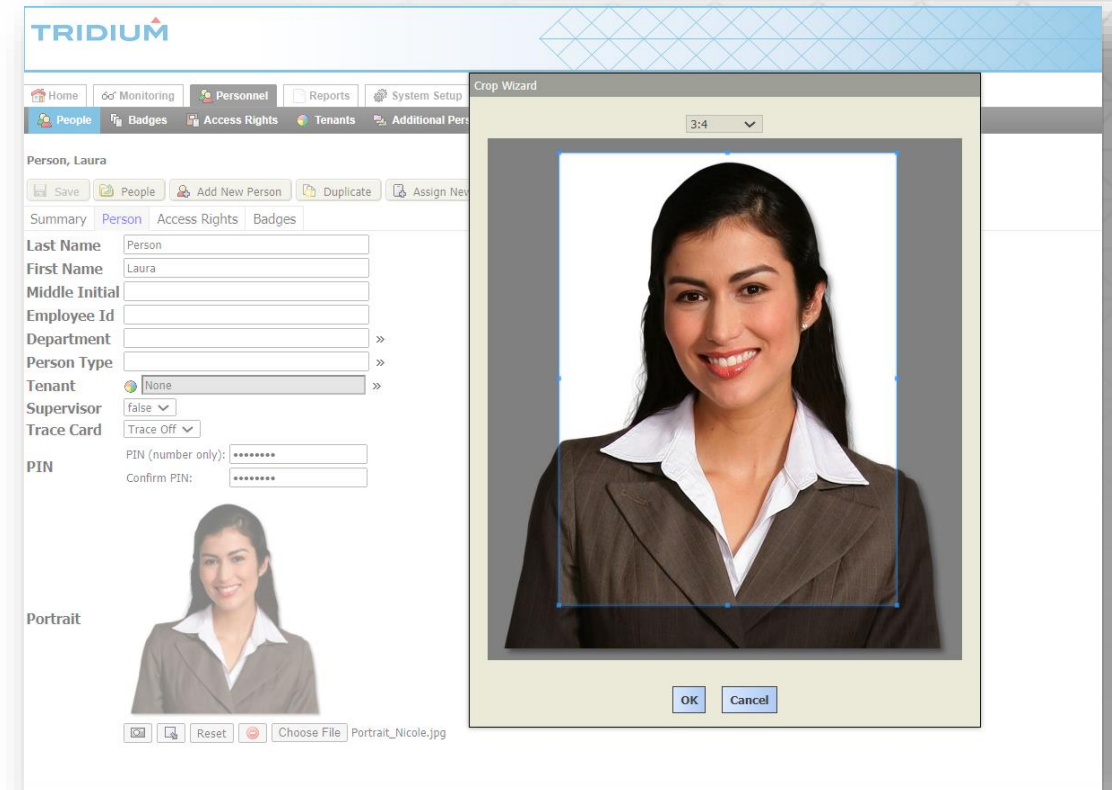
Updated PhotoID Badge Management

HTML5 Photo Capture

- Photo Capture, Crop, Save

Card Template Management and Printing

- Updated card template management and printing that eliminates java dependencies



Niagara 4.11

Summary Review

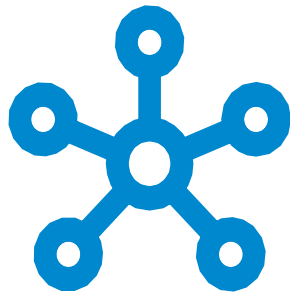
Niagara Framework[®]: Always Evolving – 4.11

Niagara 4.11 brings exciting new features that continue to evolve Niagara's key tenets of visualization, rapid deployment, security, edge, connectivity, certification and IT compliance.



Visualization

WebWiresheet
WebChart Enhancements



Connectivity

BACnet/SC
Archive History Provider



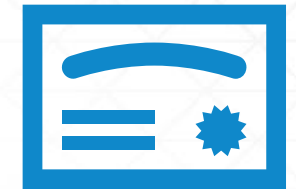
Security

Critical Support/Enhancements
TLS 1.3



Deployment

Edge Tools Updates
Optimized JACE[®] Memory
Added Support Infrastructure



Certification & Compliance

Archive Alarm Provider