



Overcoming Oil and Gas Communications Challenges



Table of Contents

The Biggest Connectivity Challenges in the Oil and Gas Industry.....	3
Oil and Gas Distribution Chain.....	4
Exploration and Production.....	5
Benefits of Real-Time Monitoring and Production.....	6
Advanced Script Automation to Control Water Tank Levels.....	7
Reduce Safety Risks	8
Pipeline, Process, Transport and Storage Monitoring.....	9
Digi TrustFence	10
Fleet Vehicle Area Network	11
Remote Refinery Solutions	12
Software Integrations for a Simplified, Seamless Experience.....	13
Welcome to the Digi Oil and Gas Solution Family of Products	14
Digi IX Industrial Cellular Routers	15
Digi EX Enterprise Routers	16
Digi TX Transportation Routers	17
Key Digi Solution Benefits	18
Let's Customize a Digi Oil and Gas Communications Solution for Your Organization	19

The Biggest Connectivity Challenges in the Oil and Gas Industry

Rural, remote and rugged. The environments for exploration, production, transport, storage and refining often sit far from developed areas. This makes communications challenging because infrastructure is not readily available in many cases, and building it would be cost-prohibitive. In a refinery or processing center, connectivity becomes a challenge when radio signals get blocked by dense structures and RF interference.

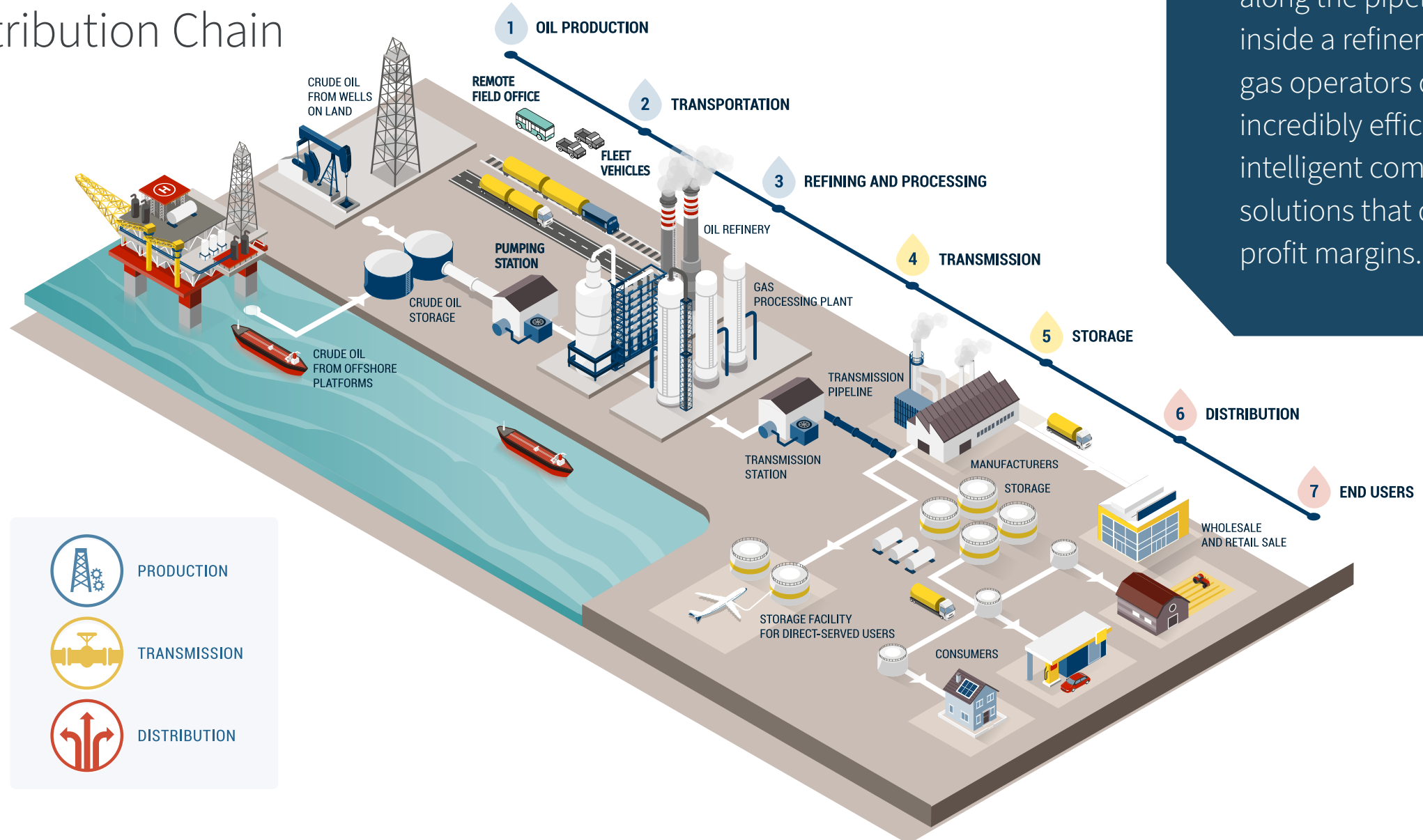
Running Ethernet or fiber in a refinery could cost thousands of dollars, and for low-production well sites it may be more than the revenue the sites generate. Yet, getting data from these facilities can inform critical business decisions in each of these situations, so overcoming the challenges isn't optional.



Oil and Gas

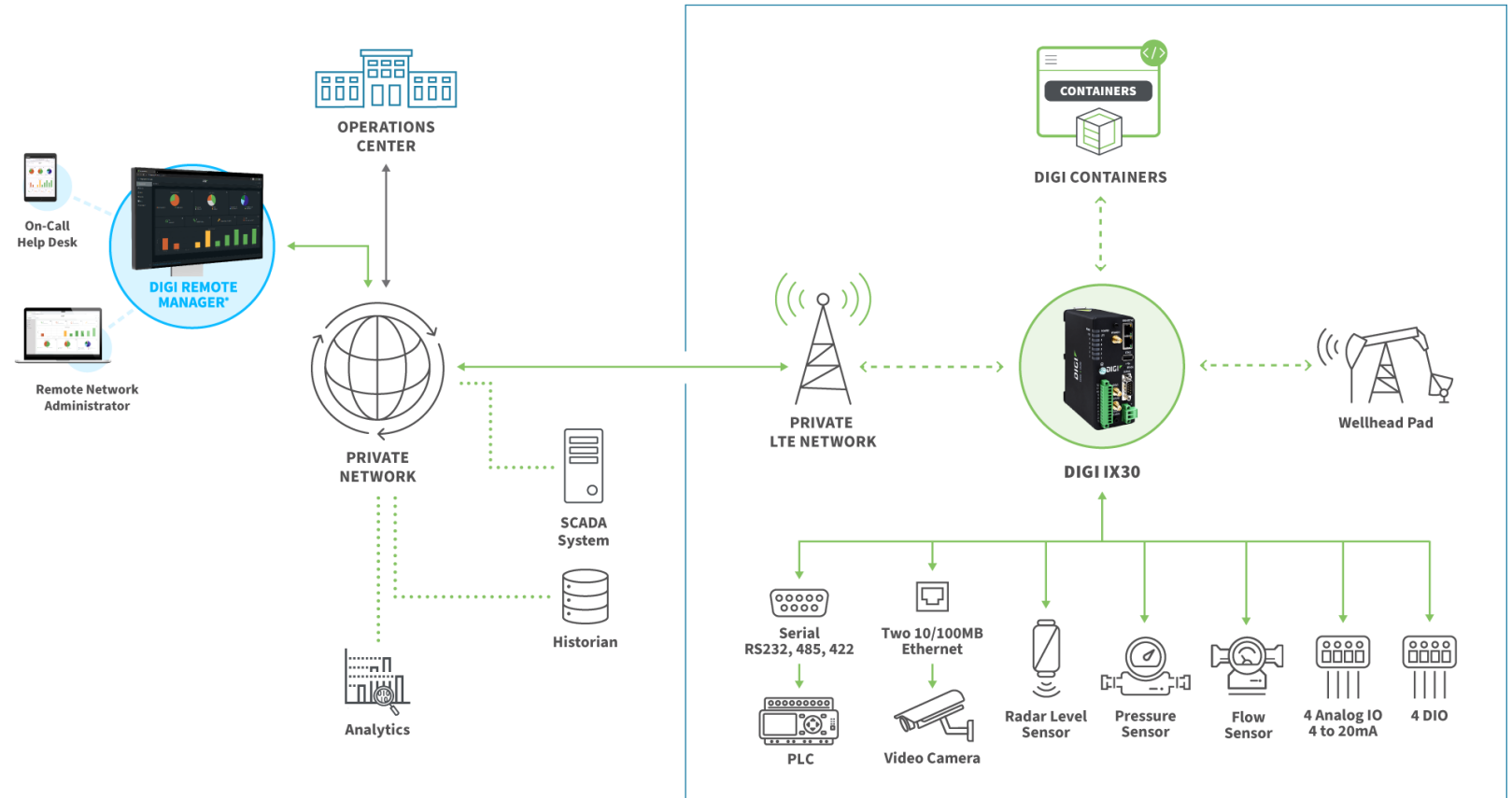
Distribution Chain

Whether at well heads, along the pipeline or inside a refinery, oil and gas operators can tap into incredibly efficient and intelligent communications solutions that don't erode profit margins.



Exploration and Production

Unplanned downtime at oil and well pads could lead to a significant loss of revenue and reduced overall asset profitability. To an operator, rig downtime results in lost revenue, added drilling costs and missed deadlines. The contractor suffers increased repair costs, financial penalties and reputational damage. Investing in real-time monitoring can make a dramatic difference.

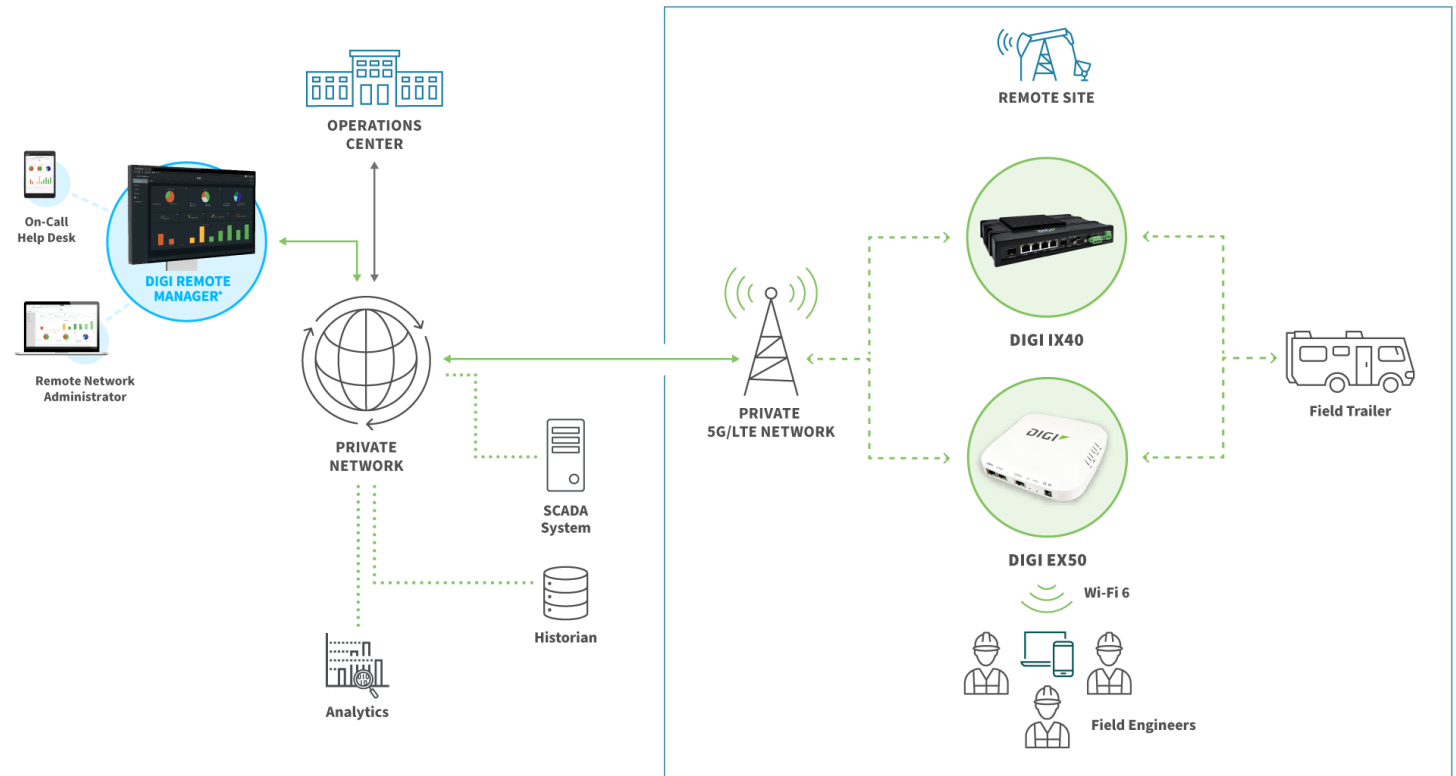


Digi solutions support Ethernet, serial, Wi-Fi and Bluetooth connections and come in a range of speeds, from LTE Cat 4 to Cat 11.

Benefits of Real-Time Monitoring in Production

Oil and gas operations that invest in real-time monitoring of production installations improve cost savings and reduce risk.

- ✓ **Gain real-time visibility:** With real-time access to operations data, find emerging issues before they cause downtime
- ✓ **Improve efficiency:** Proactively detect issues and plan maintenance to support uptime and reduce operating costs
- ✓ **Safety and site visits:** Reduce costs and increase worker safety by remotely checking equipment status
- ✓ **Reduce shutdowns:** Maintain revenue projections by reducing unplanned shutdowns
- ✓ **Proactively manage failures and environmental incidents:** Learn about potential equipment failures and spills before they occur to reduce costs and risks
- ✓ **Minimize well maintenance cost:** With real-time monitoring, operators can improve planning through preventative maintenance



Advanced Script Automation to Control Water Tank Levels at a Fracking Site

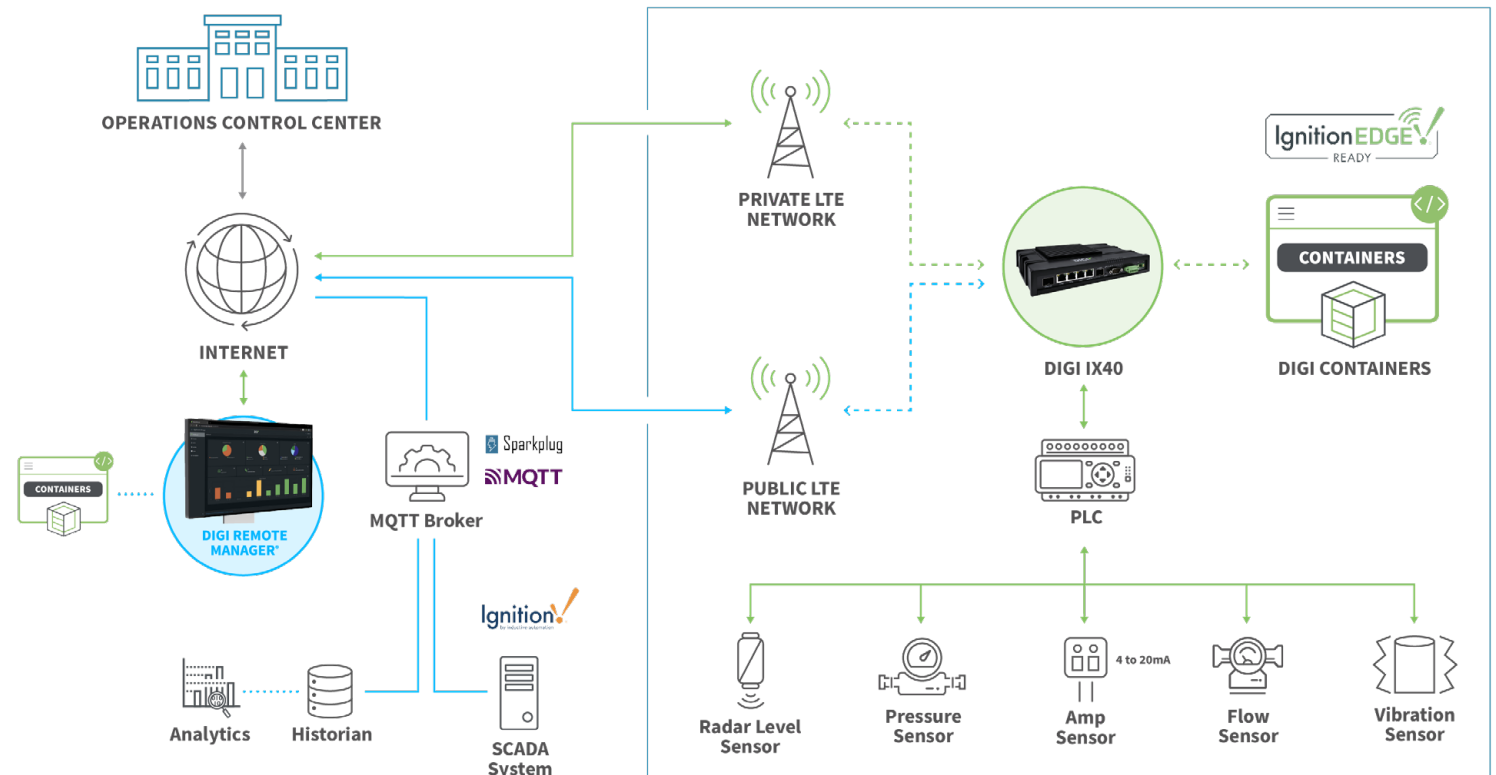
Using a [Digi IX30](#) router and a level sensor, the customer deploys a Python script to automate pump activity. The script parses through sensor data in real time, activating the pump when it discovers critical threshold data. By automating the pump operation, the operations team:

- ✓ Activates critical pump operation more quickly
- ✓ Reduces data transmission costs by parsing only exception data

Running Automation Software in Digi Containers at a Well Pad Site

At a well pad site, the customer deploys a [Digi IX40](#) router attached to a programmable logic controller to collect SCADA information. By running edge software in a lightweight Linux container (via [Digi Containers](#), a value-added service), the team drives considerable time and cost savings:

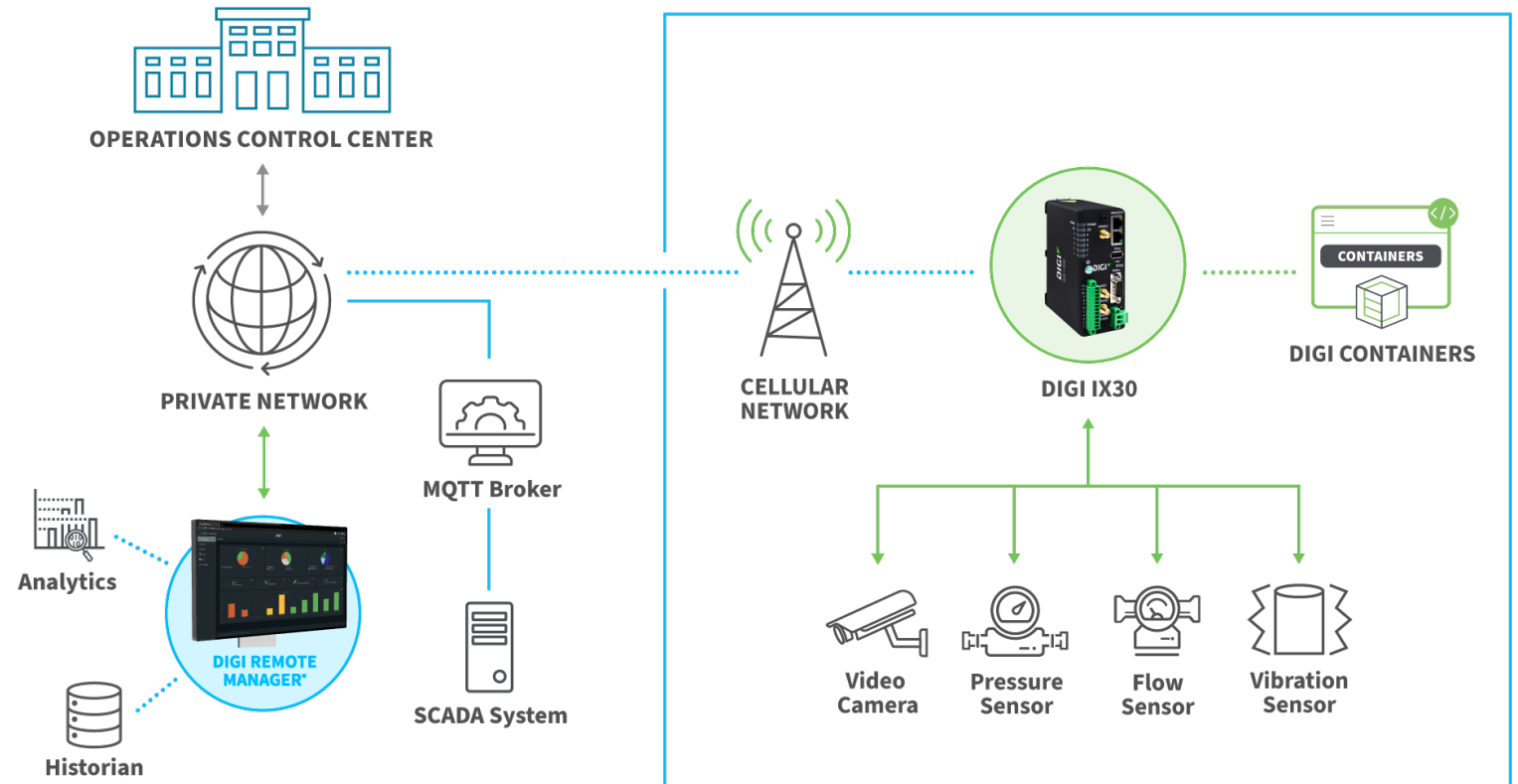
- ✓ By replacing a cellular router and an industrial PC with a Digi IX40 router, the team cuts thousands of dollars in extra equipment costs
- ✓ Because they simplified the network, teams reduce the points of failure, minimizing support time



Remote connectivity helps with proof of delivery when servicing well sites, registering service complete and monitoring skimming issues.

Reduce Safety Risks

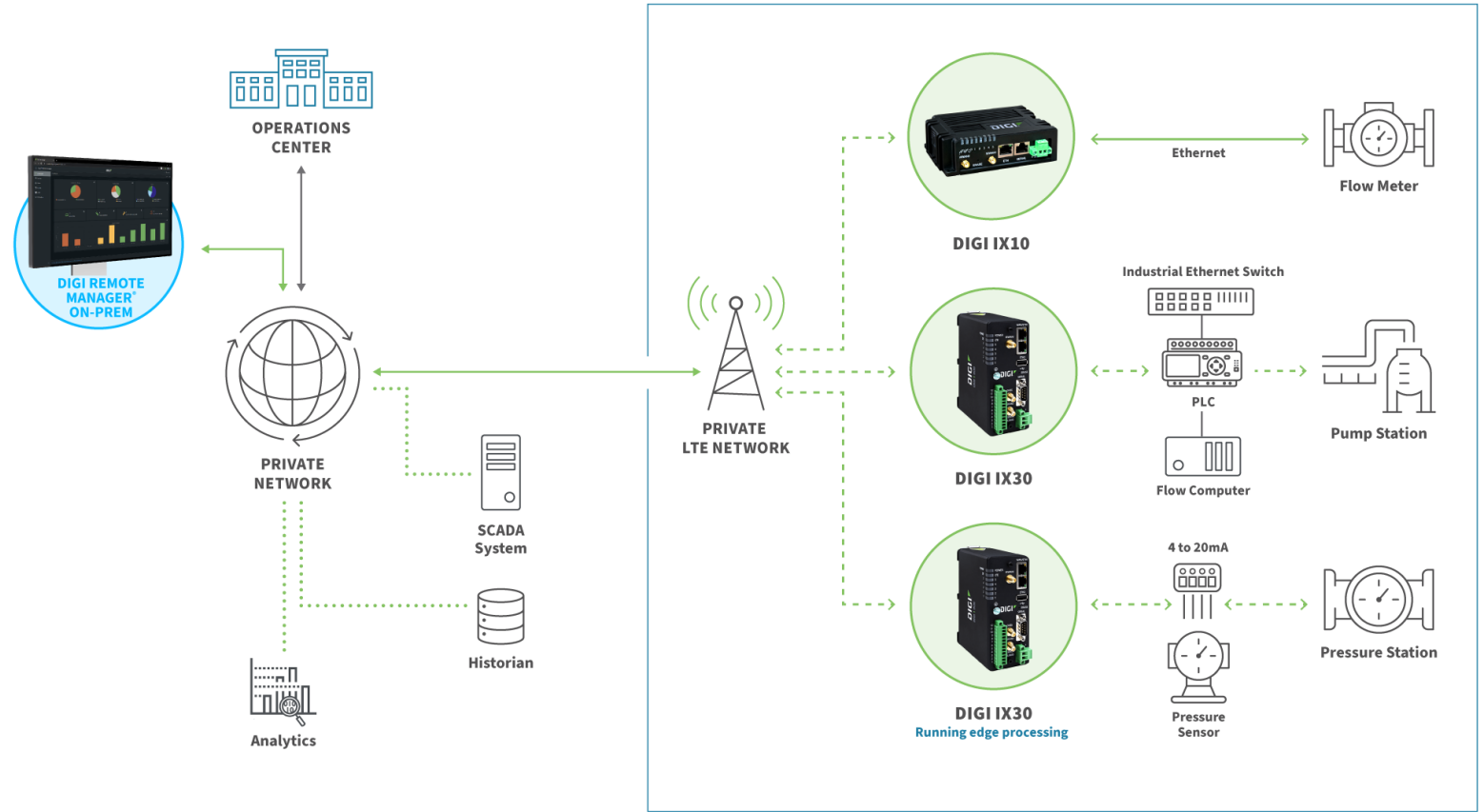
Fires, leaks, spills, and hazards caused by excessive pressure, vibrations and other conditions create significant safety risks for workers and remote operations. That's why **predictive analytics using near real-time data matters**. With the C1D2-certified [Digi IX30](#) solution, operators can reliably monitor and manage all the disparate equipment and processes remotely and automatically, lowering the risk of injury or environmental damage.



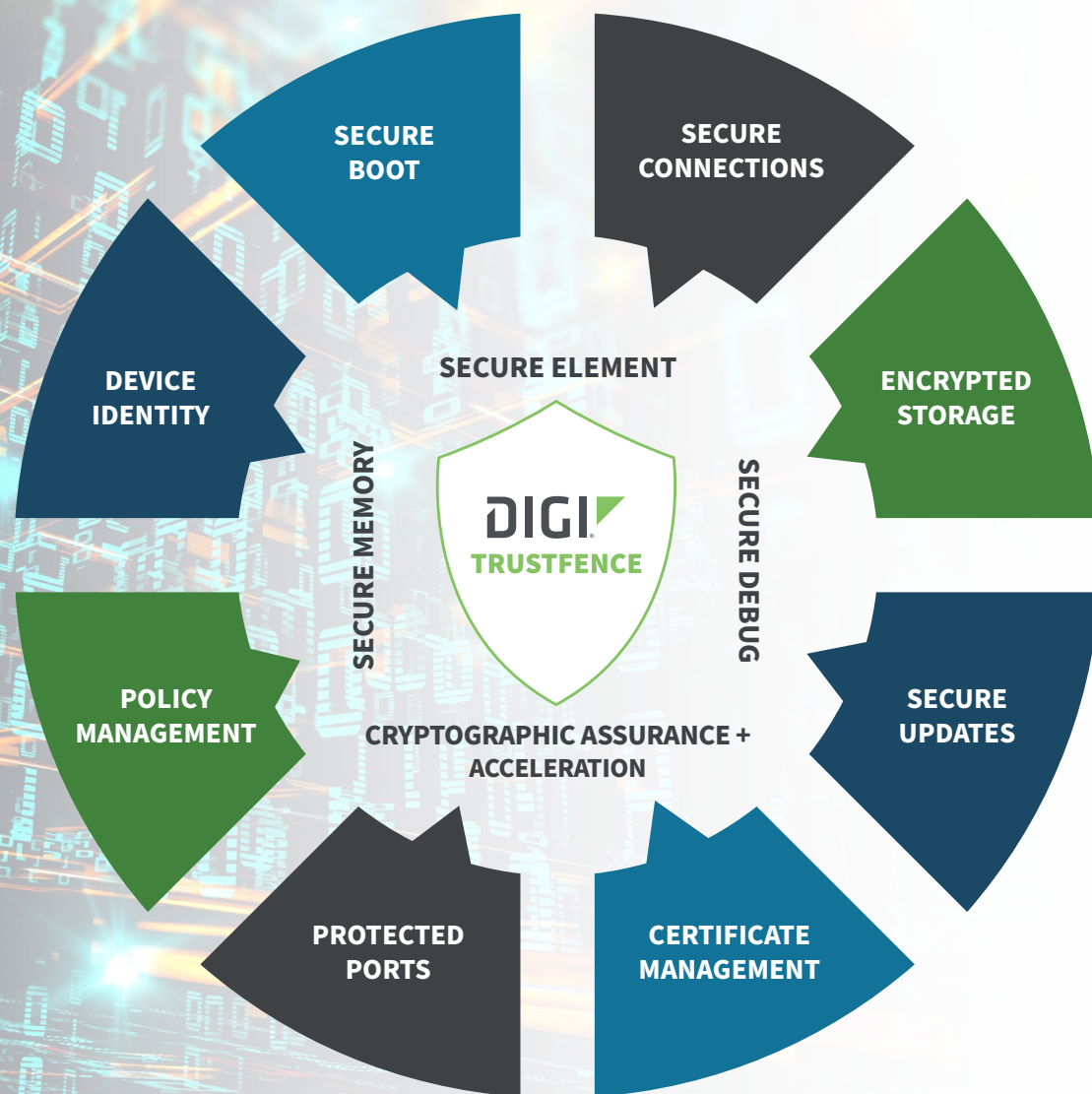
Pipeline, Process, Transport and Storage Monitoring

The Colonial Pipeline is the largest refined oil pipeline in the U.S. and carries around three million barrels of oil each day between Texas and New York. But on May 7, 2021, the pipeline was targeted by a ransomware cyberattack that halted operations for almost a week, affecting thousands of gas stations.

Digi oil and gas solutions work great for pipelines, supplying reliable, hardened, secure connectivity across all your operations. Digi technology includes built-in security to help operators collect data and automate processes, with assurance that the data is secure from cyberattacks across the OT network.



Digi's industrial cellular solutions offer remote monitoring and management capabilities with rugged enclosures.



Digi TrustFence

To protect against ongoing cybersecurity threats like the one that affected the Colonial Pipeline, Digi has built [Digi TrustFence®](#), a comprehensive security framework for protecting your connected devices. Digi TrustFence supports secure connections, secure boot, authentication, protected hardware ports and more to ensure multi-layered defense.

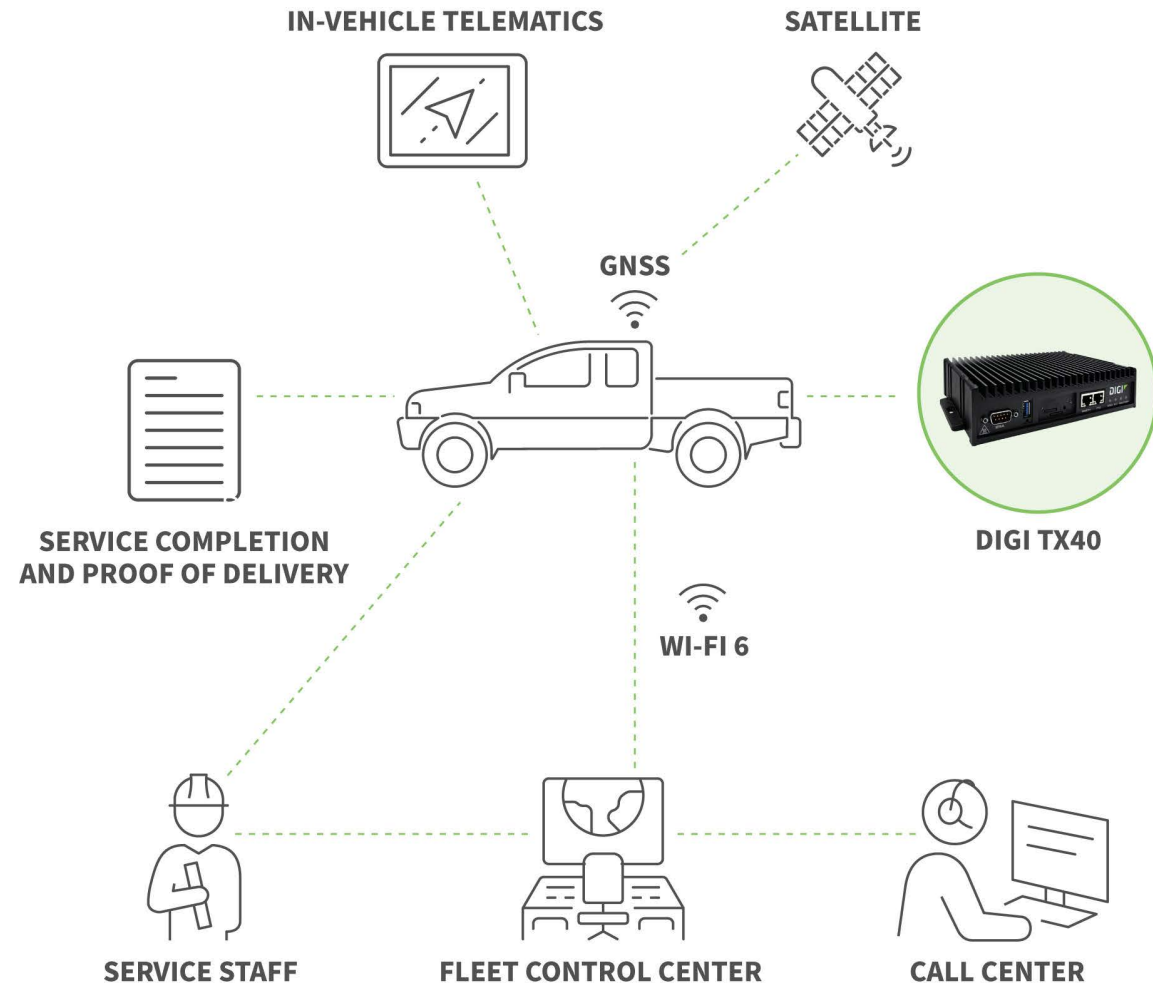
Digi IX30 and IX40 cellular routers incorporate both the Digi TrustFence security framework as well as industry security standards such as FIPS 140-2 and IEC 62443 SL3.

Fleet Vehicle Area Network

Digi solutions make it easy to set up a fleet vehicle area network that centralizes remote communications around vehicles that can support everything from person-to-person communications to security cameras. The ruggedized TX40 industrial communications hub offers 5G and Wi-Fi 6, and is ITxPT-certified for interoperability and seamless integration with other vehicle systems.

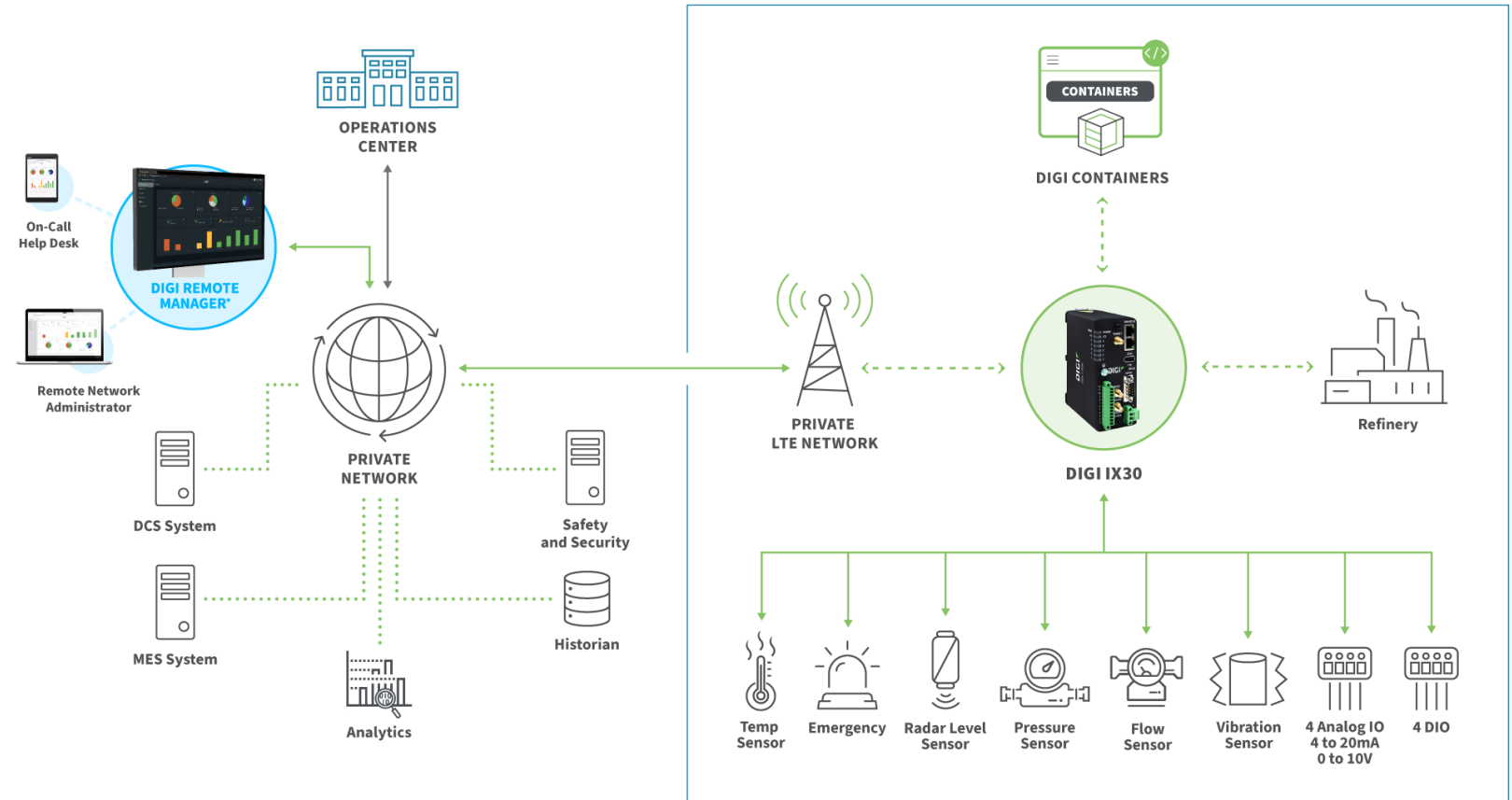
Product Preparation and Usage

Digi offers complete edge and cloud solutions that fully integrate with software and security, supplying reliable connectivity to industrial controllers, process automation equipment and assets at remote locations.



Remote Refinery Solutions

Digi oil and gas solutions can be used to provide communications to assets and people over private cellular networks at refineries. Running fiber or cable can cost thousands of dollars. Private 4G/5G communications substantially reduce communications costs. Digi routers with edge applications can provide communications for asset monitoring of critical equipment like pumps, as well as turnaround trailers and workers during turnaround events. Digi routers can make it easy to install additional security equipment like video cameras and access control systems.



Software Integrations for a Simplified, Seamless Experience

Digi supports third-party IoT applications and edge SCADA platforms with [Digi Containers](#). Automation applications developed by Digi Professional Services or the customer's IoT teams can also run at the edge in Digi Containers.

Digi Containers

[Digi Containers](#) are lightweight Linux containers that simplify the process of building applications. Available via a value-added software service with your [Digi Remote Manager®](#) subscription, Digi Containers allow developers to build, deploy and run custom applications directly on Digi cellular routers at native speeds. For oil and gas operations, running your SCADA and security applications on Digi Containers at the edge can reduce cellular traffic and minimize added equipment, reducing points of failure and cost. Because Digi solutions support open standards for equipment and system operability, Digi solutions create a unified experience.



Welcome to the Digi Oil and Gas Solution Family of Products

Digi Remote Manager

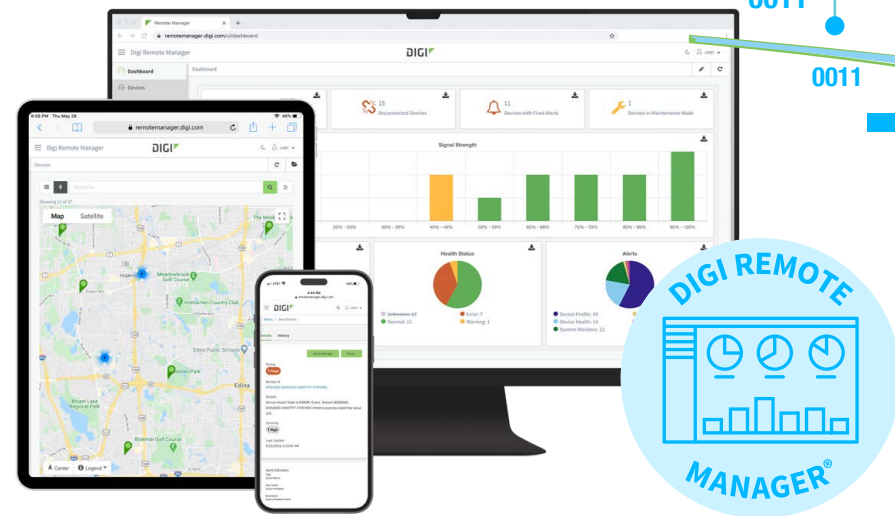
Digi Remote Manager is a scalable cloud or on-premises enterprise platform that provides central control, management, security, edge intelligence and day-to-day network management. It is the control center for your entire Digi oil and gas solution. Digi cellular products integrate seamlessly with Digi Remote Manager, supplying a complete solution for your entire enterprise operations.

Computing and Intelligence at the Edge

Digi edge computing solutions such as Digi IX40 put the power of fast network speeds at your disposal even in remote locations and under the most demanding conditions. With our complete solutions, you can simplify deployment and management of your Digi edge devices and take advantage of advanced edge computing features such as Digi Containers, Python or Linux scripting, and WAN bonding. The result is a rapid rollout, seamless management and security, and a lower total cost of ownership.

Digi WAN Bonding

Digi WAN Bonding powered by Bondix S.A.NE is an add-on service to your Digi Remote Manager license. It supplies ultra-fast, exceptionally reliable connectivity by sending packets through all available Internet connections and then only transmitting the first packet received on either end of the bonded connection. In this way, WAN bonding provides 100% certainty that your critical information (such as revenue data) gets delivered, even with high-latency or spotty connections.



Use Cases

- Monitor IoT and network security
- Manage offline edge devices with out-of-band access
- Configure security compliance
- Automate software and firmware updates
- Monitor device health and connectivity

Key Features

- A single source of truth for insights and device management across all your operations
- Discover and correct security and compliance issues
- Automatic remediation of configuration profile
- Extensive APIs for task automation

Digi IX Industrial Cellular Routers

The Digi IX family of industrial cellular routers provides rugged, reliable network connectivity for the most demanding oil and gas environments.



Digi IX10 cellular router — A C1D2 rated, cost-effective, Modbus capable cellular router solution for critical industrial applications



Digi IX20 4G LTE router — A versatile, rugged and secure networking device for critical applications



Digi IX30 industrial cellular router — An intelligent C1D2 rated, Modbus-capable cellular router specifically designed for critical industrial applications including sensor AIO/DIO



Digi IX40 5G edge computing industrial IoT solution — A rugged 5G/4G edge computing IoT cellular router solution, purpose built for intelligent industrial applications

Digi EX Enterprise Routers

The Digi EX line of routers supports indoor enterprise and light industrial use cases, with dependable LTE and 5G connectivity, wherever needed.



Digi EX12 — Integrates seamlessly with existing infrastructure as a primary or backup LTE connection



Digi EX15 — A compact, affordable, all-in-one branch connectivity solution



Digi EX50 — Provides 5G performance from an all-in-one fixed access wireless enterprise router



Digi CORE Plug-in LTE Modem — A modular LTE connectivity solution with Carrier Smart Select and dual SIM support across major carriers

Digi TX Transportation Routers

Digi TX transportation routers support multiple requirements, including onboard routing and GPS, security and Wi-Fi for high bandwidth stationary and mobile asset applications.



Digi TX40 5G cellular router — An intelligent 5G wireless communications hub for fleet vehicles

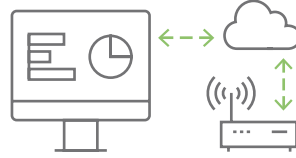


Digi TX54 5G / LTE-Advanced cellular router — A rugged and secure cellular router designed specifically for mission critical industrial and transportation applications



Digi TX64 5G / LTE-Advanced Pro cellular router — A high-performance cellular router with dual redundant communications for transportation





Key Digi Solution Benefits

Designed for extreme industrial environments without breaking the budget, our range of low-power industrial cellular routers and gateways continue to work regardless of the conditions. Since they're designed to specifically run in low-power environments (solar re-chargers), they're much more affordable to run. They're also extremely rugged.

The ATEX and NEMA TS2 temperature-rated Digi IX30 industrial router excels in remote and off-grid, low-power operations in extreme conditions. Once installed across your operations, a Digi solution provides real time, reliable connectivity and data enabling you to reduce costs through fewer site visits and improved worker safety. In other words, Digi oil and gas solutions help you capture more data, with greater frequency, from all parts of the oil and gas value chain so you can run your entire operation more efficiently — within your budget and specific site needs.

Let's Customize a Digi Oil and Gas Communications Solution for Your Organization



The oil and gas industry requires one of the most complex communications solutions on the planet. Solutions must endure extreme temperatures and weather while also working securely with little power in remote locations. But the benefits of tapping into IoT solutions are huge. Mission-critical oil and gas operations that take advantage of data intelligence can dramatically improve operational efficiency and safety.

As a trusted partner, Digi will help you customize an oil and gas solution to meet your budget and exact operational requirements. In this way, we make it easy for you to simplify management of thousands of devices and assets no matter where they're found. Best of all, we'll help you improve operational efficiency, safety and security across all your mission-critical facilities.

Learn more about how Digi solutions can help transform your operational communications. [Digi.com/contactus](https://digi.com/contactus)