



The Challenge

Protection and control systems in substations have traditionally been sold as an **indivisible package** of hardware and software, tying functionality to the refresh cycle of the underlying equipment.

Redeia also lacked a real-time view of the electrical signal, while the volume involved, thousands of high-frequency measurements per second, **made centralizing this data unviable**.

SUCCESS STORY

Virtual Oscilloscope for Substations

Using Barbara's Platform, Redeia virtualized the oscilloscope, the substation's highest-frequency function, as a **set of containerized workloads running on a thin edge node** inside a live transmission substation.

An IEC 61850 Connector captures sampled values, using a GOOSE trigger to store only the window around each event. This allows the node to handle **4,000 samples per second** without becoming saturated. Barbara's Platform remotely manages the node and every workload, from network configuration to OTA firmware updates.

Key Results



Real-Time Substation Visibility. 4,000 sampled values per second stored and displayed locally for operators.



Lower O&M Costs. Early anomaly detection and remote management reduce corrective work and site visits.



Freedom from Vendor Packages. Independent providers share the same infrastructure without requiring additional hardware.