IEC 61850

Substation Networking Solutions

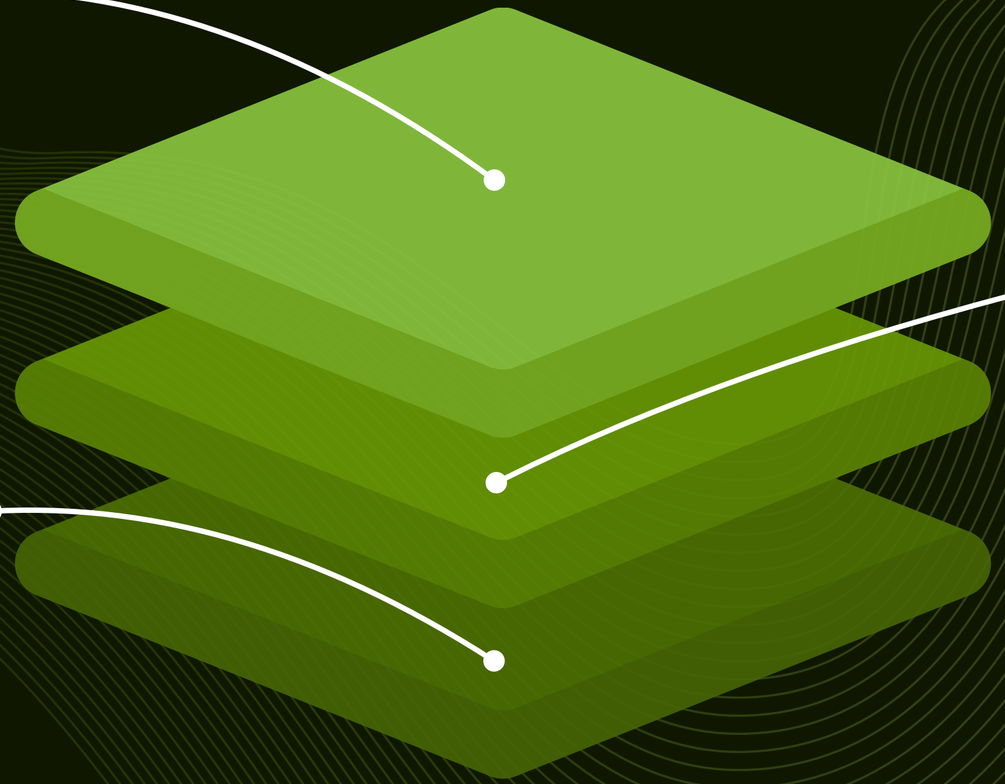
Structure of IEC 61850 Networking

Station Level

Sends data to SCADA or external management. The ability to handle large amounts of data is essential, as is cybersecurity.

Process Level

Collects data from IEDs. In the case of legacy stations, must also convert protocols for higher-level communication.



Bay Level

Consolidates data from large numbers of downlinks and passes it on to higher levels. Requires high reliability and redundancy in case of disruptions.

The IEC 61850 network can be divided into 3 levels
For more information on what is IEC 61850, check out our previous deck

Protocol Gateways

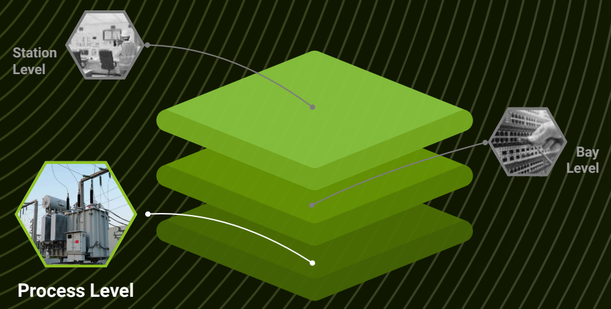
For substations utilizing legacy process protocols such as through IEC 60870, DNP 3.0, and Modbus, **ATOP protocol gateways offer transparent, highly reliable, and fault tolerant protocol translation.**

With powerful industrial-grade hardware and IEC 61850-3 certification, these gateways allow the high availability, reliability, and security that modern power grids need, without the cost and hassle of a full system renewal.

- Serial/Ethernet protocol conversion
- Flexible configurations
- Transparent and reliable
- Industrial-grade hardware

FEATURED MODEL: PG5908A SERIES

- 6 x Ethernet ports
- Embedded IPsec VPN for enhanced security
- 8-port RS-232/422/485, D-Sub9 or TB5 connector



PROCESS LEVEL SOLUTIONS

IEC 61850-3
Process Level Switches

Process-bus-switches, handling communications between the process level and the bay level, must deal with the mass amount of small sampling packets from the downlink side, while transmitting large amounts of collected data to the upper bay level.

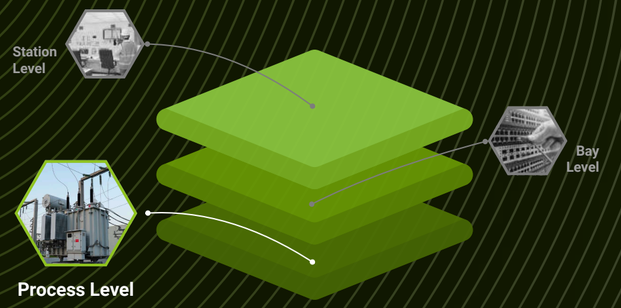
IEEE 1588 Precision Timing support

Industrial-grade hardware

Ring support for redundancy

FEATURED MODEL: EH9711 SERIES

- Comprehensive connectivity
- Secure industrial network design based on IEC62443



PROCESS LEVEL SOLUTIONS

IEC 61850-3 Aggregation Switches with PTP, and HSR/PRP

To avoid errors and blackouts, substation automation must ensure strict data integrity and the least latency or downtime. **High-availability Seamless Redundancy (HSR) and Parallel Redundancy Protocols (PRP)** helps achieve fault-tolerant communication between devices within the power grid infrastructure.

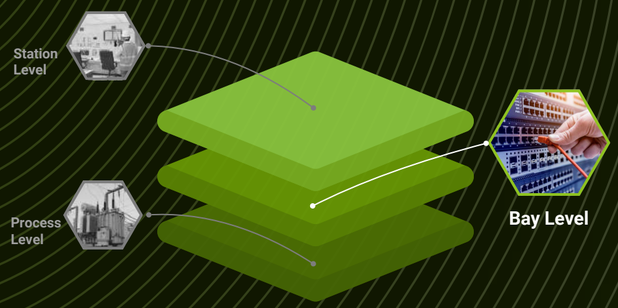
Gigabit Ethernet

IEEE 1588 PTP Support

HSR / PRP Support

FEATURED MODEL: RHG9528 / RHG9628

- Large # of ports
- Modular configuration
- QoS & VLAN



BAY LEVEL SOLUTIONS

IEC 61850-3 Certified PTP Grandmasters and Time Servers

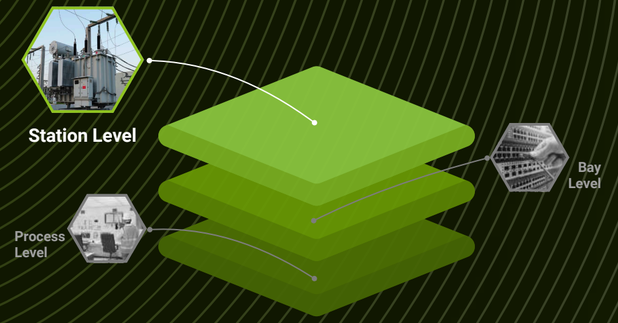
Network faults can occur at any time, but especially for critical utilities, fault detection and isolation need to be fast and accurate to minimize the risk of damage.

Precise Time Protocol (PTP) allows for coordinated operation and control of devices, ensuring grid stability and minimizing the risk of power outages.

- High-precision GNSS
- Nanosecond-level resolution
- Power profile support
- Power and network redundancy

FEATURED MODEL: NTS8600

- Proven accuracy
- Holdover <4.8 µs/24hrs
- Anomaly mitigation



STATION LEVEL SOLUTIONS

BlackBear Intelligent Gateway

The utilities sector is especially vulnerable to cyberthreats, and rely on zero-trust protection.
The BlackBear unidirectional gateway enforces unidirectional communication, performs FPGA-based packet inspection, and features like MACsec and reverse channels to secure OT and deliver reliable information.

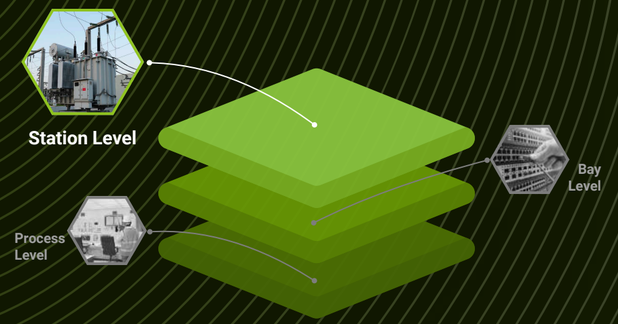
BIG9000

BlackBear NIMBL

BlackBear NIMBL is designed for efficient, portable, scalable, secure and consistent management of all BlackBear devices.It can be hosted in the cloud as services or on-prem Windows or Linux servers.

Based on consistent API layers, it allows simple, flexible visualization of topologies, centralized management, and secure fault detection.

BLACKBEAR NIMBL



STATION LEVEL SOLUTIONS

For more information, reach out to our experts.

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