



Using IoT Device Gateways to Unlock Business Value from Legacy Machines

LANTRONIX  

THE INSIGHT

According to [Gartner](#), by 2020, more than 20.4 billion devices will be connected to a network in what is commonly called the Internet of Things (IoT). [McKinsey Global Institute](#) estimates that the global economic impact of the IoT will generate up to \$11.1T annually by 2025. Connectivity is the first step in capitalizing on the powerful insights generated by connected devices in the IoT, which can be used to optimize operations, provide better user experiences, or create new services.

The economic impact of the IoT is not only driven by the next generation of connected devices, but also from connecting millions, if not billions of legacy brownfield industrial equipment deployed over the past few decades in factories, refineries, and various other industrial settings.

Obvious industrial IoT use cases focus on improving overall production yield while reducing costs and waste. But many OEMs are just starting to realize that almost any factor that could affect their bottom line, such as downtime or equipment degradation, can be mitigated by analyzing data generated from connected sensors and machines. These device networks provide insights that can alert organizations to problems with yield, inform workers to fix equipment that is about to fail or develop statistical models that can predict maintenance for machine longevity.

Today, there are a large number of legacy devices that are not connected, managed, or secured. Some estimates put this number at 85% of all industrial devices. That leaves a lot of useful data locked away in a massive array of equipment, like motors, pumps, factory tools, HVAC units, vending machines, and much more. Thus, there is a definite need to address connectivity and interoperability of legacy systems to avoid the enormous cost of replacing all existing infrastructure with next-generation equipment that can securely connect to the Internet.



THE CHALLENGE

Unlike modern industrial devices and systems, legacy machines were not designed with today's built-in communication modules and embedded gateways to deliver out-of-the-box seamless connectivity, interoperability and secure data sharing. Also, many legacy machines were designed on proprietary platforms, adding higher levels of complexity when trying to integrate these machines into today's enterprise. The path to creating a ubiquitous network of interconnected devices requires a means for legacy devices that are not IP-based to connect without having to bear the cost of a full Ethernet or Wi-Fi interface and accompanying protocol stack.

GATEWAY SOLUTIONS FOR LEGACY DEVICES

For legacy devices, external IoT device gateways enable companies to interconnect industrial infrastructure seamlessly, and secure the flow of data between devices and the cloud. This can be achieved using gateways that bridge devices to the Internet in the context of real-world applications. IoT gateways further allow users to securely aggregate, filter, and share data for analysis. It helps ensure federated system data can travel securely and safely from the edge to the cloud and back—without replacing existing infrastructure.

UNLOCKING THE VALUE OF DATA

As previously mentioned, the availability of hidden data, also referred to as dark data, can be highly valuable to a wide range of businesses and organizations. For example, potential benefits in the manufacturing segment include enabling:

- Factory tool operators and line supervisors to track real-time operations of various systems and optimize them for particular times of day, types of work, etc.
- Factory managers and executive management to correlate data across entire factory networks for analysis and optimize the cost of systems operations.
- Factory managers and their service organizations to analyze real-time system trends for better power efficiency, performance, operational life, and more.
- The R & D departments of machine and automation OEMs to develop better products by performing holistic analyses on data sets from seemingly disparate systems.

INDUSTRIAL IOT GATEWAYS

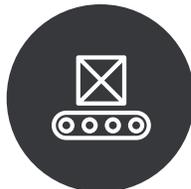
Industrial IoT gateways are the essential building blocks for connecting legacy industrial devices and next-generation intelligent infrastructure to the Internet. As the name suggests, IoT gateways act as the go-between for embedded devices and the enterprise network or the cloud. These gateways integrate technologies and protocols for networking, embedded control, enterprise-grade security, and easy manageability for application-specific software to run smoothly.

IoT gateways must be capable of extracting information from field devices and transfer data to the cloud or on-premise servers for analytical, archival, or other purposes. To lower the cost of ownership and achieve maximum utility of IoT gateways, they must be easy to deploy (provision and configure), easy to manage and flexible enough to operate in diverse industrial environments. Complete end-to-end connectivity from the edge to the cloud requires IoT gateways to support a wide variety of industrial communication protocols, such as field bus and real-time Ethernet protocols and wired and wireless connectivity.

CRITICAL FUNCTIONS OF IOT GATEWAYS INCLUDE:

- Secure connectivity up to the cloud and enterprise networks.
- Secure connectivity down to sensors and existing controllers embedded in the devices with multiple connectivity options including serial interfaces.
- Pre-process filtering of selected data for delivery.
- Local decision making, enabling easy connectivity to legacy systems.
- A hardware root of trust, data encryption and software lockdown for security.
- Local computing for on-device analytics.
- Device management capabilities and remote access for firmware and security updates.

LANTRONIX IOT GATEWAYS



Ruggedized &
Deployment-ready



Production-ready & Secure
Software Stack



Host Ecosystem
Apps & Services



Seamless & Secure
Data Flow

Lantronix IoT gateways are available in both embedded and external form factors. These two options allow customers to design-in gateway functionality for next-generation connected devices, as well as bolt-on connectivity for legacy systems using the Lantronix IoT external device gateways.

Unlike other gateways in the market, Lantronix IoT gateways are built for industrial IoT deployments with a small form factor and ruggedized design that support operation in extreme temperature and environments, as well as a combination of the most popular serial interfaces used in industrial applications.

These gateways provide enterprise-grade security with out-of-the-box cloud connectivity, Linux SDK and Python environments for ultimate programmability, built in remote manageability with production-ready Lantronix MACH10™ Global Device Management application and support for third-party edge analytics packages.

BENEFITS OF USING LANTRONIX IOT GATEWAYS

Lantronix ruggedized industrial IoT embedded and device gateways offer a wide range of benefits to businesses interested in leveraging the power of IoT and the versatility of cloud connectivity by:

- Combining industrial interfaces with networking and data security.
- Allowing for remote management and centralized operation of distributed assets.
- Offering advanced protection and rugged design with no fans or moving parts.
- Small form factor for bolt-on connectivity to existing assets.
- Allowing for operation at extreme temperatures.
- Eliminating the cost of upgrading legacy hardware.
- Enabling users to take advantage of edge analytics and cloud connectivity.

IOT DEVICE GATEWAYS



SGX 5150

- High performance 802.11ac Wi-Fi.
- Industrial-grade ruggedized design with multi-interface access.
- Cloud-ready with integrated device management capability.



PremierWave® XC HSPA +

- Penta-band UMTS/HSPA+ (global coverage).
- Quad-band GSM/GPRS/EDGE.
- Ethernet-to-Cellular Failover/Failback.

EMBEDDED IOT GATEWAYS



xPico® 200 Series

- Pre-integration with the MACH10™ IoT Platform.
- Dual-band Wi-Fi (802.11a/b/g/n), Ethernet and Bluetooth.
- Industrial-grade design for operation in extreme settings (-40 C to + 85 C).



PremierWave® 2050

- Integrated enterprise security.
- Industrial-grade 802.11ac Wi-Fi.
- Yocto Linux SDK with Python support.

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