datacentrix

Operational Technology

Industrial Switching

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Optimise your industrial fabric with Datacentrix's switching, routing and edge compute solutions. Enable industrial artificial intelligence (AI), gain real-time industrial control systems (ICS) visibility through integrated sensors, and secure mission-critical supervisory control and data acquisition (SCADA) networks with ruggedised hardware.

1. Industrial Switching, Routing and Edge Compute

1.1 Building the intelligent fabric for modern operational technology (OT) operations

As industrial environments scale with the adoption of sensors, connected devices and industrial AI, the underlying network must evolve. A modern operational network requires more than simple connectivity; it demands low-latency, high-bandwidth resilience and the intelligence to process data right at the source.

We provide a comprehensive industrial ethernet switching and routing portfolio designed to bring proven IT proficiencies to the harsh realities of OT. Our solutions serve as the foundation for digital transformation, enabling smart operations and deterministic data flows across manufacturing, utilities and transportation sectors.

2. Rugged Intelligence: Switching Built for the Field

Our industrial networking infrastructure is engineered to perform where standard hardware fails, offering a combination of robust physical design and advanced edge-processing capabilities:

- **Environmental resilience:** Ruggedised, fanless appliances certified against extreme temperatures, vibration and electrical noise. Available in versatile form factors including DIN-rail, rack-mount, and IP67-rated enclosures for heavy-duty outdoor use.
- **Integrated edge compute:** Select switching platforms feature a dedicated application hosting environment. This allows for the deployment of security and visibility tools directly on the switch, processing data at the source and eliminating the need for separate, dedicated security appliances.
- **Converged IT/OT management:** Scale your operations by managing industrial assets with the same tools used for IT networks. This supports zero-touch provisioning, automated configuration changes, and proactive performance assurance across the entire enterprise.

3. The Business Case: Visibility and AI Readiness

For technical and business stakeholders, an intelligent network is the primary enabler of operational foresight, safety and cost reduction:

- **Real-time OT situational awareness:** By utilising integrated visibility sensors, our switches provide a 360-degree view of your ICS. They profile every connected device, identify system vulnerabilities, and detect abnormal communication patterns before they escalate into downtime.
- **Infrastructure for industrial AI:** AI algorithms require consistent, high-speed data transfer. Our switching fabric provides the low-jitter, high-bandwidth communication essential for transporting large amounts of operational data to AI applications in the cloud or data centre in near real time.
- **Secure remote access and Zero Trust:** Our platforms include built-in gateways that enable Zero Trust Network Access (ZTNA) purpose-built for OT workflows. This allows you to enforce least-privilege access for remote troubleshooting and maintenance, securing your assets against risks introduced by third-party connections.

4. Realising Smart Operations: Practical Use Cases

Our industrial networking solutions are deployed to solve critical reliability and security challenges across the supply chain.

4.1 Digitising the power grid and utilities

- **The challenge:** Utility substations require high-availability networking to synchronise equipment across vast distances. Any network jitter can delay fault identification, leading to prolonged service outages.
- **The solution:** We deploy utility-certified rugged routers that act as a precision timing source. These devices provide resilient connectivity that allows utilities to identify fault locations and restore service significantly faster than traditional legacy systems.

4.2 Edge processing for real-time defect detection

- **The challenge:** High-speed production lines generate massive volumes of sensor data. Sending all data to a central server for analysis introduces latency that can slow down real-time quality control.
- **The solution:** We utilise modular DIN-rail switches with edge compute. By hosting defect-detection applications locally on the switch, data is processed at the source. The system can trigger immediate corrective actions, improving build-to-order cycle times by up to 25% and reducing waste.

4.3 Secure roadway and transportation logistics

- **The challenge:** Modern transportation infrastructure requires connecting sensors and signaling systems across tracks and roadways. This equipment is exposed to dust, water and extreme orientations.
- **The solution:** We implement heavy-duty IP67-rated switches with M12 connectors. These units provide high-speed power over ethernet (PoE) to cameras and sensors while maintaining total reliability. Integrated threat detection alerts operators to malfunctions days before they could lead to accidents, reinforcing public safety.

5. Architect Your Industrial Network

Don't let your network be the bottleneck for your digital ambitions. Contact our industrial networking specialists today to discuss how our switching, routing and edge compute solutions can accelerate your path to smart, resilient operations.

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