Case Study

Highway 9 Boosts Operational Efficiency for a Leading Flooring Manufacturer with a Private Cellular Network

Client Overview
Customer: Flooring Manufacturer
Industry: Manufacturing & Distribution
Location: US
Project Type: Private 5G Wireless Network

Background

A leading manufacturer and distributor of ceramic, porcelain, and stone tiles operates a large-scale production and distribution facility. With a strong commitment to delivering high-quality products globally, the company recognized the need for an advanced wireless infrastructure to support its growing automation, IoT deployments, and complex logistics operations. The existing network infrastructure was insufficient to meet these demands, leading to inefficiencies and connectivity challenges within the warehouse.

Challenge

The facility, which served as a central hub for manufacturing and distribution, relying on Wi-Fi networks faced several critical challenges related to connectivity and operational inefficiencies:

Reliable Mobility Across Outdoor & Hard RF Spaces: The expansive layout of the plant created challenges for reliable mobility in hard RF environments, both indoors and outdoors. Spaces like the production floor and warehouse struggled with inconsistent Wi-Fi coverage, leading to connectivity drops and operational inefficiencies, especially for forklift-mounted tablets. Wi-Fi was not suited for spaces prone to poor signal penetration and caused signal degradation across outdoors. Additionally, deploying a dense network of Wi-Fi access points for outdoor areas proved costly due to trenching and infrastructure needs. To address these issues, the manufacturer explored private cellular networks as a more reliable solution for their challenging environments.

Challenge

Consistent Low Latency for Highly Mobile Systems: Forklifts, Robots, & IoT: A consistent low-latency mobile network is essential for enhancing automation, supporting AI-driven quality controls, and improving operational efficiency. Existing Wi-Fi failed to provide consistent low latency and high throughput for real-time data needed by mobile assets like automated forklifts, robots, and IoT devices.

With constant movement and dynamic nature of these systems, even minor delays can disrupt operations, especially for automated material handling and real-time inventory tracking. Additionally, the widespread use of video cameras and sensors for quality control makes high-performing networks even more crucial.

Scalability for Future Growth: The future of manufacturing is driven by AI, robotics, and IoT. As these technologies become integral to operations, the demand for scalable, high-throughput and low-latency connectivity will be crucial to support this evolving way of industrial life. . The manufacturer had plans to rapidly expand and automate processes. However, the existing infrastructure was not designed for the future --to scale and meet these growing demands.

Solution & Key Benefits

The company partnered with **Highway 9** to deploy a private cellular network tailored specifically to the unique needs of its facility. The Highway 9 Mobile Cloud provided several key advantages:

- **Private, Dedicated Network**: Highway 9 deployed its secure, private 5G-enabled Mobile Cloud exclusively for the company's use, eliminating the risk of interference from public cellular and Wi-Fi networks and ensuring reliable, high-performance connectivity.

- **Comprehensive Coverage**: The network covered the entire facility, from large warehouse areas to production floors, ensuring seamless communication across the plant, even in hard-to-reach areas.

- **Future-Proof Scalability**: Designed with scalability in mind, the private network could easily accommodate new devices, automation technologies, and future expansions at the plant.

Solution & Key Benefits

- **Enhanced Security**: With a private network, the company's sensitive operational data was protected from external threats, ensuring compliance with security standards and reducing the risk of cyber vulnerabilities.

- **Support for IoT and Automation**: The network was optimized to handle high device density, enabling the reliable operation of IoT sensors, RFID scanners, automated guided vehicles (AGVs), and real-time tracking tools.

Deployment Architecture

5G-enabled warehouse setup using Highway 9 Mobile Cloud
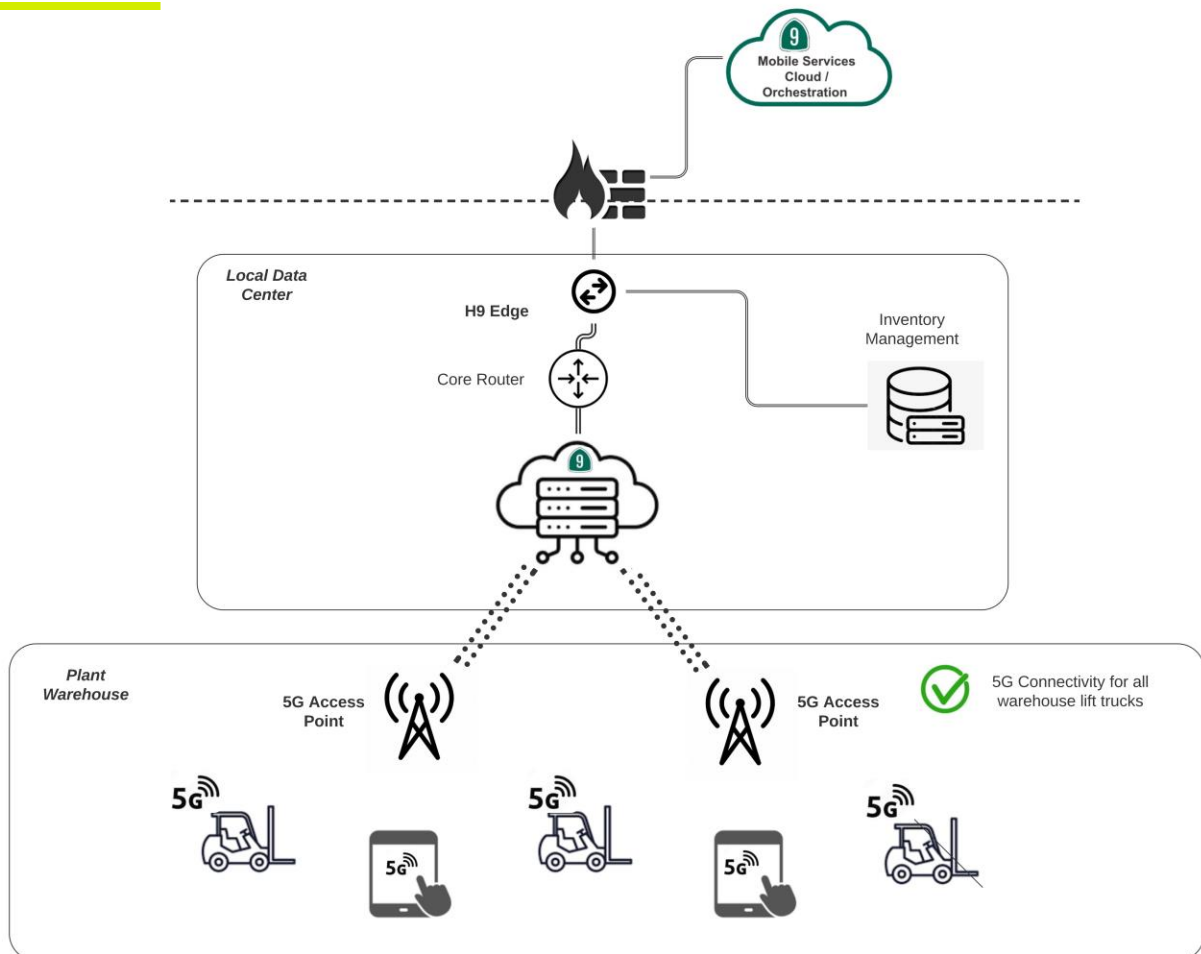
Private Cellular Network Rollout: Key Steps

Site Survey & Network Design: Conduct a site survey to assess facility needs and create a customized network design for optimal coverage.

Deployment of Infrastructure: Install private cellular network infrastructure, including base stations and antennas, to provide high-speed connectivity.

Staff Training & Ongoing Support: Provide network management training for staff, along with ongoing troubleshooting and optimization support.

Ongoing Monitoring: Implement continuous network monitoring to ensure sustained performance and address emerging issues.

Device Integration and Testing: Integrate IoT devices and RFID scanners into the network and conduct extensive testing for performance reliability.

Business Outcomes

Since deployment of the Highway 9 Mobile Cloud, the company has experienced significant improvements in both operational efficiency and network reliability.

- **Improved Productivity & Higher Availability**: With a reliable private cellular network in place, plant workers and automated systems can operate without interruptions, leading to increased productivity and fewer system downtimes.

- **Increased Operational Efficiency**: Real-time communication and seamless connectivity have improved workflow efficiency across the warehouse, reducing delays and increasing overall throughput.

- **Enhanced Inventory Accuracy**: With better network coverage and support for real-time tracking systems, inventory inaccuracies have been significantly reduced, helping streamline order fulfilment and production scheduling.

- **Scalability for Future Growth**: Highway 9 Mobile Cloud has provided the scalability to expand operations, add more IoT devices, and integrate additional automation technologies without worrying about network limitations.
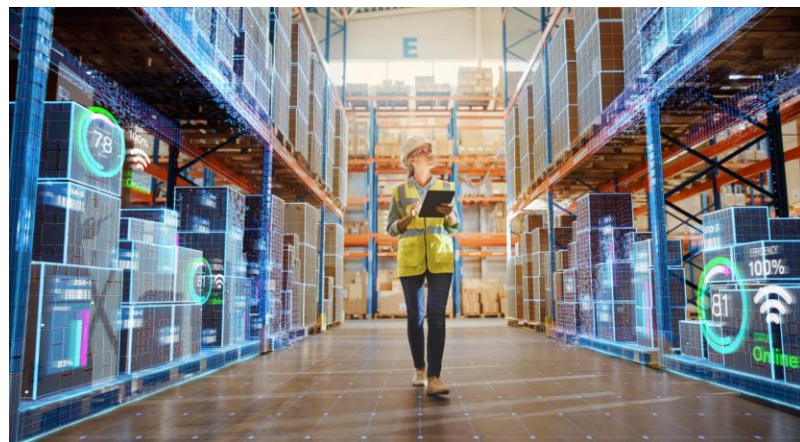
Business Outcomes

Greater Network Security: The company can now ensure that sensitive manufacturing and logistics data are securely transmitted, reducing the risk of cyber threats associated with public or shared networks.

In customers' words: 'The solution has significantly improved our efficiency'

"Highway 9's Mobile Cloud has been a game-changer for our facility. The performance and reliability of the network have far exceeded our expectations. We've seen a significant reduction in downtime and an improvement in real-time inventory and production tracking. Most importantly, we now have the security and scalability we need to continue growing and adopting new technologies. The team at Highway 9 was professional and responsive throughout the entire process, from design to deployment, and their ongoing support has been exceptional."

The successful deployment of a private cellular network has not only resolved the company's previous connectivity and reliability challenges but also positioned the facility for future growth and innovation. The high-performance, secure, and scalable network infrastructure has enabled the company to fully embrace automation and IoT technologies, improving operational efficiency and supporting long-term business objectives.

About Highway 9 Networks

Highway 9 Networks is a leading provider of private cellular network solutions, specializing in 5G deployments for enterprises in industries such as manufacturing, logistics, and automation. We design, implement, and manage custom cellular networks that help businesses stay connected, secure, and prepared for the future.

Get started today

Embark on your journey to unlock smart connectivity in factories, warehouses, and distribution centers.

Get a Demo

Contact Us : *info@highway9.com*