



CONNECTING
THE WORLD



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CONNECTING
THE WORLD

Niagara 101

Paul Fahy / Tridium

Agenda

Agenda



- What is Niagara?
- Tridium Product Line up & Licensing
- Community & Training
- Integration Examples
- What do we mean by 'Open'?
- Architecture
- Why Specify Niagara?

What is Niagara?

What is Niagara?

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

From stage zero to energy savings, resource planning, and system management in one secure platform Niagara enables Digital Transformation.



Tridium Product Line-up & Licensing

Tridium Products

- The **Niagara Framework** - software that runs on both controllers and servers
- **Supervisor** for servers and workstations



- **JACE** and **Edge** Devices and their **expansion modules**



JACE 8000 plus I/O Modules

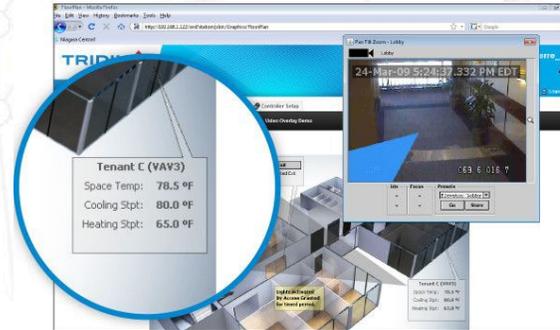


Edge10

Tridium Products

- Supporting Products

- Niagara Enterprise Security
- Niagara Cloud Suite
- Niagara Drivers



niagara
cloud SUITE™



- Applications

- Niagara Central, Marketplace, Asset Mgr
- OpenADR
- E-Signature (21CFR Part11)

niagara
licensing

niagara
marketplace

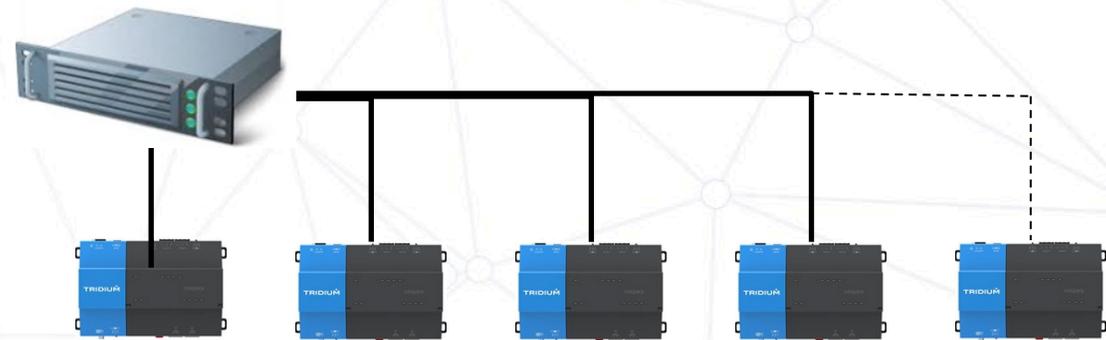


Niagara E-Signature Application



How do you License Niagara?

- Niagara 4 software has a perpetual license, with SMAs (Software Maintenance Agreements) to enable access to the latest revisions of Niagara software
- **Supervisor** – Licensed per number of network (JACE) connections
 - 1,2,3,10, 100 or Unlimited
 - Additional points capacity



How do you License Niagara?

JACE



Edge 10



Model	Devices	I/O Points	SMA Terms
8005	5	250	18m, 3Y, 5Y
8010	10	500	18m, 3Y, 5Y
8025	25	1250	18m, 3Y, 5Y
8100	100	5000	18m, 3Y, 5Y
8200	200	10,000	18m, 3Y, 5Y

- Includes 10 points of I/O as shipped
- Can support up to 3 devices/50 points with expansion
- SMA included for N4

Community and Training

tridium university

Niagara 4 Operator/End User Class



Niagara 4 Certification (TCP)

Niagara 4 Developer Certification

...and many more

tridium events niagara SUMMIT

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*Niagara Pro Tips
Series*



niagara community

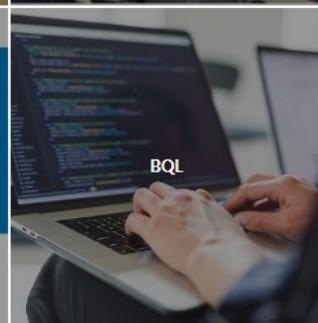
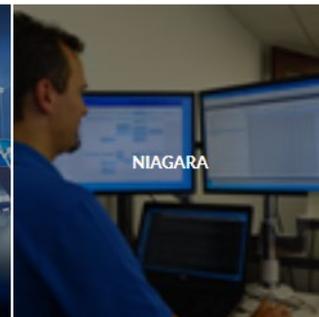
Niagara Resource Center
Find answers to your technical questions and learn how to use our products

Filter [v] Search Documentation [i] [Q]

FEATURED

DISCUSSIONS

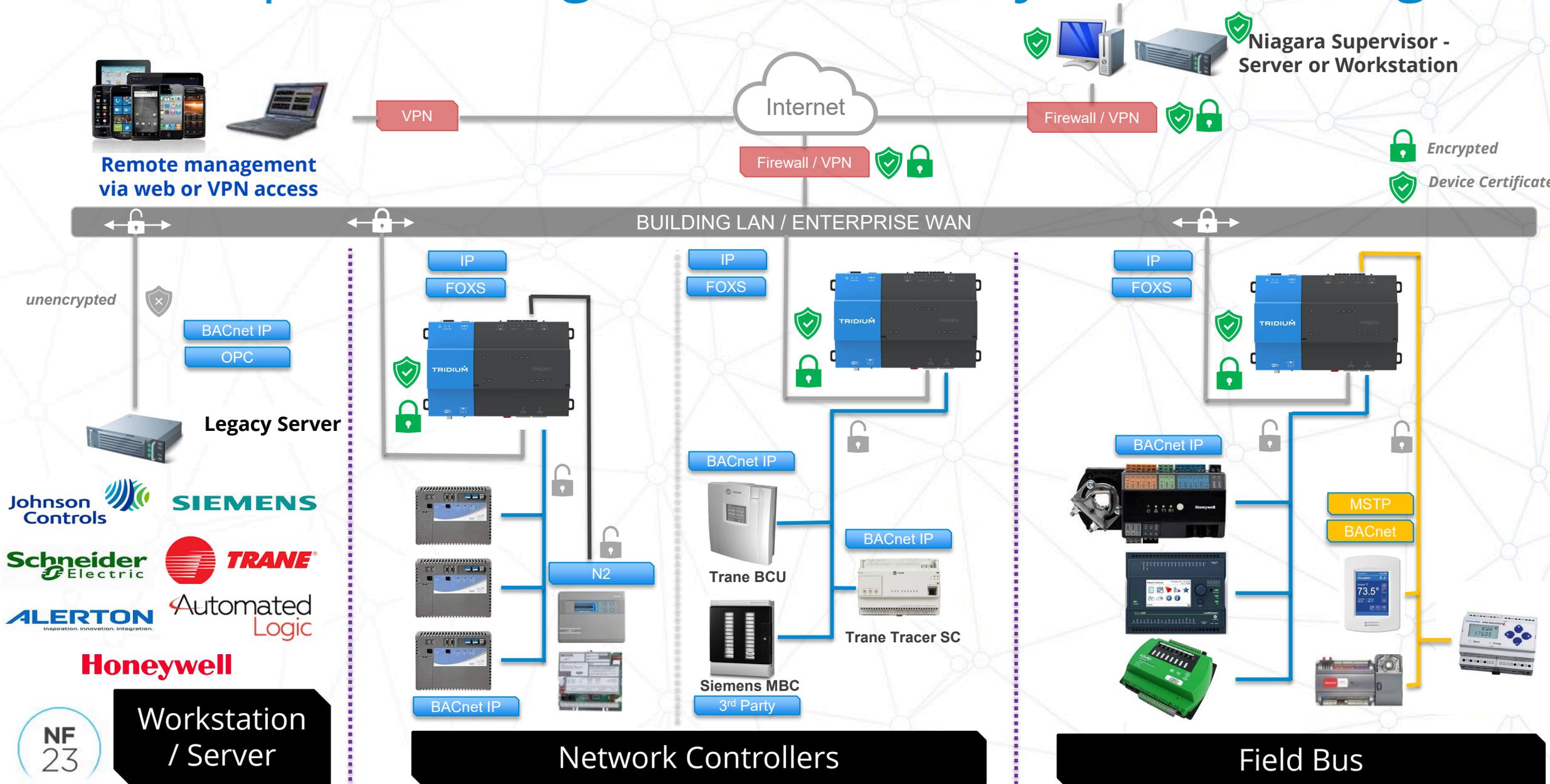
MY FEED



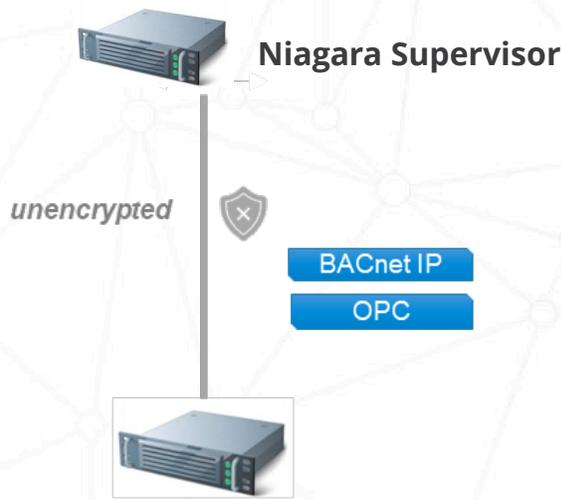
Integration Examples

hello

Roadmap to moving multi-vendor systems to 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

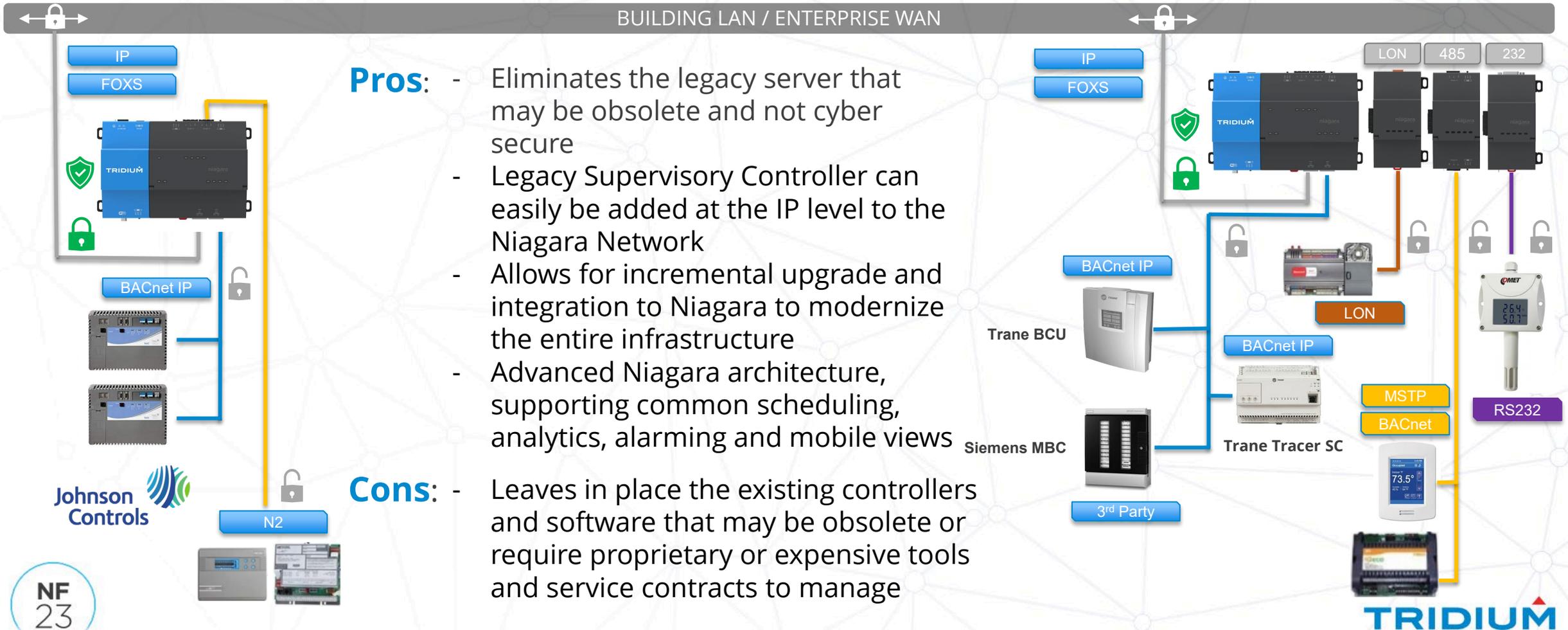
Network Controller Integration

JCI Integration

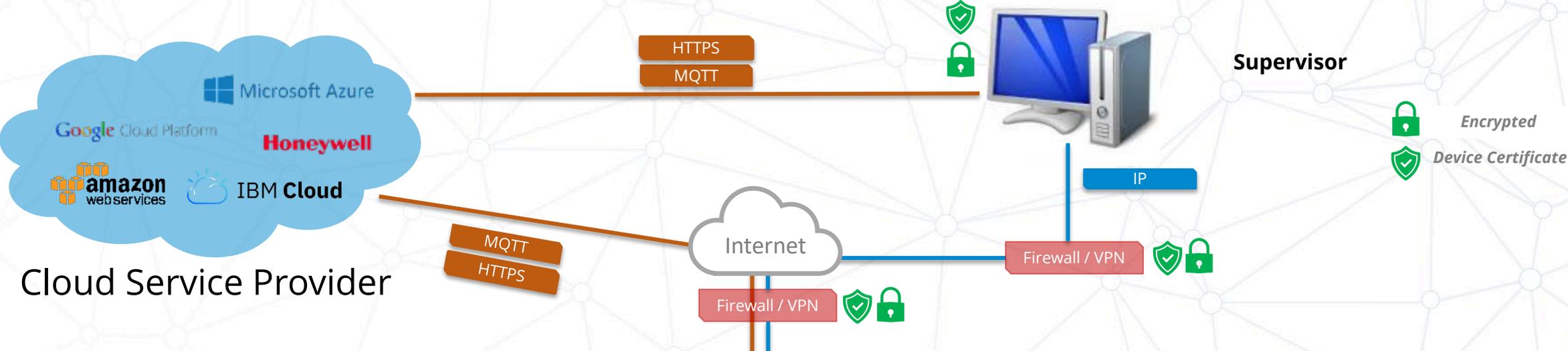
via BACnet IP, NCEs, NAE, N30

Multi-vendor Integration

via BACnet IP, Modbus TCP, or legacy drivers



Cloud Integrations



Cloud Service Provider

Supervisor

BUILDING LAN / ENTERPRISE WAN



JSON allows for easy data packaging for transporting via MQTT or HTTPS REST APIs

Use Case	Allow for external cloud analytics for predictive, machine learning algorithms, large data lakes for histories for the foundation of machine learning
Pros	Add cloud connections using industry IOT standard: MQTT and REST APIs
Cons	Offsite data inside the public cloud infrastructure



What do we mean by 'Open'?

Niagara – The Power of Choice



Facility Explorer



I/A Series



TNM8000



TONN-8



MultiSITE™ VM3



Scalibur



ILC 2050 BI



Eclipse

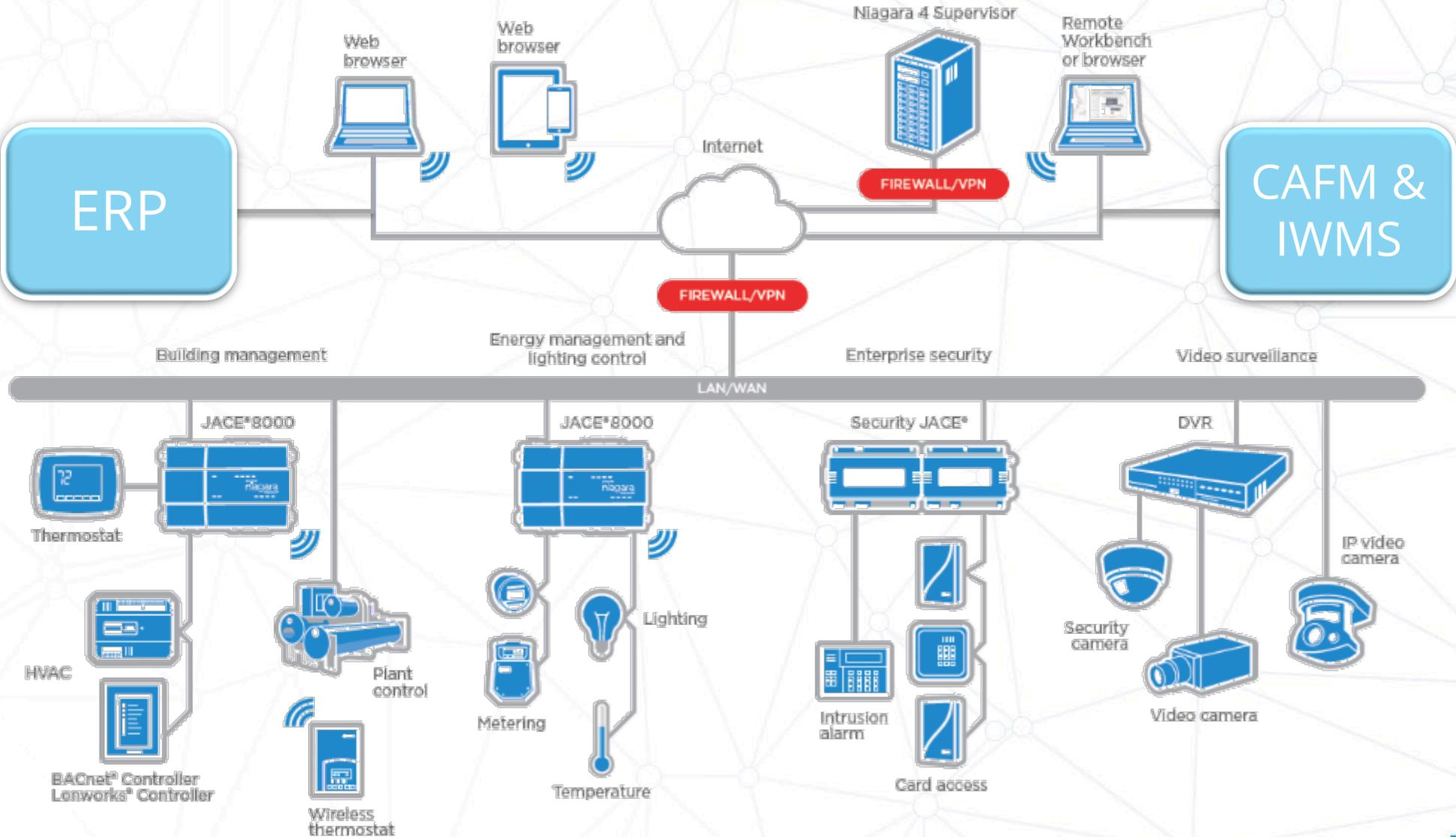


EAGLEHAWK NX

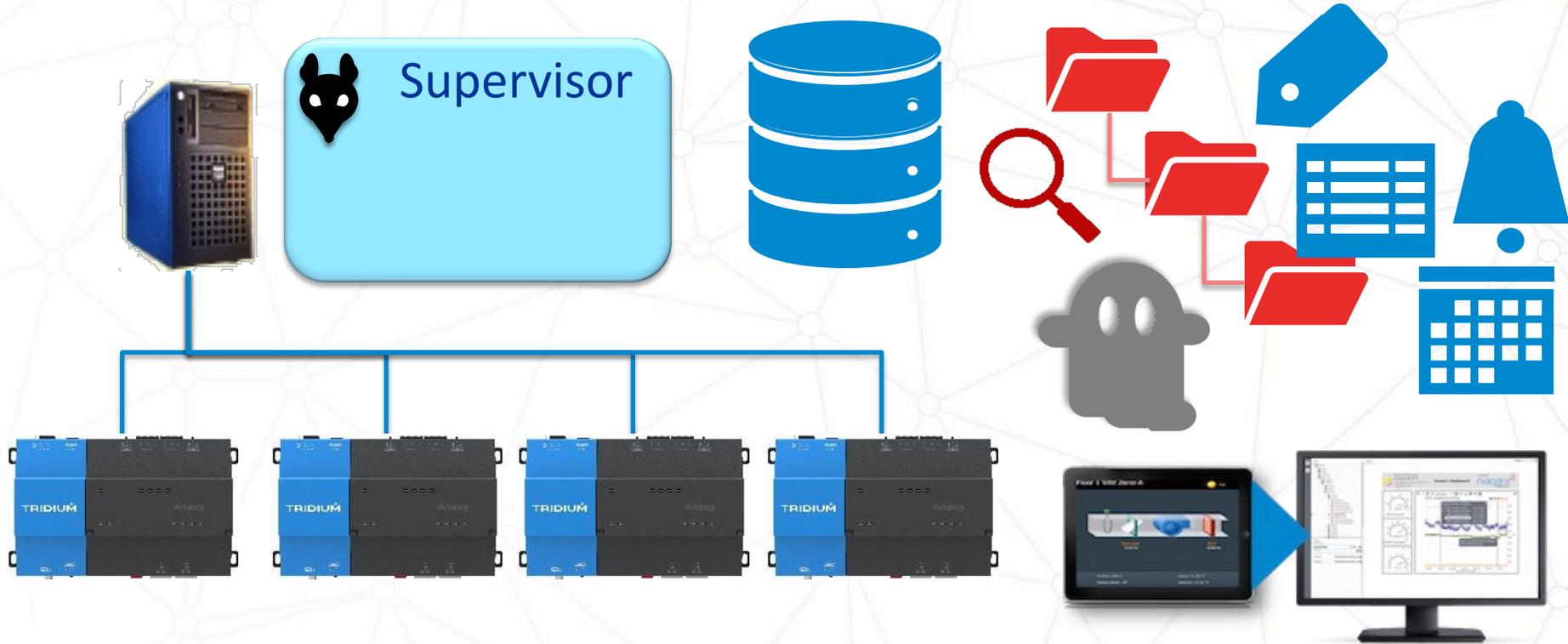


Architecture

High Level Architecture



System Database



- Seamlessly visualise your entire Niagara system
- Simple navigation through Hierarchies and Tagging
- Search your entire system
- Easier system expansion

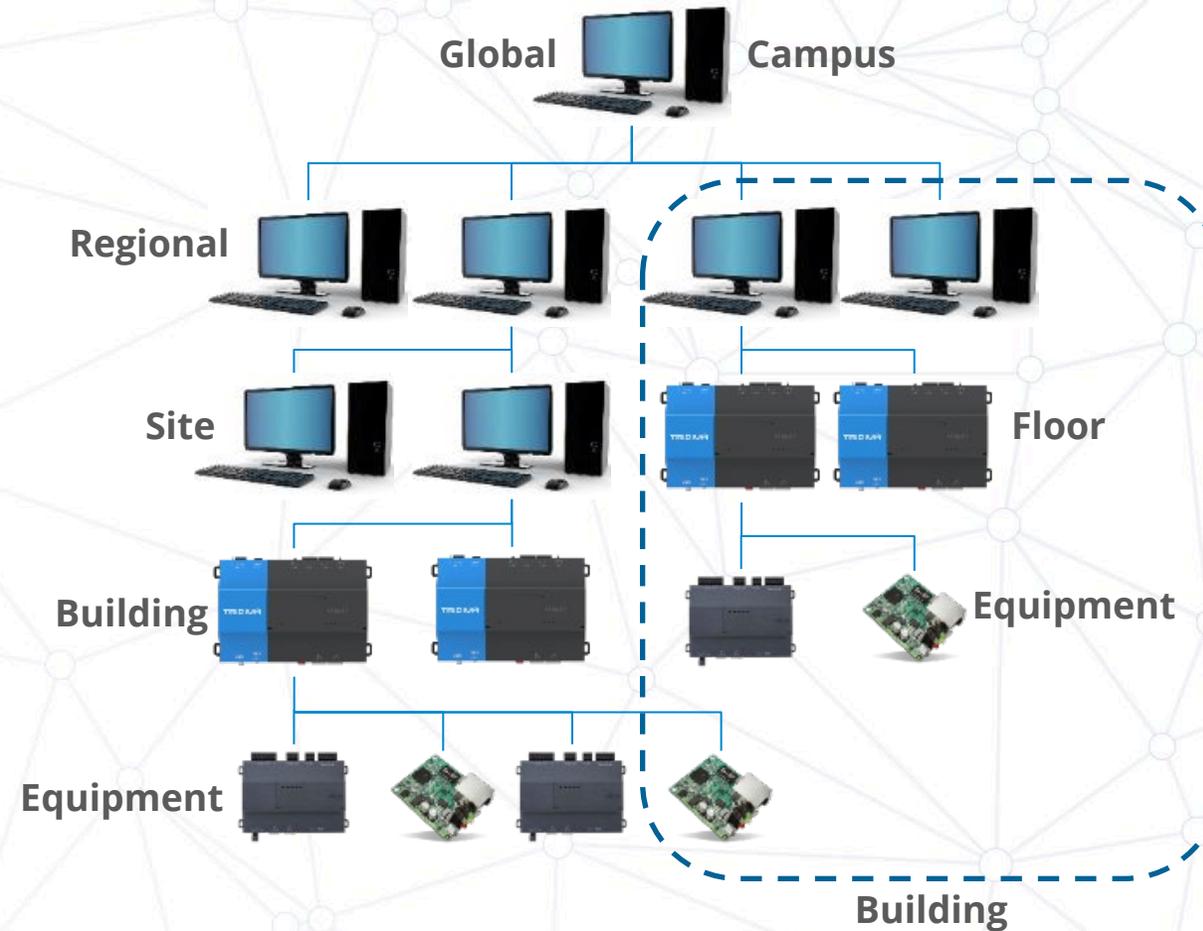
MULTI-TIERED SYSTEM DB

- New in Niagara 4.13

**Niagara System Architecture
Flexes to Any Layout**

**Query Entire Niagara System
From A Single Database Location**

**Expedite UI Configuration Through
Hierarchies and Virtual Px Views**



Why Specify Niagara?



“So, why should you specify Niagara?”

Today, in a world where open standards, interoperability and cyber security are requisite, the Niagara Framework allows you the comfort of choice without the bounds of proprietary solutions.

Compatibility & Flexibility

Risk Mitigation

Cost Savings

Future-proofing



“So, why should you specify Niagara?”

Today, in a world where open standards, interoperability and cyber security are requisite, the Niagara Framework allows you the comfort of choice without the bounds of proprietary solutions.

Compatibility & Flexibility

Embrace critical industry standards across IT, OT and IoT with the ability to integrate ‘best of breed’ solutions, regardless of vendor

Cost Savings

Risk Mitigation

Future-proofing



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Today, in a world where open standards, interoperability and cyber security are requisite, the Niagara Framework allows you the comfort of choice without the bounds of proprietary solutions.

Compatibility & Flexibility

Risk Mitigation

Cost Savings

Freedom to get competitive bids without being locked into one provider for installation, service or support

Future-proofing



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Today, in a world where open standards, interoperability and cyber security are requisite, the Niagara Framework allows you the comfort of choice without the bounds of proprietary solutions.

Compatibility & Flexibility

Cost Savings

Risk Mitigation

The highest levels of security for the most demanding environments

Future-proofing

Cybersecurity – a defence in depth approach

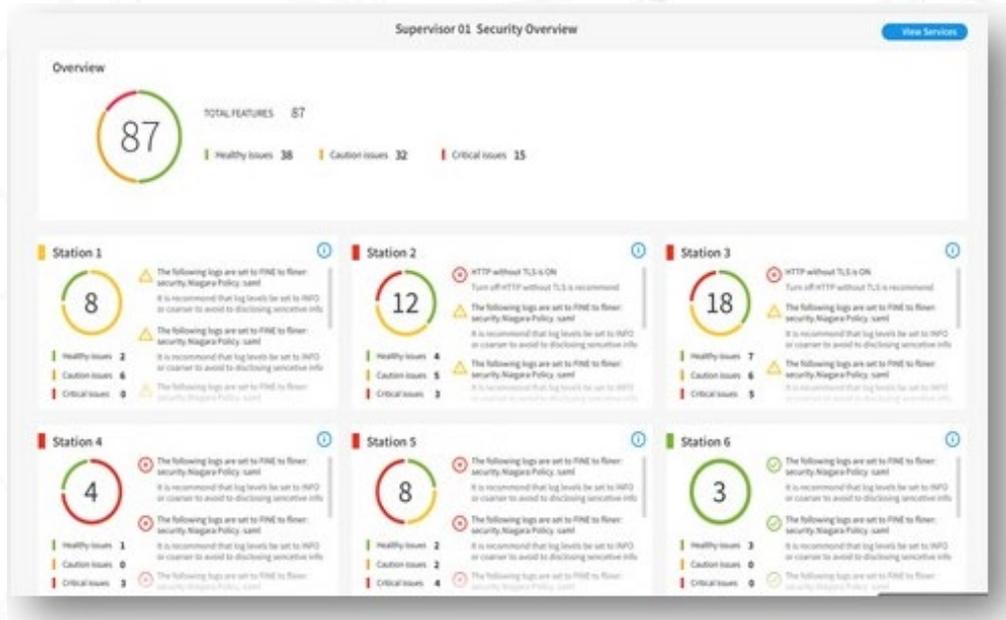
- Strong Authentication (SCRAM-SHA-256-bit DIGEST) with pluggable authentication schemes
- PKI Integration – Certificate management tools within the framework - ability to import/use 3rd party digital certificates with Niagara.
- Role-Based Access Control for authorization, providing access to security 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)
- 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

Cybersecurity – a defence in depth approach

- 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

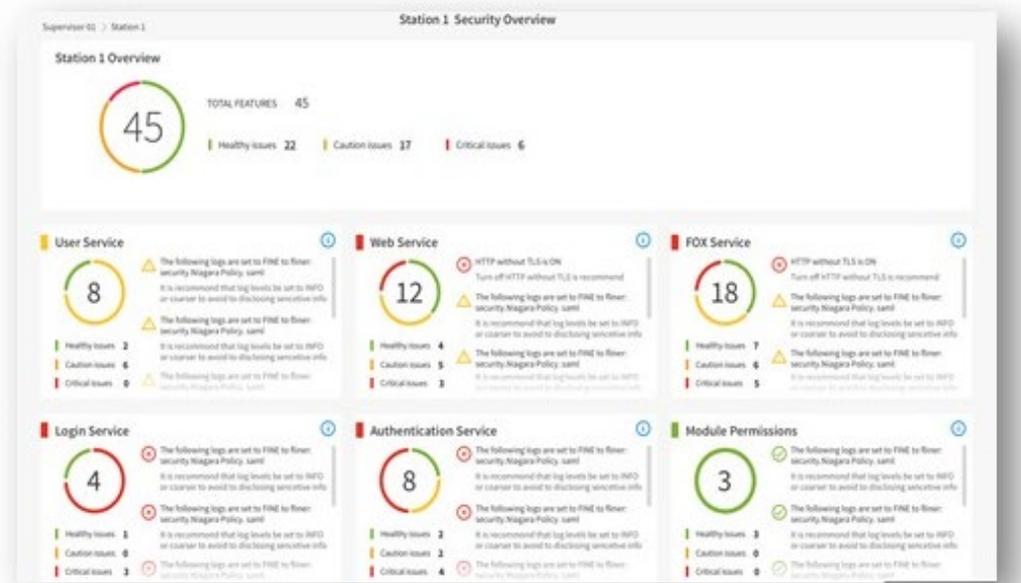


Individual JACE station views

- View per individual service in each station

Supervisor view shows all JACEs on your network

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





“So, why should you specify Niagara?”

Today, in a world where open standards, interoperability and cyber security are requisite, the Niagara Framework allows you the comfort of choice without the bounds of proprietary solutions.

Compatibility & Flexibility

Risk Mitigation

Cost Savings

Future-proofing

A Framework whose power increases over time, enhancing your design and investment

TRIDIUM 

Protection of your investment...

Enterprise-Level Features Added Since Niagara 4



The same Niagara deployed in 2015 has vastly more capabilities today through constant enhancements...



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