Belden

Whatever OT assets you have, wherever you want the data—we connect it

Belden's data software solutions bridge the gap between your factory floor and cloud applications like OEE dashboards, analytics and AI tools.

Solution Brief

Factory floors are filled with equipment spanning decades—modern machines running OPC UA alongside legacy systems with proprietary protocols, bolt-on sensors on assets with no native connectivity, smart meters tracking utilities across facilities.

Belden's network and data solutions connect the full range of OT assets through a secure, scalable and flexible integration layer to digital services. From the newest equipment to decades-old machinery, we provide comprehensive coverage across your entire operation.

AWS, Microsoft Azure and Google have made analytics, dashboards and ML easily accessible. But legacy machines, PLCs and proprietary control systems were never designed to share data. Getting operational information out of this equipment and into the cloud remains one of the biggest roadblocks in industrial IoT.

Belden's OT data solutions deliver information in formats that integrate directly with **AWS IoT Core, AWS IoT SiteWise, Microsoft Azure IoT Hub** and **Google Pub/Sub**.

≫ Ready-to-use data boosts digitization.

≫ Industries served

- Discrete manufacturing
- Automotive

- Warehousing & logistics
- Process industries

- Food & beverage
- Consumer packaged goods

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Use BHDO when you need:

- 300+ industrial protocols (including legacy systems from decades ago)
- Connectivity to control systems, MES, historians, databases and more OT assets
- Local edge processing and analytics before cloud transmission
- On-premise, hybrid or cloud data destinations

Use CloudRail when you need:

- Plug-and-play sensor connectivity (30,000+ IO-Link sensors and actuators auto-detected)
- Direct sensor-to-cloud deployment in minutes instead of weeks
- Native AWS, Microsoft Azure and Google Cloud integration with minimal configuration
- Fast connectivity of smart meters to cloud-based energy monitoring services

Use both together when you have:

- Mixed OT environments (modern machines + legacy equipment + new sensors)
- Multi-site deployments requiring different connectivity approaches
- Complex data operations at plant level plus simple sensor retrofitting

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Cloud

☁

DATA DESTINATIONS

IT

>>> Customers leverage **DataOps tools like BHDO** to collect and contextualize data from disparate OT data sources across **300+ protocols**

FLEXIBLE OT DATA CONNECTIVITY

>>> **CloudRail automatically detects IO-Link sensors** and delivers contextualized data to your cloud account— typically **within 15 minutes of physical installation**

Contextualized OT data in a consumable format

Flexible OT data connectivity

Retrofitting with bolt-on sensors

Belden | Horizon

Data Operations

CloudRAIL
A **BELDEN** BRAND

OT

Acquire datapoints like downtime, error states and configuration of machines

Acquire additional data-points like vibration, produced parts, temperature, pressure, flow, or trigger actuators like LED signal lights

Collect smart meter data and feed it directly into IT services like AWS, Microsoft Azure or on-premise data-base

> Connections:

OPC UA

PROFI® NET **PROFI® BUS**
Euromap63

IO-Link

Modbus

Direct machine connection via **OPC UA**

Direct machine connection via **fieldbus protocols**

Gather datapoints independent from machine control systems through **retrofitted sensors**

Gather datapoints directly from **smart meter interfaces**

| Modern machines | Legacy machines | IO-Link sensors | Smart Meters |

>>> **Complementary Belden products:**

• Industrial edge gateways   • IO-Link masters   • Industrial cables   • Managed switches

The right tool for every data source

Customer success story

> The challenge

A discrete manufacturing company needed to deploy cloud-based MES across seven facilities. Each facility ran 10-15 injection molding machines—a mix of modern equipment with OPC UA connectivity, legacy machines with proprietary protocols from the 1960s-70s and newly installed IO-Link sensors monitoring temperature, flow and pressure in cooling cycles.

> The solution

The company started with a proof-of-concept using CloudRail to connect bolt-on sensors directly to AWS IoT SiteWise. This provided immediate visibility into process parameters that had never been monitored before. As the project expanded, they deployed BHDO to acquire data from both modern and legacy PLCs, contextualizing information from heterogeneous control systems into a unified data structure. CloudRail continued handling sensor connectivity, while BHDO managed machine-level protocol translation and edge processing.

As the customer looked into energy monitoring, the existing CloudRail infrastructure was leveraged to connect various smart meters to AWS IoT Sitewise.

>>> The outcome

- **Reduced deployment time:** Scaled from proof-of-concept to full seven-facility deployment in months, not years
- **Improved process control** increased product quality and provided insights for production planning
- **Contextualized data lake** enabled trend analysis and future predictive maintenance use cases
- **Belden's complete solution offering** enabled scaling from initial sensor retrofitting to comprehensive PLC connectivity across all facilities
- **Reliable vendor-agnostic** connectivity solution by Belden bridges the gap between OT devices from all vendors and prevents lock-in effects on IT services

The Belden advice: >>> **Start small, scale globally**

Begin with a single machine or asset, prove the concept, then scale step-by-step to a global fleet of connected assets. **BHDO** and **CloudRail** integrate seamlessly to grow with your needs.
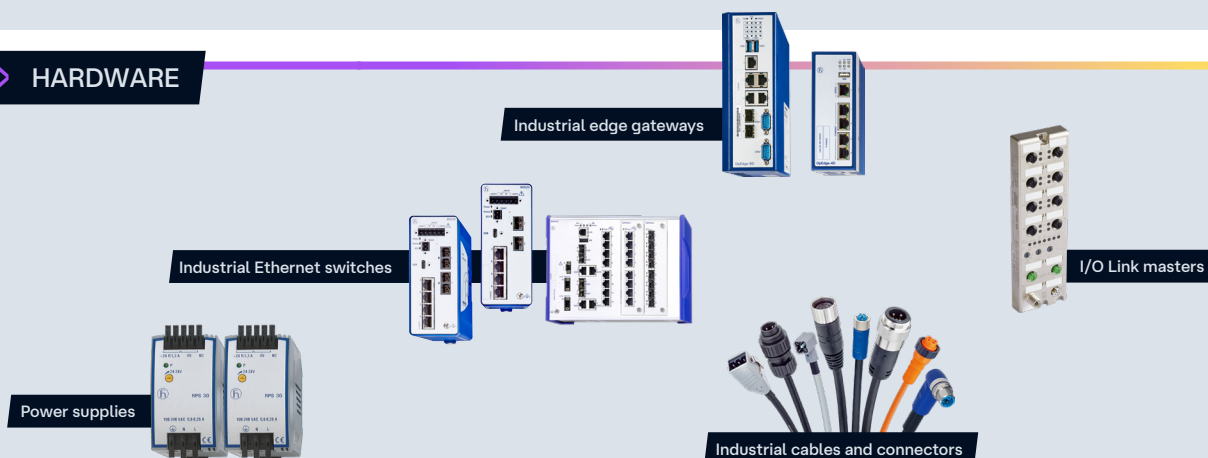
Why Belden?

- **From shop floor to top floor:** Belden connects operational technology to information technology, giving decision-makers visibility into what's happening across the entire operation.

- **End-to-end accountability:** One vendor, one support line, one solution. When you deploy Belden hardware and software together, we design the complete system, support it throughout deployment and maintain it long-term. No finger-pointing between vendors when issues arise.

- **Your data stays yours:** Belden solutions deliver operational data directly to your AWS, Microsoft Azure, Google Cloud or on-premise destinations. You maintain complete ownership, control and security of your industrial information.

- **Proven integration, reliable performance:** When you deploy Belden IO-Link masters, switches, gateways and connectivity software as an integrated solution, you receive a proven package that's been tested and validated together.

Learn more →

>>> SOFTWARE

- **Belden Horizon Data Operations** (BHDO) – Site and node-based annual subscriptions available
- **Belden Horizon Data Manager** (BHDM) – Centralized management for scaled deployments
- **CloudRail** – Annual subscription per connected unit

>>> HARDWARE

Industrial edge gateways

Industrial Ethernet switches

I/O Link masters

Power supplies

Industrial cables and connectors

>>> Ready to connect your OT assets to the cloud?

Contact us →

Contact our team to discuss your specific connectivity challenges and discover how **BHDO** and **CloudRail** can accelerate your digital transformation.