Gen5 Network

One Network for Critical Infrastructure – No Compromises

The Internet of Things (IoT) holds great promise for industries ranging from consumer electronics to industrial automation, but deriving these benefits presents a greater challenge. Today, the critical infrastructure sector of IoT provides clear value for cities and utilities that are transforming energy, transportation and environmental initiatives. The Gen5 Network provides the essential elements for connecting critical infrastructure and enabling customers to create regional economic advantages, increase operating efficiency, and contribute to a more sustainable environment.

Energy | Transportation | Water | Health and Safety | Environment

Dynamically optimized for data throughput, range and power

power =
Performance =

The Itron Gen5 Network provides the connective fabric between applications and critical infrastructure devices to enable customers to continue to unlock value and accelerate their initiatives.

Critical infrastructure challenge	Traditional solutions	Gen5 value
Connect any device	» Pilot with cellular, constrained by battery power lifetime	» Connect any device with 20-year battery life
Automate high capacity, low latency processes	» Use special purpose radios, constrained by cost of ownership	» Dynamically adapts for capacity and range on a single network
Transform massive data in action	» Use data warehouses, constrained by time-to-value and responsiveness	» Harness the compute/ storage within the network
Assure security and compliance	» Implement policy and controls across individual networks	» End-to-end, multi-layer protection with proven security

THE OPEN STANDARDS-BASED IPV6 NETWORK FOR CRITICAL INFRASTRUCTURE

The Gen5 Network is the fabric connecting critical infrastructure devices with value-added applications. Itron has successfully architected the Gen5 Network to balance the stringent and competing demands of ubiquitous coverage, high performance, and cost efficiency. Itron has been proven at scale in real-world deployments, with a mesh architecture that serves a wide range of physical terrain types and device densities (urban, suburban, and rural). IPv6 technology delivers strong security and a common platform for applications. A unified approach to management and security makes it possible for you to focus on operating applications instead of network integration.

The Gen5 Network builds on this heritage of secure, reliable performance by extending the scope to new classes of battery-powered devices, harnessing the distributed intelligence of the network, and delivering the performance to support the most demanding applications.
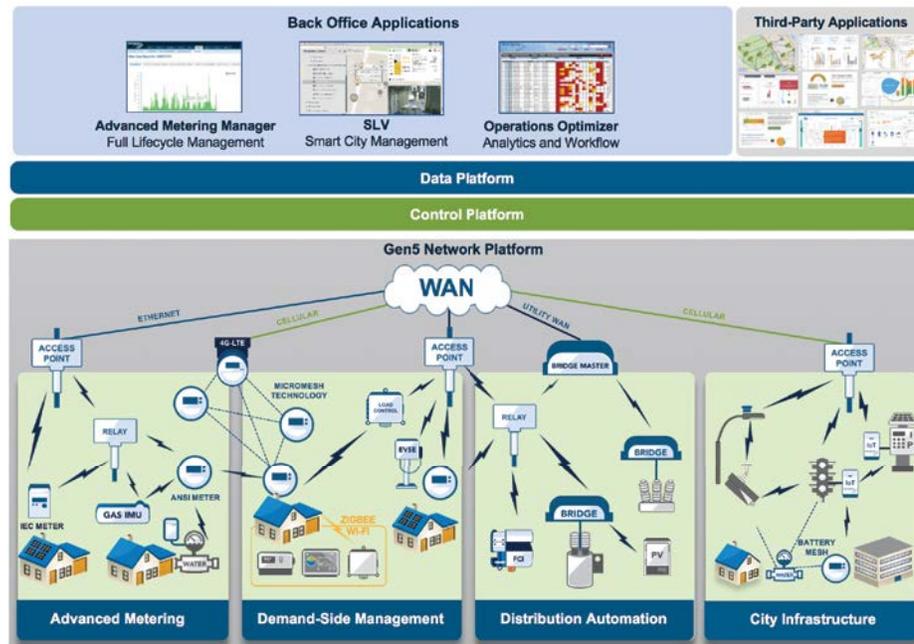
The Itron NIC 5 delivers optimal overall system performance across multiple applications and diverse environments.

NEW CAPABILITIES WITH THE GEN5 NETWORK

High data capacity and low latency for the most demanding critical infrastructure applications

» The Bridge 5, Network Interface Card 5 (NIC 5), Access Point 5 (AP 5), Relay 5, MicroAP 5 and SocketAP 5 form the infrastructure supporting the high data capacity of the network with data rates up to 2.4 Mbps using a radio operating at both 900 MHz and 2.4 GHz to maximize data throughput.

Breakthrough integration of battery-powered devices

» The low power Milli™ 5 opens the network to small form-factor battery-powered devices that can operate for up to 20 years.

Dynamically optimized performance delivering cost-effective coverage with the highest overall data throughput

» Devices equipped with the NIC 5 coupled with AP 5 and Relay 5 dynamically adapt to environmental and application requirements to optimize data rate and range.

Distributed intelligence within the network

» Programmable compute and storage within each NIC 5 enables new peer-to-peer applications leveraging the ability to transform data at the network edge.

GEN 5 SOLUTION ELEMENTS

Milli 5

The Milli 5 offers the self-forming, self-healing network capabilities already proven at scale to new classes of devices. The power-optimized design enables integrated IPv6 communications with a battery life of up to 20 years. The small form factor and cost-effective performance bring connectivity to devices including water meters and smart city sensors.

NIC 5

The NIC 5 provides secure, highly reliable connectivity for devices driven by high data throughput and low latency response requirements. The dynamically adaptive capabilities of the NIC 5 automatically optimize data rates to extend range as dictated by the environment. Each NIC 5 also enables distributed intelligence within the network, to support innovative applications and services across network resident compute/storage.

Bridge 5

The Bridge 5 combines the performance, distributed intelligence, and rapid integration necessary to address the most demanding critical infrastructure applications. The low latency, high data rate, and quality of service address mission-critical control processes while delivering the cost of ownership advantages of a unified network. Extending range while dynamically adapting the data rate enables cost-effective automation of telemetry and control processes in the most challenging environments. Powerful on-board processing and storage capability deliver the distributed intelligence to transform data into action. (see diagram, next page)


The Milli 5 enables new classes of small form factor, battery-powered devices within new and existing wireless networks.

AP 5, Relay 5, MicroAP 5 and SocketAP 5

The Itron AP 5 and Relay 5 combine to support maximum overall system performance. The AP 5 connects the Itron network to high capacity WAN backhaul via Ethernet or cellular (including 4G LTE). The Relay 5 uses adaptive gear-shifting to dynamically optimize for range and overall multi-application application performance. The MicroAP 5 and SocketAP 5 integrate cellular, RF mesh and HAN

communications to support both backhaul and local meshing, providing flexible scalability and coverage for hard to reach or isolated premises.
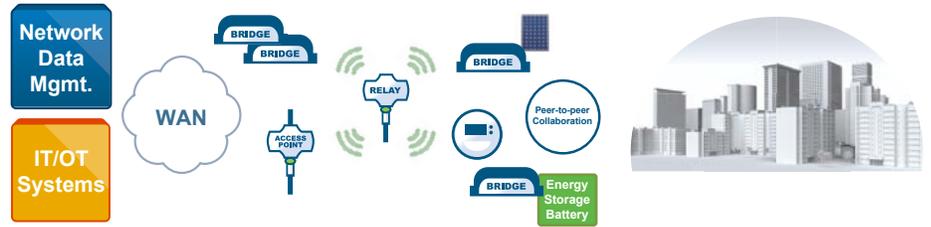
The Itron Bridge 5 delivers the low latency, high data rate and distributed intelligence to enable the most demanding grid modernization and distribution automation initiatives.

BREAKTHROUGH CHARACTERISTICS OF THE GEN5 NETWORK

» New applications enabled by distributed intelligence that harness the compute/storage capabilities within millions of NICs across the network

» Increased capacity with dynamic optimization for data throughput, range, or battery life

» Seamless connection to low power devices with battery life of up to 20 years in the field

As a result of these breakthroughs, Itron customers now have several additional dimensions of value to unlock within critical infrastructure. Most importantly, customers benefit from using one open standards-based, IPv6 network without the compromises associated with alternative approaches.

KEY BENEFITS INCLUDE:

Expanded opportunity for performance-intensive, multi-application services. With the NIC 5 support for a data rate up to 2.4 Mbps and 10 ms latency, as well as distributed intelligence, cities and utilities have the opportunity to roll out new services and increase customer satisfaction with engaging applications.

Comprehensive and cost-effective coverage of diverse territory

The NIC 5 delivers cost-effective coverage while ensuring maximum overall system performance by dynamically adapting the data rate to optimize reliable information delivery over a long range in the most challenging environments.

Risk mitigation through proven multi-layer security

The value of two-way communication remains protected from the increasingly hostile threat environment by building on Itron's proven multi-layer security that leverages built-in controls from the application-to-device layer.

Rapid time-to-value with flexible integration

The Itron NIC 5 offers standard interfaces and robust APIs for maximum flexibility.

Improved operating efficiency through service automation across battery-powered devices

Cities and utilities have achieved significant cost savings and improved customer service with reliable, secure connectivity. The Milli 5 extends these operational improvements by integrating with smaller form factor and battery-powered devices.

Cost-effective power/performance integrated within an open standards network platform

Continued leveraging of open standards ensures a rich device and application ecosystem, as well as investment protection. The innovative power management of Milli 5, low overall cost of ownership and reliable performance assures best-in-class critical infrastructure services.

The benefits and new capabilities of Gen5 are fully compatible with previous generations of the Itron platform. Gen5 opens new opportunities by building on key characteristics of the Itron network including reliable operation, ubiquitous coverage and proven security.

Join us in creating a more **resourceful world**.
To learn more visit **itron.com**