EMERSON EXCHANGE 2025

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Seamless Data Integration: Streamlining Communication Across Different Protocols

DeltaV Product Update

Session 3-1869

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PK Flex Controller & DeltaV Flex

PK Flex Controller Overview

Same Powerful PK Controller
Max capacity as of a PK1500 Controller

Term-Based Functionality
Only pick what you want or what you need

Software Scalable
Add capacity at any time

Simplified I/O count
Flex DSTs: do not worry about your I/O mix

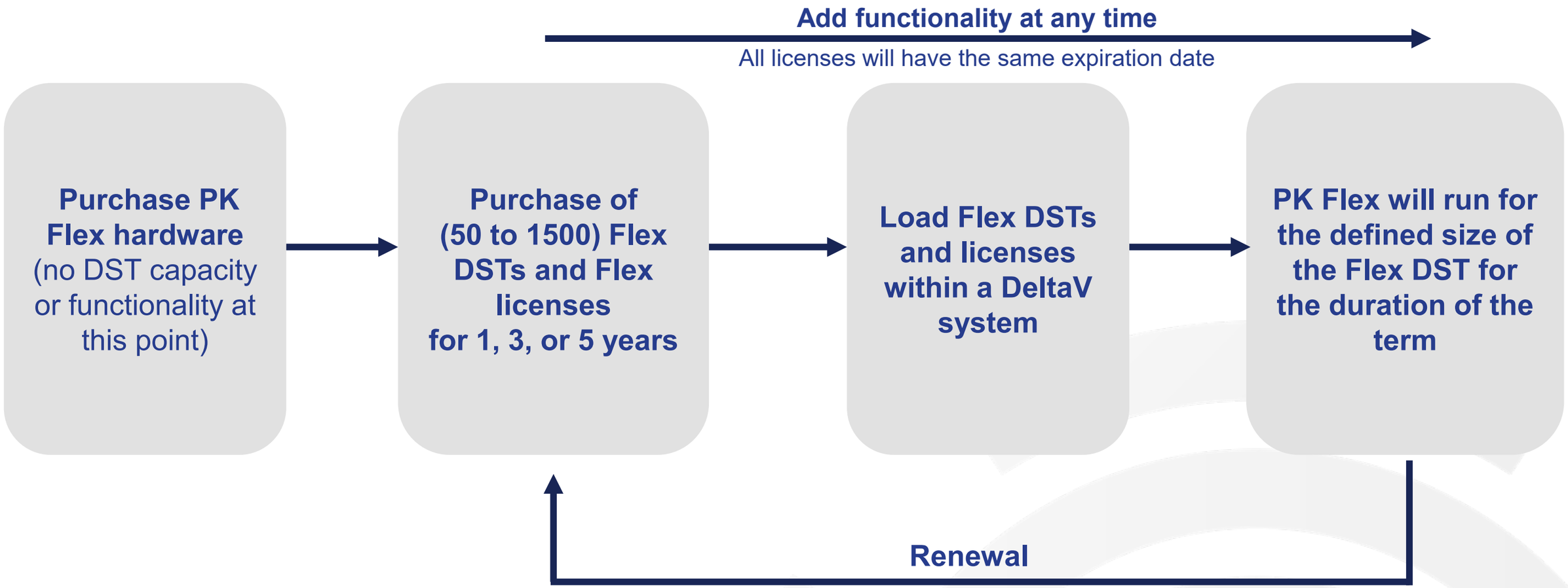
Simplex or Redundant
Easy, cost-effective redundancy without footprint

Peace of Mind
Extended HW warranty as a part of the subscription

Redundant PK Flex Controller Carrier Assembly

PK Controller	# DSTs	P01 Devices	PN Devices
PK100	100	16	50
PK300	300	32	100
PK750	750	64	150
PK1500	1500	128	250
PK Flex	50 to 1500	128 (max)	250 (max)

How PK Flex works?



Expansion and Upgrade with PK Flex

Brownfield Expansions
Due to high capital investment and operational interruptions, systems expansions can be costly.

Controller Upgrades
Customers are hesitant to upgrade old controllers, given the high capital cost and uncertainty around product life cycle.

PK Flex

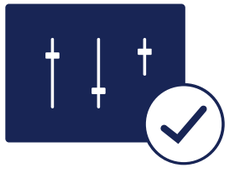
- Lower Upfront Cost
- Fewer Hardware Changes
- Reduced Engineering Time

- Lower Upfront Cost
- Access to the Latest Technology
- Future-proofing Strategy

DeltaV Flex System

What *IS* the DeltaV Flex System?

- The DeltaV Flex system is a **full-blown DeltaV** DCS Systems that combines **term-based software, product support, and extended hardware warranty**



What *DOES* the term-based licensing do?

- Enables gradual addition of capacity and/or functionality, allowing you to **pay only for what you need, when you need it.**

What *IMPACT* does DeltaV Flex have?

- DeltaV Flex **lowers the initial capital investment**, accelerating system's ROI, while providing access to the latest DeltaV DCS innovations

It is the same DeltaV, but in a new Flex way

DeltaV Flex Base Software Packaged Solution

SOFTWARE BASE PACKAGE

Available in three sizes:

- 50, 100 and 250 Flex DSTs

Base package includes:

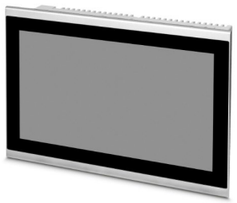
- P01(Modbus or EtherNet/IP) Protocol License
- 32 Physical Device Licenses
- ProPLUS Premium License
- OPC UA Activation License
- Product Support (Formerly Guardian support)
- Extended Hardware Warranty for DeltaV Control and I/O Hardware

Subscription term options are 1, 3, or 5 years

REQUIRED HARDWARE

PK Flex Controller (Simplex or Redundant)

Supported Workstation or Industrial PC for ProPLUS



Hardware is sold separately as a one-time purchase

Add scaleups and add-ons at any time

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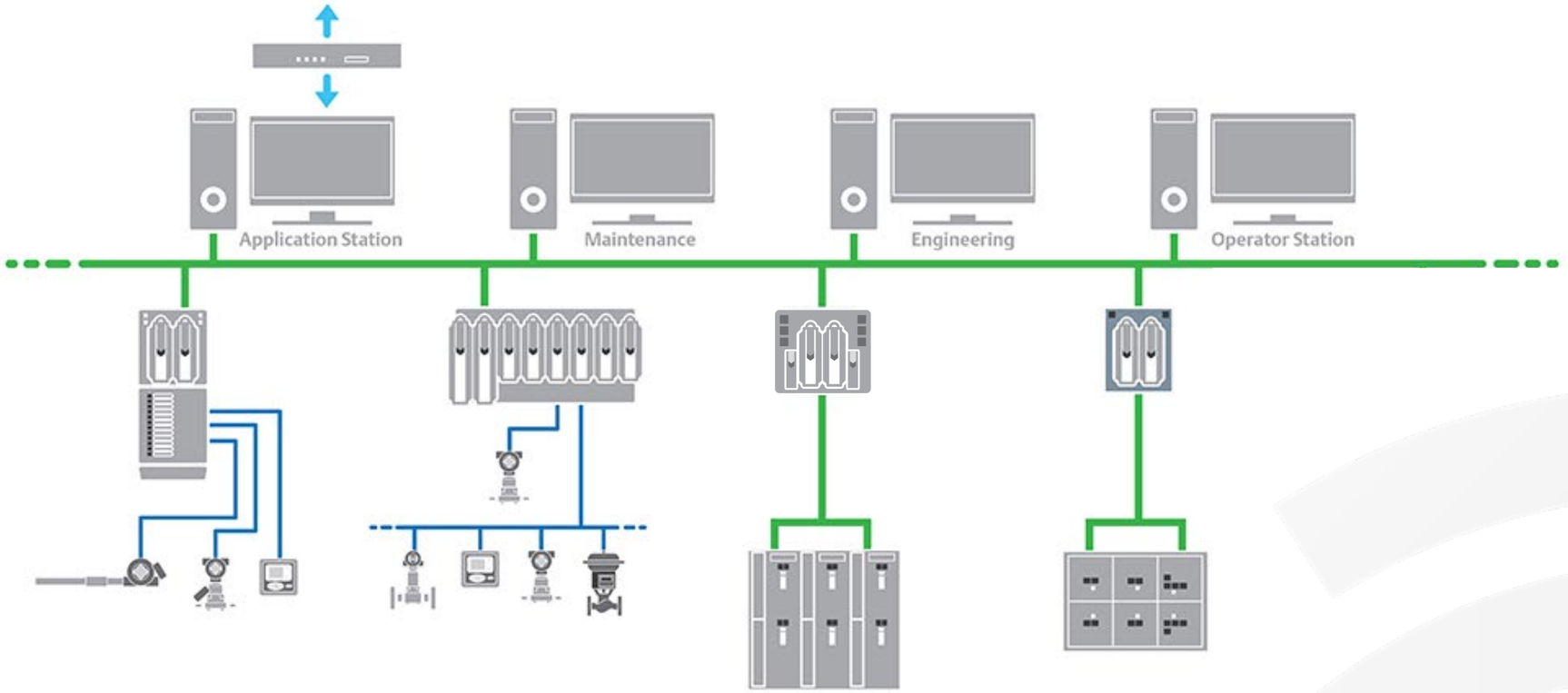
Data Integration

Product Overview & Update

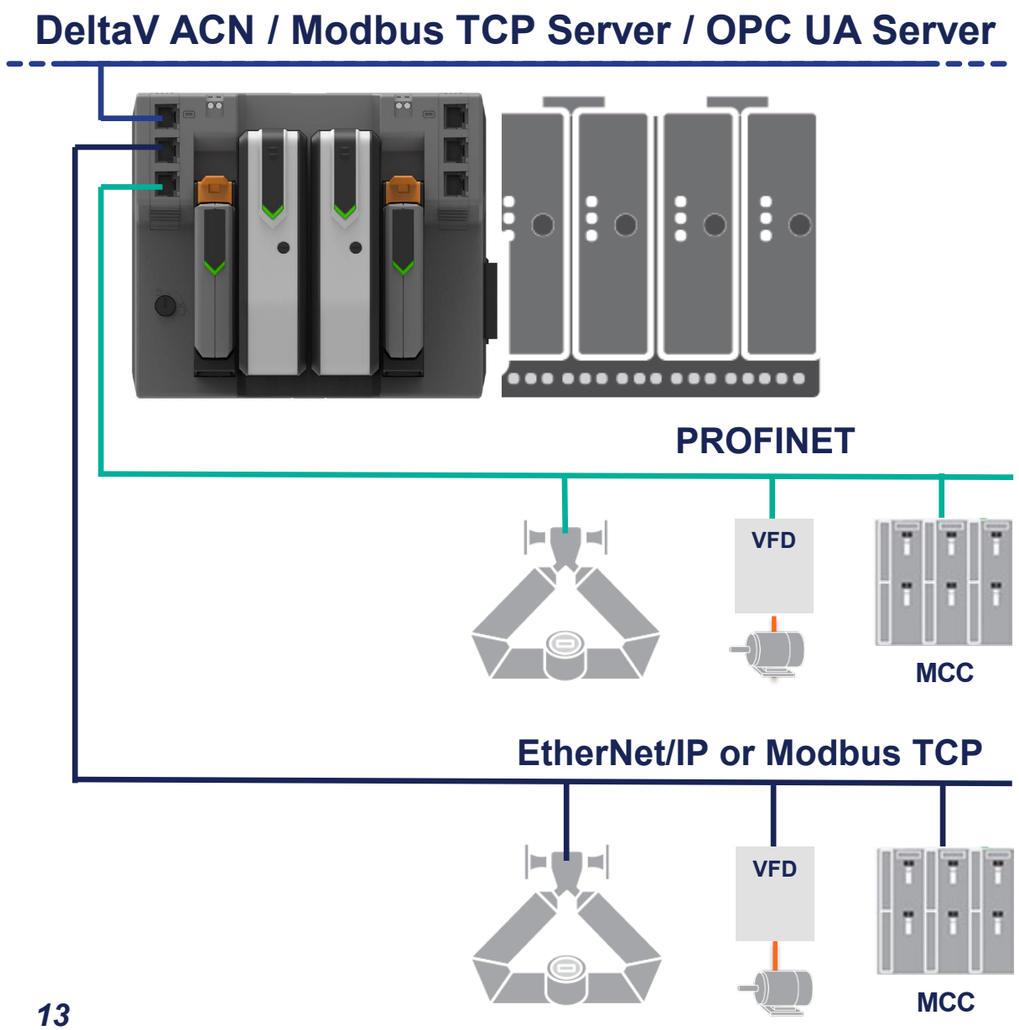
Data Integration for Level 1 to Level 2



Platforms:

- PK controller
- EIOC
- VIM2
- Serial Cards

PK Controller



PK Controller	P01 Ethernet Devices	PN1 PROFINET Devices
PK100	16	100
PK300	32	250
PK750	64	250
PK1500	128	250

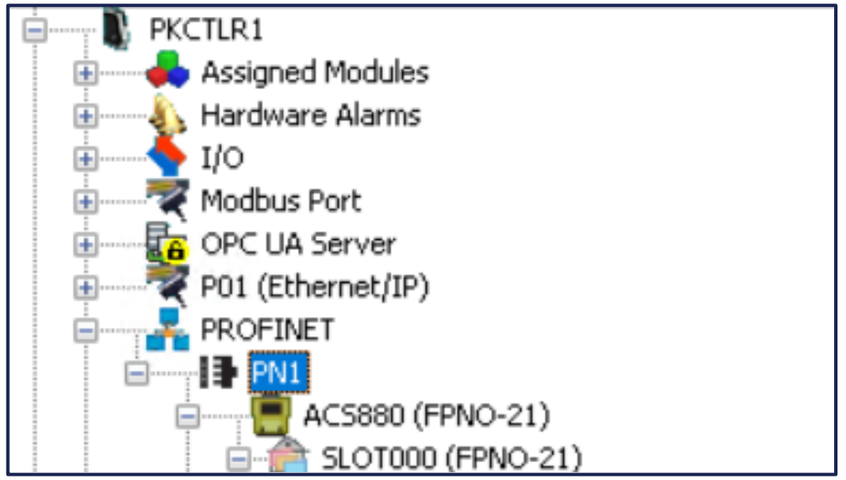
*Subject to CPU and Memory limitations – consult planning guide

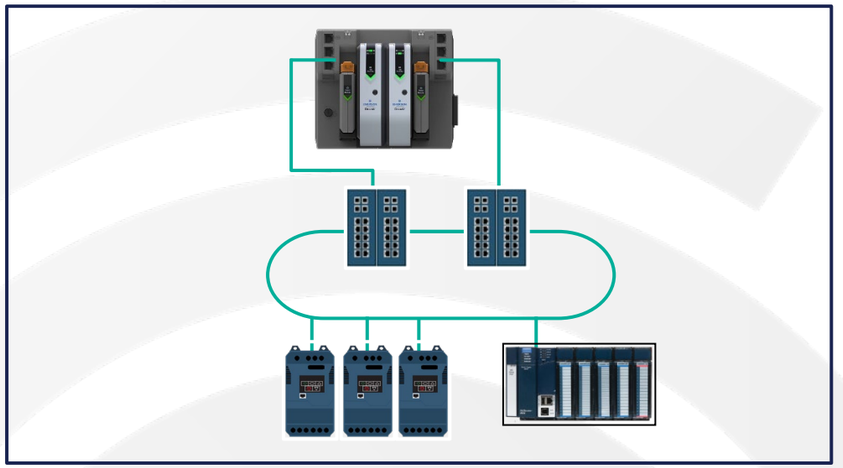
- Combines Ethernet Devices and Traditional I/O
- PK Ethernet Device Network
  - Simplex or Redundant
  - P01 supports two protocols (one at a time)
    - ModbusTCP (Client) or EtherNet/IP (Scanner)
  - PN1 supports PROFINET
    - It can be enabled at the same time as P01
- Device Network Redundancy: PRP (EtherNet/IP or Modbus TCP) and MRP (PROFINET)

PROFINET in the PK

PROFINET Features

- PROFINET v2.3 and CC-A compliant
- Easy configuration by supporting GSDML file and device templates
- Real Time data for control and Device Diagnostics
- Device diagnostics available within Control Studio for mapping into alarming or historization
- Max 250 PROFINET Devices in one subnet
- Scan time of ~128 msec (with 250 devices and individually set by device)
- Able to connect to an MRP ring (PK does not participate in the ring)
- Some Network diagnostics in DeltaV Diagnostics
- PROFINET Error Code Manager able to translate hex error codes into something that can be easily understood
- PROFINET device connection errors added to Event Chronicle
- Support for Redundancy Class S1 and S2



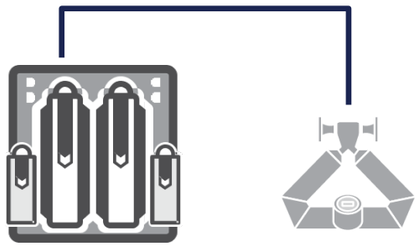


PROFINET in the PK

PROFINET Redundancy Classes

S1 (v15.FP1)

1 NAP / 1 AR

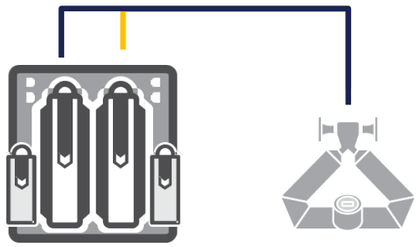


Redundancy from **DeltaV**

Vs

S2 (v15.FP3)

1 NAP / 2 ARs



Redundancy from **PROFINET**

- PROFINET S2 – Main Advantages
  - Protocol handles controller redundancy
  - Improves system availability
  - Bumpless switchover

Increased device limits

	FP1/FP2	FP3
PK100	50	100
PK300	100	250
PK750	150	250
PK1500	250	250
PK Flex	Up to 250	Up to 250

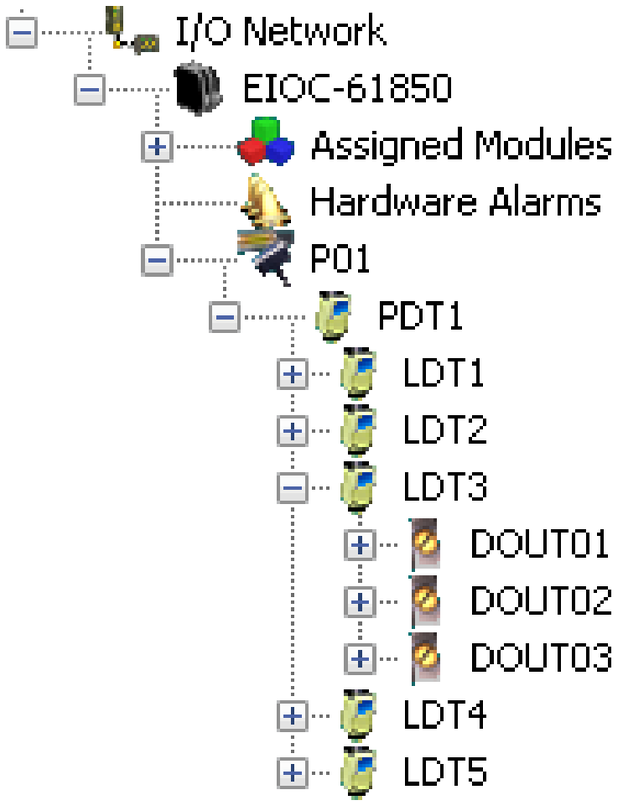
New DST Consumption (From slots to device type)

- For Remote I/O devices and gateways, the system consumes one DST of the most expensive type used for the first 16 signals. Each additional signal requires one DST of the correspondent I/O type (AO, AI, DO, DI).
- For all other PROFINET device types, the system consumes one DST of the most expensive I/O type for every 16 signals.

Planned developments and enhancements

- AMS Device Manager for PROFINET
- PROFINET (including S2) in the PK Standalone
- PROFINET I/O Simulation

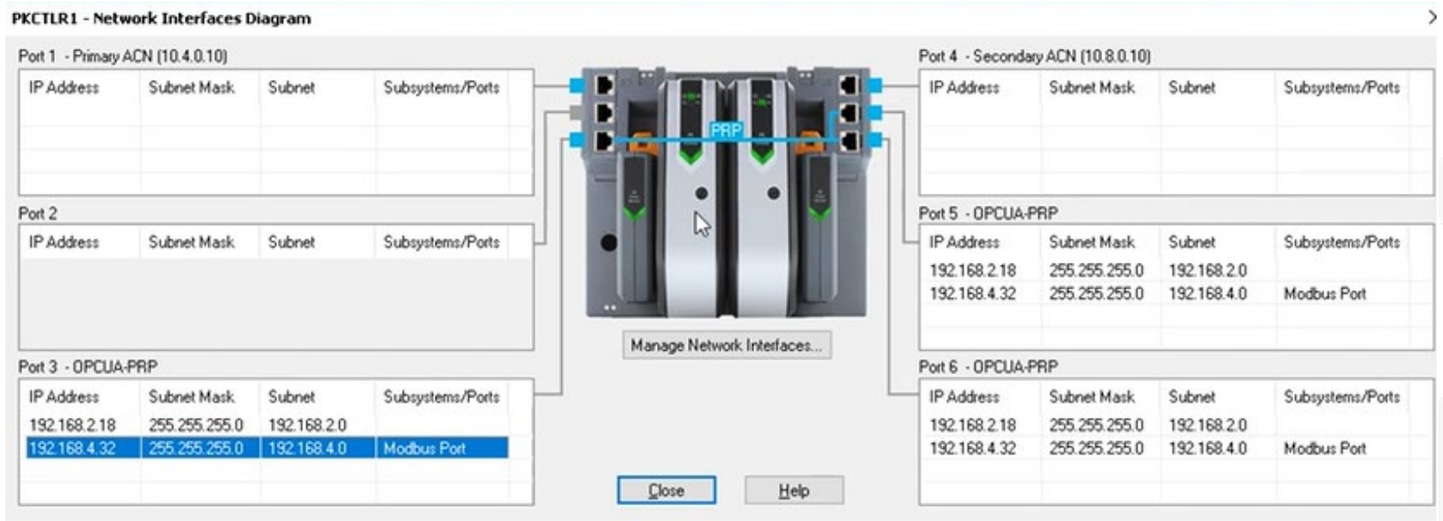
Ethernet I/O Card (EIOC)

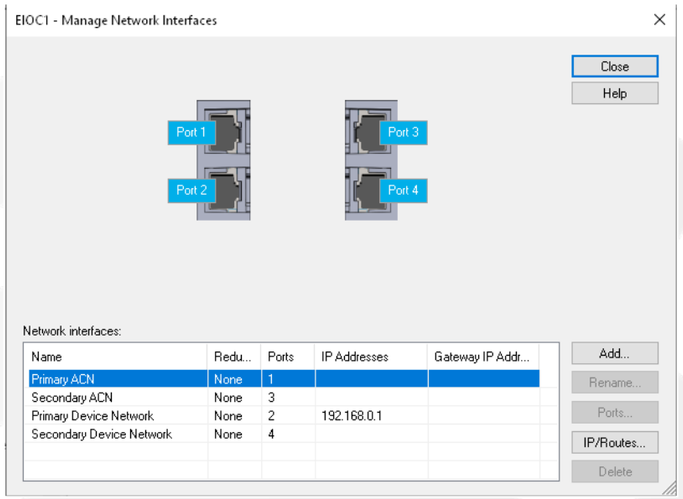


- Supports 5 Protocols (only one at a time)
  - Modbus TCP Client
  - EtherNet/IP Scanner
  - EtherNet/IP Control Tag Integration
  - IEC 61850 MMS
  - OPC UA client
- Small Footprint – 85% Reduction compared to the VIM2!!!
- Native Support for Parallel Redundancy Protocol (PRP)
- No Controller Assignment and does not count as a Node
- Local Control – Modules Run in EIOC
- Up to 60 EIOCs in one system
- ~32,000 Data Values (protocol specific)

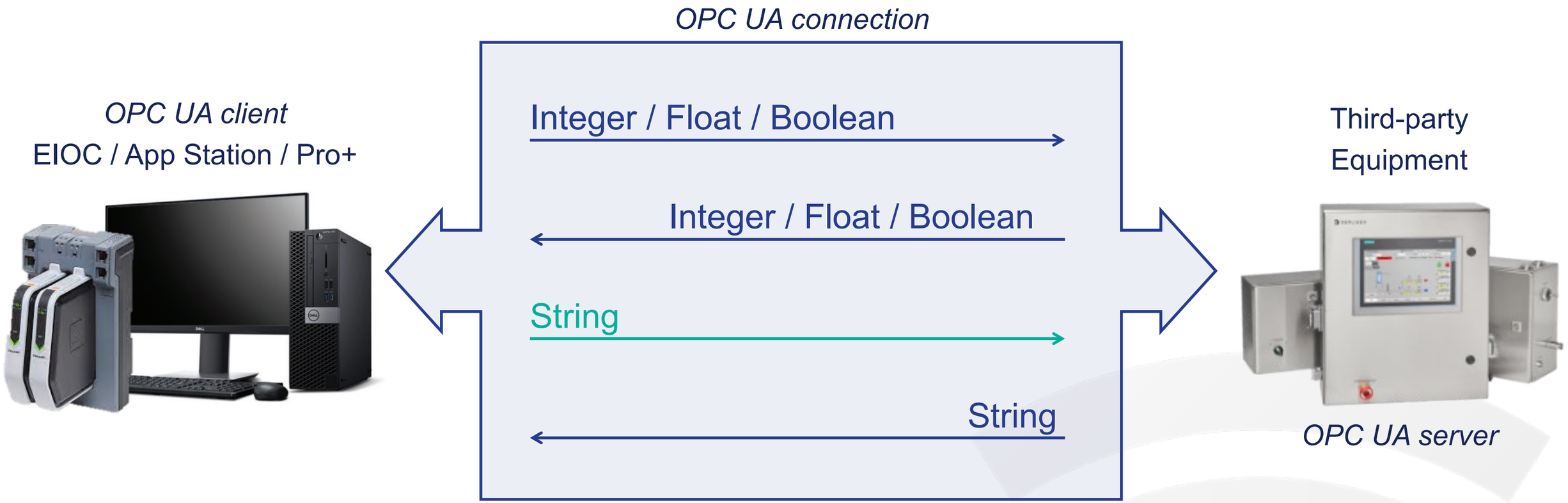
Advanced Network Configurations

- Managing local networks at the node level
- Redundant networks in the same subnet (only in the PK Controller)
- Allowing configuration of default gateway



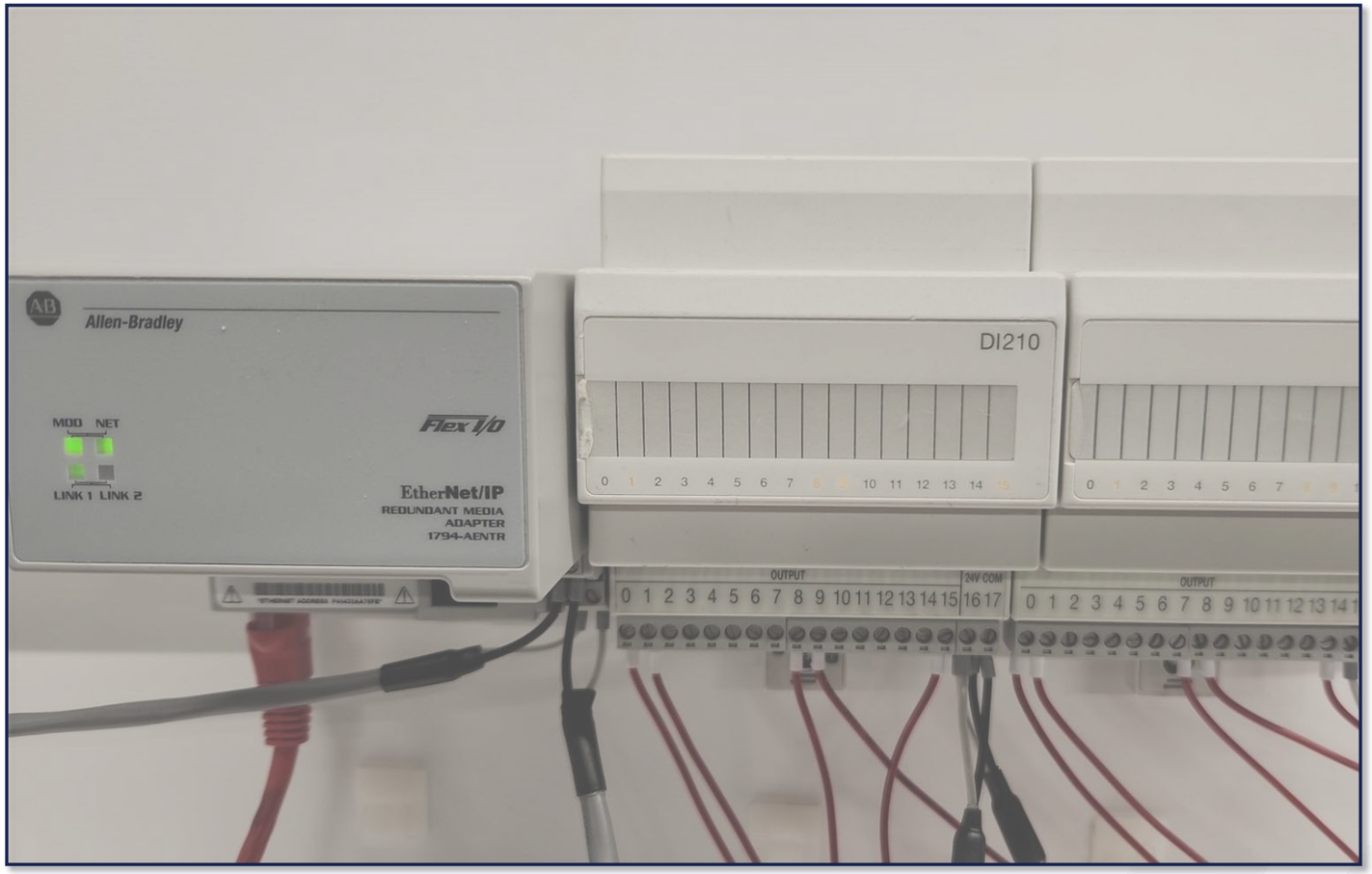


Writing Strings in OPC UA Client



- Maximum string length is 127 chars.
- Supported in the physical and virtual EIOC, Application Station, and ProfessionalPlus.
- Enables the transfer of Batch ID and/or Recipe Name to Vendor Provided Equipment (VPE)

EtherNet/IP Class 1 Enhancements

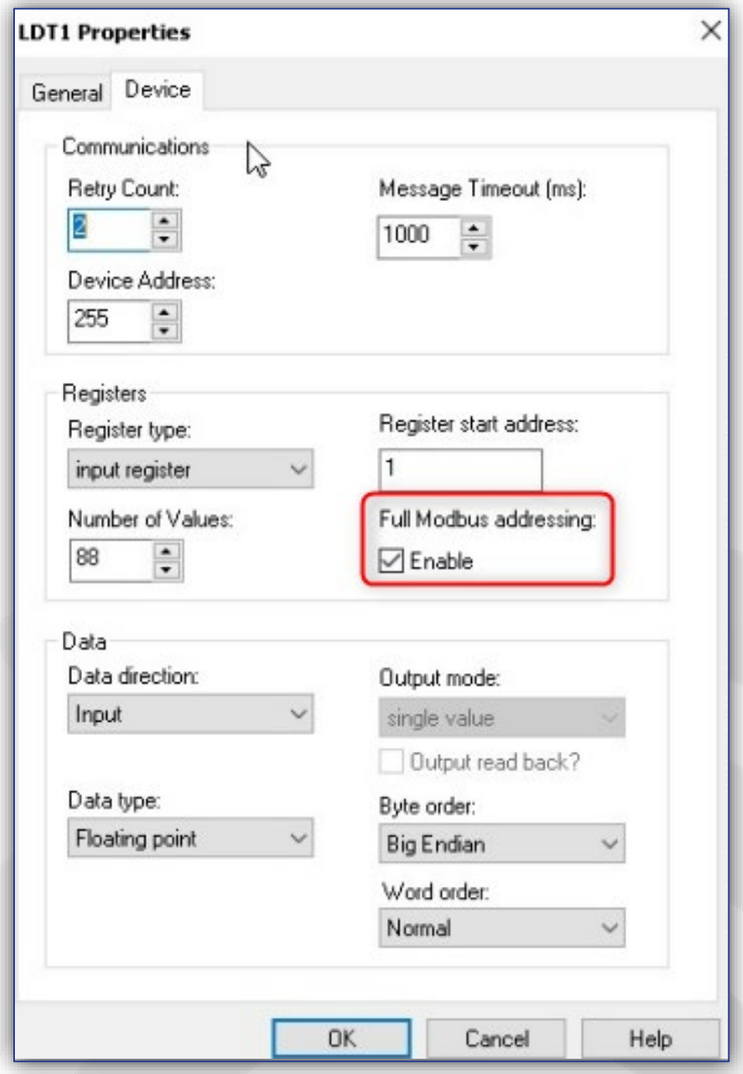


Key Features

- Device Extended Address Path configuration
- Configuration Assembly Instance simple data buffer configuration parameters
- I/O Families Supported:
  - 1734/5034
  - 1794/5094
  - 1769/5069
  - 1756
- PCSD Soft I/O: AI, AO, DI, DO
- Channel Status

Modbus Extended Addressing

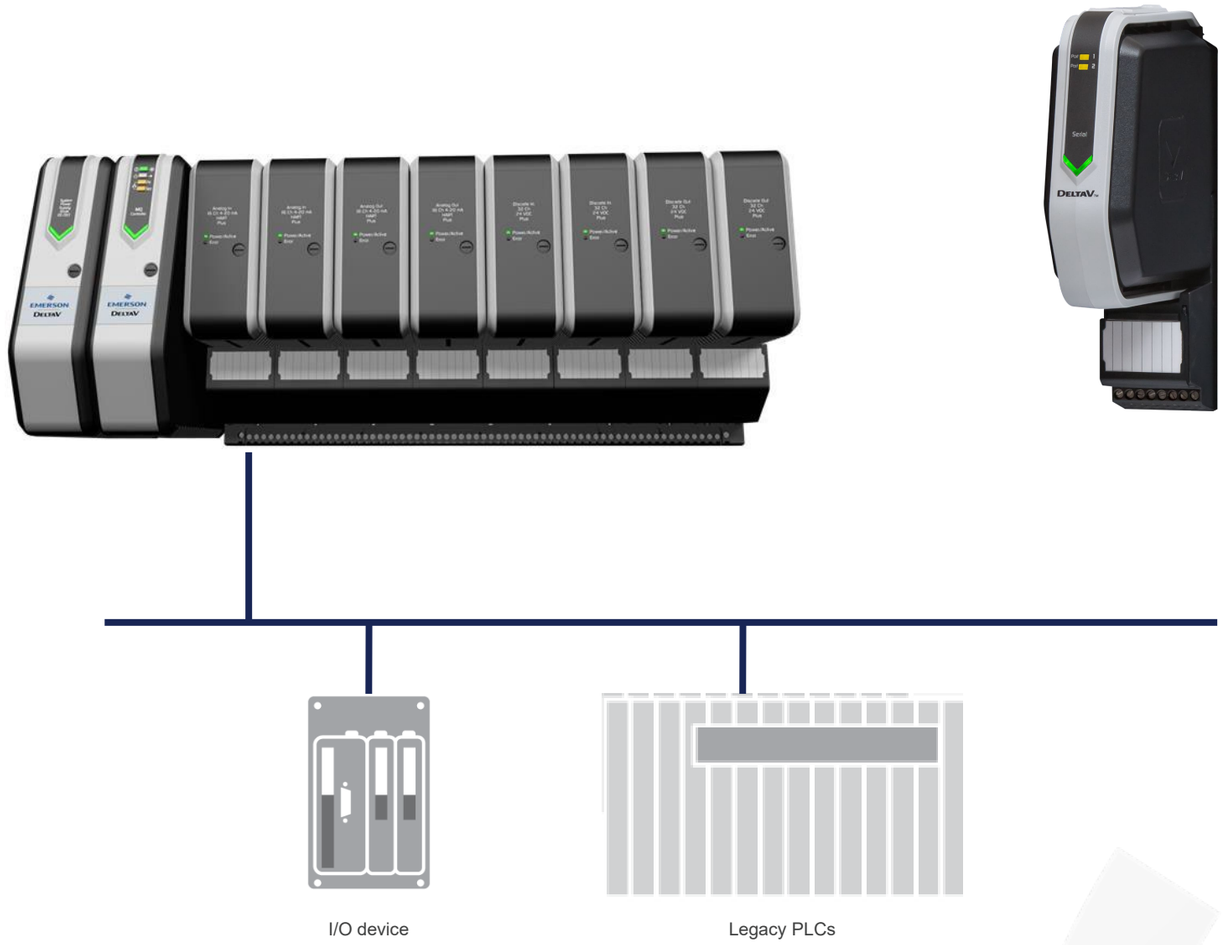
- The EIOC and PK only supported a limited range of addresses when mapping registers using Modbus TCP (address range from 1 – 9999). Several Modbus devices in the market support a full range of 0-65535 address space
- For version 15.FP2, the Modbus TCP protocol in the EIOC and PK support register addresses from 1-65536 and complies with www.Modbus.org specification
- Only for the Modbus Client. The Server's addressing range remains the same
- There is no impact to existing customers who upgrade. There is a "Full Modbus addressing" checkbox in the GUI that is disabled by default.



Virtual I/O Module 2 (VIM2)

- Industrial Ethernet Solutions
- Protocols:
  - Modbus TCP
  - ODVA Certified EtherNet/IP Protocol
  - FMC722 Subsea Driver
  - PROFINET (only Simplex)
- Flexible Networking for Device Network
- 12,800 possible integer registers
- Simplex or Redundant
- Good for control with Ethernet devices mixed with traditional I/O
- Large Footprint and use external tools

Serial Card



- Protocols:
  - Modbus RTU
  - Modbus ASCII
  - Data Highway
  - Programmable Interfaces
- 1:1 redundancy
- 3200 data registers
- Requires Controller (M-series, S-series, or PK controllers)

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Thank You