Cellular Solutions

Advanced Smart Grid Networks

Utilities' business needs and challenges are as diverse as the territories and demographics they serve. With smart grid initiatives reimagining both current and future energy delivery models, utilities face increasingly complex decisions on where, when and how to deploy new technologies. To succeed in this evolving landscape, smart grid solutions must be uniquely tailored to optimize the data-driven value chain.

Cellular technologies are vital to providing you with flexible, end-to-end solutions which are both optimally functional and simple to deploy.

Itron's Cellular Leadership

- More than a decade of experience deploying the most reliable and cost-effective cellular solutions
- 150 utility customers in North America and all 10 of the largest US utilities use Itron's cellular solutions
- 2.5 million cellular electric units under contract
- More than 500,000 gas units under contract
- 35 distinctive cellular communication modules developed to meet a wide variety of utility needs

WHY ITRON'S CELLULAR SOLUTIONS?

Simple

Itron's cellular solutions provide a simple way to securely connect strategic utility grid assets from meters to substations. The network infrastructure is already built, ready for you to use. And just like all Itron communications platforms, cellular networks provide an avenue for other smart grid applications, with the scalability needed to meet your business objectives today and tomorrow.

Cost-Effective

Prices for cellular communications have come down by over 90% in the last two years alone, making the cost-to-benefit ratio better than ever. With billions of devices operating over cellular networks around the world, carriers are driven to continually improve infrastructure.

From 2007 to 2010, over $120 billion was invested in cellular networks in the U.S. alone. This ongoing investment in hardware, software and facilities results in an efficient, high-performance network which extends coverage to the far reaches of the grid. Cellular, deployed alone or in combination with other communications platforms, is more cost-effective than ever, even for many lower-density environments.

Secure

With Itron's cellular solutions, utilities can enjoy the same world-class security used to protect billions of smart phone users throughout the world. In addition, Itron's cellular products add multiple layers of security to ensure the highest levels of protection. Encrypted utility data is secured over a private cellular network segment not used for phone calls or other internet traffic. Global Internet Protocol (IP) security standards, utilized by many of the world's largest financial institutions to secure billions of dollars in daily electronic transactions, are then layered on top of all communications to ensure that your data is safe.

CREATING YOUR SMART GRID

With high-value smart grid deployments at over 150 utilities, Itron is leading the industry in cellular-based smart grid solutions. As more utilities enter the smart grid arena, bringing with them diverse service geographies, performance requirements and business cases, cellular will be key to their success— whether as a stand-alone or complementary technology.

Adaptable

Itron can build the right solution for your diverse needs by leveraging our broad portfolio of standards-based IP network offerings (IPv6 and IPv4) including RF-Mesh, Point-to-multipoint and cellular communications. Itron's cellular solutions fulfill a wide variety of important utility needs. It can be used to fill coverage gaps; be combined with RF mesh in service territories with a mix of urban, suburban and rural geographies; or be deployed as a standalone solution.

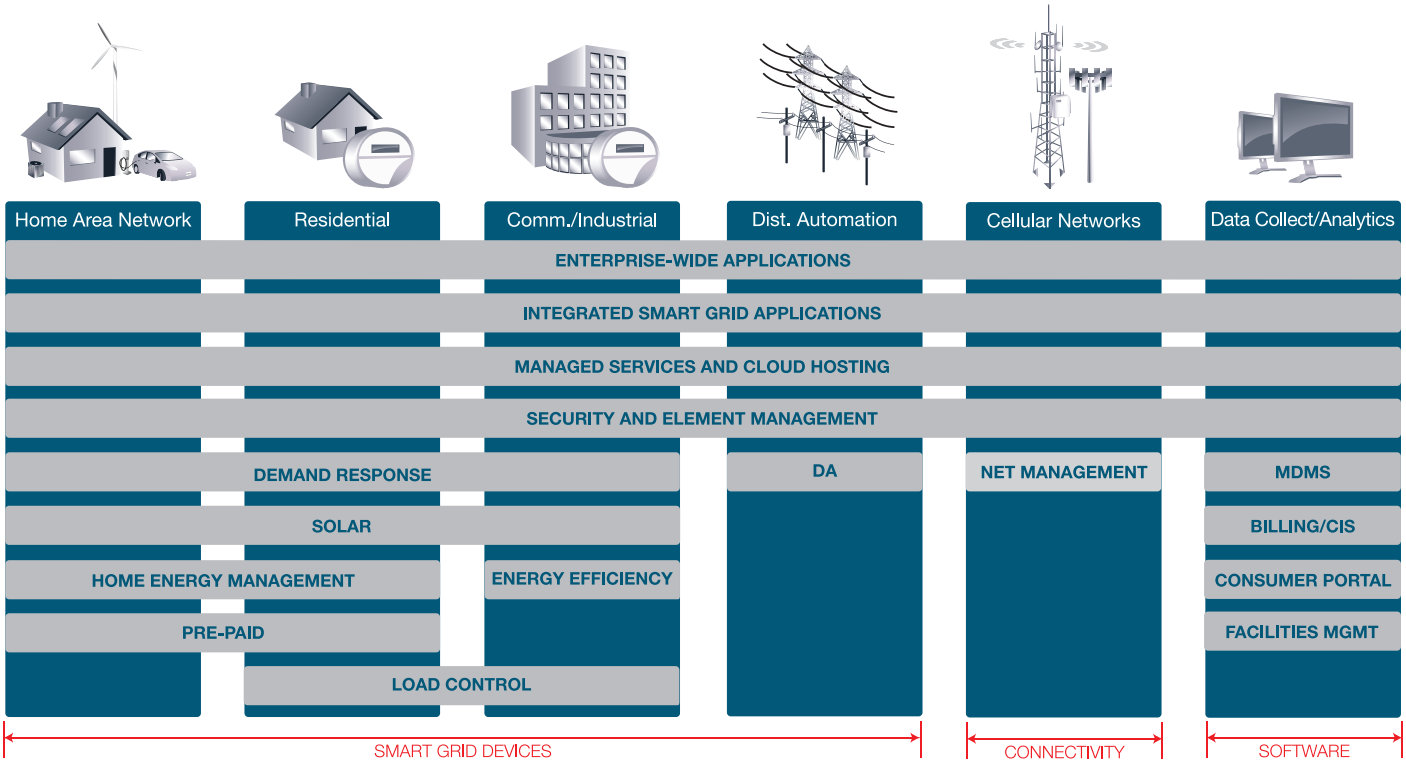
Future Interoperability

A truly smart grid will run over multiple communications platforms and include system components built on open standards, ensuring connectivity and integration throughout the grid. Interoperability is critical to future success since many promising smart grid applications are just emerging. In a rapidly changing industry, utilities need the future-proof solutions that Itron has deployed in the field.

Bandwidth for Future Applications

To make use of near-real-time data, we must have high-performing, reliable communications. According to the FCC, cellular coverage reaches 99.6 percent of the US population. Our cellular-enabled smart grid devices send TCP/IP messages across an encrypted virtual private network to protect and isolate the smart meter traffic from other types of carrier traffic. This ensures maximum security and reliability.

If every water, gas and electric meter in the U.S. (about 300 million meters) transmitted a day's worth of 15-minute interval data, it would amount to an increase of less than 2/1000th of 1 percent (specifically, 0.00018 percent) in the amount of data that a carrier like AT&T currently transfers across its network on a daily basis. There is more than sufficient bandwidth for smart grid device data.



SOFTWARE, SERVICES AND CELLULAR MODULES

Connecting the Grid

Itron cellular solutions have been validated in the field at over 150 utilities. They have been built to exacting standards—addressing both form and function—to create a more open, connected smart grid. Our solutions comprise a complete ecosystem of meters and other smart grid devices with integrated cellular modules, complemented by software that helps you measure, manage and analyze meter data. We also provide Managed Services—system management, monitoring and maintenance—which allow you to concentrate on core business operations.

Software

Itron's Transaction Management System (TMS) is a highly scalable, enterprise-grade software application that manages two-way encrypted data transactions over multiple cellular networks for multiple meter models, both residential and commercial and industrial (C&I). The software enables you to monitor electricity meters for register and interval data, real-time usage during load curtailment events and real-time meter alarms and events while seamlessly integrating with existing billing and meter data management systems. TMS monitors, manages and validates all scheduled meter data collection functions and automatically recovers missing data.

Key Benefits of Cellular Networks

- Support diverse applications and varying customer densities
- Reduce initial capital costs
- Allow utilities to focus resources on their distribution network
- Provide excess bandwidth to support future applications

Itron Cloud Services: Managed Services

Itron's Cloud Services team hosts TMS in our secure data center, collects all metering data and supports the secure daily transfer of smart grid data to the utility back office. The Managed Services solution includes all daily IT operations and maintenance of the TMS application server, including scheduled server backups and off-site storage for disaster recovery.

Itron's SmartView is a web-based dashboard that allows you to monitor advance metering infrastructure (AMI) system performance and view meter data via real-time access to TMS databases. This system features quick and easy viewing of overall system statistics or specific information about a selected group of meters during any given time frame.

Compatible Meters

- Residential: OpenWay® CENTRON® Meter, GE I210+c®
- Commercial and Industrial (C&I): Elster A3®, GE kV2c®
- Solar Meter
  - Our revenue-grade Solar Meter is ideal for monitoring the production of residential and commercial solar photovoltaic systems. Designed for quick installation, the meter collects, stores and uploads the photovoltaic system's production data to the solar solution provider over an existing cellular network link that is fast, reliable and secure.

Itron Adaptive Grid Router

The Itron Adaptive Grid Router supports multiple communication networks and connectivity to almost any grid sensor. It serves as an IP-addressable, external interface offering connectivity to meters and other grid devices. The Adaptive Grid Router acts as a secure wireless pipe capable of transmitting and receiving data over cellular networks using IP or other open standards. Utilities can quickly and affordably spot-deploy smart grid applications, including load profile and control, power quality monitoring, distribution automation and standby generator control.

Cellular Smart Grid Features

AMI features, including:

- Demand Response
- Time of Use (TOU)
- Interval Data
- Voltage Monitoring
- Power Quality including:
  - Harmonics
  - Internal Remote
  - Connect/Disconnect Switch
- Device diagnostics and over-the-air (OTA) firmware updates and reconfigurations
- Real-time reporting for customer outages
- Local area network (LAN) with ZigBee®:
  - In-home display of utility information, including current monthly bills and energy costs
  - Utility-to-customer messaging
- Web portal
- Smart grid functionality
  - Including System Operations
  - Voltage Regulator Reconfiguration
  - Switched Capacitor Bank Control and Reconfiguration
  - Continuous Power fFactor/ VAR Optimization
  - Automated Distribution Line Switches
  - Distribution Recloser Control
  - Fault Monitor Remote Access
  - Portable Disturbance Monitors (Dranetz-BMI, Power Monitors, Inc., and Others)
- Monitoring and control of distributed energy resources (DER) such as solar, wind and electric vehicles (EV) with mobile and smart charging
- Full IP-based communications with layered encryption and access point failure tolerance (APFT)

OUR HERITAGE. OUR VISION.

You don't have to compromise on business solutions limited to one piece of the energy delivery puzzle. Choose a solution that is certain to weather the test of time.

Itron's smart grid expertise is preceded by decades of utility industry innovation and partnerships built on trust, integrity and proven results. We've created a distinctive energy data value chain that combines the best in measurement, communications and control. Deployed at scale and fully integrated across the enterprise, our solutions enable you to focus on driving new business value today and tomorrow.

PARTNER WITH US

Itron is a global technology company that specializes in measuring, managing and analyzing utility data. We've listened intently to you, our customers, to develop and offer complete, comprehensive solutions that target your most essential business needs and help you overcome your most significant challenges.

We believe in technology that enables energy efficiency, reliability and resource conservation by extending intelligence from the metering and distribution system to those who use, own and operate it—consumers, businesses and utilities.

Smart grid technology is integral to our energy future. Partner with us as we build flexible, forward-thinking smart grid solutions that deliver immediate benefits and evolve at the speed of innovation.

Itron is a global technology company. We build solutions that help utilities measure, manage and analyze energy and water. Our broad product portfolio includes electricity, gas, water and thermal energy measurement and control technology; communications systems; software; and professional services. With thousands of employees supporting nearly 8,000 utilities in more than 100 countries, Itron empowers utilities to responsibly and efficiently manage energy and water resources.

Join us in creating a more resourceful world; start here: **www.itron.com**

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