

Case Study

Leading Electric Vehicle Manufacturer Streamlines Manufacturing & Supply Chain with Highway 9 Private Mobile Networks

Client Overview:

Customer: Leading Car Manufacturer

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 leader in sustainable energy and electric vehicles, operates some of the most advanced automotive manufacturing facilities in the world. Their operations demand continuous synchronization of assembly lines, robotics, logistics networks, quality systems, and workforce mobility. However, the company's rapid growth and diverse use cases created a fragmented network environment, where teams relied on different connectivity layers (Wi-Fi, Zigbee, Z-Wave, and fiber). To scale production efficiently while maintaining high standards of quality and security, Tesla partnered with Highway 9 to modernize its connectivity backbone with a Private Mobile Network (PMN) that unifies all factory and supply chain workflows under a single management plane.

Challenge

Their global automotive operations rely on highly coordinated manufacturing, logistics, and quality processes. Their IT and operations teams faced challenges:

Fragmented connectivity: Each team (Factory, Supply Chain, Facilities, Quality Control, Security) managed separate networks, creating device contention, inefficiency, and daily operational issues.

Critical manufacturing requirements: Assembly line tools (torque wrenches), AGVs carrying car bodies, and conveyor systems required reliable, low-latency connectivity.

Supply chain demands: Zebra scanners and iPads in truck containers needed real-time integration with planning and inventory systems.

Facilities sprawl: Sensors for temperature, air quality, and carbon monitoring operated on multiple protocols (Zigbee, Wi-Fi, Z-Wave), creating management complexity.

Quality control workflows: End-of-line vehicle inspections and telemetry required secure, mobile iPad connectivity and integration with test track systems.

Security operations: Badge readers, timecard machines, LPR, security cameras, and remote gate systems needed reliable coverage without over-reliance on fiber or Wi-Fi.

They needed a centrally managed, IT-controlled network that could consolidate all these use cases, reduce operational friction, and scale with production requirements.

Highway 9 Solution

Automobile manufacturer partnered with Highway 9 to deploy a Private Mobile Network (PMN) across their manufacturing and logistics operations, providing:

Centralized IT-managed PMN: Unified connectivity for all operational teams, replacing fragmented Wi-Fi, Zigbee, and Z-Wave deployments.

Factory coverage: Reliable low-latency network for assembly line tools, torque wrenches, AGVs, and conveyor operations.



Supply chain integration: Zebra scanners and iPads in truck containers connected to a single management plane for real-time inventory tracking and operational efficiency.

Facilitates IoT convergence: Cellular-compatible network replaced disparate sensor protocols for temperature, air quality, and environmental monitoring.

Quality control support: iPads for inspection workflows and vehicle telemetry at test tracks operated seamlessly over the PMN.

Security operations coverage: Badge readers, LPR, cameras, and remote gates integrated into the PMN to reduce dependence on fiber and Wi-Fi while ensuring reliability.

All PMN traffic is centrally orchestrated, allowing traffic prioritization, real-time monitoring, and proactive optimization.

Outcome & Benefits

Challenge	Solution	Value Delivered
Fragmented operations across teams	Centralized PMN	Reduced daily operational issues, lower costs
Unreliable factory connectivity	PMN	Continuous assembly line & AGV operations
Supply chain delays	PMN	Real-time inventory and planning visibility
Sensor sprawl in facilities	PMN	Consolidated IoT monitoring for indoor/outdoor environments
Quality control inefficiencies	PMN	Reliable telemetry and mobile inspection workflows
Security system gaps	PMN	Integrated coverage for badge readers, cameras, LPR, and gates

Customer Quote

With Highway 9's private mobile network, we've unified factory, supply chain, quality, and security connectivity into a single platform. It's given us the reliability we need to keep production moving, the visibility to manage operations in real time, and the flexibility to scale as our business grows." – IT Network Lead, Global Electric Vehicle Manufacturer

Looking Ahead

The manufacturer plans to:

- Growing Network Coverage: They will keep growing PMN coverage as new production lines and logistics centers come online.
- Boosting Automation: They plan to bring in more advanced robots and autonomous vehicles to boost automation 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 even smoother.
- Data-Driven Efficiency: Real-time data will play a bigger 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.