

SOLUTION BRIEF

Industrial Internet of Things (IIoT)
Industrial Device Onboarding



Plug-and-Play Onboarding of Industrial Devices for Any IoT Platform

Innovative software from Omnio running on Intel® architecture-based gateways simplifies the Industrial IoT (IIoT)

“How do you scale your IoT solution from pilot to full implementation? How do you onboard additional devices without the integration cost breaking your business case? How do you deal with legacy devices, multiple communication standards and unique data models? Omnio is ‘Google Translate*’ for industrial device communication.”

—Mikkel Sørensen,
CEO and founder, Omnio

Executive summary

Many industries today operate brownfield plants or facilities with mixed communication standards and devices that have unique data models, making them difficult to connect to the internet. Omnio’s edge and cloud solution allows any industrial device—legacy or new—to connect to any Internet of Things (IoT) platform in seconds. The solution runs on Intel® architecture-based gateways to bring fast, scalable connectivity across industrial environments and deliver data for nearly unlimited use cases.

Data is translated through a process of scaling, labeling, and normalization, making it easy to connect and removing variation in the data for holistic visibility into operations. With the Omnio and Intel solution, industries have the data-driven insight to improve operations, optimize business models, lower costs, and offer new services and products.

Challenges

IDC predicts that the worldwide installed base of Internet of Things (IoT) endpoints will grow from nearly 15 billion at the end of 2016 to more than 82 billion by 2025.¹ Despite the forward momentum, a study conducted by Cisco shows that 60 percent of IoT initiatives stall at the proof of concept (PoC) stage.² In addition, while 35 percent of IT decision-makers called their IoT initiatives a complete success, only 15 percent of business decision-makers did—with the implication that delivering the business value of IoT deployments is lagging even further behind overcoming the technical hurdles.² The top challenges across all stages of implementation range from time to completion, limited internal expertise, and quality of data to integration across teams and budget overruns.² Seventy-seven percent of IoT professionals see interoperability as their biggest IoT challenge.³

There are a number of reasons why deploying successful IoT is so challenging for industry. Industrial devices are typically pre-internet technologies that are not designed to communicate with each other or the internet. Each device has a unique data model and set of commands needed to call for data. Large-scale implementations often involve many different devices and it can take days or weeks to manually integrate a single device in order to access data, making timely scalability all but impossible. Furthermore, each model reports data back in different units, making it hard to compare data or run analytics.

Because integration and normalization are being handled on a device by device basis, it typically cannot be reused, making it highly inefficient. And, typically, pilots don’t test all the factors that will impact a full implementation, limiting scalability.



Solution

Omnio offers a software solution designed for industry that connects any device to any IoT platform. CEO and founder, Mikkel Sørensen, describes the solution as “Google Translate*” for industrial device communication. Running on reliable, high-performance Intel architecture-based gateways, the solution brings plug-and-play integration to even the most complex brownfield and greenfield deployments.

Manufacturers, power and water utilities, the maritime industry, commercial buildings, and agriculture are some of the industries utilizing Omnio software for a breadth of use cases, including equipment monitoring and tracking, predictive maintenance, and operational optimization.

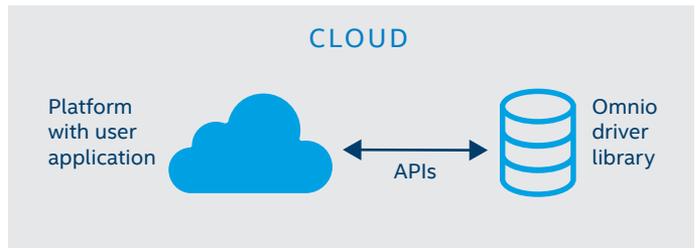
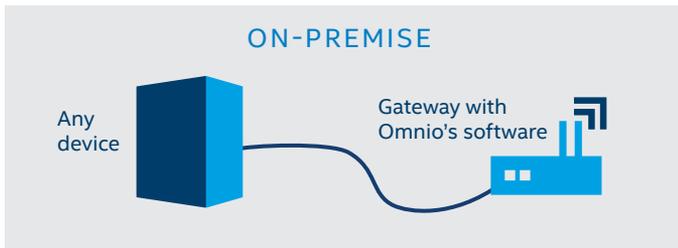
Omnio configures its innovative software to meet the requirements and help solve the challenges of specific industrial implementations. The middleware connects any device to the internet for two-way data transmission at the edge and the cloud, cleans and normalizes the data, and delivers it in a predictable way to any application. With

Omnio's plug-and-play integration, legacy and new devices can work with Amazon Web Services* (AWS*), Microsoft Azure*, or other public or on-premise clouds; speak a common language; and deliver the data in any format needed.

In part because it eliminates the need for custom drivers, the Omnio and Intel solution scales easily to connect more devices and speeds IoT outcomes based on near-real-time operational data.

Industrial decision-makers and IT can determine the device data points they would like to gather and analyze. The Omnio driver library hosted in the cloud is used to configure and talk to devices, download the requested data, and transmit this to the customer's IoT platform. The process is simple and fast:

1. Define the information needed from the device
2. Download the relevant configuration from the cloud
3. Access data in near-real time in a preselected format



Omnio's software running on the Intel® architecture-based gateway connects any device to any IoT platform

Through a flexible Software-as-a-Service (SaaS) model, Omnio allows companies to pay only for the onboarding they need, rely on continuous support, and receive the latest firmware updates and output formats.

Accelerate IIoT deployments	<ul style="list-style-type: none"> • Gain the advantages of internet connectivity • Avoid being stuck in pilot mode • Dramatically reduce implementation time for IoT solutions • Get instant plug-and-play capability with drivers developed by Omnio • Quickly and easily add new data points • Simplify and speed scalability
Align data with business value	<ul style="list-style-type: none"> • Get the freedom to easily connect any device and expand IoT solution capabilities • Streamline processes and optimize operations based on live data benchmarking • Access data continually in near-real time to inform decision-making, help solve production issues, and support new business models and services • Improve product development through informed analysis of user needs • Create new revenue streams from digital offerings based on device data
Plug-and-play interoperability	<ul style="list-style-type: none"> • Make all IoT devices IoT-ready and easily connectable without retrofitting • Use any cloud, whether internet-connected, on-premise, or offline • Ensure uniform communication across devices
Improve TCO	<ul style="list-style-type: none"> • Eliminate unnecessary expenses for consultants, complicated integrations, and protocol conversion cards • Save on costly on-site and manual monitoring and service costs with remote monitoring • Improve uptime and save on time-intensive repairs with predictive maintenance • Gain cost-effective access to the most up-to-date and accurate device drivers through a renewable subscription
Reduce security risks	<ul style="list-style-type: none"> • Utilize existing security solutions (e.g., encryption) and compliance parameters • Avoid components or configurations that weaken existing security • Get the assurance that data is not saved anywhere other than the organization's cloud and/or network • Ensure that your data stays within your own secure network

Sample use cases

Omnio's software supports a wide range of vertical industry use cases. Though the solution mines equipment and device data in a consistent way, it is configured to address the specific requirements of a particular industry and operation. For example, gathering predictive maintenance data for selected equipment in a particular plant.

Here are some of the ways industry can take advantage of the Omnio and Intel IIoT solution.



Industrial manufacturing: Connect devices across a production line for predictive maintenance and energy optimization.



Shipping: Connect containers for data-driven remote inspection.



Smart utilities: Monitor pumps, smart meters, inverters, and variable frequency drives (VFDs).



Commercial buildings: Manage climate controls, refrigeration, heating, and elevators.



Maritime: Connect and monitor equipment and devices on ships.

Advancing edge and cloud intelligence

Intel and its ecosystem help businesses use the IoT to solve long-standing industry-specific challenges. Quickly develop IoT solutions that connect things, collect data, and derive insights with Intel's portfolio of open and scalable solutions—so you can reduce costs, improve productivity, and increase revenue.

Intel® technologies support the rigorous requirements for programmable logic controllers (PLCs), industrial PCs (IPCs), human machine interfaces (HMIs), robotics, machine vision, and many other industrial applications.

“In order to succeed, device onboarding must be as intuitive as plugging a mouse into your PC.”

—Mikkel Sørensen, CEO and founder, Omnio

How it works in brief

Omnio's hardware- and platform-agnostic edge translation layer seamlessly onboards devices, ensuring interoperability. All device data is reported in one consistent format and customized to an organization's existing IoT platform. Depending on customer needs, Omnio can be deployed in both edge and cloud scenarios.

Omnio supports device commissioning processes on IoT platforms by offering device drivers via APIs. Raw data is extracted from devices by the Intel architecture-based gateway and cleaned by Omnio either at the edge or the cloud. The result is validated, scalable, labeled data which is readable and available to apps running on the platform. Once deployed, the solution serves drivers for all connected devices on demand.

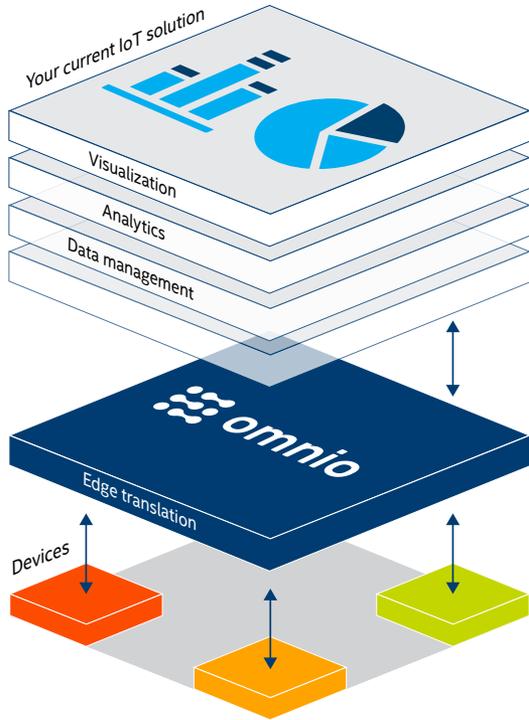
Omnio also provides read/write capabilities, so settings on devices are easy to change and industries can evolve data requirements and expand insight over time.

Commissioning process

1. An IoT platform user wants to get data from a device to his platform
2. The device is industrial and has complicated interfaces
3. The user requests the driver from Omnio's cloud and it is delivered to the IoT platform in seconds
4. The driver is sent straight to the software on the Intel® architecture-based gateway

Translation process

1. The gateway software uses Omnio's driver to request data from the device
2. The user wants the data with specific names and units so it will work with a particular application
3. Omnio's cleaner runs on the gateway and translates the device's replies into cleaned and interoperable data that can be understood by the user and the relevant application



Omnio's middleware connects devices to the cloud via an Intel® architecture gateway, enabling all types of industrial equipment to generate clear data and benefit from two-way internet connectivity

Learn more

For more information about Omnio, please visit omnio.net or contact us at sales@omnio.net.

For more information about Intel IoT Technology and the Intel® IoT Solutions Alliance, please visit intel.com/iot.



1. Worldwide Internet of Things Installed Base by Connectivity Forecast, 2017–2021, DC, March 2017, idc.com/getdoc.jsp?containerId=US42331917.

2. newsroom.cisco.com/press-release-content?articleId=1847422

3. iotbusinessnews.com/2015/02/25/10901-77-percent-of-iot-professionals-see-interoperability-as-the-biggest-challenge-facing-iot/

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0818/GR/CMD/PDF

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The foundation for IoT

The Omnio solution is one example of how Intel works closely with the ecosystem to help enable smart IoT solutions based on standardized, scalable, reliable Intel® architecture and software. These solutions range from sensors and gateways to server and cloud technologies to data analytics algorithms and applications. Intel provides essential end-to-end capabilities—performance, manageability, connectivity, analytics, and advanced security—to help accelerate innovation and increase revenue for enterprises, service providers, and industry.

Conclusion

With Omnio and Intel, industries can focus on creating value from their data instead of on time- and labor-intensive device onboarding. Access to data and increased operational visibility can solve immediate issues, while generating new insights and driving business efficiency and growth.

About Omnio

Omnio is a leading provider of device onboarding solutions for Industrial IoT. Omnio's software is powered by machine learning to provide understanding of how devices communicate. This knowledge is embedded in the software, which in turn enables customers to onboard devices in just a few clicks.

Omnio's solution is targeted at helping IoT platform providers, OEMs, system integrators, and industries onboard devices quickly and easily. omnio.net