

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

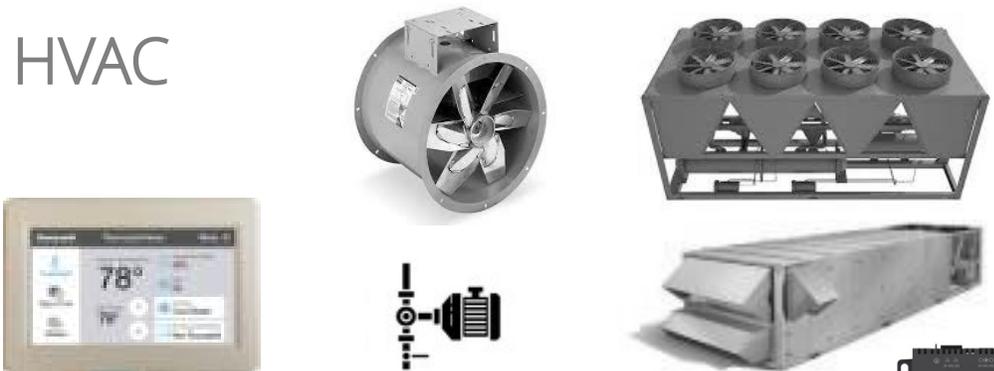
Risk
Mitigation

Cost
Savings

Future
Proofing

Flexibility to Integrate, Monitor and Control

HVAC



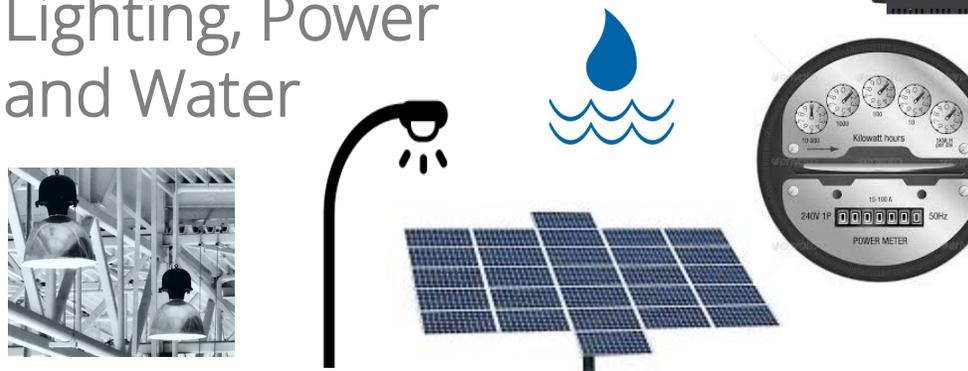
A collection of HVAC-related items: a wall-mounted thermostat showing 78°F, a circular ceiling fan, a rectangular diffuser with multiple circular vents, and a motor unit with a fan.

Safety and Access



A collection of safety and access-related items: a circular icon of a door lock, a white security camera, a red fire alarm pull station, and a white control panel with a screen.

Lighting, Power and Water



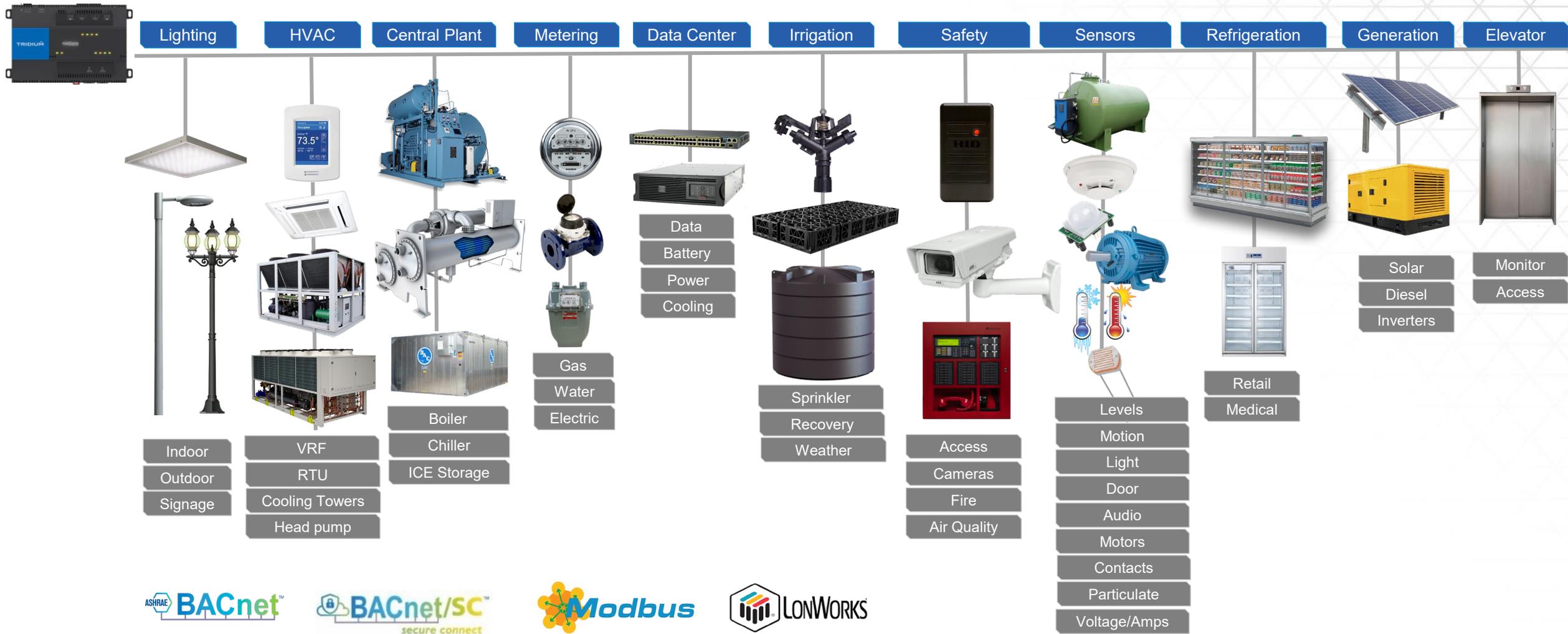
A collection of lighting, power, and water-related items: a photograph of workers in a facility, a black light fixture, a blue water drop icon, a solar panel, and a circular power meter with multiple gauges and a digital display.

Occupancy, Usage and Condition

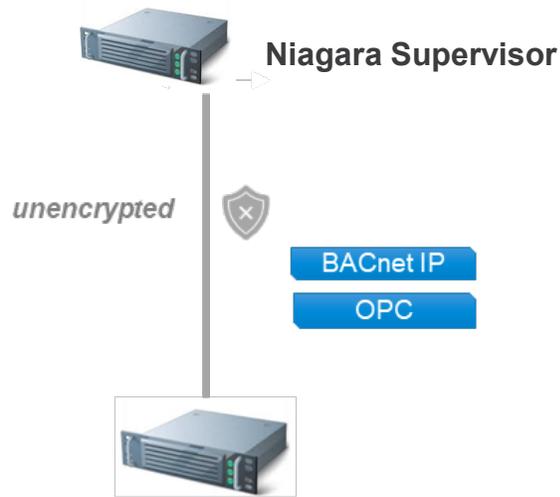


A collection of occupancy, usage, and condition-related icons: a person at a desk with a Wi-Fi signal icon (PEOPLE DETECTOR), a person with a Wi-Fi signal icon (PEOPLE COUNTER), a server rack with a Wi-Fi signal icon (Flow), a water drop with a Wi-Fi signal icon (Leak), a speaker with a Wi-Fi signal icon (NOISE LEVELS), a water drop with a Wi-Fi signal icon (HUMIDITY LEVELS), and a recycling symbol (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

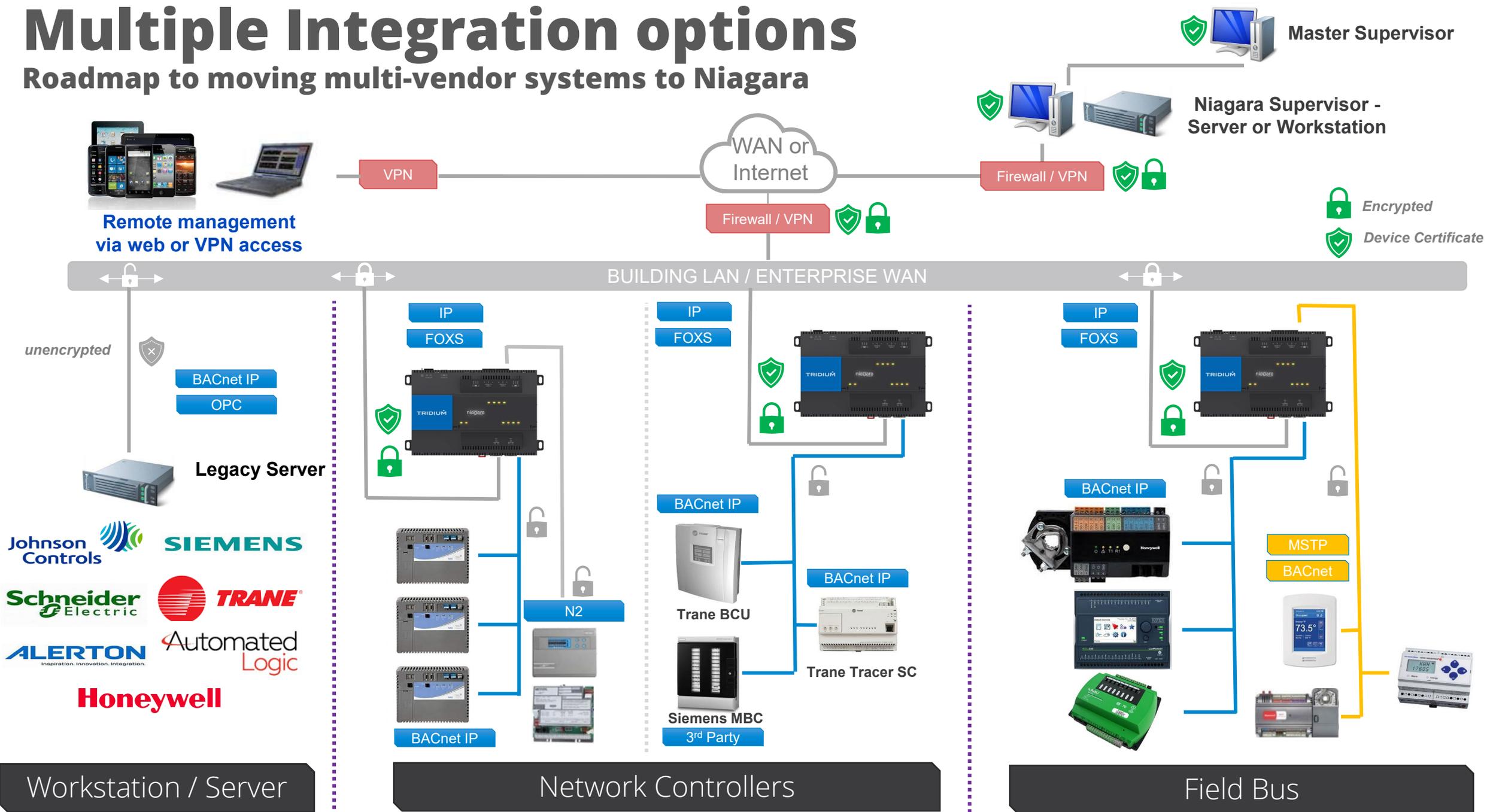
Johnson N2 Open
driver

Siemens Apogee 600
TEC Driver



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.

WHY NIAGARA

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Cost
Savings

Future
Proofing

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

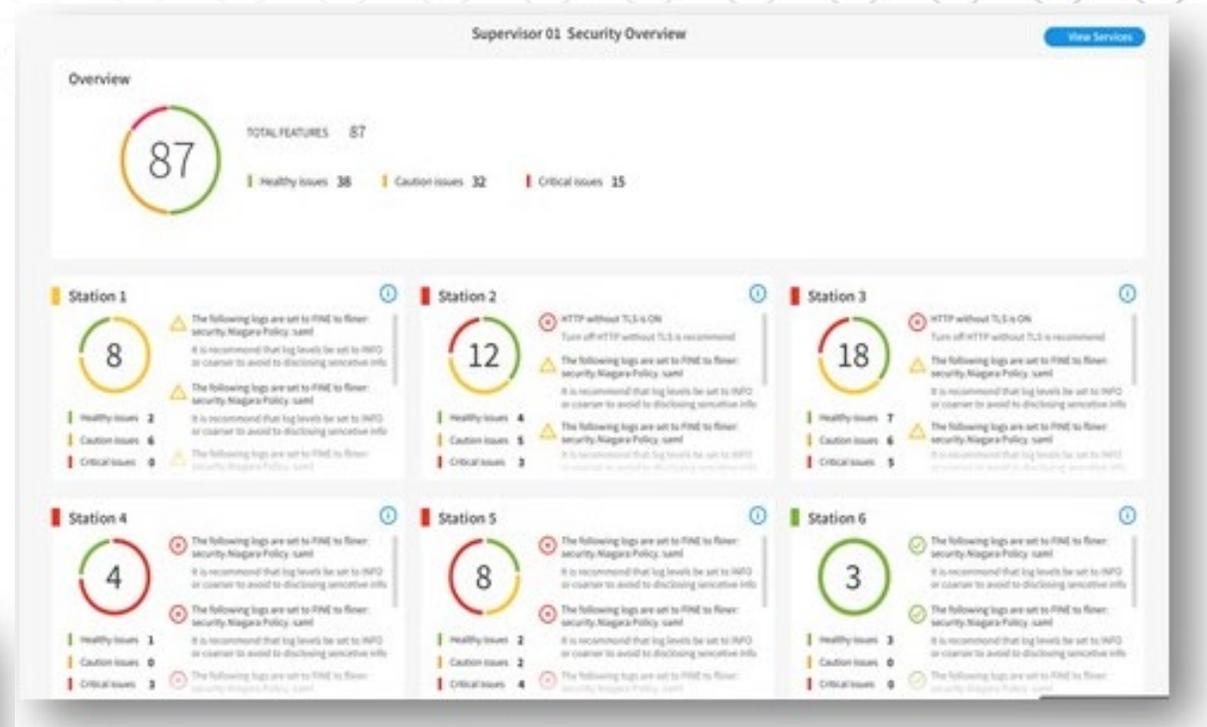
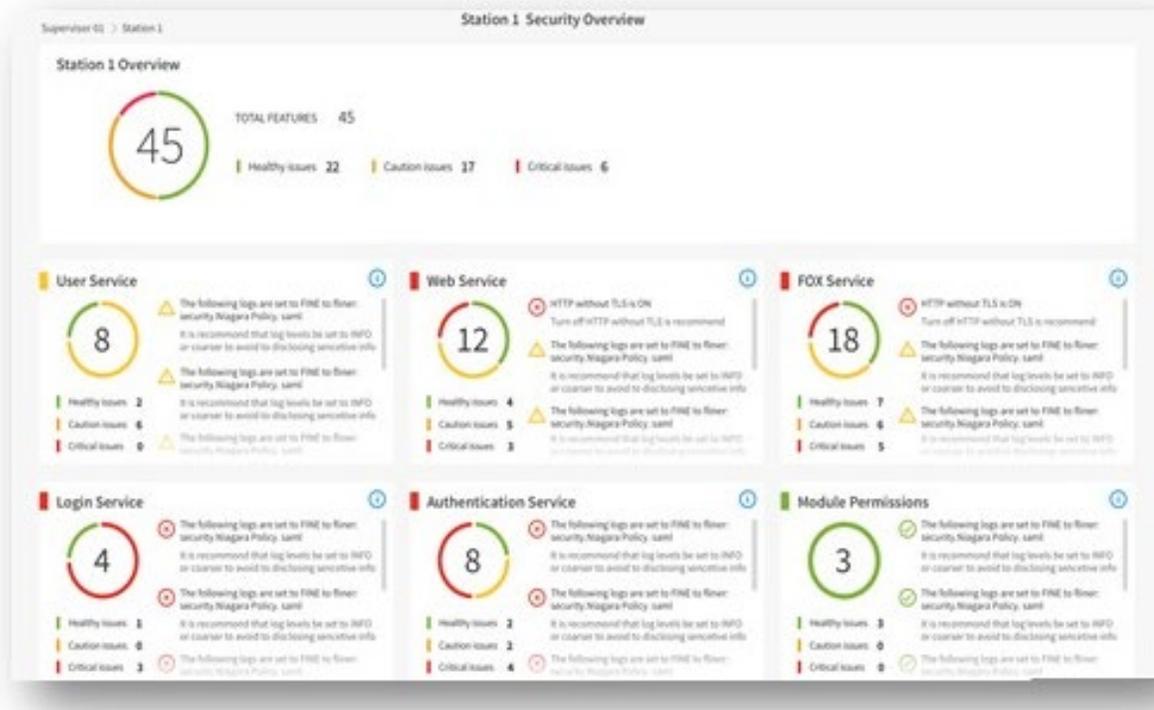


Security Dashboard

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



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Niagara – Open and Secure Framework



WHY NIAGARA

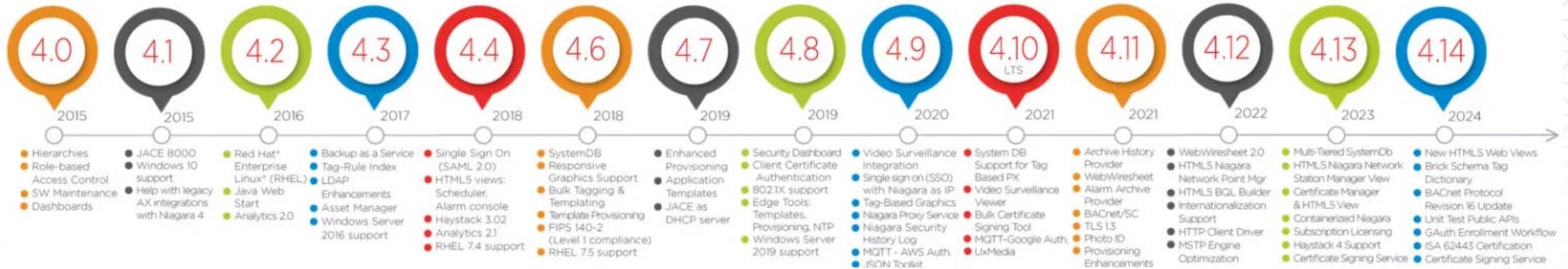
Compatibility
and
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Risk
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Cost
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Future
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Protection of your investment...



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

COMING IN 2025

niagara

5



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



Niagara Recover



Niagara Remote



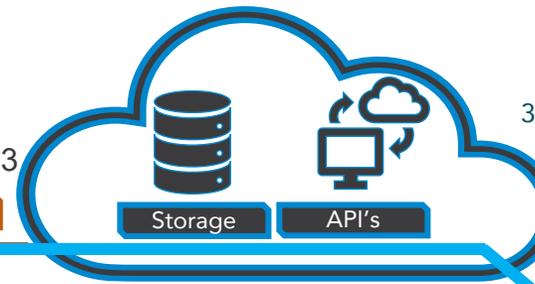
Browser Remote Access

JACE and/or Supervisor



Outbound 443

HTTPS



IoT Cloud Connections
Time Series Database
Customer Siloed



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