How Edge Computing Solves Networking Challenges, by Industry

Connectivity and technology to meet the needs of diverse industries

Digi Delivers Reliable Connectivity with Leading Technology

Edge computing is the answer to the challenges of demanding, data-intensive applications. By integrating smart devices deployed at the edge with high-powered networks, edge computing enables faster processing to support mission-critical applications like industrial automation and control, with rapid insights for operational efficiency.

With robust, reliable connectivity and real-time processing at the edge, organizations in nearly any industry can enable automation, improve worker safety, enhance the customer experience, and support asset monitoring and predictive maintenance. Digi offers industry-leading edge computing solutions designed to meet the needs of connected systems across multiple industries.

Digi Edge Computing: Use Cases by Industry

Retail

With edge computing in retail, edge data processing allows retailers to leverage in-store analytics to adapt to shifting conditions. Inventory management can be simplified through the incorporation of edge devices, ensuring retailers know when specific products fall below quantity threshold.

Edge computing also creates opportunities to personalize the customer shopping experience. With data-driven insights, retailers can automate personalization to optimize in-store experiences, support comparison shopping, and enable automated checkout systems. Additionally, edge computing allows retailers to implement cutting-edge augmented reality (AR) technology, allowing them to take the customer experience to a new level.

Manufacturing

Transitioning to Industry 4.0 relies heavily on processing capabilities. With edge computing technology, manufacturing companies can achieve a new level of digital transformation. Real-time processing enables manufacturing automation and advanced robotics. Edge computing optimizes production efficiency with the use of cameras, sensors and edge devices, enabling immediate detection of defects and corrective actions.

Edge computing also digitally transforms inventory management, allowing for the automation of materials reordering, as well as creating opportunities through smart predictive maintenance to reduce equipment failures and limit downtime.

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Healthcare

Edge computing empowers healthcare organizations to make data-driven decisions while limiting the need to transmit sensitive patient information across systems. Medical wearables can collect critical patient data, such as heart rate and temperature, and provide that data in real time to providers. Medical imaging can remain on the source device for processing, bolstering security, and ensuring patient privacy.

With edge computing, healthcare facilities can boost the quality of telemedicine solutions, use connected devices for real-time analytics during medical procedures, and enhance the patient experience, all of which lead to better patient outcomes.

Public Safety

First responders increasingly rely on technology to make intelligent decisions to ensure the safety of the public, as well as themselves. With edge computing, in-vehicle and body-worn devices remain connected to critical systems, ensuring data is available when it's needed most. Real-time vehicle tracking provides agency leaders with crucial information about first responder locations, while edge devices enable real-time video feeds.

Additionally, edge computing allows for the immediate compression of body camera footage, accelerating upload to a centralized data center. During broad emergencies, edge computing can assist with the dynamic deployment of personnel, ensuring first responders are directed where they're needed most.

Smart Cities

The development of smart cities is highly dependent on edge computing technology. Reliable connectivity combined with IoT devices creates a dynamic, responsive environment. Intelligent traffic management optimizes traffic light patterns and enables features like smart parking to help locals and visitors manage their trips more efficiently.

Edge computing can support energy conservation initiatives, such as intelligent streetlights that automatically dim when roadways are empty. During emergencies, edge devices can alert residents to threats and provide recommendations based on real-time data. From smart city water management to optimizing routing for sanitation vehicles, edge technology can help advance smart city initiatives.

Transportation

Edge computing technology is the basis for autonomous vehicle operations, ensuring the vehicles can analyze information in real time to react to pedestrians, signage, other vehicles and changing road conditions. With edge devices, cities can also design intelligent traffic management systems, supporting solutions like adaptive traffic lights that adjust their timing based on current conditions.

In the world of logistics, edge computing supports real-time shipment tracking, allowing organizations to monitor incoming and outgoing goods more effectively. Additionally, implementing "transit signal priority" optimizes the routing of city buses through the city to improve public transit and help relieve congestion.

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Utilities

Edge computing empowers utility providers to operate more efficiently and adapt to changing conditions with greater ease, thanks to real-time data analytics and automation. Smart grid solutions can support predictive maintenance, efficient use of power supplies, and streamlined operations.

Utilities can automate response to fluctuations in demand, get real-time outage notifications and deploy repair personnel faster. Edge devices can monitor wastewater treatment operations, ensuring efficiency and compliance with various safety and environmental standards.

Agriculture

With edge computing, agriculture benefits from intelligent solutions designed to optimize operations. Sensors can monitor moisture levels in the soil and optimize irrigation. Autonomous equipment such as tractors and mowers rely on the ability to manage large amounts of data at the network edge.

Additionally, edge computing and rapid data processing support intelligent automation and remote monitoring of silos, feed bins, and the health of livestock.

Digi Edge Computing Solutions

Digi offers a broad range of solutions supporting the edge computing needs of the many industries and applications we've covered. Whether you are an OEM designing connected products or you are ready to deploy connectivity and processing at the edge, Digi has solutions to meet your needs. Most importantly, in every case, Digi has assembled complete solutions that integrate device security and authentication with tools to support rapid configuration, and remote management capabilities that enable you to remotely monitor and manage your deployed device network throughout its lifecycle. Let's look at Digi's edge computing solutions.

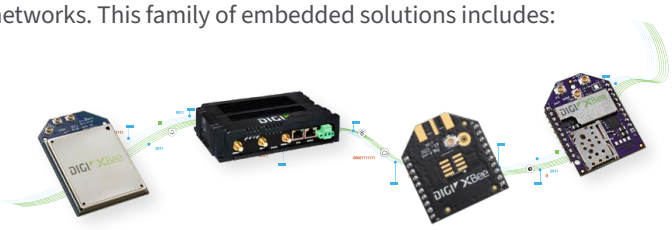
Digi Embedded Systems

Digi's extensive offering of embedded systems supports OEMs in every aspect of product development, testing, deployment and remote management once those devices are deployed to the field. Whether you are building vending machines, robotics, race cars, EV charging stations, agricultural automation products, medical devices, smart city streetlights, or any other smart, connected solution imaginable, Digi solutions can help. Need design, development or certification support? We've got you covered there too, with **Digi Wireless Design Services** — a team of experienced engineers who can take your concept through development to production and support your ongoing development and go-to-market needs.

Digi XBee Ecosystem

The **Digi XBee® ecosystem** features a family of wireless communication modules and a suite of development tools that support a broad range of protocols. With Digi XBee, IoT application developers have unprecedented flexibility thanks to three form factors and the support of numerous popular wireless protocols.

Most Digi XBee modules are programmable via MicroPython. This enables developers to build edge computing functionality into their XBee modules and deploy them at the network edge, without the need for a separate microprocessor. IoT gateways and management tools are also part of the family, allowing organizations to effectively connect, monitor, and manage their custom Digi XBee networks. This family of embedded solutions includes:



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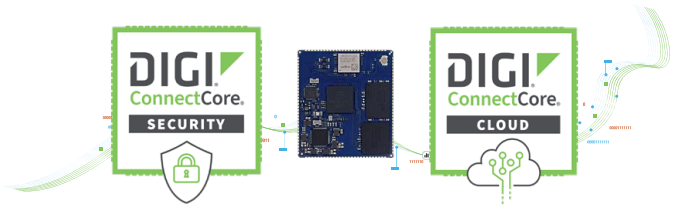
- Digi XBee RF modules, supporting a range of protocols, including Zigbee, DigiMesh® 868 and 900 MHz, 802.15.4 and LoRaWAN
- Digi XBee Cellular modems, supporting rapid integration and global deployment of cellular-enabled solutions
- Digi XBee Tools, including tools for configuration, testing, and local and remote monitoring and control
- Digi XBee gateways for XBee RF networks, which convert wireless protocols like Zigbee, DigiMesh and LoRaWAN to cellular

Digi ConnectCore Ecosystem

Digi ConnectCore® is a complete ecosystem of embedded solutions, including software, tools, services, and wireless system-on-modules. The Digi ConnectCore family simplifies and streamlines solution development and deployment, allowing organizations to create an easy-to-manage and secure system of connected devices.

The Digi ConnectCore ecosystem supports OEMs with end-to-end development, deployment, security monitoring and remote management for the full lifecycle of their products. This family of embedded solutions includes:

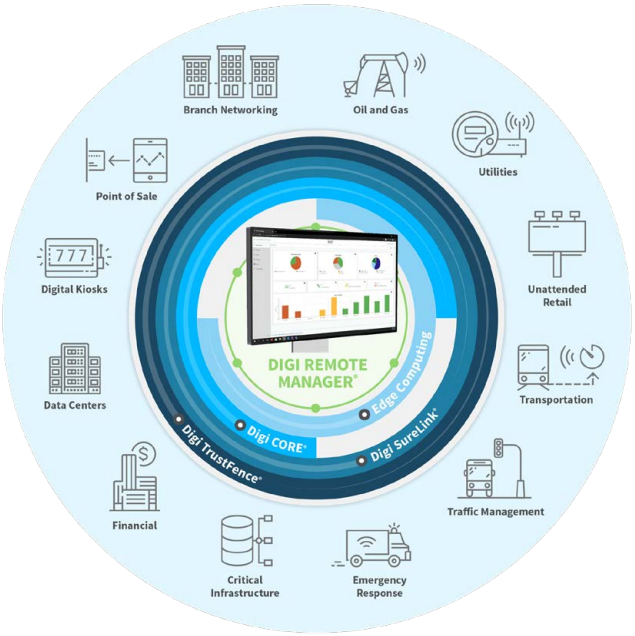
- Digi ConnectCore system-on-modules with a range of features and functionality for a wide range of use cases
- Digi ConnectCore Cloud Services for remote monitoring and ongoing device management of deployed devices
- Digi ConnectCore Security Services for security monitoring with a curated security report and security services
- Digi ConnectCore software and tools, including Digi Embedded Yocto and Android, Digi Voice Control, Digi ConnectCore Smart IOmux, and more



Digi Cellular Routers

Digi offers a broad selection of purpose-built cellular solutions supporting the range of use cases in enterprise, industrial and transportation. Digi cellular routers are complete solutions that integrate the feature-rich Digi Accelerated Linux operating system (DAL OS), the Digi TrustFence® security framework, Digi SureLink® for connection persistence, and Digi Remote Manager® for configuration, remote monitoring and management of deployed devices, as well as industry-leading warranty and support options.

In addition to integrated security, reliability and management, Digi cellular solutions can be enhanced with a range of value-added services for demanding applications that require the most robust link persistence, security and throughput.



Enterprise

Digi's family of enterprise cellular solutions includes a selection of 4G LTE and 5G cellular routers and extenders that support the full range of indoor cellular connectivity needs for retail, business and light industrial use cases. This family includes:

- Digi EX50 — Offering primary or backup network connectivity, 5G speeds, enterprise-grade Wi-Fi 6 and dual 2.5 Gigabit Ethernet ports, for ultimate versatility in a small form-factor.
- Digi EX15 — For LTE-certified connectivity, with a variety of mounting options to provide the optimal cellular connection, as well as optional Digi CORE® LTE plug-in modems to support cellular speeds that align with your business.
- Digi EX12 — With LTE connectivity in a highly compact device, Digi EX12 is a simple but effective solution that can seamlessly integrate into existing infrastructure.

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Industrial

Digi's family of industrial router solutions includes both 4G LTE and 5G cellular routers for the complete range of industrial use cases, from applications in harsh environments like oil and gas and mining, to solutions for manufacturing automation and Industry 4.0. This family includes:

- Digi IX40 — A high-performance 5G cellular solution that is purpose-built for Industry 4.0, bringing 5G connectivity to optimize edge computing capabilities in manufacturing automation, robotics and predictive maintenance use cases.
- Digi IX30 — An intelligent 4G LTE solution designed to support critical infrastructure applications, this rugged solution provides resilient connectivity even in harsh, remote environments.
- Digi IX20 — A rugged and flexible solution for industrial connectivity, Digi IX20 comes with two Ethernet ports and optional Wi-Fi, in a compact and economical platform that provides connection redundancy.
- Digi IX10 — For cost-effective and dependable connectivity in industrial applications, Digi IX10 offers reliability and resilience with flexible power and connectivity options to provide versatility while boosting efficiency.

Transportation

Digi's family of transportation solutions includes 5G cellular routers with 4G LTE fallback for a wide range of use cases, from public transportation to light and heavy railway connectivity to purpose-built solutions for first responder vehicles. In addition to 5G performance and reliability features, our TX routers support first responder networks and offer value-added services like Digi WAN Bonding for ultimate speed and reliability. This family includes:

- Digi TX64 — A complete connectivity solution for complex transportation and transit systems, Digi TX64 5G/4G LTE Advanced Pro delivers excellent performance with a quad-core processor and dual redundant communications.
- Digi TX64 Rail — Purpose-built for heavy and light railways and metros, Digi TX64 5G Rail features high-speed 5G connectivity with 4G LTE and 3G fallback, integrated VPN and firewall, untethered dead reckoning (UDR) and exceptional security, ensuring fast, reliable connectivity for railways.
- Digi TX54 — Offering high-performance connectivity for mission-critical transportation applications such as traffic management, Digi TX54 5G is a reliable and highly rugged solution designed to operate efficiently in challenging environments.
- Digi TX40 — An intelligent 5G wireless communication hub purpose-built for public safety vehicles, Digi TX40 ensures fleet vehicle operators can remain in constant contact. Part of the Digi SAFE™ solution, Digi TX40 enables precincts of any size to cost-effectively upgrade their technology.

Digi Infrastructure Management Solutions

Digi infrastructure management solutions support a range of use cases across industrial, smart cities, retail, hospitality and education environments. With easy-to-implement solutions and excellent remote management through Digi Remote Manager and remote out-of-band management, our solutions support the most demanding use cases.

USB Connectivity

Digi offers connectivity solutions for USB and USB over IP, designed to extend access to USB and serial devices. These solutions are ideal for manufacturing lines, retail POS systems, inventory scanners, and more. Meet the most popular and long-standing USB connectivity product in Digi's portfolio:

- Digi AnywhereUSB® Plus — Our industry-leading USB connectivity solution, the Digi AnywhereUSB Plus family includes 2/8/24 USB port solutions offering secure, high-speed connectivity on LANs via Wi-Fi or Ethernet without locally attached host computers.

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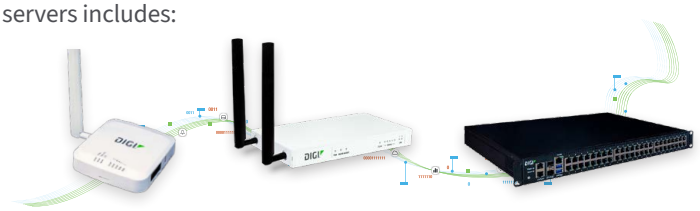
Console Servers

Digi console servers provide the tools and technology to enable IT teams to centrally manage routers, firewalls, servers and other critical IT infrastructure over LTE or enterprise WAN. This family of servers includes:



- Digi Connect® IT Mini — A compact, affordable solution for remote IT devices with LTE Cat M for maximum coverage.
- Digi Connect® IT 4 — Ensure continuous network uptime for remote locations with this always-on cellular out-of-band (OOB) gateway solution featuring 4G LTE connectivity.
- Digi Connect® IT 16/48 — Centralize the management of firewalls, routers, servers, and other IT infrastructure with this enterprise WAN or LTE network solution.

Serial Device and Serial Terminal Servers

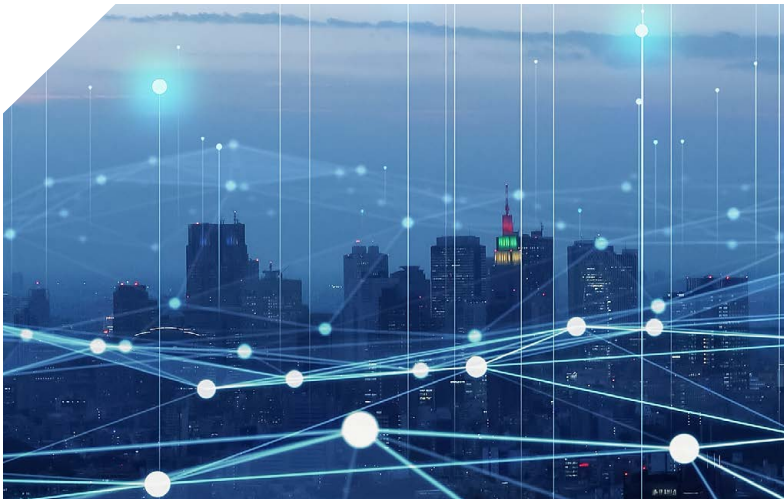
Digi serial device and serial terminal servers connect critical equipment to applications, providing 1, 2, 4, 8, 16, and 32 port serial over Ethernet options with transparent connectivity for existing serial applications with Digi's RealPort® driver, or via TCP or UDP sockets. Whether you are upgrading your serial operations, or want to modernize the way you talk to them, Digi has solutions. This family of servers includes:

- Digi Connect EZ® Mini/2/4 — Click-to-connect support for 1 to 4 serial ports supporting RS-232/422/485, with Gigabit Ethernet, AC or 9-30 VDC power, Wi-Fi, and optional Digi CORE® LTE modules.
- Digi Connect EZ® 8 — With 8 serial RS-232 or RS-232/422/485 software selectable ports to connect to a wide variety of serial equipment over IP networks, plus Wi-Fi and support for optional Digi CORE LTE modules. The Digi Connect EZ 8 serial terminal server is flexible and affordable.
- Digi Connect EZ® 16/32 — Our most powerful Digi Connect EZ solutions offer 16 or 32 serial RS-232 or RS-232/422/485 software selectable ports with single or dual power to support a wide variety of serial applications, and support for optional Digi CORE LTE modules.

Industrial Monitoring and Control

Digi industrial monitoring and control solutions offer sensor connectivity and remote management to support a range of use cases in industrial and smart city applications, including agriculture, asset monitoring, utilities and water/wastewater management. This solution family includes:

- Digi Connect® Sensor+ — A highly versatile, scalable and cost-effective solution for remote monitoring and diagnostics, Digi Connect Sensor+ is designed to withstand challenging environmental conditions, with a rugged, weatherproof enclosure. Digi Connect Sensor+ runs on battery, making it the ideal solution for situations where power isn't readily available.
- Digi Z45 Industrial Controllers — A complete SCADA system in a box, Digi Z45 combines the capabilities of PLCs and SCADA systems in a single integrated solution for rapid deployment and simplified management.



Connect with Digi

Seeking next-generation solutions and support?
Here are some next steps:

- Ready to talk to a Digi expert? Contact us
- Want to hear more from Digi? Sign up for our newsletter
- Or shop now for Digi solutions: How to buy

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