Protocol Conversion: The Universal Translator of Industrial Automation

Enable old and new systems to speak to each other, unlock critical data, and optimize performance.

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Introduction

ENABLE OLD AND NEW SYSTEMS TO SPEAK TO EACH OTHER, UNLOCK CRITICAL DATA, AND OPTIMIZE PERFORMANCE

Artificial Intelligence (AI) is transforming industrial automation with robotics, smart factory equipment, and programmable systems. However, the cost efficiencies and performance gains AI delivers are not limited to the production line. Business leaders recognize that every piece of an automated industrial system generates valuable data. They're eager to deliver that data to enterprise AI systems that can analyze it and feed it back – to optimize performance. Those benefits include reducing downtime, enhancing plant safety, bolstering predictive maintenance efforts, increasing energy efficiency, and delivering top quality product.

Automation engineers and systems integrators have a front row seat on new technology in industrial processes. They're also well aware that legacy equipment remains an important cornerstone on shop floors around the world. The challenge of bringing in new automation technology is often not the technology itself – it's incompatible industrial communications protocols.

For legacy equipment to be interoperable with newer systems, it needs to "speak" to those systems. What's needed are devices that bridge those protocols, to unlock data from isolated islands and connect it with other systems.

Building Bridges with Protocol Conversion

Older machines often use older protocols, such as Modbus RS-232. Newer systems are more likely to employ more modern protocols, such as OPC Unified Architecture (UA). Another protocol that is catching on in manufacturing is the MQTT (MQ Telemetry Transport) protocol. While not entirely new, it's gaining traction due to its low bandwidth demand. It's a lightweight, efficient, and powerful protocol that helps transmit data within and between local, remote, and cloud networks.

The existence of different protocols isn't the real problem, either. It's ensuring that all systems – old or new – can speak across the range of protocols the organization is currently using. This bridging can sometimes be achieved with specialized software. However, not all organizations have technicians on staff with the necessary expertise to program and maintain it. Where remote sites are involved, sending experts to the field to configure the necessary changes can be cost-prohibitive.

A better way to navigate industrial protocols is with protocol conversion. Modern, all-in-one devices with built-in protocol conversion libraries can be installed to bridge communication between previously isolated systems. Industry-leading protocol converters support up to 300 industrial communications drivers, both open and proprietary, and can process up to 20 unique protocols simultaneously. Advanced configuration software includes an intuitive drag-and-drop interface, making it simple to configure. The result is easy access to data, both locally and remotely, in a simple-to use, out-of-the-box solution.

Protocol Conversion Delivers Flexibility at Scale

Along with interoperability, modern industrial organizations need flexible and scalable solutions. Protocol conversion enables data access in a solution that suits your organization now and continues to adapt as you grow.

For instance, many modern industrial organizations are enabling wireless communications on their production lines. Some protocol converters have modular hardware, allowing users to add things like Wi-Fi and cellular communications interfaces to increase the functionality of a unit with ease. These modular devices can also be set up and configured with security features to ensure networks and data are protected. With this level of modularity and adaptability built-in, protocol conversion devices promise a good return on investment.
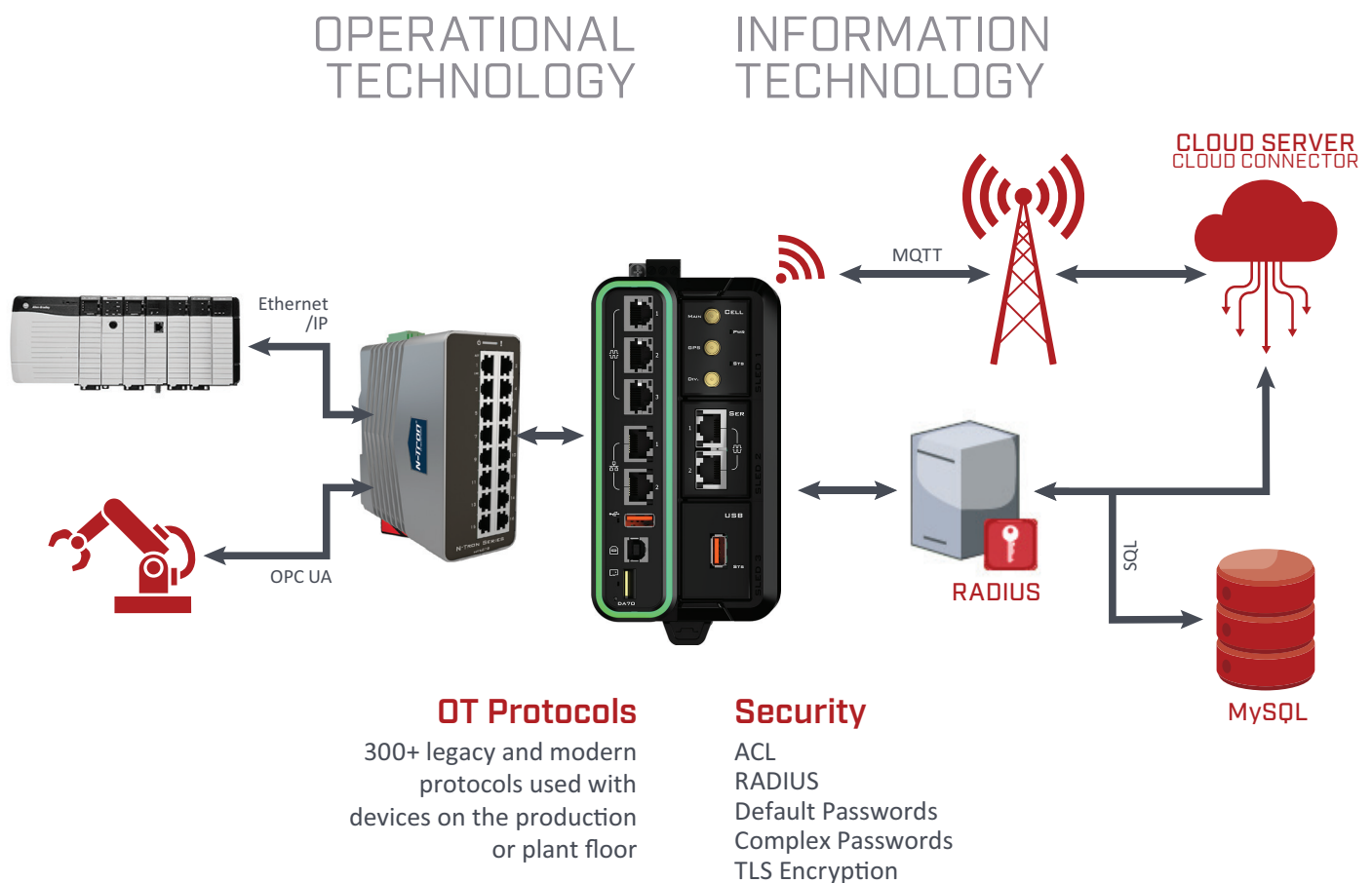
Connecting Islands of Data to Bridge OT and IT

Even state-of-the-art automated facilities grapple with industrial communication protocols. For example, some brand new devices may only be compatible with a proprietary manufacturer-specific protocol that is not easily integrated with other new (and old) devices which speak open protocols like Modus TCP. The solution is not to banish old equipment or reconfigure everything to fit a single industrial protocol. Instead, the solution is to simply get existing and new machines to speak to one another.

When equipment sits disconnected, the organization misses the chance to learn from and act on that data. The result is an incomplete picture of the operation, and a widening gap between OT and IT.

In a competitive marketplace, production facilities need to work every angle they can to deliver quality goods efficiently, on time, safely, and securely. The way to optimize OT performance, productivity, and preventive maintenance decisions is through the data analytics capabilities of today's IT systems.

One of the simplest ways to integrate OT with IT is with today's sophisticated protocol conversion devices. They put the power of industrial data into users' hands – on the plant floor and at head office.

OPERATIONAL TECHNOLOGY

INFORMATION TECHNOLOGY

CLOUD SERVER
CLOUD CONNECTOR

Ethernet/IP

MQTT

OPC UA

RADIUS

SQL

MySQL

OT Protocols
300+ legacy and modern protocols used with devices on the production or plant floor

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ACL
RADIUS
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Complex Passwords
TLS Encryption

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