Utility Communications
Integrated, hybrid and multi-level solutions for network communications
The industry challenge – more reliable, more efficient, more secure and more flexible

There is a convergence occurring between the business realities of the utility industry, the energy demands of modern society, and the sustainability requirements of the environment in which we live. This convergence is driving the development and implementation of a new type of power system. This network, known as the “smart” or “intelligent” grid, uses the same basic infrastructure we know today, but applies advanced information and communication technologies and many more sensors and actuators within the existing systems.

The result is a power grid that is more reliable, more efficient, more secure and more flexible than the systems currently in operation. These characteristics in turn will support the integration of renewable energy sources and all other types of future generation units into the systems, thus supporting reducing environmental impacts of power supply and in particular CO$_2$ emissions while improving the efficiency of power delivery systems.

Integrated and hybrid communications networks

For a stepwise introduction of such smart grids, an integrated and hybrid communication network architecture allowing multi-service provisioning is the key.

The foundations for a more reliable and secure network for the harsh utility environment are utility-grade products and robust system design. Redundancy is achieved by sophisticated hardware protection and path diversity, such as transmission of mission-critical protection signaling through fiber optic and power line carrier systems.

The transmission view

In the examples shown on opposite side, control, protection and voice signals are interfaced with typical systems deployed in the utility’s transmission environment. This includes Power Line Carrier (PLC), optical network solutions (e.g. SDH), teleprotection systems, as well as wireless systems to enable communication between remote stations and towards centralized or decentralized control centers.

ABB’s solutions ensure the seamless integration of the existing infrastructure, upgradeability to cope with future bandwidth requirements, and at the same time, enable packet switched service provisioning over a wide range of media. Combined with enhanced network management features, ABB integrates a future proven communications infrastructure for mission-critical applications and other legacy and new services in utilities.

The distribution view

Distribution automation up to the consumer level is vital to efficiently deliver sustainable, economic and secure electricity supplies today and in future.

ABB offers a suite of wireless and fixed distribution communication solutions for the reliable deployment of intelligent devices at lower voltage levels. Depending on the geographic coverage and specific application needs, ABB can supply systems such as dedicated V/UHF radio, optical/electrical network solutions (e.g. pilot wire xDSL) and cellular modems, as well as satellite solutions, which enable end-to-end connectivity from the device to the system.

In-plant communication

To support the increasing needs to operate the entire power grid securely, in-plant communication solutions for substations, power plants and similar installations play a crucial role within utility communications networks. ABB has developed a portfolio comprising telephony solutions, paging systems, video surveillance (CCTV), public address and access control systems, which can be seamless integrated into the overall communication infrastructure of a network.

Service – ensuring a long-lasting network

There are two golden rules to ensure the health of your network. The first is to acquire a stable and expandable network and the second is to ensure longevity with components and services.

ABB’s wide range of service activities includes project management and contracting for specific tasks, including turn-key projects. Our broad service know-how is complemented with system implementation services, such as network design, end-to-end integration, validation and after-sales services, including training and maintenance.
The utility communications landscape

Typical transmission communication solutions

Typical distribution communication solutions

Typical in-plant communication solutions
ABB – the full solution provider

Our vast experience in the electricity industry and complete range of products and services available from a single source, make ABB the natural partner for the stepwise introduction of smart-grid infrastructure.

Why utility communications from ABB?

We are a full-solution provider. We are a single-source provider of a complete range of products and services.

Our solutions give investment flexibility and security. We work together with our customers to ensure that we provide the most financially viable solution.

We believe in a partnership approach solution. We work as a trusted partner for our customers.

Our solutions improve performance. Our products and solutions help customers to improve their operating performance, grid reliability and efficiency in a fast-changing environment.

We deliver products and solutions for the stepwise introduction of smart grids technologies. Our solutions are at the heart of smart grid architecture. We are the natural partner for the stepwise introduction of smart grid infrastructure and technologies.

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