



Distributed Intelligence Network Interface Card (DI NIC)

Enabling Edge Computing for Industrial IoT Applications

Leading utilities and cities have delivered breakthroughs in operational efficiency, customer service and environmental sustainability by relying on Itron's secure, reliable two-way connectivity to critical infrastructure. Itron's DI NIC technology extends the benefits of intelligently connected edge computing to more devices, giving utilities and cities an unprecedented level of insight and control of their low and medium voltage networks.

ENABLING FLEXIBLE DISTRIBUTED INTELLIGENCE

Itron's flexible DI NIC enables intelligent industrial Internet of Things (IIoT) connectivity via Cellular or Itron's Gen5 Mesh in a broad range of global devices and endpoints. The DI NIC is compatible with both ANSI and IEC electricity meters, enabling greater distribution system visibility and control out to the grid edge for more devices. DI enables utilities and cities to gain unprecedented situational awareness, operational efficiency and insight at the grid edge.

GRID EDGE SOLUTIONS

Itron's Grid Edge Solutions portfolio is a set of applications that enable our customers to evolve from AMI use case realization to real-time, grid edge infrastructure-based solutions and services. GEI applications leverage DI to help utilities and cities solve business challenges from the substation to the consumer and beyond. With the DI NIC, we're extending our robust connectivity, edge compute capability, and proven performance at scale to more solutions and endpoints.



FEATURES

Dedicated Edge Computing Platform

Edge Computing Processor

» 32-bit microprocessor

» 512 MB RAM

» Up to 1 GB Flash

Run multiple edge applications at the same time.

Run only the edge applications that you want on each DI NIC.

Extract meter data for edge analytic applications.

Remotely add, delete, update, license, and monitor edge applications.

Run applications from Itron's large and rapidly growing library of Itron and Third-party developed edge applications.

Communications Microcontroller

» 32-bit microcontroller

» Cellular modem (Cat-M1)

» Gen5 Mesh Radio

» IEEE 1901.2 (NB PLC) modem

» Wi-Fi Radio

» BLE Radio

» USB port

Integrate DI NIC into meters, gateways, and other utility edge devices.

Peer-to-Peer Communications between nearby DI NIC devices (meters, gateways, etc.) over the PLC and mesh radios.

Home Area Network capability over Wi-Fi and standards-based protocols such as IEEE 2030.5 (aka SEP 2.0).

KEY BENEFITS OF DI-ENABLED DEVICES

DI NIC-enabled devices allow utilities and cities to address business challenges with a variety of edge devices and applications. Critical infrastructure providers can gain access to off-the-shelf applications or develop new applications to streamline operations and enhance the customer experience.

DI-enabled devices provide significant improvements to outage detection and analysis, distribution connectivity modeling, fault detection, assets management, renewables integration, EV integration and multiple innovative consumer services

Better management of low and medium voltage networks

Distributed intelligence moves grid analysis, decision-making and control to the grid's edge, reducing latency of action, greatly improving situational awareness and enabling precise analysis and advanced event detection. The result? An optimized grid, better asset management and more engaged consumers

Intelligent Connectivity

Intelligent Connectivity provides the ability to support multiple communications options, giving utilities and cities flexibility in both cost and performance in multiple deployment scenarios. The DI NIC can be deployed utilizing Itron's proven mesh solution or with cellular technology. The cellular variant of the DI NIC will support Cat-M1 on Public and Private Networks.

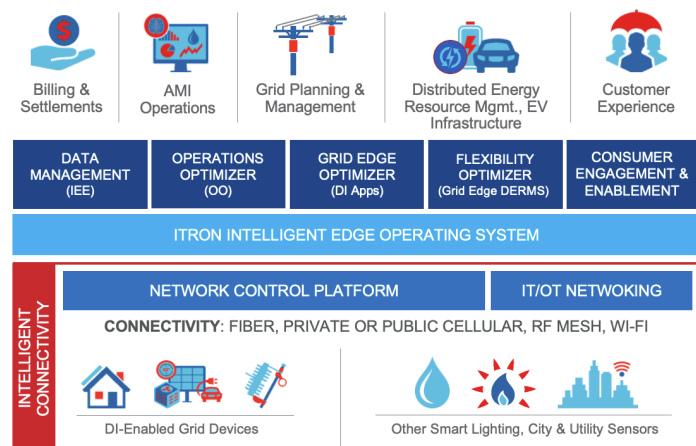
Complete and scalable solution

Enables a highly scalable, highly distributed real-time distribution network, capable of autonomous monitoring and control of millions of assets from the substation to behind the meter.

Enabling device freedom

The DI NIC is designed to support easy integration into many products enabling utilities and partners to leverage their network and back-office infrastructure to monitor and solve many aspects of the grid.

GRID EDGE INTELLIGENCE SUITE



The flexibility of the DI NIC enables greater visibility, analytics and control for a wide range of edge devices and critical infrastructure applications.

CUSTOMER BENEFITS

- » Integrate Renewables
- » Ensure Resiliency & Reliability
- » Enable Consumer Access & Engagement
- » Reduce Carbon Footprint
- » Reduce Operating Costs
- » Provide Data Access

SPECIFICATIONS:

DI NIC Product Family – General	
PLATFORM	RAM AND FLASH: 512MB/512MB OPTIONAL 1 GB FLASH
NAN COMMUNICATIONS	RF Frequencies: 902 – 928 MHz Data rates: 50-300 Kbps Spread spectrum: FHSS Adaptive gear shifting: FSK Transmitter output: Up to 1 W PLC frequencies: 150-500 kHz Data rates: up to 500 kbps OFDM encoding with BPSK, QPSK & Robo modulations Transmit output: 123 dBμV
HAN COMMUNICATIONS	Radio: Wi-Fi - IEEE 802.11 (b/g/n) Frequency: 2400-2483.5 MHz Protocols: IPv4, IEEE 2030.5 (SEP 2.0) Data rates: up to 50 Mbps Transmitter output: 10 to 23 dBm (10 to 200 mW) ¹
PROTOCOLS/SECURITY	Addressing: IPv6 Encryption: Advanced Encryption Standard (AES-256) Security: Secure Hash Algorithm 256-bit (SHA-256) and ECC-256 Key storage: X.509 certificate stored in the DI NIC Application Layer Security:DLMS Suite 1+
ENVIRONMENTAL	Operating temperature: -40°C to +85°C (-40°F to +185°F) Humidity: 0% to 95%, non-condensing

DI NIC CONFIGURATIONS

DI NIC – Mesh Global	
DI NIC-M GLOBAL	Local Radio Frequencies: <ul style="list-style-type: none"> • Mesh (local) 915 – 928 MHz up to 300 kbps 1W • PLC interface 150 – 500 kHz up to 500 kbps 123 dBµV • Wi-Fi 2.400 – 2.4835 MHz up to 50 Mbps 100-200 mW • BLE 2.402 – 2.480 MHz up to 2 Mbps 100 mW
INTERFACES	Approvals: AS/NZS 4268 (RF Mesh), ETSI EN 300 328 (Wi-Fi), EN 50065-1 (PLC), AS/NZ CISPR-32, AS 62052-31(Safety), IEC62052-31 IEC (Safety), FCC Part 15 (RF mesh and PLC), UL 2735
	DLMS-COSEM

DI NIC – Cellular	
DI NIC-C	Cellular Frequencies: 700, 800, 850, 900, 1700, 1800, 1900, 2100 MHz LTE Bands: 1, 2, 3, 4, 5, 8, 12, 13, 14, 17, 18, 19, 20, 25, 26, 28, 66, 85 Carriers: <ul style="list-style-type: none"> • APAC Telstra Local Radio Frequencies: <ul style="list-style-type: none"> • Mesh (local) 915 – 928 MHz up to 300 kbps 1W • PLC interface 150 – 500 kHz up to 500 kbps 123 dBµV • Wi-Fi 2.400 – 2.4835 MHz up to 50 Mbps 100-200 mW • BLE 2.402 – 2.480 MHz up to 2 Mbps 100 mW Approvals: AS/NZS 4268 (RF Mesh), ETSI EN 300 328 (Wi-Fi), EN 50065-1 (PLC), AS/NZ CISPR-32, AS 62052-31(Safety), IEC62052-31 IEC (Safety), FCC Part 15, UL 2735
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