NS
18
NIAGARA
SUMMIT
CONNECTING
THE WORLD

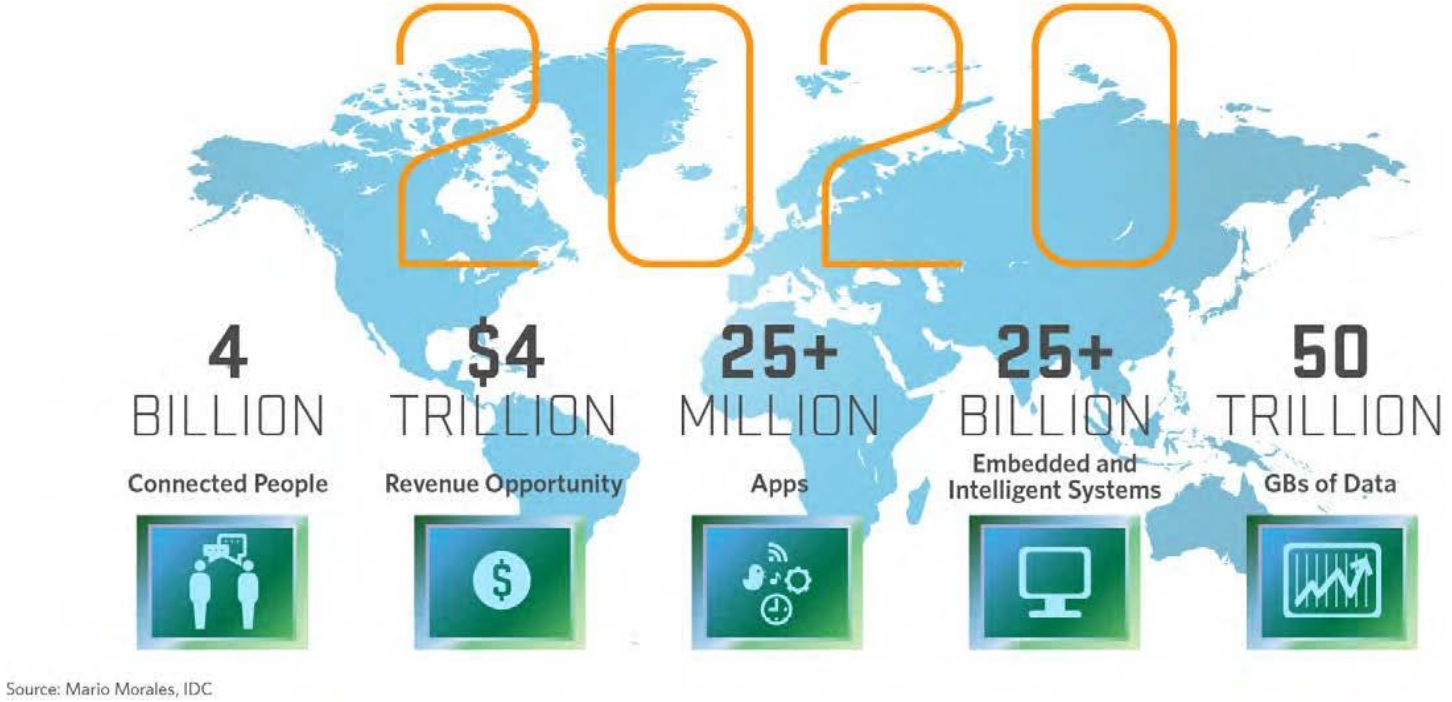
Thinking Outside the Box: Niagara as an innovation platform

Greg Barnes – Activelogix, LLC

Thinking Outside the Box:

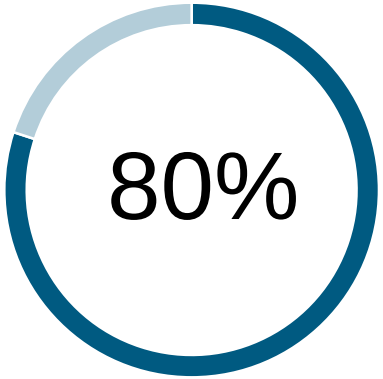
nProtex - Comprehensive security reporting for two-tiered Niagara IoT Systems

IoT is here… and Niagara is an Enabler!

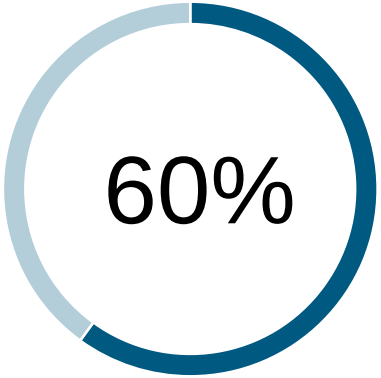


Source: Mario Morales, IDC

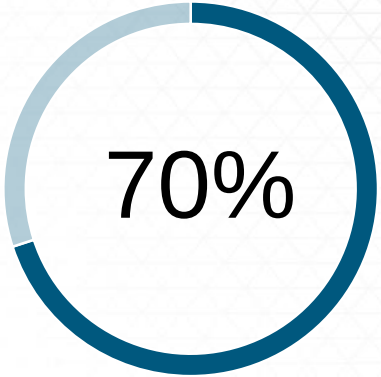
IoT State of the Union



Did not require strong passwords



Were found to have vulnerabilities



Did not use any encryption

**2015 HP study

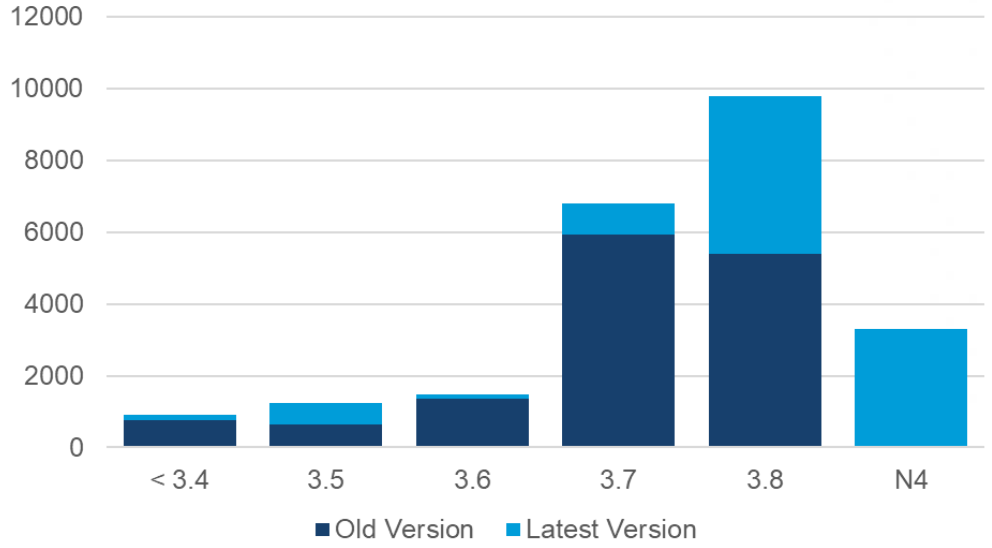
Notable Hacks

- Stuxnet
- Target Hack
- Marai Botnet
- Wannacry

Multiple Components to Securing…

1. Software Security
2. Hardware Security
3. Network Security
4. User Awareness

Many Users Are Negligent



Only 30-40% of AX users running latest respective builds

nProtex is a comprehensive security reporting tool for two-tiered Niagara Networks. It offers scheduled and on-demand reporting of security policy adherence. All generated Reports are saved for future comparison. Reports, past and present, are visualized in a clear and responsive web interface.

- **Developed By Activelogix**
- **Improves Focus on Need For Security Diligence**
- **Compatible With Niagara AX 3.6+ and Niagara 4.x**
- **Uses Recommendations Based On The Niagara Hardening Guide(s)**
- **Generates Reports To Review Security Assessment(s)**

Niagara Hardening & Best Practices

Hardening guides for

- AX (34 pages)
- N4 (42 pages)

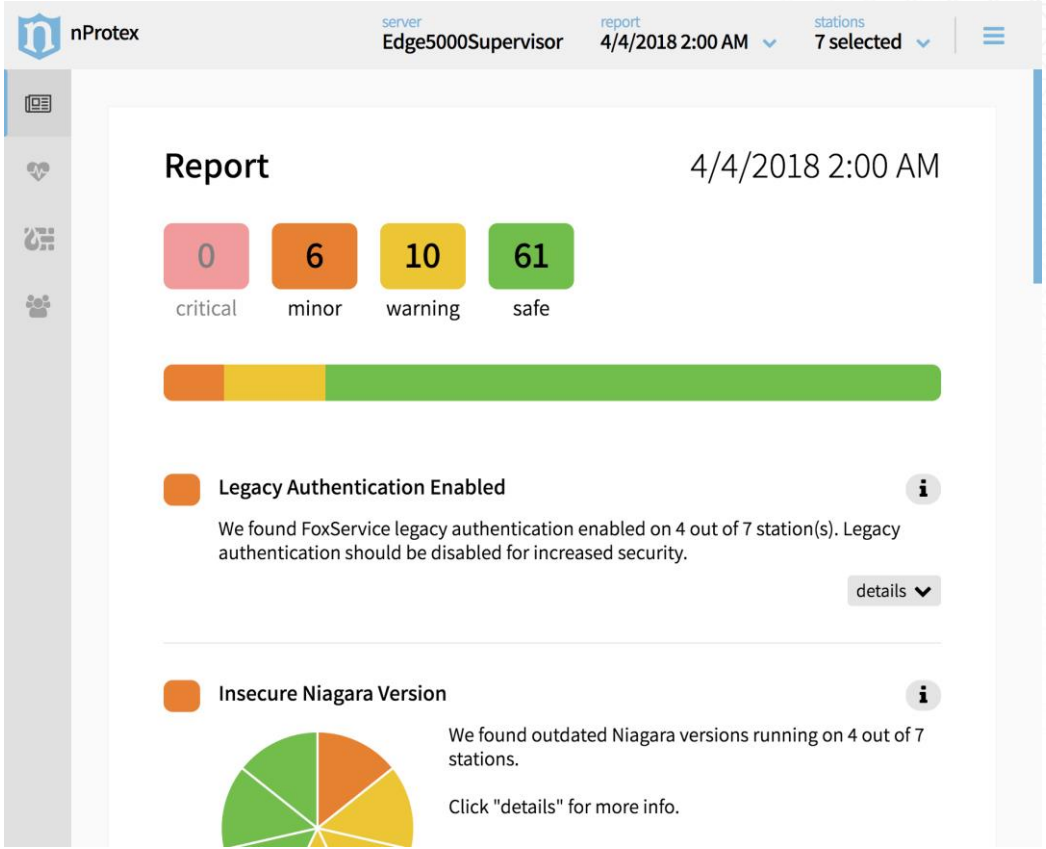
Includes:

- Passwords
- Accounts and Permissions
- Authentication
- TLS & Certificates
- JACE-8000 Settings

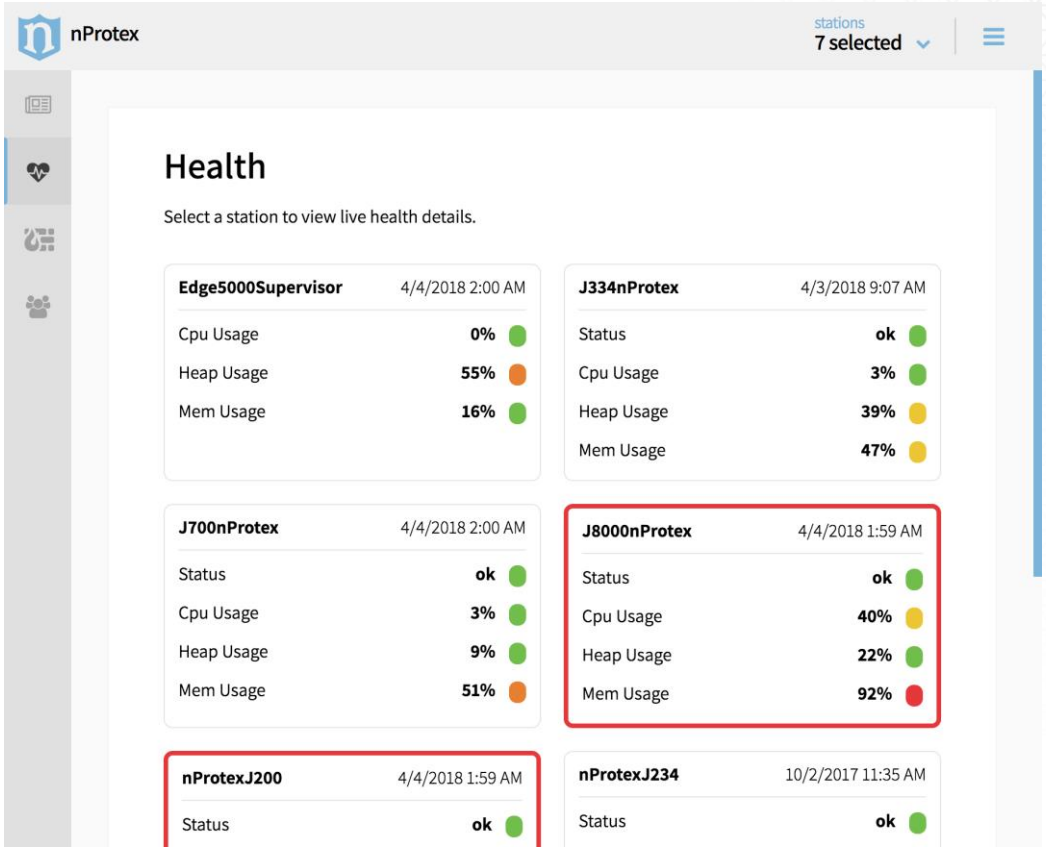
Reports Include:

- Password Strength/Expiration
- User Account Lockout
- Outdated Software
- Number of Users/Super Users
- FoxService Authentication
- WebService Authentication
- Configurable Thresholds

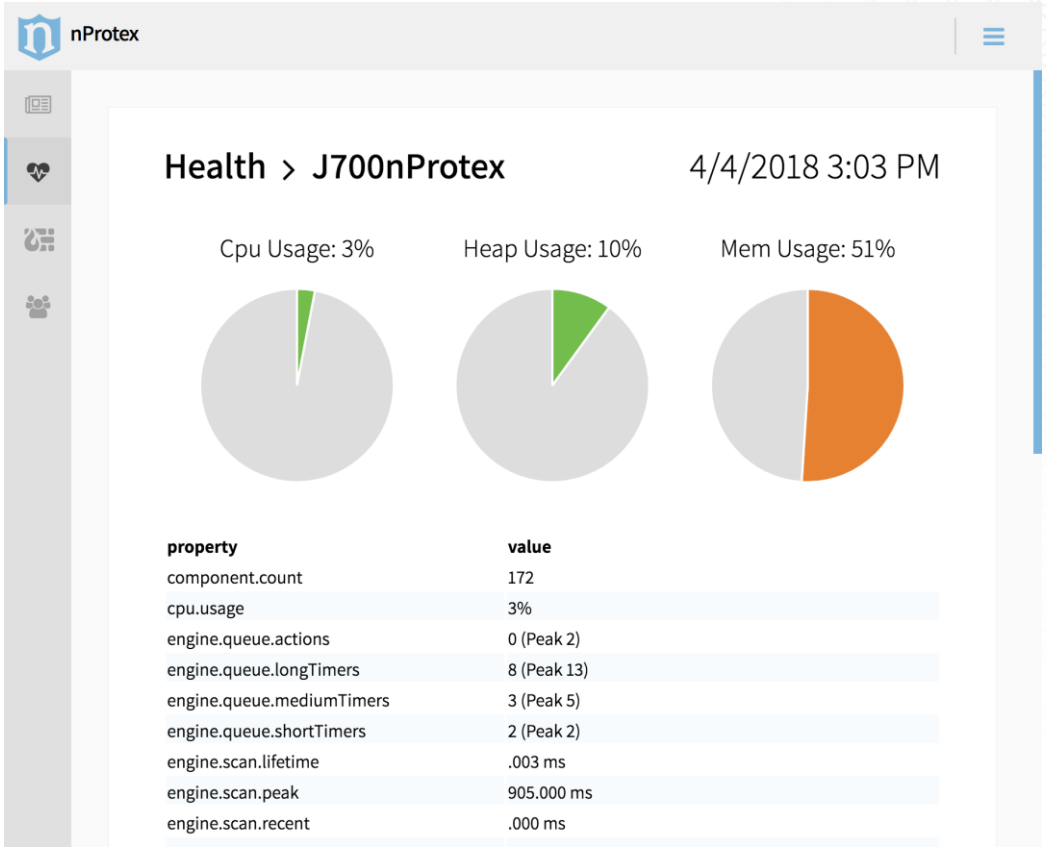
Report


nProtex
server
Edge5000Supervisor
report
4/4/2018 2:00 AM
stations
7 selected
Report
4/4/2018 2:00 AM
0
critical
6
minor
10
warning
61
safe
Legacy Authentication Enabled
We found FoxService legacy authentication enabled on 4 out of 7 station(s). Legacy authentication should be disabled for increased security.
details
Insecure Niagara Version
We found outdated Niagara versions running on 4 out of 7 stations.
Click "details" for more info.

Health

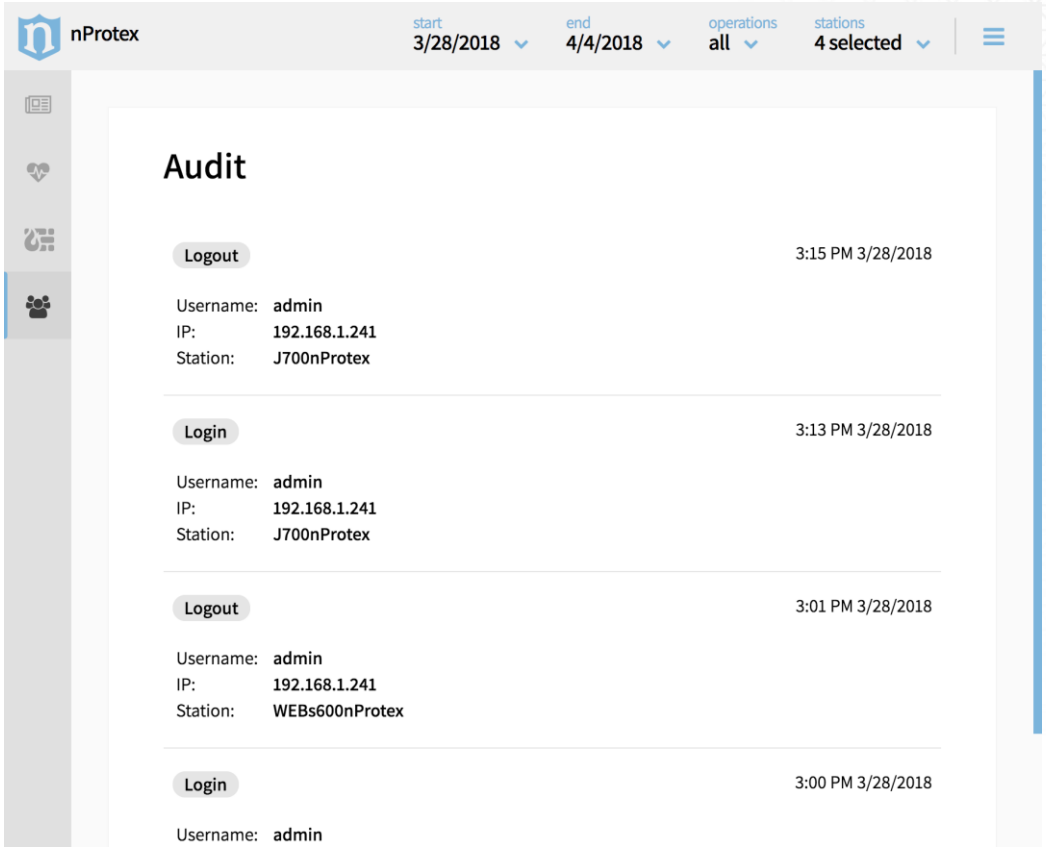

nProtex
stations
7 selected
Health
Select a station to view live health details.
Edge5000Supervisor 4/4/2018 2:00 AM
Cpu Usage 0%
Heap Usage 55%
Mem Usage 16%
J334nProtex 4/3/2018 9:07 AM
Status ok
Cpu Usage 3%
Heap Usage 39%
Mem Usage 47%
J700nProtex 4/4/2018 2:00 AM
Status ok
Cpu Usage 3%
Heap Usage 9%
Mem Usage 51%
J8000nProtex 4/4/2018 1:59 AM
Status ok
Cpu Usage 40%
Heap Usage 22%
Mem Usage 92%
nProtexJ200 4/4/2018 1:59 AM
Status ok
nProtexJ234 10/2/2017 11:35 AM
Status ok

Health Detail

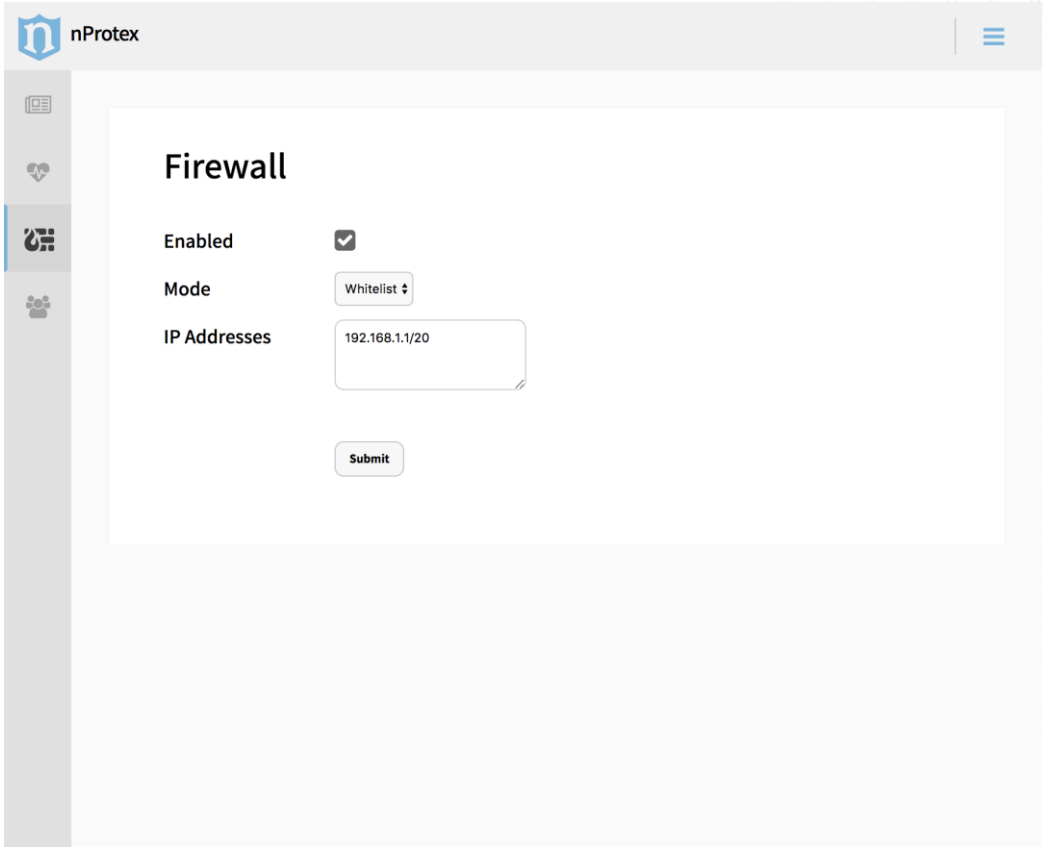


property	value
component.count	172
cpu.usage	3%
engine.queue.actions	0 (Peak 2)
engine.queue.longTimers	8 (Peak 13)
engine.queue.mediumTimers	3 (Peak 5)
engine.queue.shortTimers	2 (Peak 2)
engine.scan.lifetime	.003 ms
engine.scan.peak	905.000 ms
engine.scan.recent	.000 ms

Audit


nProtex
start
3/28/2018
end
4/4/2018
operations
all
stations
4 selected
Audit
Logout
3:15 PM 3/28/2018
Username: admin
IP: 192.168.1.241
Station: J700nProtex
Login
3:13 PM 3/28/2018
Username: admin
IP: 192.168.1.241
Station: J700nProtex
Logout
3:01 PM 3/28/2018
Username: admin
IP: 192.168.1.241
Station: WEBs600nProtex
Login
3:00 PM 3/28/2018
Username: admin

Firewall


nProtex
Firewall
Enabled
Mode
Whitelist
IP Addresses
192.168.1.1/20
Submit

Thank You!

www.Activelogix.com
www.nProtex.com

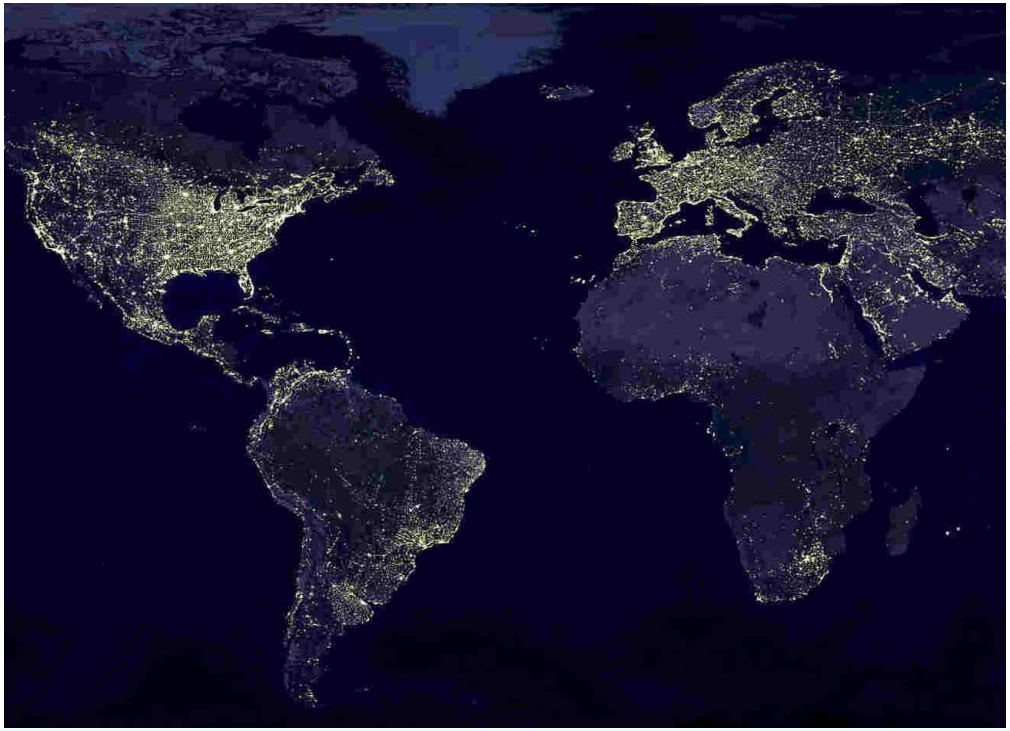
Clever Lighting: Leveraging Niagara for Revenue and IoT

Russ Sharer

VP Marketing, Fulham

rsharer@fulham.com

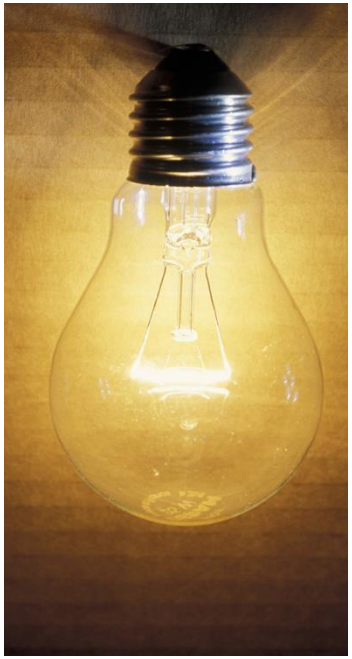
Lighting is the Perfect IoT Ekoskeleton

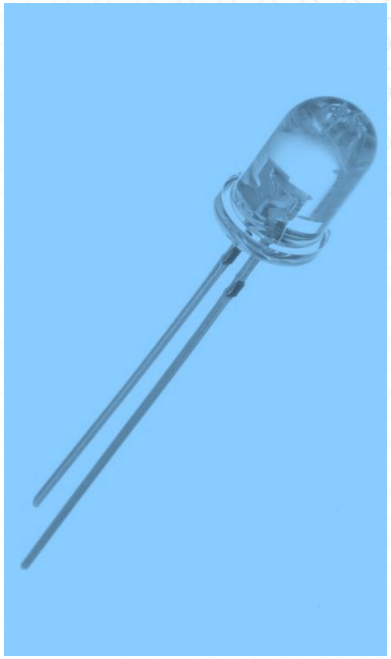


Lighting is the Perfect IoT Ekoskeleton

Lighting is the Perfect IoT Ekoskeleton

Lighting is Evolving





Clever Lighting

- Leveraging the uniqueness of LEDs and digital design for customer-valued, differentiated products
- ~$1B Global Market
- Smart Endpoints = Sensor Data Points

Clever = Programmable + Intelligent

Smart = Clever + Connected

The New Business Case for Niagara + Clever

elitedali™
smart lighting controls

Software & hardware building blocks, enabling any suitable BMS, BAS, BEMS, or BACS platform based upon Tridium's Niagara FrameWork® to be a smart DALI® lighting commissioning and controls solution.

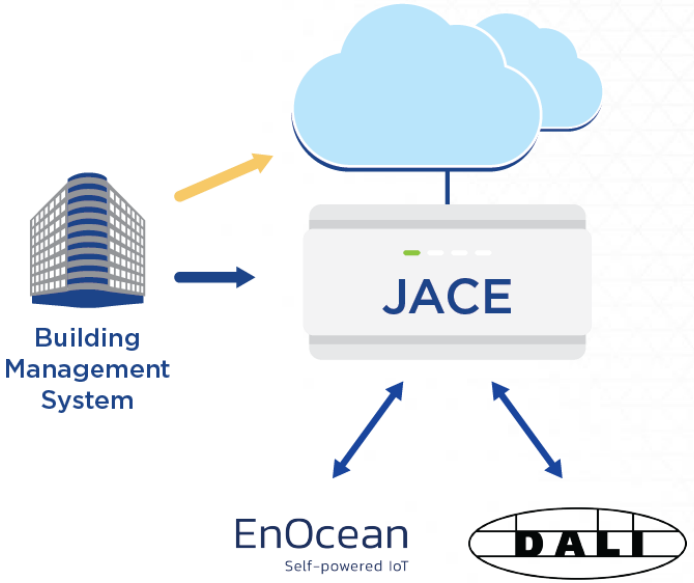
cns-enocean™
wireless | energy harvesting

Software & hardware building blocks, enabling, any suitable BMS, BAS, BEMS, or BACS platform based upon Tridium's Niagara FrameWork® to be a smart EnOcean® wireless commissioning and controls solution.

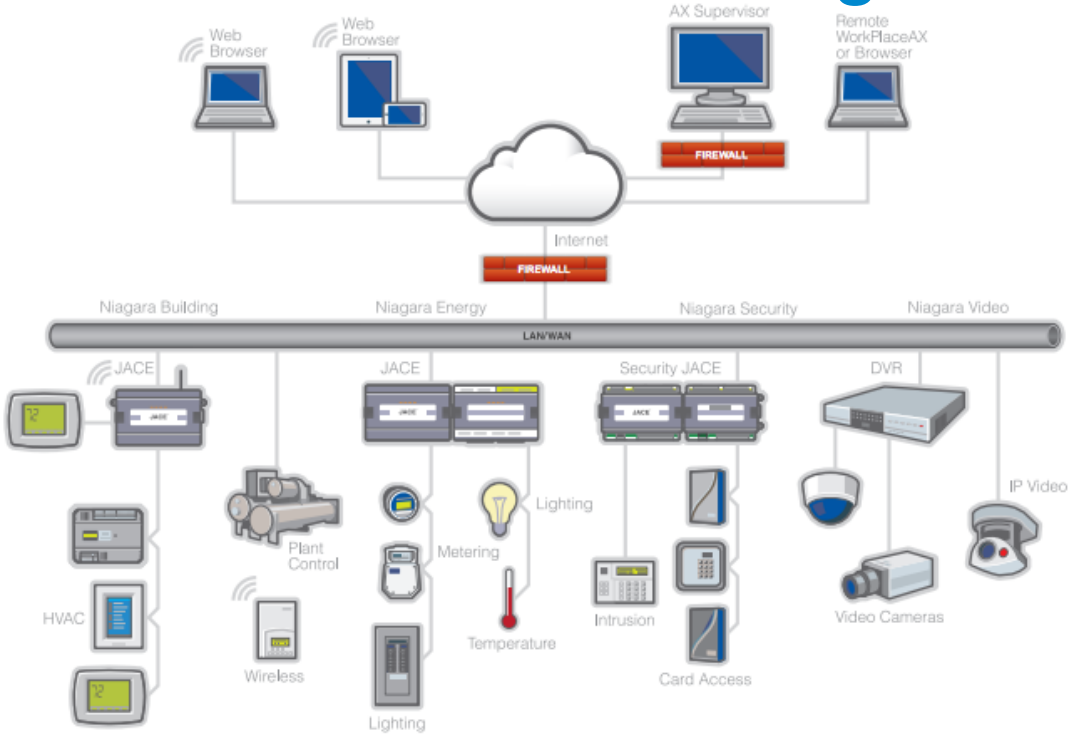
The New Business Case for Niagara + Clever

elitedali™ **and cns-enocean™**

- Direct & seamless BMS/BAS integration & device value data access
- **Native** Tridium® Niagara product
- Specialized for distribution centers, factories, office space, hospitals, hotels, educational facilities
- Empowers the Niagara Community to add its own significant IP and value.



The New Business Case for Niagara + Clever



The New Business Case for Niagara + Clever

California State University
DOMINGUEZ HILLS

- Why Communicate with Every Fixture?
  - No matter the code changes (Title 24), we can adapt
  - Take full advantage of future software updates
  - Better daylight harvesting
  - Easily adjustable lighting scenes

California State University
DOMINGUEZ HILLS

- What features are important to me today?
  - HVAC optimization
  - Space utilization
  - Classroom scenes
  - Plug loads
  - Proven energy savings reports

California State University
DOMINGUEZ HILLS

CASE STUDY

Before 100%

After 25%

California State University DOMINGUEZ HILLS

- What do I see in the future?
  - Professor walks into room and lights and HVAC adjust to his or her preselected levels
  - Maintenance walks into the room and they are immediately connected to a database that corresponds to relevant room data
    - Age of carpet, paint, furniture, etc.
    - Last time cleaning was done or floor polishing
    - PMs or work logs
  - CO2 sensors, humidity, water leaks/flooding

California State University
DOMINGUEZ HILLS

- During February 2015, Eco Vox building **analytics showed** that **15 VAV units using lighting occupancy controls data** averaged 152 hours each with **flow reduced by 161 cfm from normal.**
  - **2.1% reduction** of total airflow through air handlers 2 and 3
  - **Saves 720 kWh**
  - **Reduction of some 80 therms of natural gas**, due to cooling saved at the chiller level
- Welch Hall has a total of 185 VAV units

185 / 15 = 12.33
720kWh * 12.33 = 8,878 kWh * 12 months = 106,531 kWh per year
80 therms * 12.33 = 986 therms * 12 months = 11,837 therms per year

ECOVOX
ENERGY ANALYTICS

Smart Business = Clever + Niagara (Platforms & Products)

- A profitable extension for single service Niagara SIs – Lighting

- Create multiple system control (usually Lighting + HVAC)
  - Better RoI than single service
  - Unique offerings to differentiator your service from competitors
  - Small incremental work for large revenue increase
  - Broaden and enhance your reputation

- Create annuity solutions limited only by imagination and ability to execute!

Thank You

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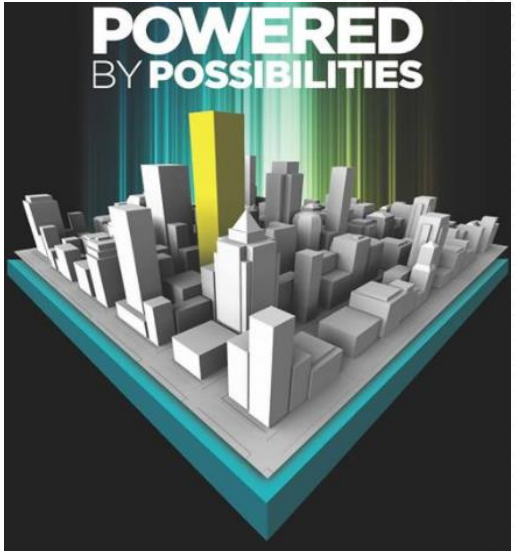
Thinking Outside the Box

Amod Kamat

Manager Software Engineering, Tridium Inc.

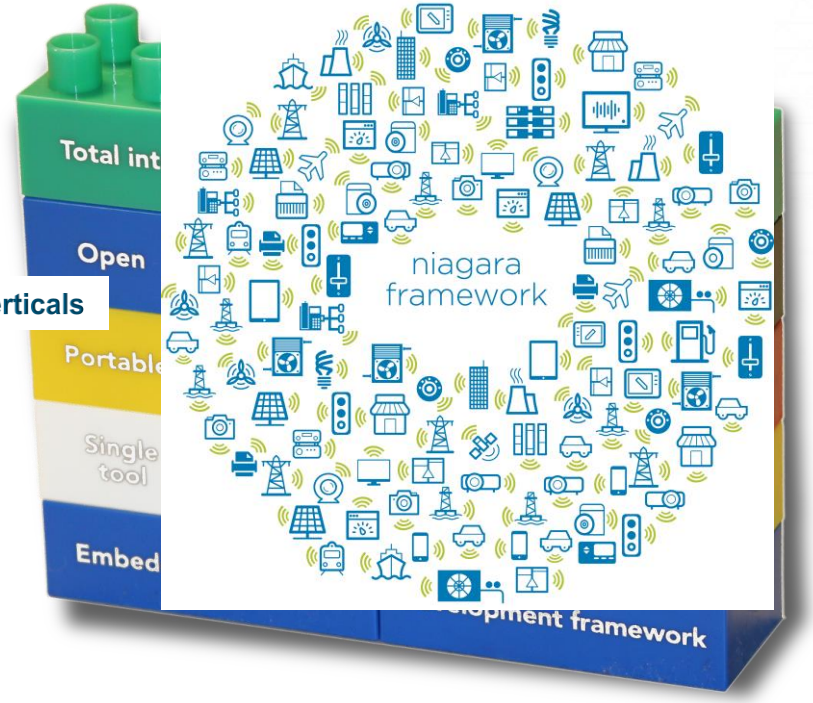
niagara4

Continuing to fuel the innovation ecosystem



Niagara Platform – Open 4 Innovation

Spanning to different verticals



Beyond our imagination

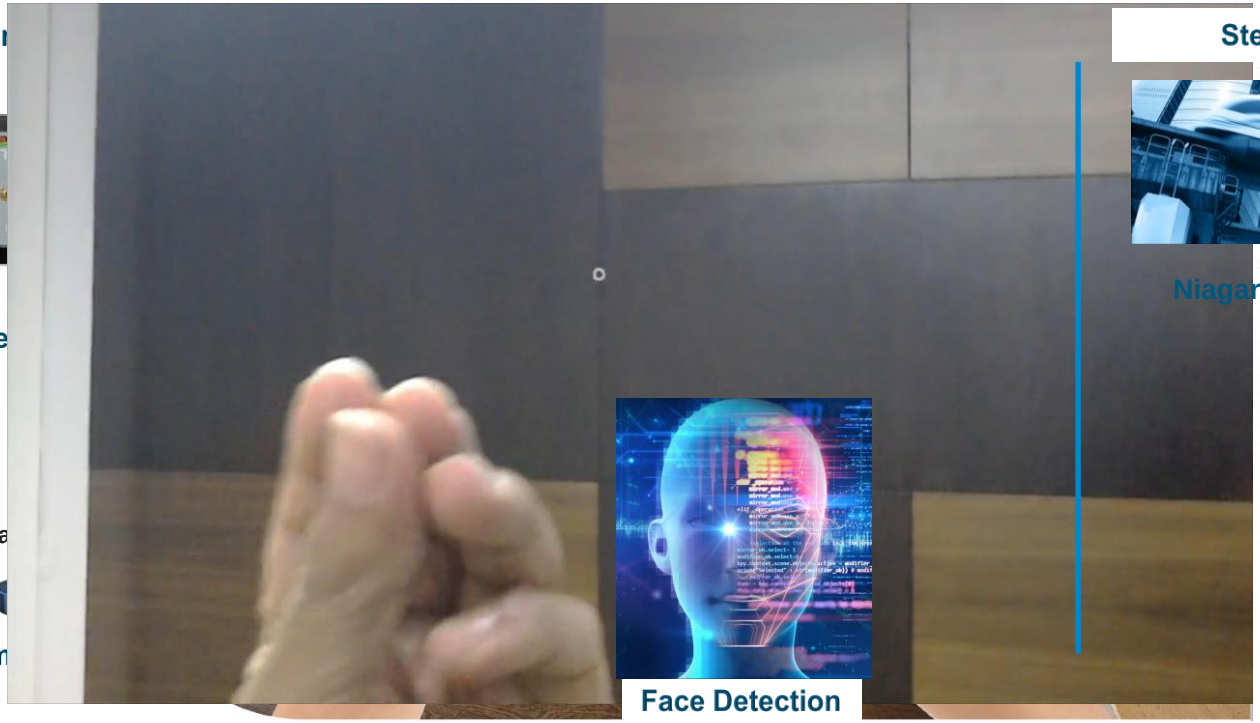
Niagara Platform – Open 4 Innovation

Curren

Mobile Inte

Amazon Alexa

Sm



Face Detection

Step Beyond …

Niagara for locomotives

Thanks to our Community…..

*Questions?

BACKUP

IHA – Integrated Home Automation

Augmented Reality – with Microsoft HoloLens

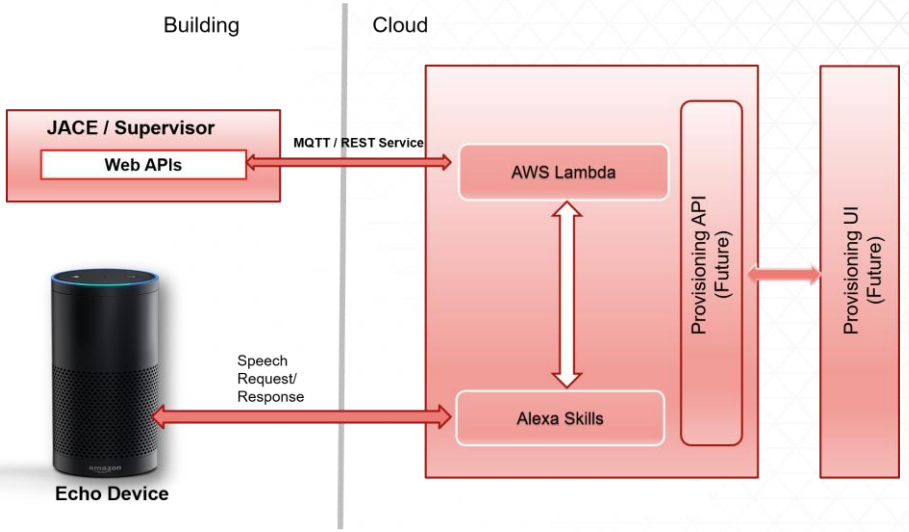
niagara4

Analytics Framework

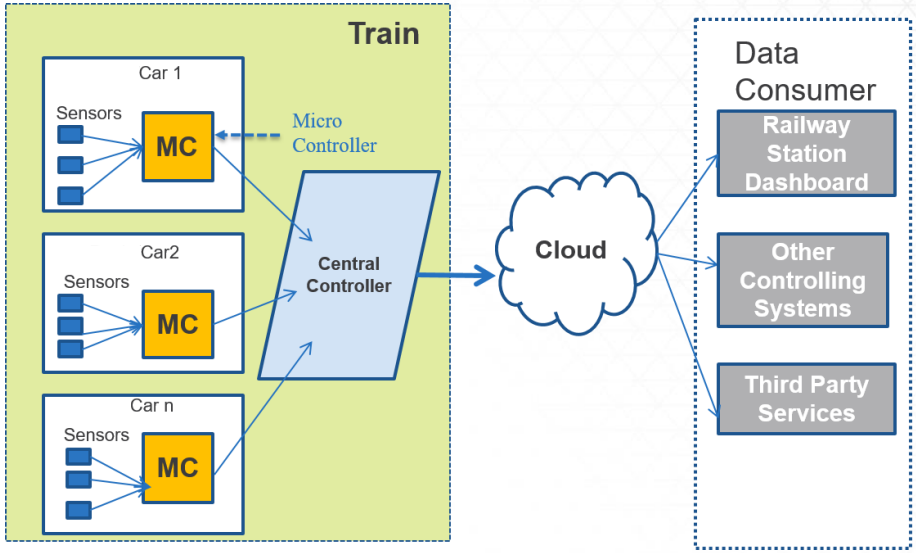
Smart Office – “Hello Niagara!”

Most of people spend 30% of their active day at the office!

- Provide seamless experience with voice command and control
- Step towards future workspace



Step Beyond Buildings & Home

Concept to explore use of Niagara on Railways

- Model every train car as a building
- Overcome network availability challenges