



STRATEGY, ROADMAP AND PROJECT EXPERIENCE

How to Optimize IEC 61850

As a starting point for utilities seeking to engage with IEC 61850, Quanta Technology’s engineers have a full understanding of the features, services, applications and risks, and can lay the groundwork for development of a plan for a field trial or practical utilization.

Quanta Technology’s experts have participated in the development of the IEC 61850 protocol since its inception in 1995 and through its absorption of EPRI UCA in 2000 to yield the single, international, multi-vendor standard for substation protection and data integration.

Quanta Technology’s engineers are experienced in mapping data and information needs to unified substation integration architectures, including add-on systems and support of legacy systems. Our advice and solutions are independent, objective, and practical. Our domain expertise in the field of electric power and utilities represents an unmatched set of business, regulatory, and technical expertise and best-practice know how which we apply to provide solutions that are not only technically smart, but also practical.

Upgrading with IEC 61850



Strategy development

- Vision - strategy - roadmap - business case
- Technology evaluation and process bus application impact study
- Cross-departmental involvement, deployment, and acceptance
- Protection + control: asset management, operations, planning, IT/Communication, cybersecurity.



Knowledge transfer

- Onsite training on the basics, tools, applications, GOOSE messages, process bus, MMS mapping
- Communication, network design, security
- How to build the business case
- Testing
- Hands-on training on select equipment.



Implementation support

- System design + architecture
- RFP, specifications, vendor evaluation, project support, and processes
- Application standardization.



Testing

- Single-device tests, performance, compliance, tools, calibration (PMU 90-2)
- System design tests - IEC 61850-based protection system using the Quanta Technology RTDS lab.

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Long-term Strategy

In order to optimize long-term return on investment for IEC 61850 integration programs, consider these elements:

- **Technical roadmap** to assist with vendor independent products/ technologies, new regulations, paradigm shifts and industry trends
- **Cross-departmental involvement** to improve deployment and acceptance
- **Business case development** to obtain financial and managerial support
- **Implementation support** for RFP, RFQ, RFI documents, evaluation and project support.

Automated configuration of networked devices from multiple vendors, based on IEC 61850-6 substation configuration language (SCL) is just emerging. As the industry absorbs these developments, the standards writing teams continue with new features and services including objects for new applications (hydro power plants, distributed energy resources) and new communications applications reaching outside the substation to control centers and to other substations for protection applications.

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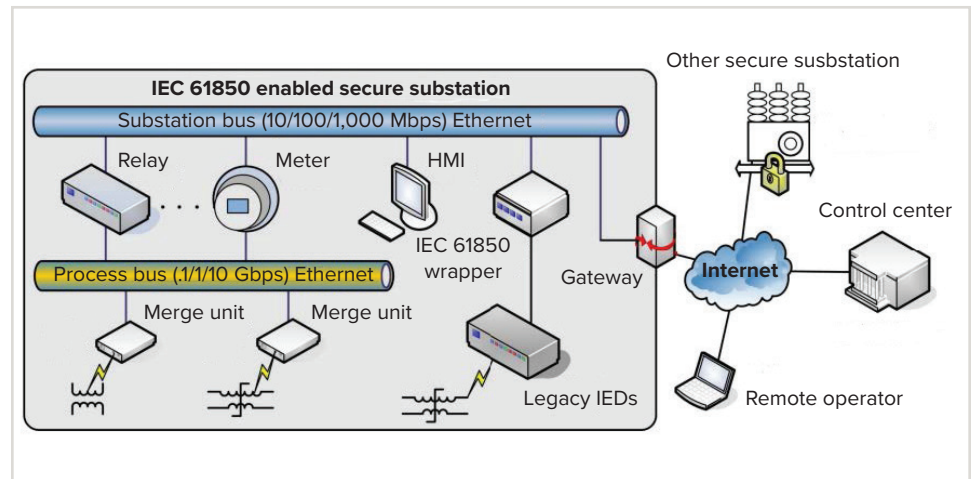
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More Than A Protocol

The IEC 61850 standard is so much more than a protocol for communications within substations. It is also an architecture applicable for external communications systems such as substation-to-substation, substation-to-control center and distributed automation communications, as well as metering, electrical equipment condition monitoring and diagnosis, and intelligent electronic device (IED) to engineering systems communications. IEC 61850 unifies requirements for vendors to supply compatible IEDs to ensure interoperability. Single device and system design testing are an important part of the engineering process in order to ensure conformance and interoperability.

PICTURED: IEC 61850-enabled secure substation



Single Standard Advantages

There are many advantages to the new IEC 61850 single standard:

- **Provides a framework** to describe all automation and protection functions of a substation
- **Standardizes language** and allows you to describe what you need to do
- **Standardizes engineering** based on vendor-independent function descriptions
- **Ethernet-based GOOSE messaging**
- **Allows interoperability** between different vendors
- **Non-hardwired interdevice communication providing protection coordination.**

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