



# niagara 101

FOR SPECIFYING ENGINEERS



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# NIAGARA 101 - OBJECTIVES

- Who is Tridium, and what is Niagara?
- What's a JACE?
- Why Niagara?
- What resources do we have to help you?

# POWER OF PARTNERSHIP

Founded in 1996, Tridium became a wholly owned, independent business entity of Honeywell in 2005

Global leader in Open Platform Building Automation



**25K+**  
certified  
professionals



**1K+**  
developer  
partners



**60+**  
OEM partners with  
Niagara based products



**77+**  
countries



**5K +**  
system  
integrators



**~1.4M**  
Niagara instances  
across the globe



# TRIDIUM VS NIAGARA

Tridium is the company, Niagara is the product...

## Software

Niagara  
Supervisor  
Niagara Analytics  
E-Sign  
Drivers  
Niagara Cloud Suite

## Hardware

JACE  
Edge  
Expansion Modules  
Enterprise Security

## Services

Professional Services  
Custom Drivers  
System Audits  
OEM Development

## Training

Niagara Certification  
Operator / End User  
Niagara Analytics  
Developer



## **The Niagara Framework is an open automation infrastructure used in critical facilities around the world**

Niagara helps institutions address energy savings, resource planning, and system management in one secure platform that sets the standard across entities as diverse and demanding as the U.S. State Department and DoD, Amazon, Google, Wawa, GM, Ford, Ikea, Walmart, Home Depot, Wells Fargo and Bank of America

# GSA CHOSE NIAGARA

## GSA advances Building Automation Systems and connectivity to reduce security risk and promote small business contract opportunities

September 11, 2024

**WASHINGTON** — The U.S. General Services Administration (GSA) announced that it will be standardizing a Building Automation System (BAS) solution, a major step towards vulnerability mitigation and reducing cybersecurity risks associated with BAS hardware and software solutions. This enterprise-wide solution is expected to open more doors for small business contract opportunities and encourage more competition, especially related to BAS service contracts to install, program, support, and maintain building automation systems.

Establishing an enterprise-wide BAS Solution streamlines software and hardware solutions across its inventory for all new BAS installations and major modernizations of existing BAS. A standardized approach will also streamline operations and maintenance contract support, and minimize training requirements by reducing the number of different systems across the portfolio.

In support of this effort, GSA issued a [Class Brand Name Justification](#) for the Niagara Framework manufactured by Tridium, Inc. GSA's market research indicates that this enterprise solution is sold and serviced by nearly every major BAS manufacturer, as well as BAS service providers and vendors of all sizes. Both large BAS manufacturers and small business integrators can compete based on this enterprise standard. GSA also anticipates this enterprise-wide solution will help mitigate unnecessary labor and costs resulting from the remediation of disparate systems.

This enterprise BAS solution aligns to GSA's mission to deliver the best customer experience and value in real estate, acquisition, and technology services to the government and American people.

<https://www.gsa.gov/about-us/newsroom/news-releases/gsa-advances-building-automation-systems-and-connectivity-to-reduce-security-ris-09112024>

The J&A highlights that the Niagara Framework is the only solution fully meeting GSA's stringent cybersecurity and operational needs. With over one million instances in use globally, Niagara is the leading choice due to its non-proprietary nature, scalability, compliance with key government cybersecurity standards like IPv6 support, and reduction of server licensing costs in line with OMB Memorandum M-19-19.

<https://ingovcon.com/news/new-building-automation-systems-coming-to-gsa-run-facilities/>



# WHY NIAGARA

Compatibility  
and  
Flexibility

Risk  
Mitigation

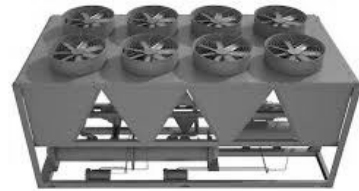
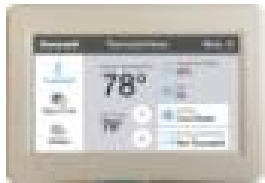
Cost  
Savings

Future  
Proofing



# Flexibility to Integrate, Monitor and Control

## HVAC



## Safety and Access



## Lighting, Power and Water



## Occupancy, Usage and Condition



PEOPLE DETECTOR



PEOPLE COUNTER



Flow



Leak



NOISE LEVELS

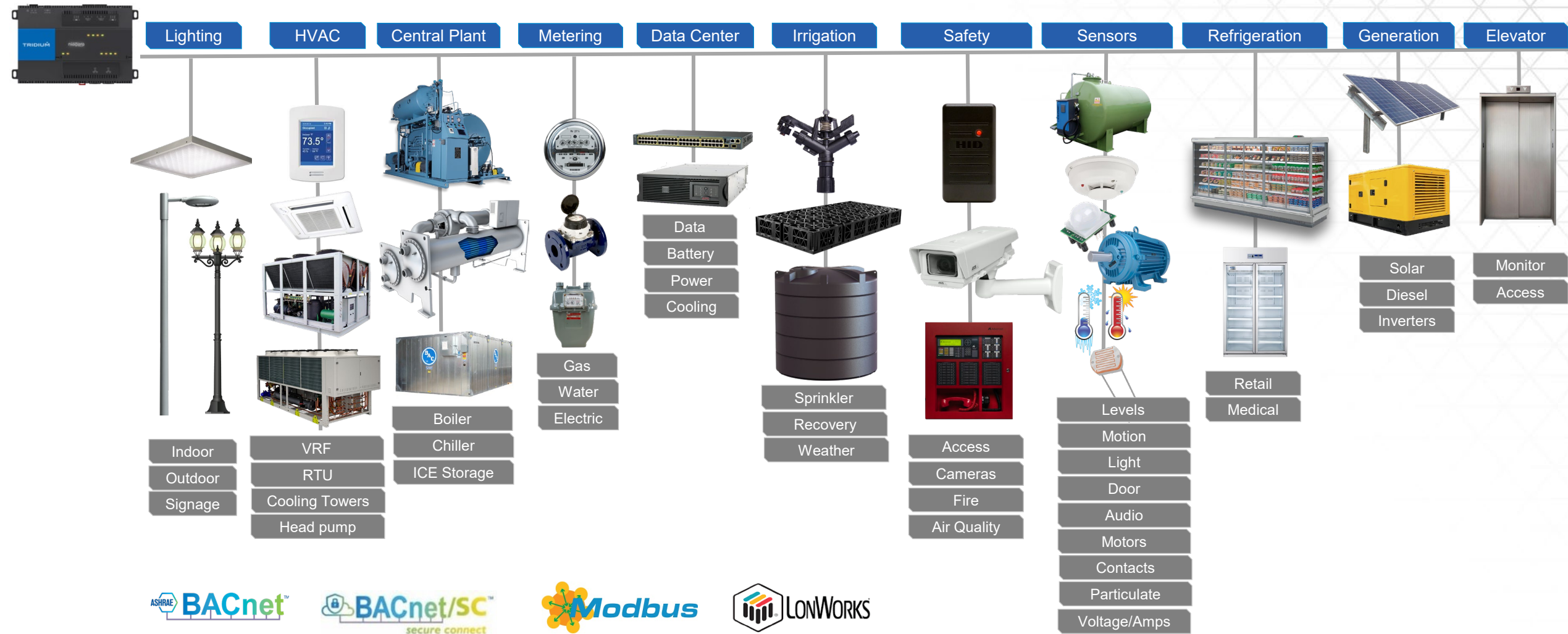


HUMIDITY LEVELS



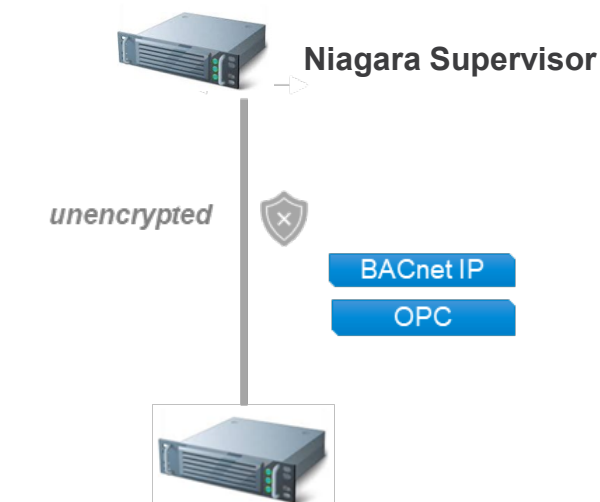
ENVIRONMENTAL MONITORS

# Limitless Device Integrations with Niagara





# Connecting to Legacy Systems



**Honeywell**



Driver Name	System Detail	Type of System	Developer	For More Info
Accruent Alarm Driver	Send configured alarms to the accruent server	Any system that generates an Alarm including HVAC, Refrigeration and Lighting	Accruent	
Accruent Configuration Driver	To clone the JACE device to the Accruent system for mapping telemetry data values	Any System that needs a collection of Telemetry data or changing values on a JACE	Accruent	N/A
Accruent IOT Driver	Works with the Accruent Configuration Driver to change the values on a JACE from the Accruent System	Any System that needs values changed for a period of time including Turning on/off Lights, Temps on HVAC and Refrigeration Devices Mainly.	Accruent	N/A
Accruent Telemetry Driver	Transmits telemetry data from interesting points to the Accruent system for further processing and analysis	Any system that can be distilled into operational information using the Accruent rules engine	Accruent	N/A
Alarm Console (Enhanced)	Multi Client, Multi Group, Multi Workstation	Building Automation	MaxLine	controlsplus.s
Allen Bradley CIP Driver	Allen Bradley AbLogix5, PLC/SLC 2 and 5	Building Automation	Infocon/MaxLine	controlsplus.s
Allen Bradley CSPV4 TCP Driver	Allen Bradley	Building Automation	Infocon/MaxLine	controlsplus.s
American Auto-Matrix PHP	AAM PHP version 8.10	Building Automation	Tridium	tridium.com c
American Auto-Matrix PUP	AAM PUP version 8.35	Building Automation	Tridium	tridium.com c
Andover AC256	Andover AC256	Building Automation	Tridium	tridium.com c

American Auto-Matrix PUP

Andover AC256  
Andover Infinity/  
Continuum Driver

Automated Logic  
WebCTRL®  
SOAP Driver

Barber Colman GCM

Barber-Colman N8K  
Driver

Trane Comm3  
Non-isolated Driver

Trane Comm4 Driver  
(Isolated)

Honeywell Cbus  
TCP Driver

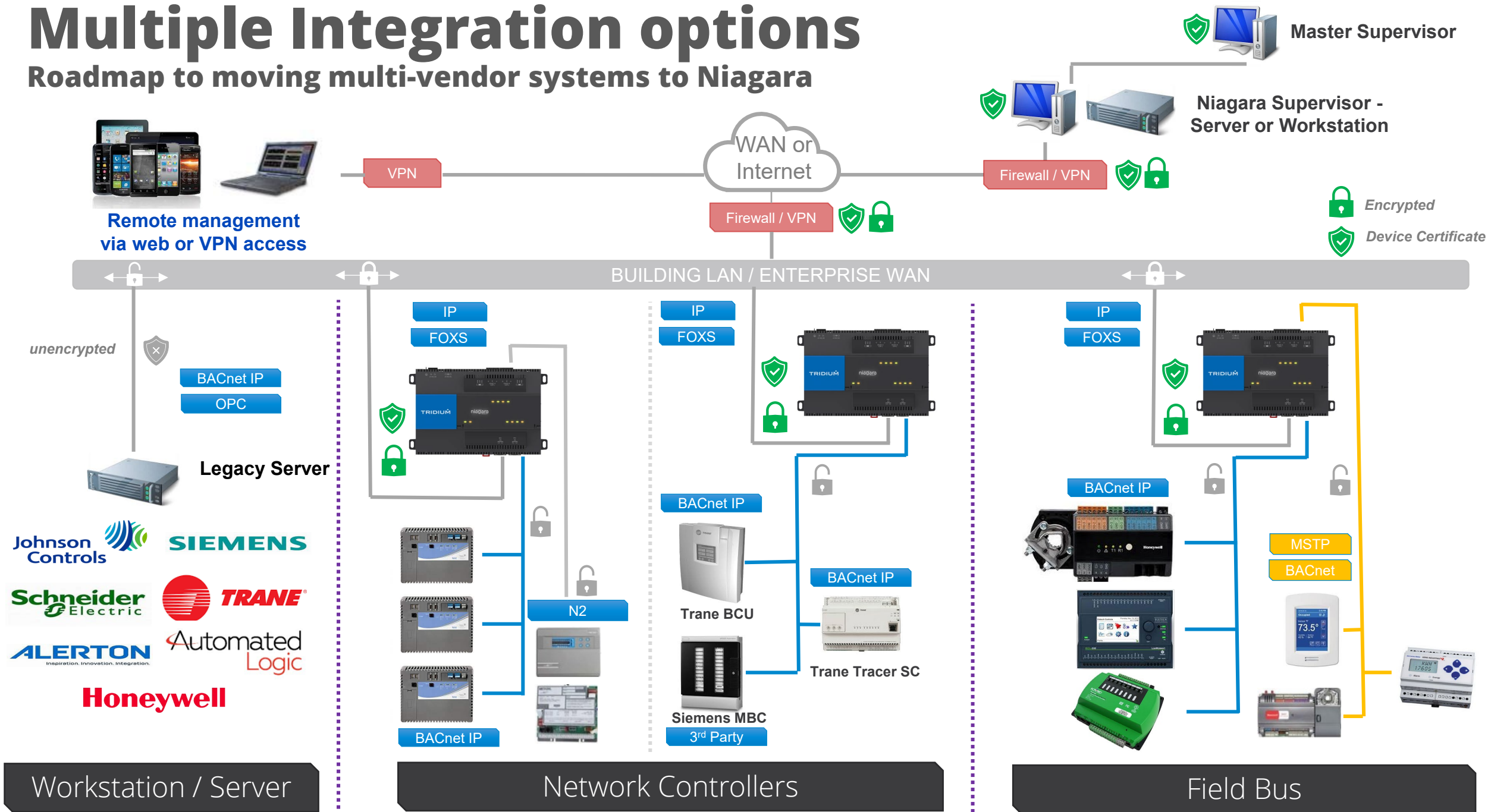
Johnson N2 Open  
driver

Siemens Apogee 600  
TEC Driver

**TRIDIUM**

# Multiple Integration options

## Roadmap to moving multi-vendor systems to Niagara





# Niagara Information and Conformance Statement (NICS)

The Niagara Compatibility Statement (NICS) for all Niagara Software shall allow open access and be set as follows: accept.station.in="\*" accept.station.out="\*" accept.wb.out="\*" accept.wb.in="\*". In any case, the end user shall maintain the right to instruct the contractor to modify any software license, regardless of supplier, as desired by the end user. *The contractor shall not install any "brand-specific" software, applications or utilities on Niagara Framework-based devices.*

All hardware and field-level devices installed shall not be limited in their ability to communicate with a specific brand of Niagara Framework JACE. They shall also be constructed in a modular fashion to permit the next generation and support components to be installed, in replacement of or in parallel with existing components. *All controllers must be able to be programmed within the Niagara Workbench.*

At the completion of the project, the owner shall be given all existing platform and station login credentials to include; super user (admin) usernames; passwords and passphrases.

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# Cybersecurity – a defense in depth approach

- **Strong Authentication** (SCRAM-SHA-256-bit DIGEST) with pluggable authentication schemes
- **PKI Integration** – Certificate management tools within the framework - ability to import/use 3rd party digital certificates with Niagara.
- **Role-Based Access Control** for authorization, providing access to security components by security role
- Use of **Internal Security Manager**, controlling authorization at the API level (protecting components of the framework from only accessing authorized methods & items)
- **ISA 62443 Certification** Tridium processes have met all requirements defined by the International Society of Automation (ISA) certification standard ISA/ICE 62443-4-1-2018
- **Encrypted Communications & Encrypted sensitive information at rest** for confidentiality. FOXS and HTTPS utilize Transport Layer Security (TLS 1.3) - additional degree of integrity protection in the protocol
- **Digitally Signed & Validated Code**, providing non-repudiation and assurance of system integrity
- Integration Capability with Security Infrastructure, including **LDAP Directory Servers, Kerberos, and SAML 2** Identity Providers for Single Sign-On
- **Common-Sense User Account Management** (Forced Strong Passwords, User Lockouts, Forced Removal of Factory Default Passwords, the ability to rename /change known user names...)
- **Auditing** of user activity at customizable levels
- **Cybersecurity Team** - A dedicated team focused on continuous security improvements

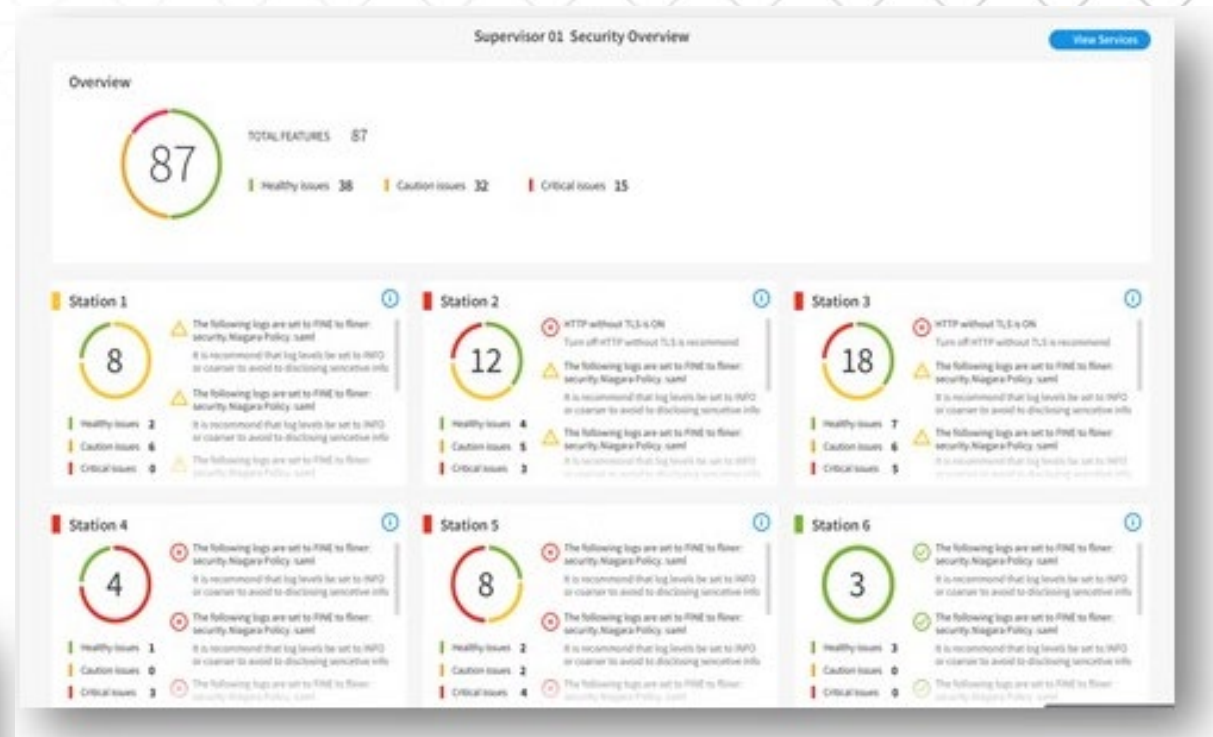
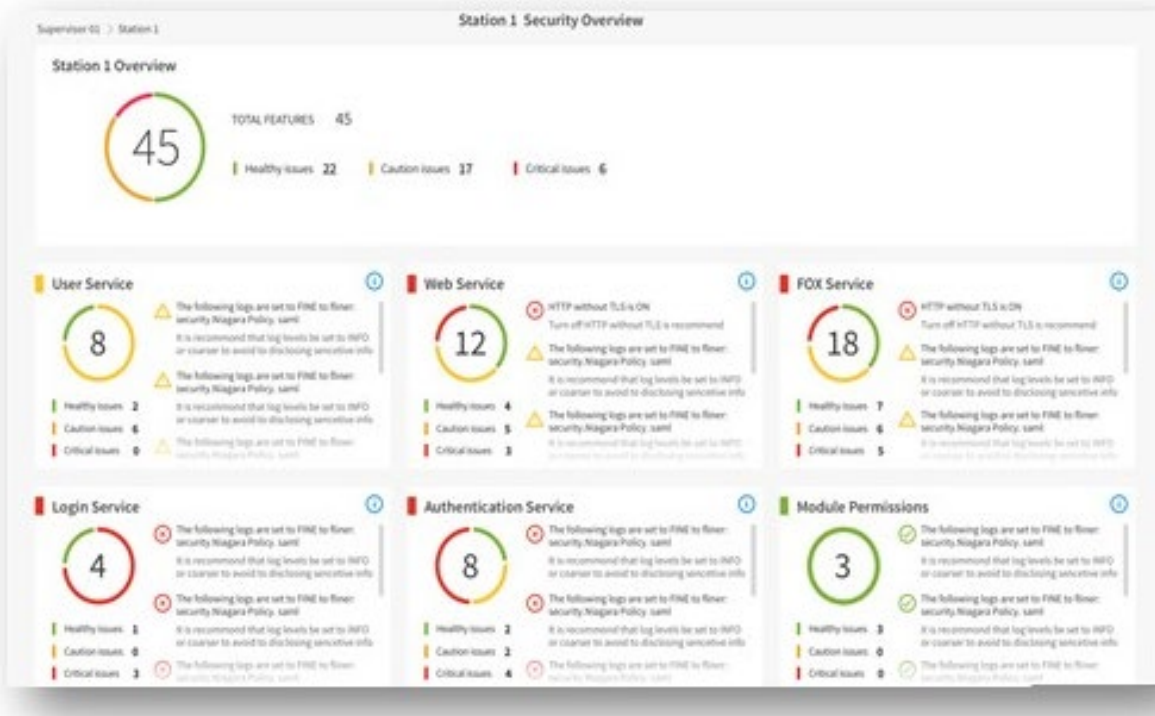


# Security Dashboard

*Quickly assess the security posture of your Niagara Network*

Supervisor view shows all JACEs on your network

- Quickly identify issues with roll up view
- Triage Outliers
- Manage Certificates and access privileges





# WHY NIAGARA

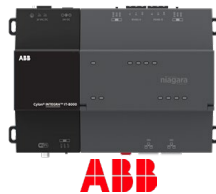
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# Niagara – Open and Secure Framework



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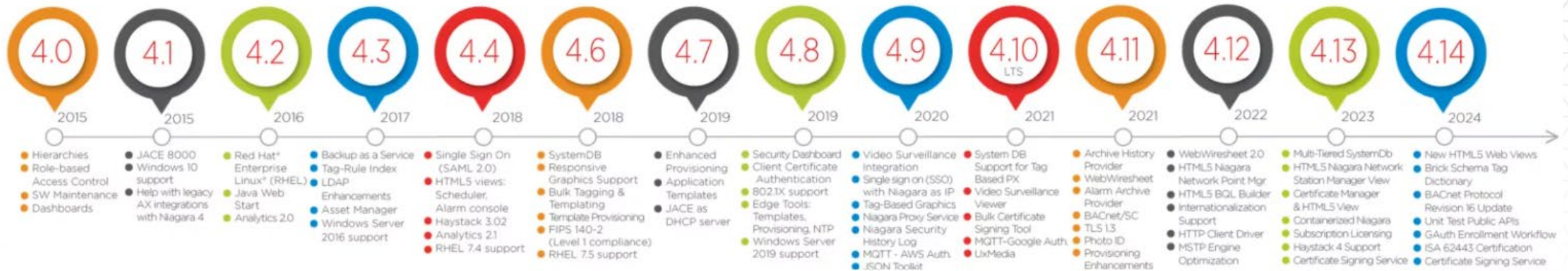
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# Protection of your investment...



The same JACE controller deployed in 2015 has vastly more capabilities today through constant enhancements to Niagara 4...

COMING IN 2025

niagara





# JACE-9000

## KEY FEATURES

- Quad core iMX8M+ CPU
- Double the amount of RAM and 4x Usable Storage
- Ubuntu Core 20 operating system
- Wireless and Non-Wireless model
- Refreshed branding clip
- Easy drop-in replacement/upgrade to JACE-8000
- Supports all existing expansion modules (+remote IO)
- All connectors in same location and same orientation

## ROADMAP OBJECTIVES

- Remote device management
- Edge computing platform
- Mobile management UI
- Machine learning capabilities (NPU)





# PRODUCT COMPARISONS

	JACE-8000	JACE-9000
Processor	Single Core 1GHz TI AM3522	Quad Core 1.6GHz NXP iMX8M+
Operating System	QNX	Ubuntu Core 20 Linux
Memory	1GB	2GB
Storage	2GB uSD	8GB uSD
RS-485 Ports	2	2
USB Backup	Yes	No
Ethernet	10/100	10/100/1000
Data Recovery	2Mbit	4Mbit
Wi-Fi	2.4 & 5GHz	2.4 & 5GHz
Bluetooth	No	Yes
Debug Port	Yes	Yes



# RESOURCES FOR SPECIFYING NIAGARA

## Specifier Page\*

Div 25  
Design Guides  
Graphics Guide  
Analytics Specs  
NIC Statement (NICs)

## Events

Niagara Summit  
TridiumTalks  
ProTips Videos

## Community

Tech Doc Libraries  
Discussion Boards  
Release Documents

## Training

In-person  
Virtual



\* <https://www.tridium.com/us/en/Learn/by-role/specifying-engineer>

<https://www.tridium.com/us/en>

SEP  
12

2024

## Specifier Series - Empowering data-rich Digital Twins with Autodesk Tandem and Niagara Data Service

Learn more about leveraging Autodesk's new Tandem Connect API for Niagara Data Service.



JUL  
18

2024

## Specifier Series - The Path from Smart to Intelligent Buildings

This event in our Specifier Series reprises one of the most popular sessions from Niagara Summit 2024 – the use of AI in building automation.



NOV  
16

2022

## Specifier Series - Specifying an OT Network

This session provides an overview of the hardware and software needed to design a secure OT Network for your Smart Building project.



NOV  
09

2022

## Specifier Series - Writing Analytics Specifications for Smart Buildings

In this session, you receive an in-depth review of some best practices and guidelines when creating analytics specifications for smart buildings.



OCT  
12

2022

## Specifier Series - Writing Cybersecure Specifications for Buildings

This webinar discusses the state of today's buildings and provide insights into security capabilities and features in Niagara products.



OCT  
05

2022

## Specifier Series - Crafting Powerful Niagara Specifications

This session shows how Niagara enables you to write a modern and effective specification beyond the basic boilerplate Div 25 outline.





# Q&A

Check out our library of recorded TridiumTalks  
Backup slides with resource links

# Resources and Links

Tridium Website <https://www.tridium.com/us/en>

Tridium Library – Searchable for documents <https://www.tridium.com/us/en/services-support/library>

For info and to register for upcoming [Specifier Events](#)

Cybersecurity Page <https://www.tridium.com/us/en/Products/niagara-cyber-defense>

Page for Specifying Engineers <https://www.tridium.com/us/en/Learn/by-role/specifying-engineer>

Niagara Framework <https://www.tridium.com/us/en/Products/niagara>

Supervisor <https://www.tridium.com/us/en/Products/niagara/supervisor>

JACE <https://www.tridium.com/us/en/Products/niagara/jace>

# Resources and Links ... continued

Edge10 <https://www.tridium.com/us/en/Products/niagara/edge10>

Niagara Analytics <https://www.tridium.com/us/en/Products/niagara-analytics>

Niagara Cloud Suite <https://www.tridium.com/us/en/Products/niagara-cloud-suite>

Enterprise Security <https://www.tridium.com/us/en/Products/niagara-enterprise-security>

Niagara Drivers <https://www.tridium.com/us/en/Products/niagara-drivers>

Tridium University <https://www.tridium.com/us/en/services-support/tridium-university>

Marketplace <https://www.tridium.com/us/en/services-support/niagara-marketplace>

Pro Services <https://www.tridium.com/us/en/services-support/professional-services>



# Architecture

## Hybrid Edge/Cloud Approach



NCS Portal

User Management

Point History Graphs / API Keys

Backups

Remote Access

### Niagara Data Service



Modeler



Histories



Archive Histories

### Niagara Recover



Backup

### Niagara Remote



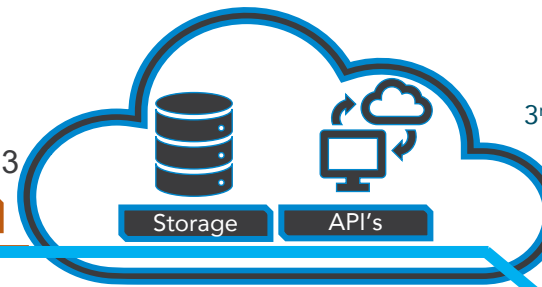
Browser  
Remote Access

JACE and/or Supervisor



Outbound 443

HTTPS



IoT Cloud Connections  
Time Series Database  
Customer Siloed



3rd Party Services



Backups



Remote Access to Niagara Station

Current Long Term Support Release | Current Feature Release | and Active SMA