CONNECTING
THE WORLD

Portability and Containerisation

Jacqueline Walpole
Sr. Product Manager
Tridium

TRIDIUM

Portability

4 TARGET AREAS

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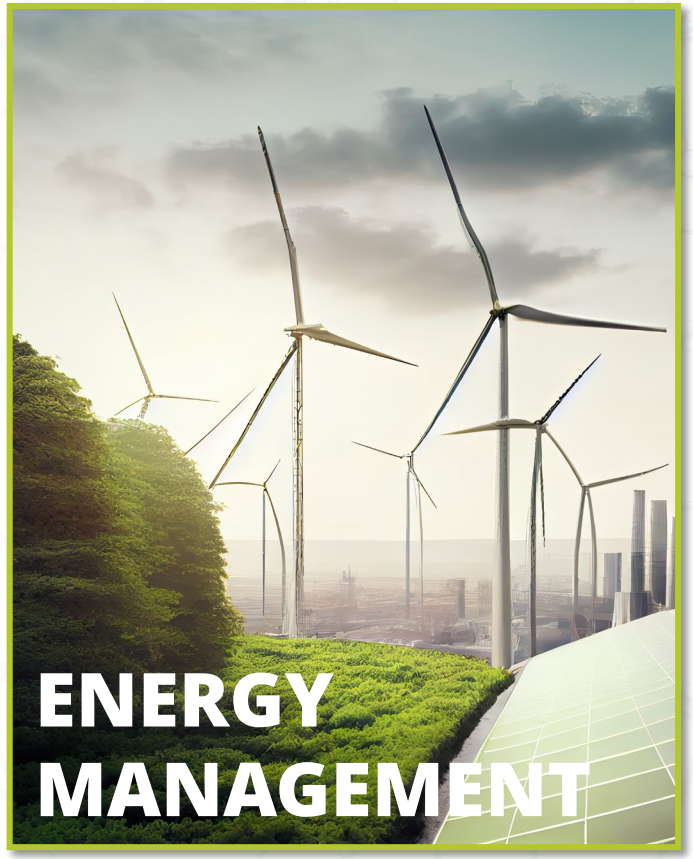
PORTABILITY



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niagara PORTABILITY

powered by niagara framework®

Platform Independent niagara4

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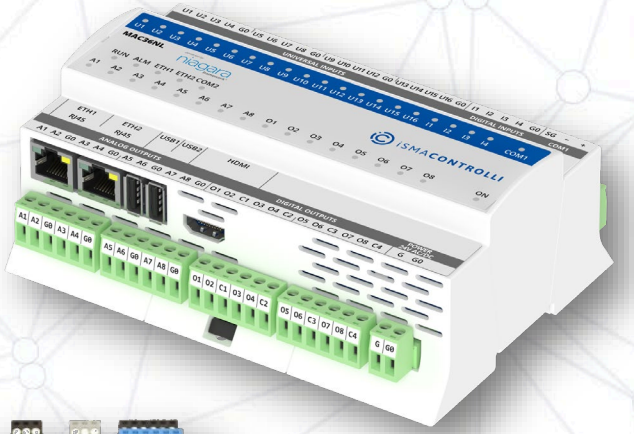

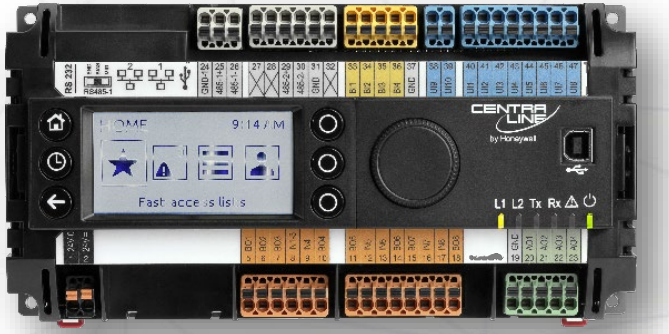

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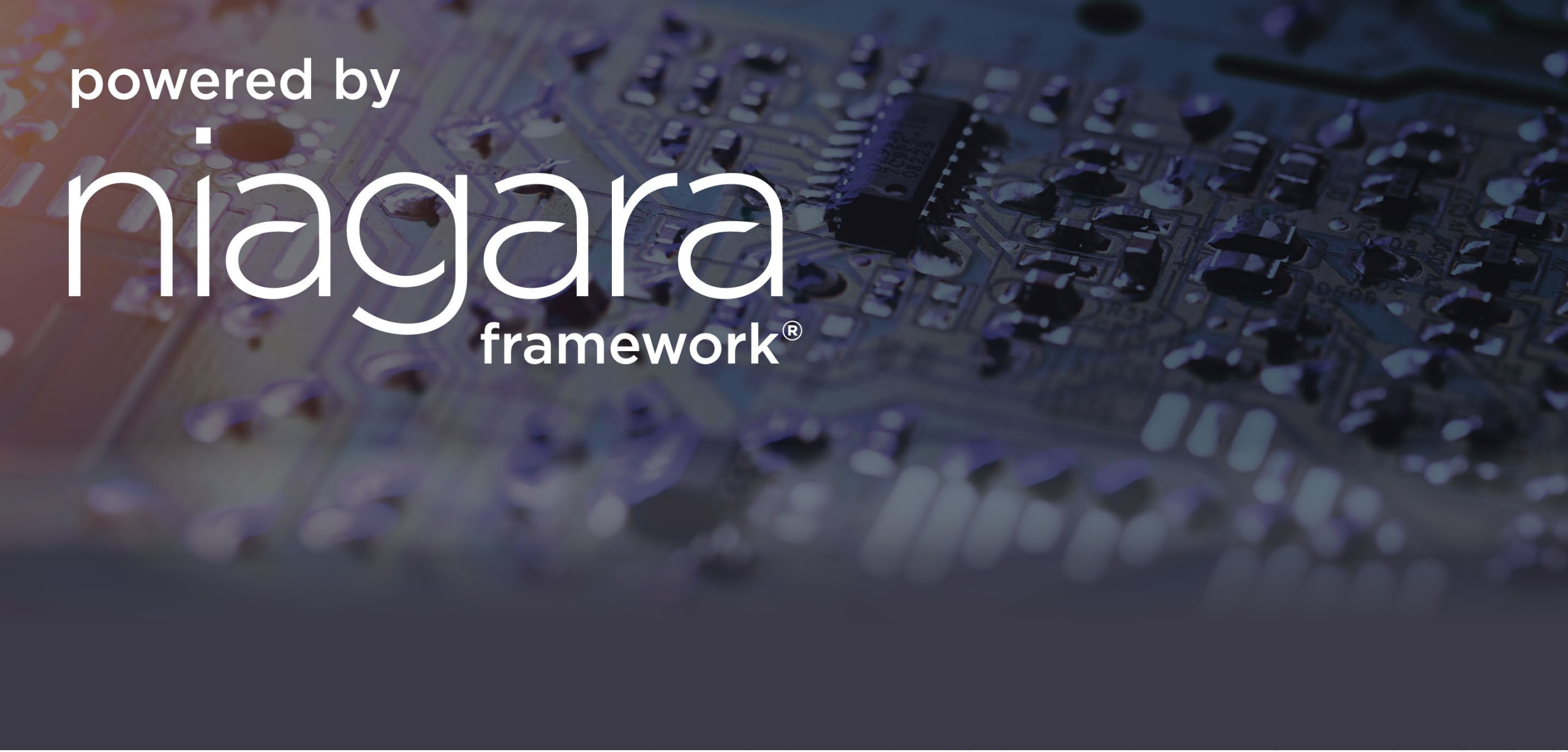

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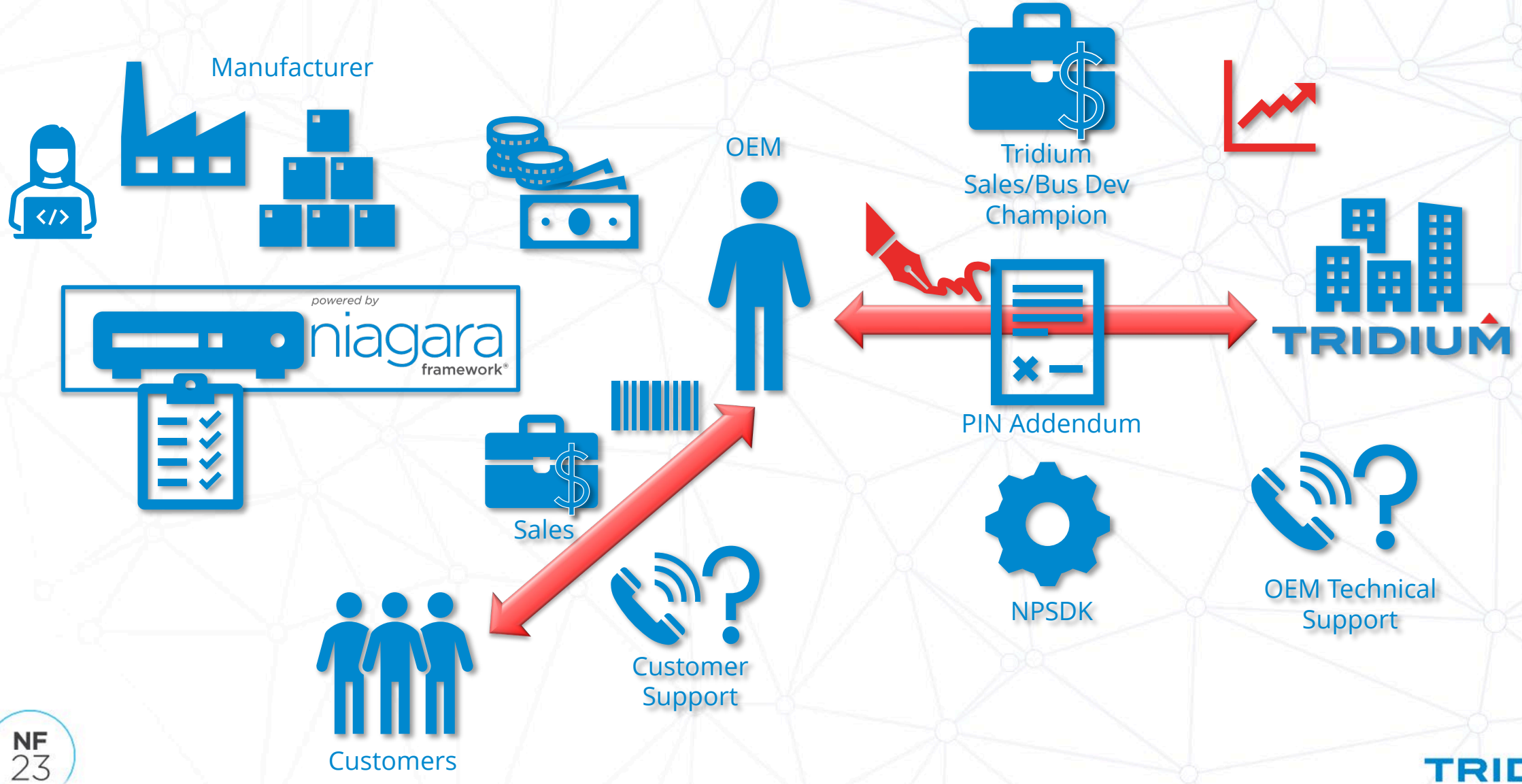
Portability Process & Who's Who...?



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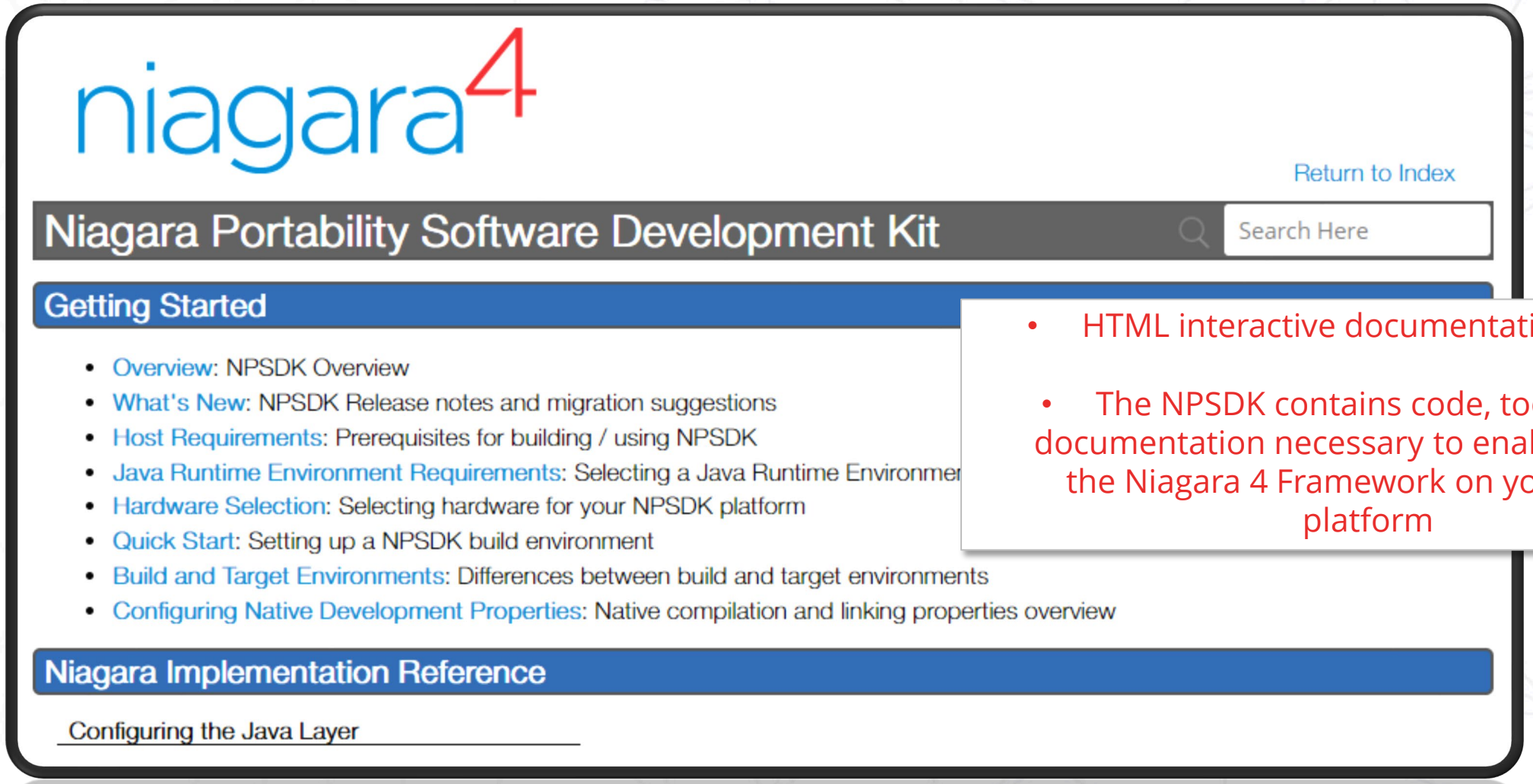
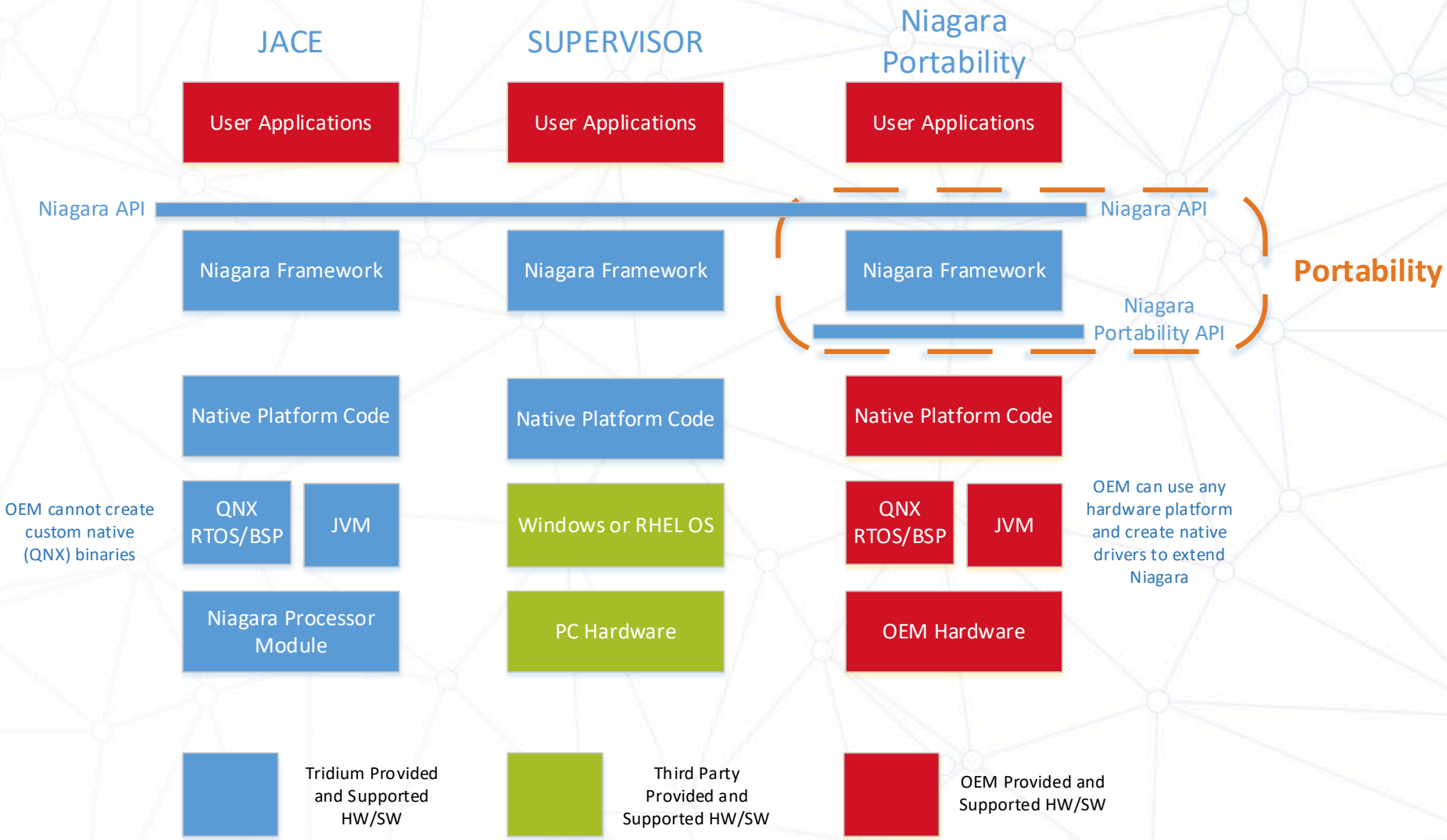
What's in the NPSDK...?



- HTML interactive documentation pack
- The NPSDK contains code, tools and documentation necessary to enable running the Niagara 4 Framework on your target platform

What is Portability…?



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Containerised Niagara

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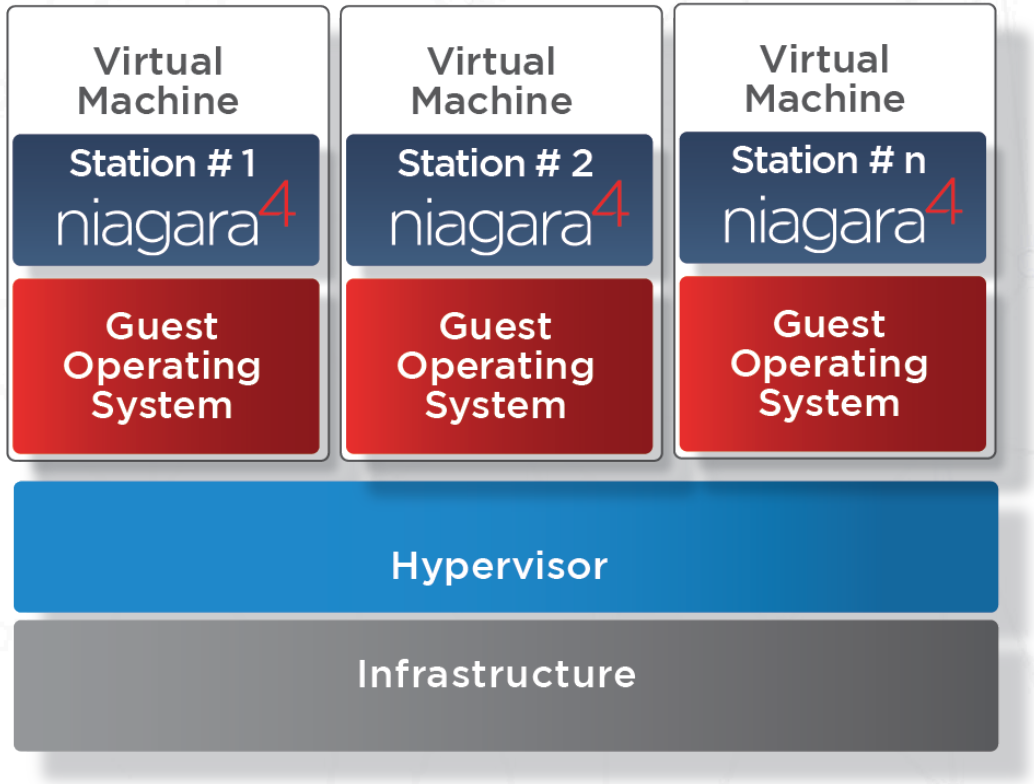
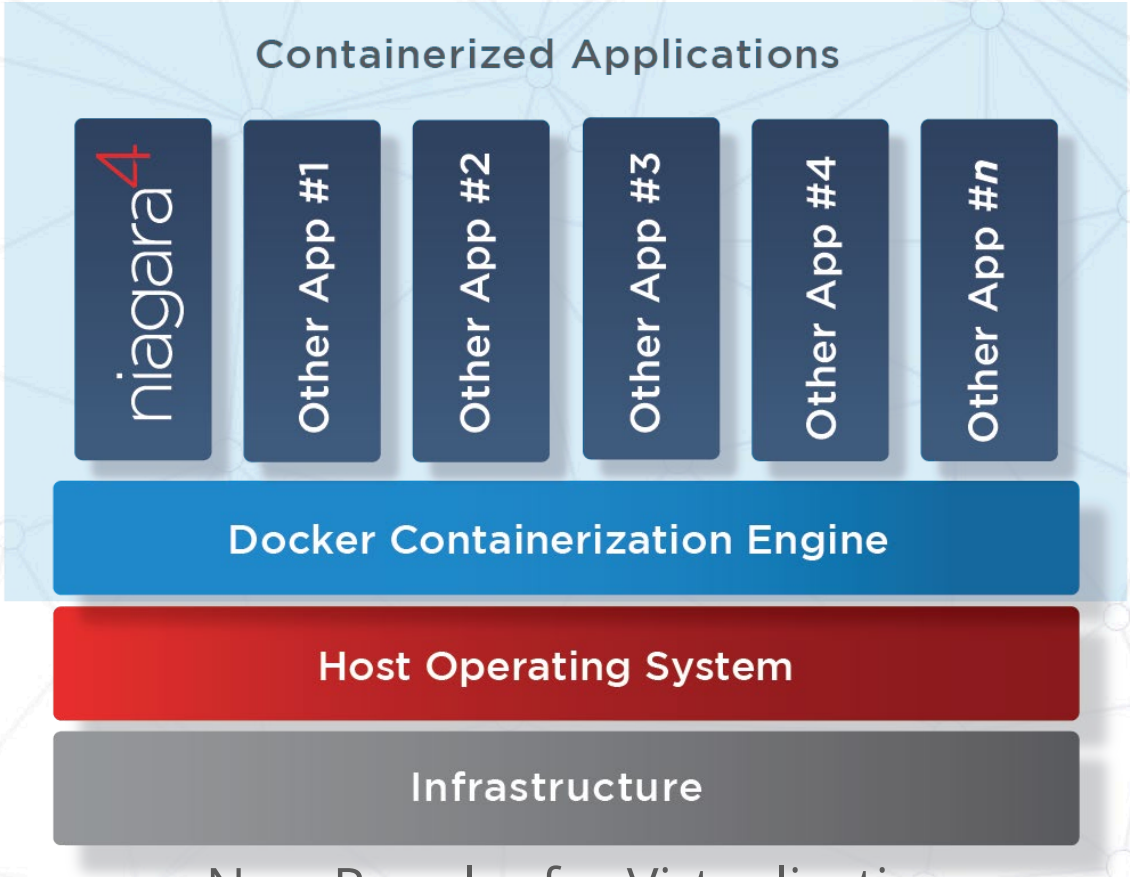
Why Use Containers…?

Containers are less resource intensive and more portable than Virtual Machines.
Can ease development, deployment and upgrades.



Formerly Popular for Virtualization



Now Popular for Virtualization

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Containerized Niagara Versions

CLOUD

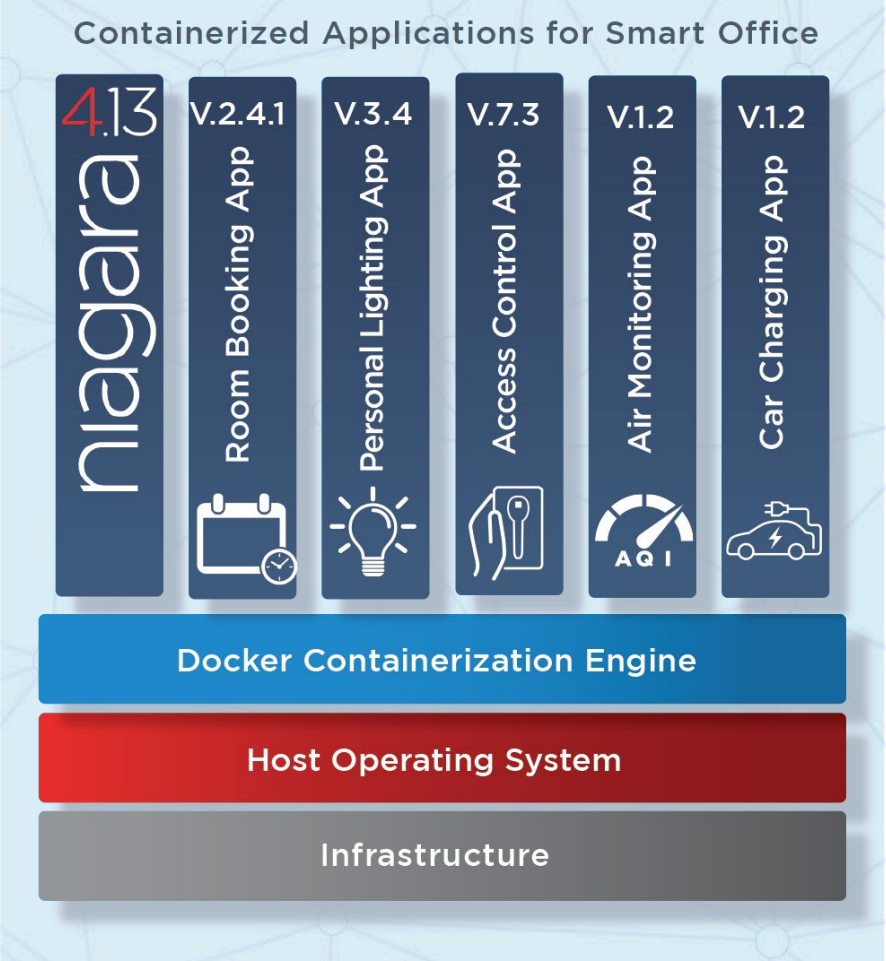
Supervisor deployment in a cloud service

ON PREMISE

Supervisor deployment on a server device housed locally

HARDWARE EMBEDDED

Embedded deployment whereby a Niagara development partner deploys Niagara containers on its own proprietary or a third-party commercial device or server



Example deployment of Containerized Niagara on a partner-built mobile hub.

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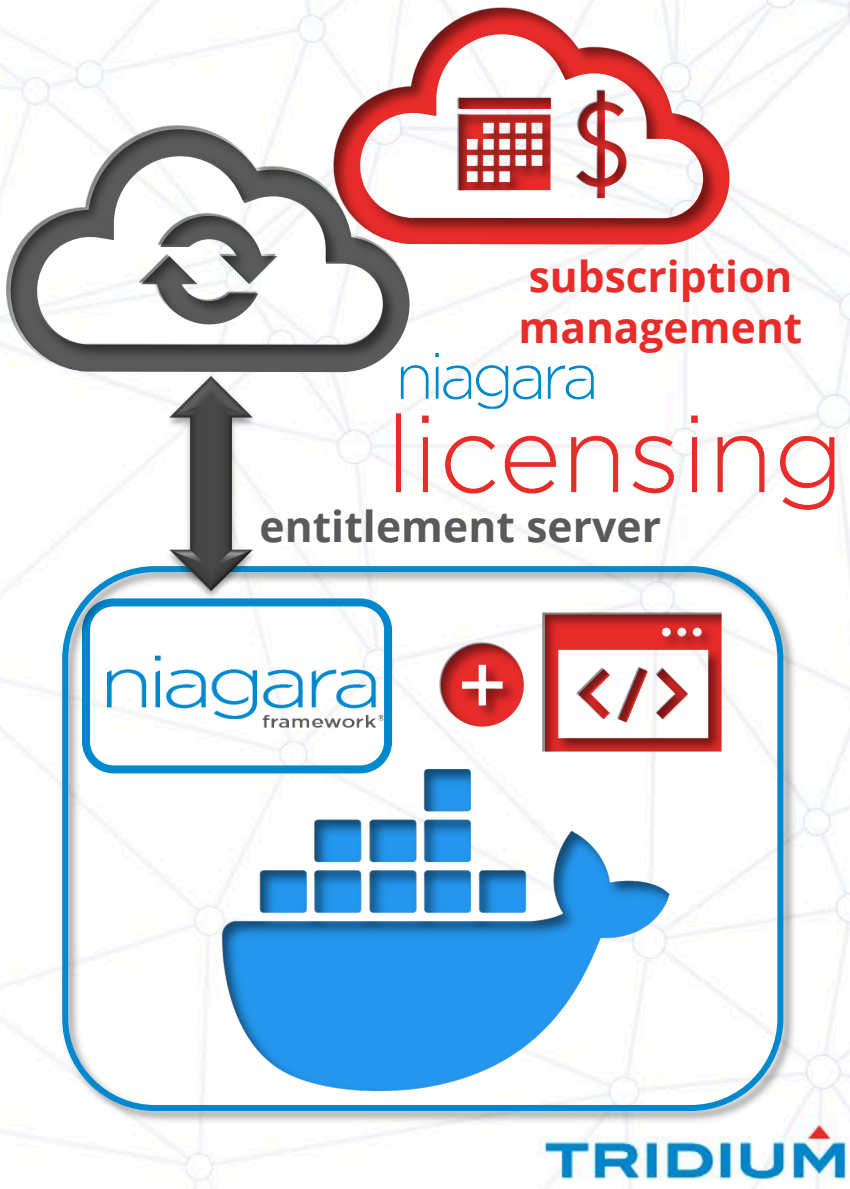
Containerised Portable Niagara: Introduction

- For OEMs managing connected devices such as routers and hubs using a container management system, containers can facilitate **easy remote deployment** and **updating of Niagara**
- Niagara Framework supplied in a Docker™ container
- Support for AMD_x86 and Arm64 architecture
- Partner OEMs can add their own applications as required prior to the deployment of their container
- As the container is commissioned, it will contact the Tridium entitlement server to authorize install, deploy license, and stay activated
- Containerized Niagara is being launched as a subscription only service from N4.13



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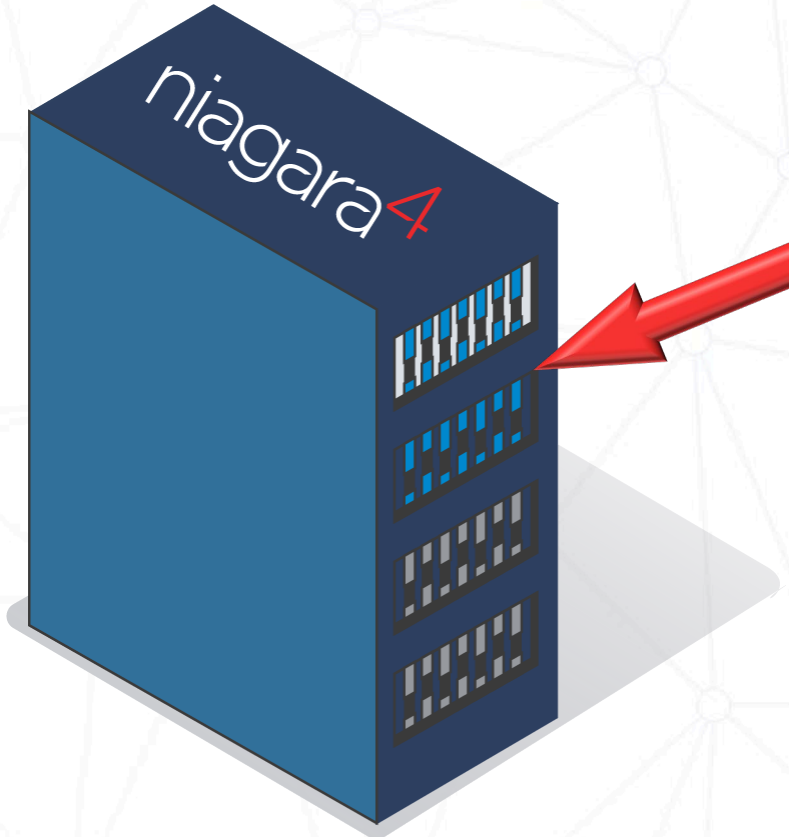
Subscriptions and Containerized Niagara

SaaS Subscriptions =

More purchasing flexibility

Purchased using OPex rather than CAPex



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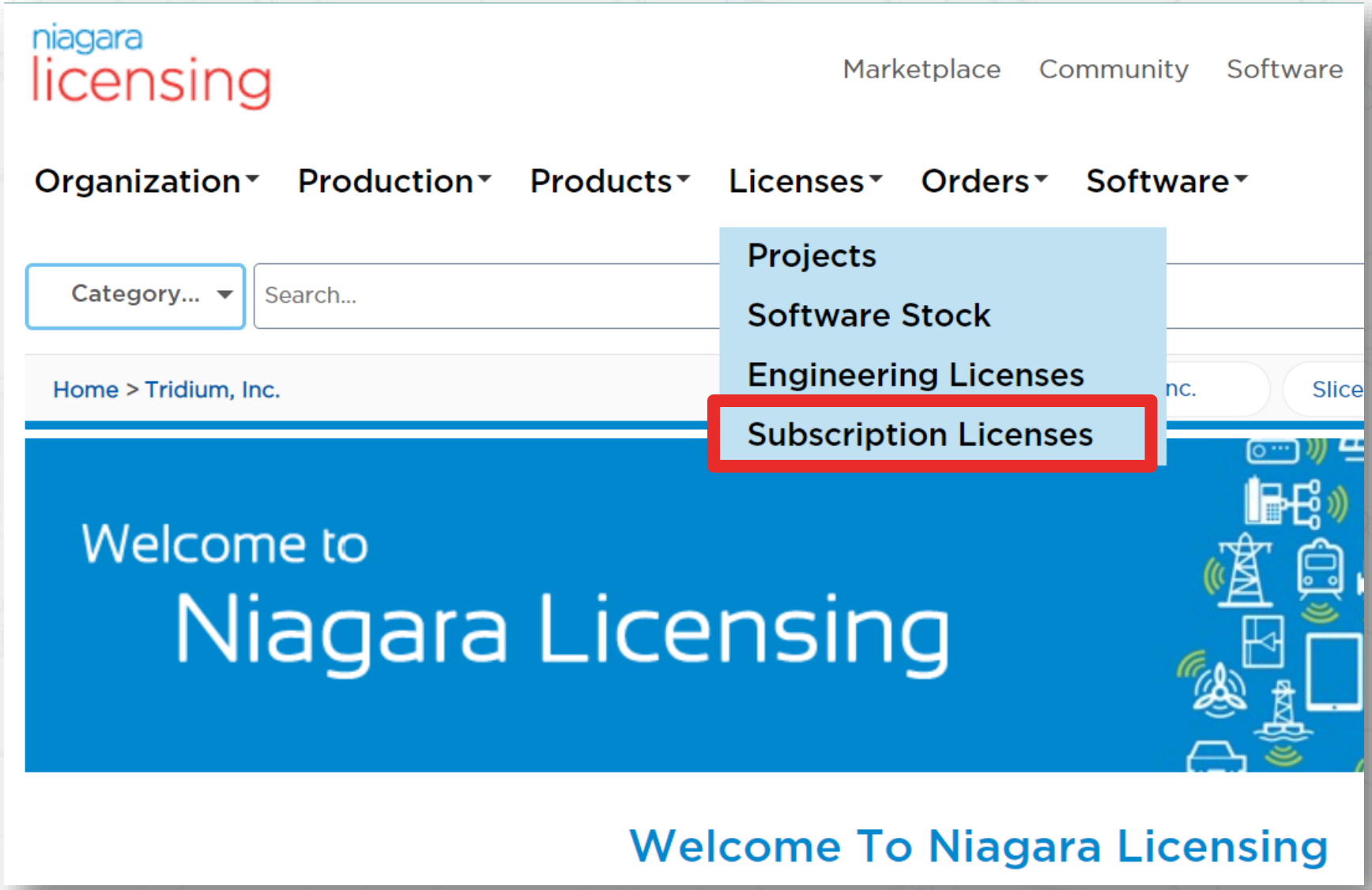
Subscription Licensing



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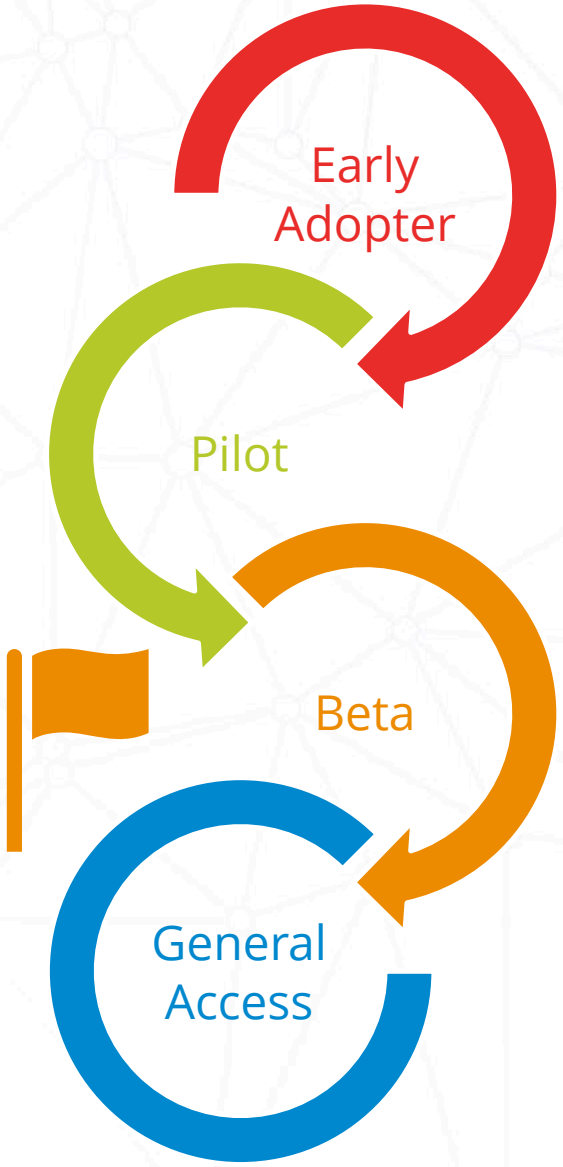
Containerised Portable Niagara: Roadmap



- Early adopter phase - Docker Container provided with full Niagara build plus built in JRE & Niagara licenses with 90-day expiry for testing in the partner OEM's lab
- Pilot phase – containers provided for pilot customer sites – Docker container provided with full Niagara build plus built in JRE & maximum required Niagara licenses with agreed expiry date (up to 6 months)
- Beta & GA – all containers to be deployed in an environment that can contact the Tridium Entitlement Server to manage a) registration and activation of new site licenses b) validity of a site license c) feature set and optional add-ons to Niagara license
- Commercial offering targeted to coincide with Niagara 4.13 release

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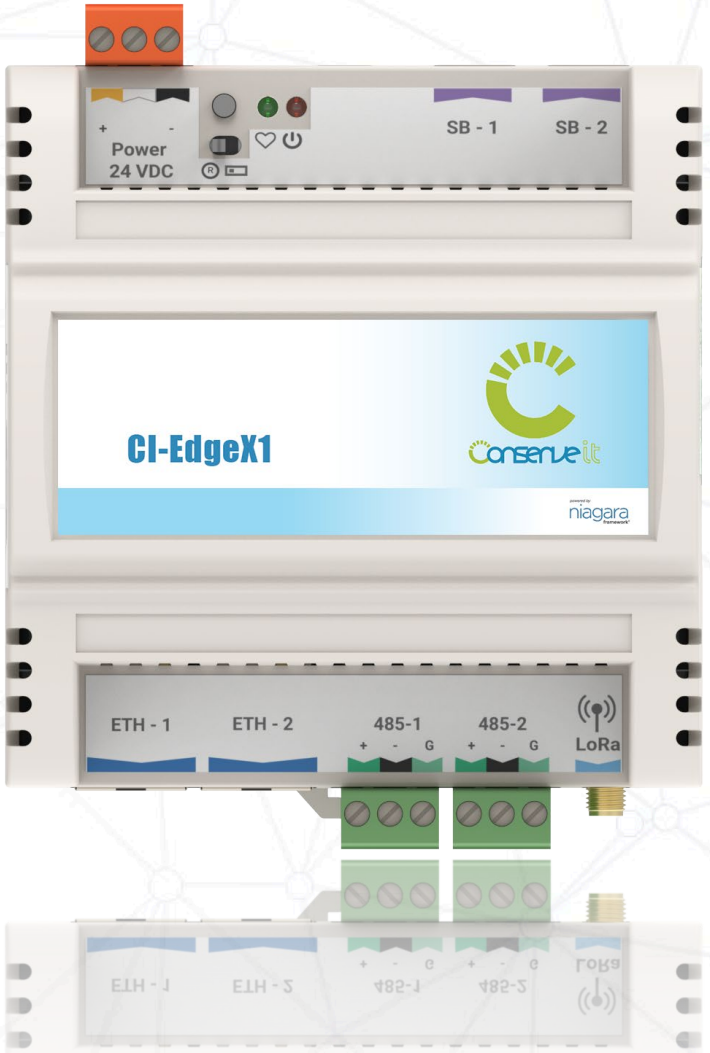
Portability OEMs

Here at the Forum

ConserveIt stand E3



CI-EdgeX1
Datasheet

Deliver the Reliability of Niagara to the Edge

Conserve It Edge IoT controllers are a new generation of IoT controllers using the Niagara Framework®. A first-of-its-kind, the CI-EdgeX1 combines a quad core processor with a wide range of peripherals to deliver fully programmable controller that leverages Niagara, provides expandable IO ports, and web server duties into a single device. Taking Niagara to the edge with real-time control – the CI-EdgeX1 utilizes the same familiar Workbench software, Niagara programming tools and Fox Protocol.

Conserve It EdgeX1 (CI-EdgeX1) Specifications

- Supports full HTML5 web user interface running Niagara 4 framework
- Supports JAVA Web Start without JAVA Plug-ins
- Standard Drivers – Niagara Network (Fox), BACnet, Modbus, Web & oBIX
- Compatible with many additional IP drivers
- Expandable I/O available
- 10/100 Mbps Ethernet (2), RS-485 (2)
- 8/16/32G eMMC Flash memory
- Broadcom BCM2837B0, Cortex-A53 (ARMv8) 64-bit SoC @ 1.2GHz Quad core
- Wired 24 VAC/DC power input, ideal for equipment control and monitoring applications
- 35mm DIN rail or flat panel mounting

Features

- CI-EdgeX1IoT = fully programmable Niagara controller - Fox Protocol - Workbench/Web Browser - Same programming tools
- Expandable Serial expansion, 4G, Lora receiver & IO ports
- Super powerful quad-core processor
- 1GB RAM
- Multiple storage options (8/16/32 GB)
- Fast and increased memory capacity
- Small unit footprint (11.2cm x 10.7cm x 5.6cm)

Connect & Access Data - Anytime, Anywhere

Reduce Engineering Time & Installation Costs

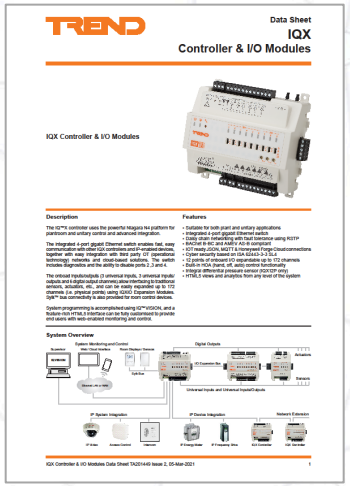
The Conserve It EdgeX1 utilises Niagara and a proven IoT edge hardware platform, enabling facility managers, operators, system integrators and contractors to use a known user interface (Workbench/Web Browser) to achieve operational efficiencies between multiple systems and/or devices, facility management functions, equipment control and business applications. Ultimately, the CI-EdgeX1 licencing is well-suited to take Niagara into smaller or mid-sized and price-sensitive applications. The following are available: 100 points, 250 points, 500 points, 1250 point, 5,000 point and 10,000 point variations.

Honeywell stand R2

Honeywell

THE POWER OF CONNECTED

TREND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Data Sheet
IQX
Controller & I/O Modules

IQX Controller & I/O Modules

Description

Features

System Overview

CENTRA LINE by Honeywell

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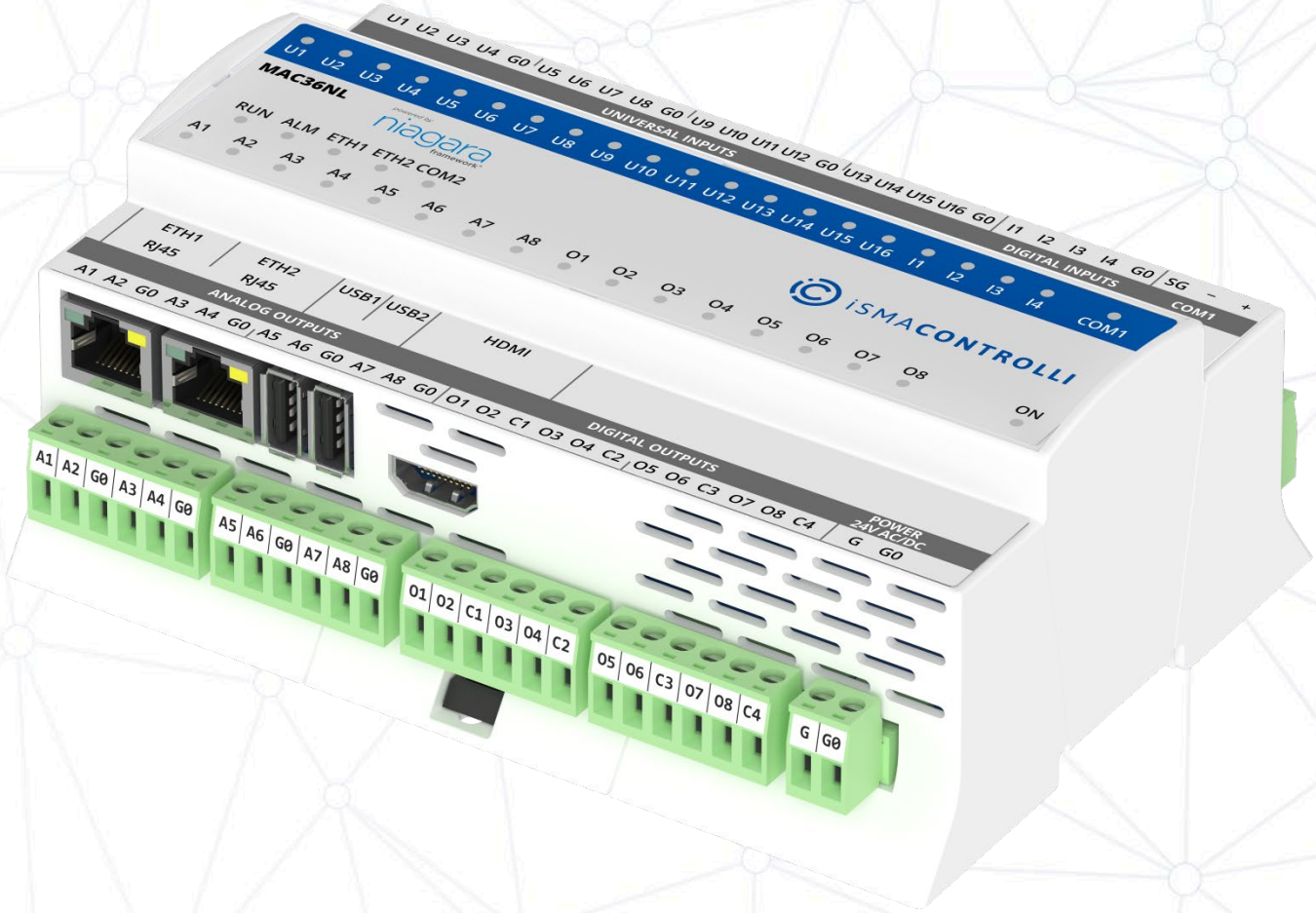
iSMA Controlli stand D5

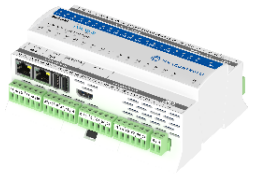
iSMACONTROLLI



MAC36NL

Hybrid IoT Controller

MODEL	DESCRIPTION
ISMA-B-MAC36NL	Hybrid IoT Controller powered by Niagara Framework
ISMA-B-MAC36NL-RS	Hybrid IoT Controller powered by Niagara Framework, with 2 RS485 ports
ISMA-B-MAC36NL-M	Hybrid IoT Controller powered by Niagara Framework, with M-Bus interface



APPLICATION AND USE

ISMA-B-MAC36NL is a compact Master Application Controller with built-in different types of I/O, powered by Niagara Framework. Using the specific local I/O set (16 UI, 8 AO, 4 DI, and 8 DO) allows users to use the device in different applications. The controller provides control, data logging, alarming, scheduling, integration, and visualization.
To allow IP connectivity there are 2 Fast Ethernet ports that can operate as two independent ports. Built-in RS485 interface can be used to expand the number of I/O by connecting iSMA-B-MINI or iSMA-B-MIX series I/O modules or to integrate with other subsystems. There are two more hardware versions of the controller with the second RS485 port or M-Bus interface available.
ISMA-B-MAC36NL provides a rich graphical interface to be displayed on a standard web browser or an external display connected to a built-in HDMI and USB port (touchscreen support).

FEATURES

- Niagara 4.4 and up
- Real-time programming
- 2 Fast Ethernet (independent)
- RS485 port (opto-isolated)
- Second RS485 port (opto-isolated, optional hardware version)
- M-Bus interface (optional hardware version)
- 2 USB ports (touchscreen, mouse, keyboard support)
- 16 UI, 8 AO, 4 DI, and 8 DO
- HDMI to connect an external display
- Built-in web server provides graphical user interface available from a web browser level
- SD card to collect real-time data, history, and alarms
- Hardware replacement by SD card

TECHNICAL SPECIFICATION

DESCRIPTION		MAC36NL
Power supply	Voltage	24 V AC/DC ± 20%
Universal inputs	Number of inputs	16
	Voltage input	Voltage measurement: 0-10 V DC Input impedance: 100 kΩ Measurement accuracy: ±0.1% Measurement resolution: 3 mV at 12-bit and 1 mV at 16-bit
	Current input	Current measurement: 0-20 mA Required external resistor: 200 Ω Measurement accuracy: ±1.1% Measurement resolution: 15 µA at 12-bit and 5 µA at 16-bit

The performances stated in this sheet can be modified without any prior notice.

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Lynxspring stand E2

LYNXSPRING®

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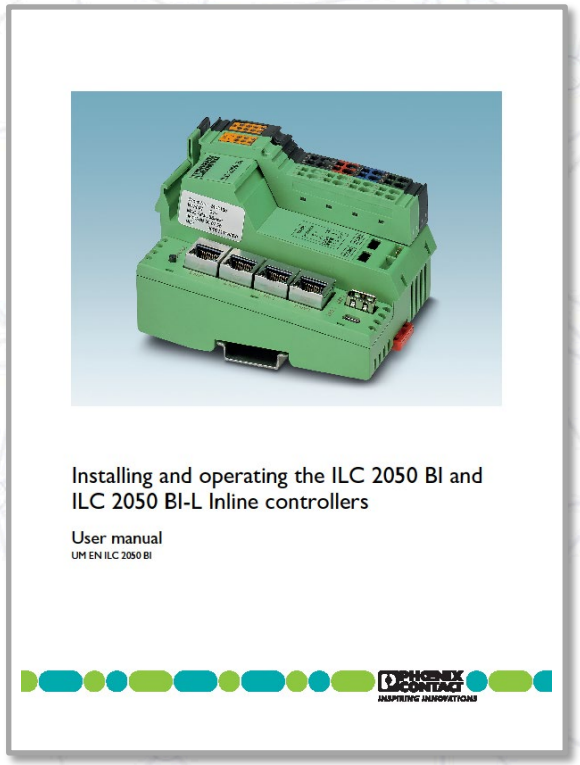
Phoenix Contact stand E4

You can connect up to 63 Inline terminals to an Inline controller. Ranging from digital and analog inputs and outputs with different numbers of channels right through to function terminals for DALI, pulse width modulation, M-Bus, or serial interfaces.



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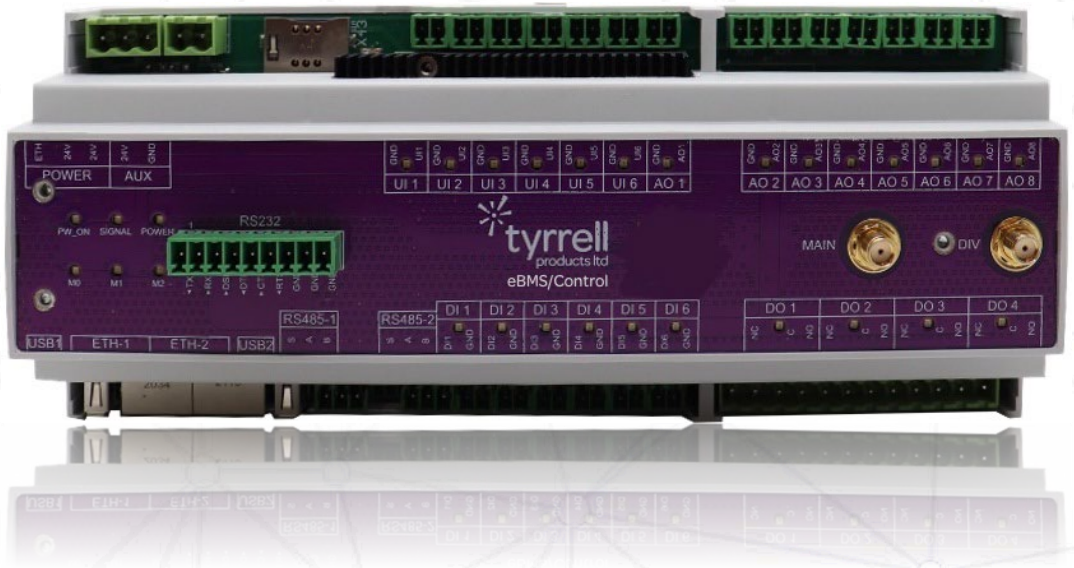
Tyrrell Products stand R7

tyrrell products ltd



Intel IoT Automation Controller

tyrrell products ltd

Connectivity

- 8 x Universal Outputs
- 4 x 230VAC Relays
- 6 x Universal Inputs
- 6 x Digital Inputs with counters
- 2 x GB Ethernet Ports
- 1 x USB3.0 Communication / Power Port
- 1 x USB Power Port
- 2 x RS485 Ports + 1 x RS485 Edge IO Port
- 1 x RS232 Port
- 24VAC/DC Power

Processor / Memory / Storage

- Intel Elkhart Lake 1.3 GHz Dual Core (Fanless)
- 16GB DDR RAM
- 32GB eMMC
- PCMCIe with Cellular option

Specification

Nominal Voltage	24VDC
Universal Inputs	0(2) - 10V DC PT1000 NTC 10K3A1 NTC 10K4A1 NTC 1K8 Voltage Free Contact 1-10K Ohm Potentiometer for Remote Set-point Adjustment
Digital Inputs	DI (Volt Free Contact) Pulse Input (Max. 20Hz, 50% Duty Cycle, Max. 50 Ohm Contact)
Analog Outputs	0(2) - 10V DC (20mA Max.)
Digital Outputs	Normally Open/Closed 230V AC (2A Max.) 30V DC (5A Max.)
External Output	24V AC (1A Max.)
Operating Temperature	-25...+75°C (-13...+167°F)
Operating Humidity	5...95%RH, Non-condensing

OS and Software

- Ubuntu Core 20 Core OS
- Intel Edge Compute for Industry software stack
- Optional virtualised containers:
  - Tridium Niagara 4.10
  - Open PLC SoftPLC
  - NodeRed
  - Proprietary SoftPLC on application

Dimensions and Connections

Weight	560g
Dimensions	217mm(W) x 90mm(H) x 83mm(D) (Including Terminals)
Mounting	35mm DIN Rail
Protection	IP20 / EN 61326-1
Connections (UI/DI/AO/Comms)	Plug-in Terminals Cable Max 1.5mm2
Connections (Power/Relays)	Plug-in Terminals Cable Max 2.5mm2

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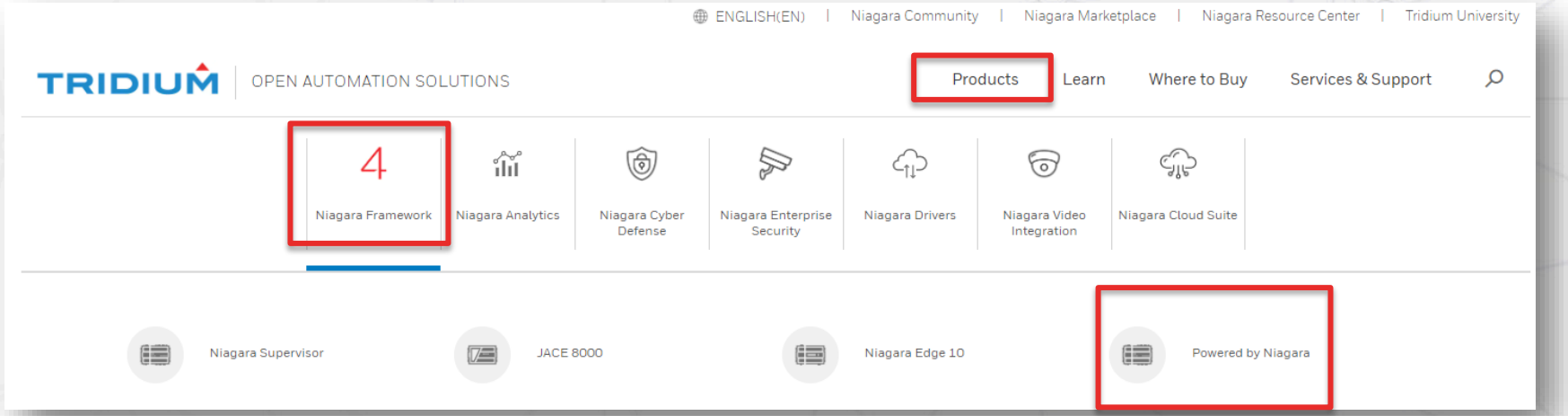
Where Can I Find More Information…?

www.tridium.com



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Where Can I Find More Information…?

https://www.tridium.com/us/en/Products/niagara/powered-by-niagara

Tridium.com Website > Niagara Framework > Powered by Niagara

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Where Can I Find More Information…?

https://www.tridium.com/us/en/Products/niagara/powered-by-niagara

Power YOUR devices with Niagara

Solution developers can now build the full features and functionality of Niagara 4 into their own edge devices. Why start from scratch when designing secure internet connectivity, robust web serving capability, advanced integrated control, data logging, alarming, analytics and trending into your IP controller when you can port Niagara onto *your* device?

Gain the advantage

Gain the advantage of the building automation industry's standard platform for integration and control. Niagara doesn't only belong on a JACE® and an Edge 10 controller. There is growing family of devices leveraging the Niagara Framework®, each bringing unique benefits. Join that family now!

Get to market faster

Our Niagara Portability Software Development Kit allows you to deploy the Niagara framework onto your hardware with Tridium's support, saving you the effort of recreating the features and functionality recognised by controls professionals the world over and giving you the confidence that comes with its powerful cyber security.

Our 'Powered by Niagara' partners get all the benefits of the Niagara Framework right down to utilizing Tridium's licensing server to manage the software incidences. For equipment controllers, Niagara's convenient edge tools make it easy to upgrade installed application templates and provide greater flexibility when defining and configuring peer device and/or station proxies upon installation of an application template.
Plus now 'Powered by Niagara' controllers can be made more flexible and suitable for a wider range of control situations including industrial PLC supervision with Niagara's ACE (Asynchronous Control Engine) deterministic engine. The ACE enables users to make changes to logic and load the updated code without a complete shutdown.

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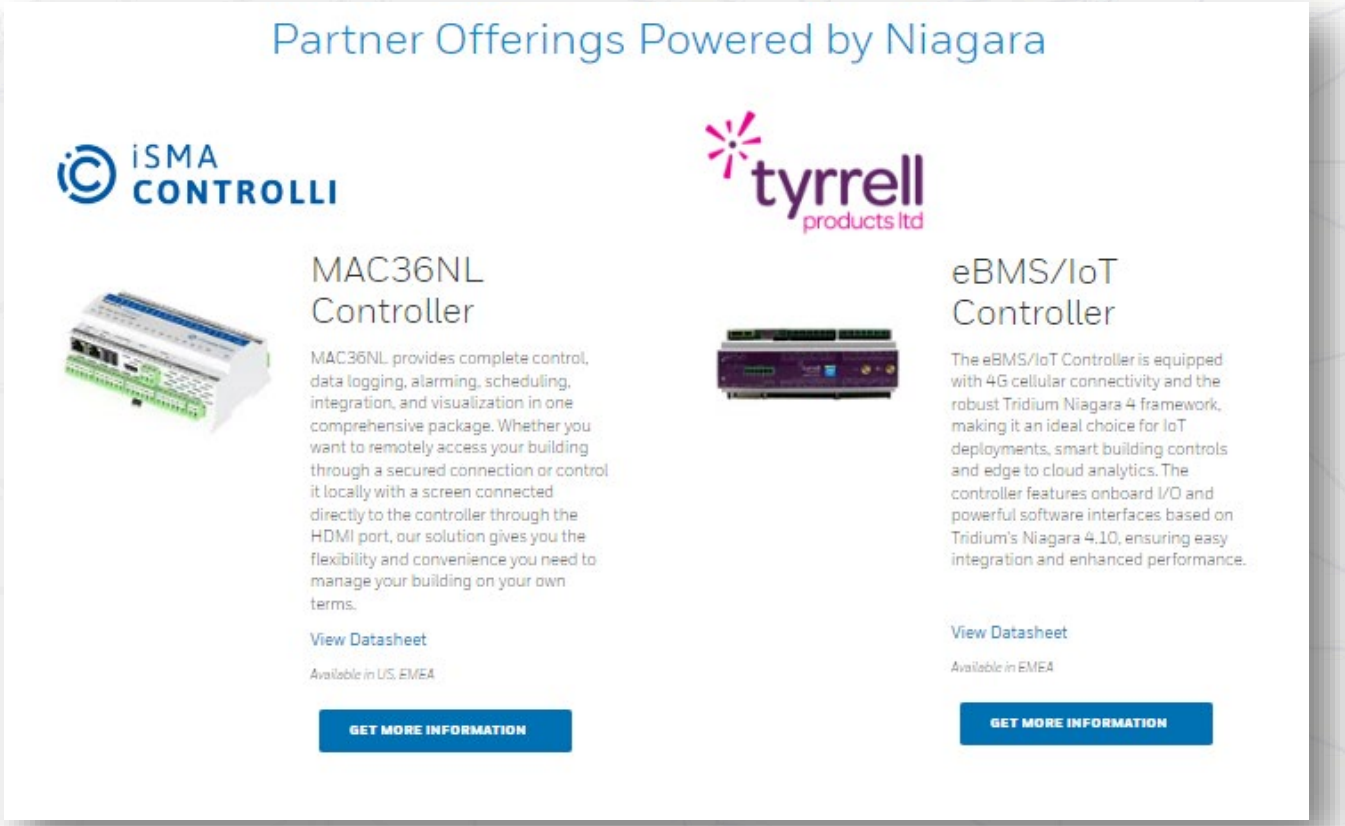
Where Can I Find More Information…?

https://www.tridium.com/us/en/Products/niagara/powered-by-niagara



Thank you

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