

Case Study

Global Automotive Leader Eliminates Network Fragmentation and Boosts Manufacturing Efficiency with a Private Mobile Network

Client Overview:

Customer: Global Automotive Leader

Industry: Automotive Manufacturing

Location: United States

Project Type: Private Mobile Network (PMN) for factory operations, supply chain, facilities, quality control, and security

Background

A Global Automotive Leader specializing in vehicles, mobility solutions, and financial services, faced critical operational friction due to fragmented and disparate network infrastructures supporting various teams (Factory, Supply Chain, Facilities, Quality Control, and Security). To consolidate connectivity, eliminate device contention, and ensure low-latency performance for critical assembly and logistics processes, the company deployed a Highway 9 Private Mobile Network (PMN). This solution provided a single, centrally managed platform that delivered continuous assembly line operations, real-time inventory visibility, and consolidated IoT management, leading to a significant reduction in daily operational issues and associated costs.

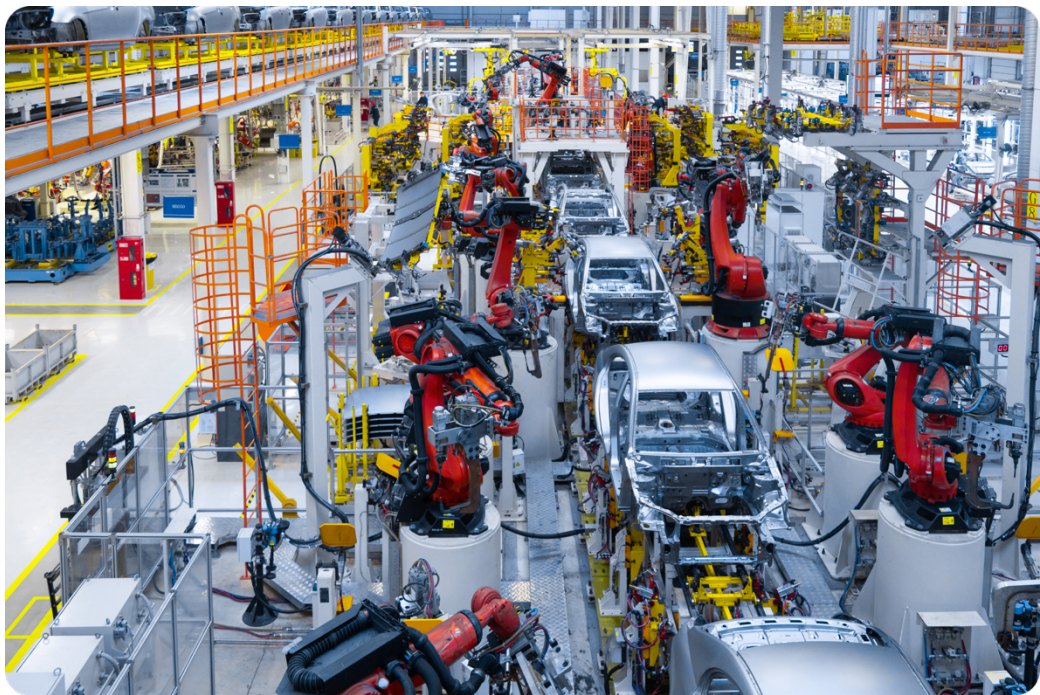
Challenge

The automotive leader's commitment to advanced manufacturing demanded high efficiency, but existing technological sprawl created major friction points.

1. **Manufacturing Reliability Risk:** Critical factory floor processes required extremely reliable, low-latency communication. Specifically, AGVs transporting car bodies, conveyor systems, and precision assembly line tools like torque wrenches were vulnerable to operational interruptions caused by fragmented connectivity.
2. **Supply Chain Invisibility:** Mobile equipment, including Zebra scanners and iPads used in truck containers, needed continuous, real-time integration with internal planning and inventory systems to maintain seamless operations.
3. **Facility Management Complexity (IoT Sprawl):** The facilities team struggled to manage environmental sensors (monitoring temperature, air quality, and carbon) because they utilized multiple, incompatible protocols such as Zigbee, Wi-Fi, and Z-Wave, making management cumbersome.
4. **Security and Quality Gaps:** Secure, mobile connectivity was essential but lacking for specific workflows, including end-of-line vehicle inspections, test track telemetry (Quality Control), and crucial infrastructure like LPR systems, security cameras, and remote gates (Security).

The overall requirement was for an IT-controlled network that could consolidate all these diverse needs, reduce operational friction, and scale effectively, without depending heavily on fiber or traditional Wi-Fi throughout the large facilities.

Highway 9 Solution



Automobile manufacturer partnered with Highway 9 Networks to deploy a PMN, establishing a single, centrally orchestrated network platform across manufacturing and logistics sites.

Use Case	PMN Feature and Integration	Outcome
Factory Floor	Provided reliable, low-latency network specifically for torque wrenches, AGVs, and conveyors.	Ensured continuous assembly line operations and minimized production delays.
Supply Chain	Integrated the management plane for mobile devices (Zebra scanners, container iPads).	Delivered real-time inventory tracking and planning visibility.
Facilities IoT	Implemented a cellular-compatible network and migration plan, replacing fragmented Wi-Fi, Zigbee, and Z-Wave.	Achieved consolidated IoT monitoring and simplified management of indoor/outdoor environmental sensors.

Use Case	PMN Feature and Integration	Outcome
Quality/Security	Supported secure, mobile iPad connectivity for inspections/telemetry and integrated systems like badge readers, LPR, and cameras.	Enhanced reliability and reduced the facility's dependence on fiber and Wi-Fi for critical security infrastructure.

The PMN enabled traffic prioritization and proactive optimization through central orchestration, ensuring the most critical factory processes always maintained reliable connectivity. Furthermore, the deployment leveraged rugged switches and many Wi-Fi access points to conserve on fiber while maintaining robust security coverage.

Outcomes & Benefits

The unified private mobile network deployment resulted in immediate and tangible operational improvements, confirming its status as a high-performance, converged network enabling seamless operations.

- **Cost and Efficiency:** The client experienced a significant reduction in daily operational issues and achieved lower overall costs.
- **Production Stability:** Factory operations (assembly line and AGV transport) became measurably more reliable and efficient, contributing to a smoother production process.
- **Management Simplification:** IT management was simplified through the consolidation of disparate IoT sensors.
- **Agility:** Supply chain operations gained improved operational agility and responsiveness through real-time visibility.

Customer Quote

"Consolidating connectivity for our factory, supply chain, and security teams eliminated the constant device contention that plagued our daily operations. Implementing the PMN provided the reliable, low-latency link necessary for our AGVs and torque wrenches, resulting in significantly reduced operational issues and a smoother, more efficient assembly line process."

– Director of Manufacturing IT, Global Automotive Leader

Looking Ahead

The manufacturer plans to continue advancing its digital operations, focusing on further leveraging the PMN:

- **Scaling Coverage:** Continuing to expand PMN coverage as new production lines and logistics centers are commissioned.
- **Advanced Automation:** Integrating more advanced robots and autonomous vehicles to boost automation levels even further.
- **Smarter IoT:** IoT will get smarter, helping predict when machines need maintenance and keeping an eye on environmental factors.
- **Network Optimization:** The network will be fine-tuned regularly to make quality checks and security operations even smoother.
- **Data Utilization:** Real-time data will play a larger role in speeding up production and cutting costs across the board.

With Highway 9, they now operate a converged, high-performance private mobile network that enables seamless factory operations, secure supply chain management, and efficient quality and security workflows.