

INDUSTRIAL WIRELESS CONNECTIVITY GUIDE FOR AGV/AMR DEPLOYMENT

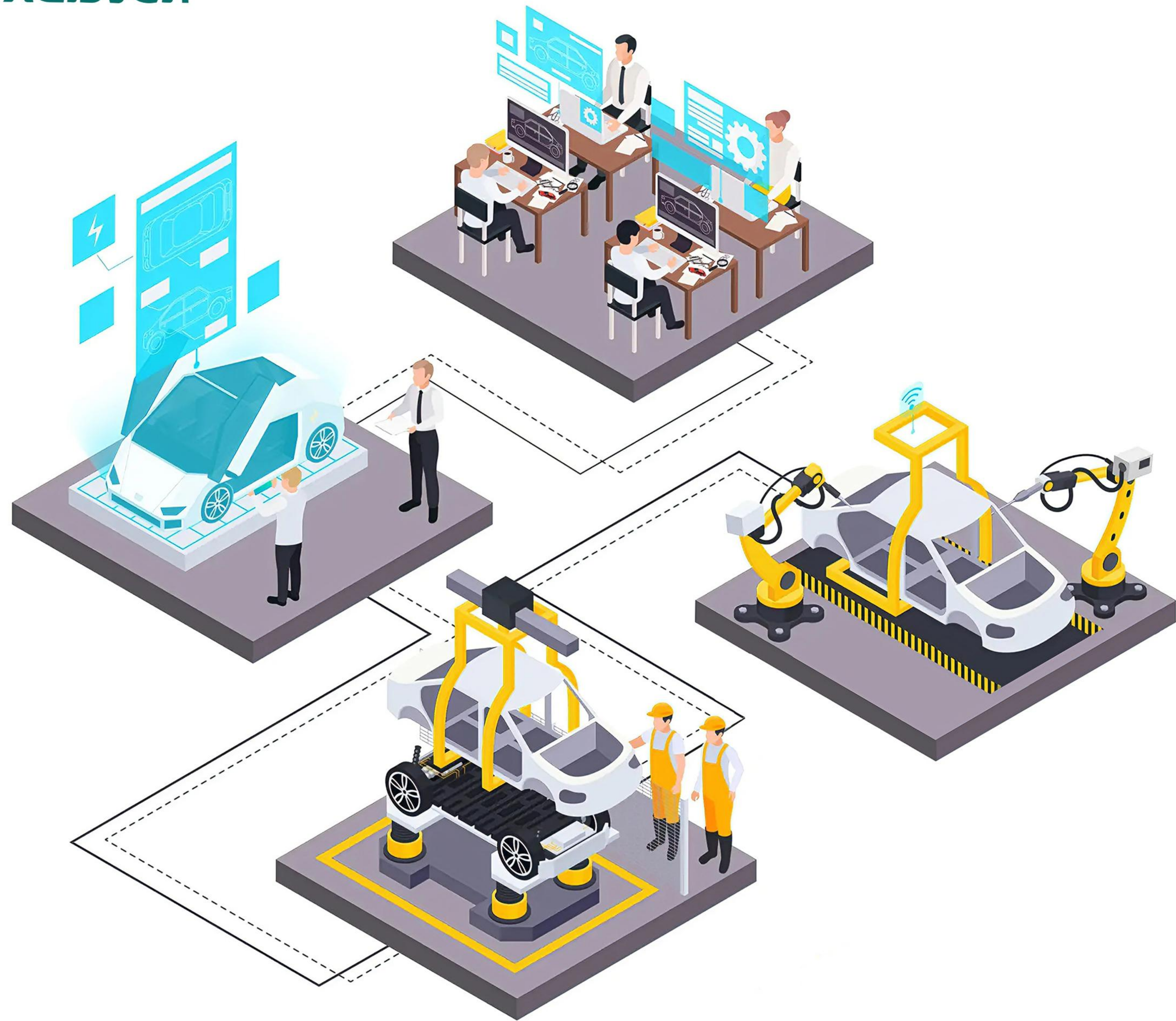
Ensuring Operational Resilience in High-Density
Smart Factories

DEDICATION & INNOVATION FOR A SMARTER FUTURE



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1. INTRODUCTION

THE LOGISTICS PARADIGM SHIFT

In the contemporary Smart Factory ecosystem, the transition from static conveyor systems to dynamic Automated Guided Vehicles (AGV) and Autonomous Mobile Robots (AMR) has redefined material handling. However, as fleets scale, the underlying wireless infrastructure often becomes the single point of failure.

This e-book examines the critical networking requirements for high-density robotic deployments and how Maisvch provides the deterministic connectivity required for zero-downtime operations.

2. THE NETWORKING BOTTLENECK: RF CHALLENGES

Industrial environments are notoriously hostile to wireless signals. Engineers must account for:

1. Multi-path Fading & Metal Interference

Dense metallic racking and moving machinery create reflection and diffraction, leading to signal instability and high jitter.



2. Spectral Congestion in High-Density Deployments

When over 200 concurrent units operate within a single facility, co-channel interference can degrade throughput, causing synchronization errors between the AGV and the Fleet Management System (FMS).



3. Handover Latency (The Roaming Gap)

Traditional roaming protocols often take seconds to switch between Access Points (APs). For an AGV moving at high speed, a 1-second delay can result in a Safety Halt, leading to cascading delays across the production line.



3. THE MAISVCH SOLUTION: TECHNICAL ARCHITECTURE

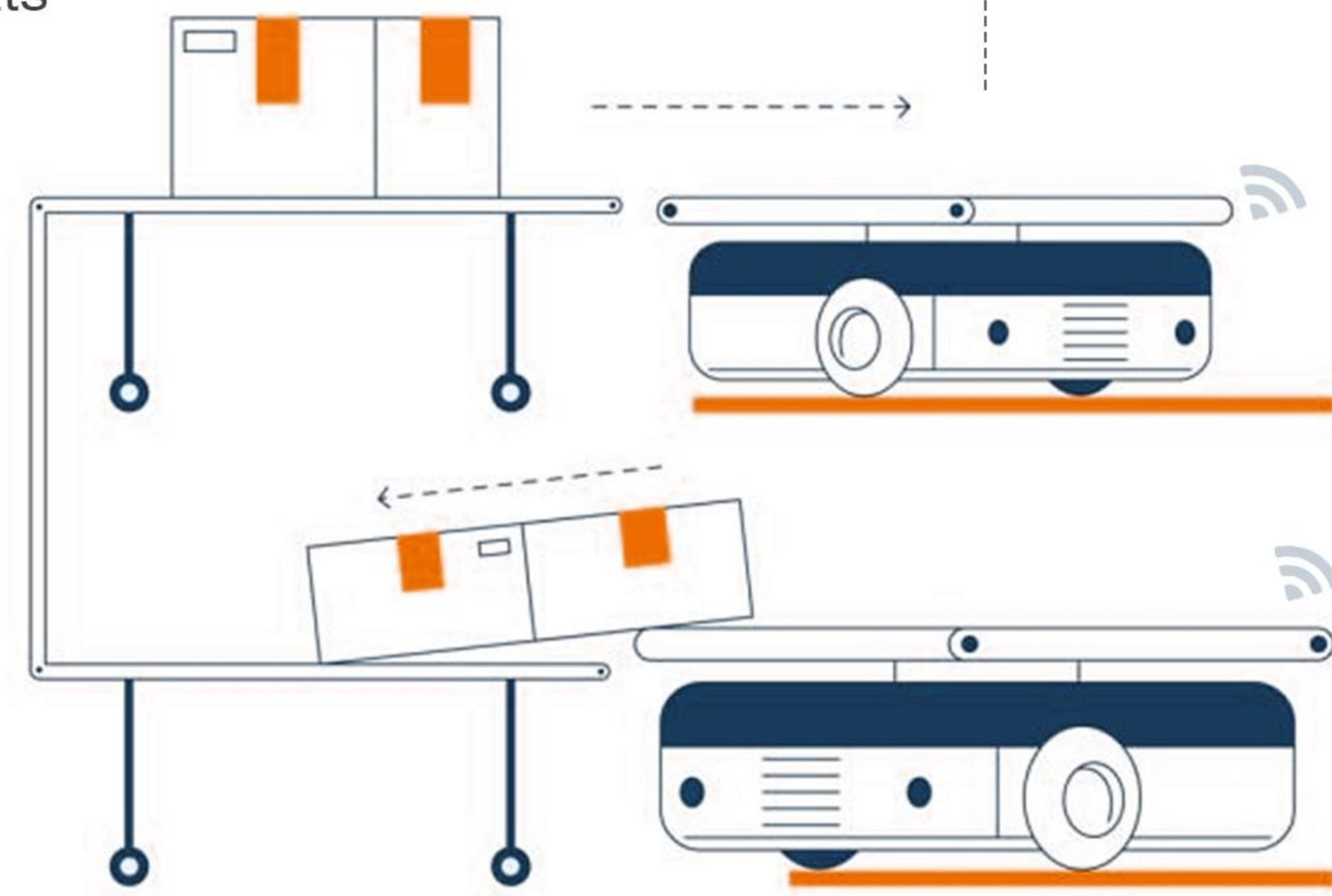
Maisvch addresses these challenges through a combination of hardened hardware and optimized software protocols.

01. Millisecond-Level Roaming Optimization

Our proprietary roaming algorithm utilizes predictive RSSI analysis to trigger handovers before signal degradation occurs.

Benchmark: Handover latency is sustained at < 150ms.

Impact: Ensures continuous heartbeats for PLCs and real-time control loops.



High-Throughput Fabric (2976 Mbps) 02.

To support advanced SLAM (Simultaneous Localization and Mapping) and 4K environmental perception, our MIAP7200 series utilizes high-order modulation to achieve a physical rate of 2976Mbps. This bandwidth allows for:

- Real-time 3D LiDAR data backhaul.
- Concurrent high-definition video monitoring for remote intervention.



4. CASE STUDY: 200-UNIT SMART FACTORY DEPLOYMENT

The Scenario

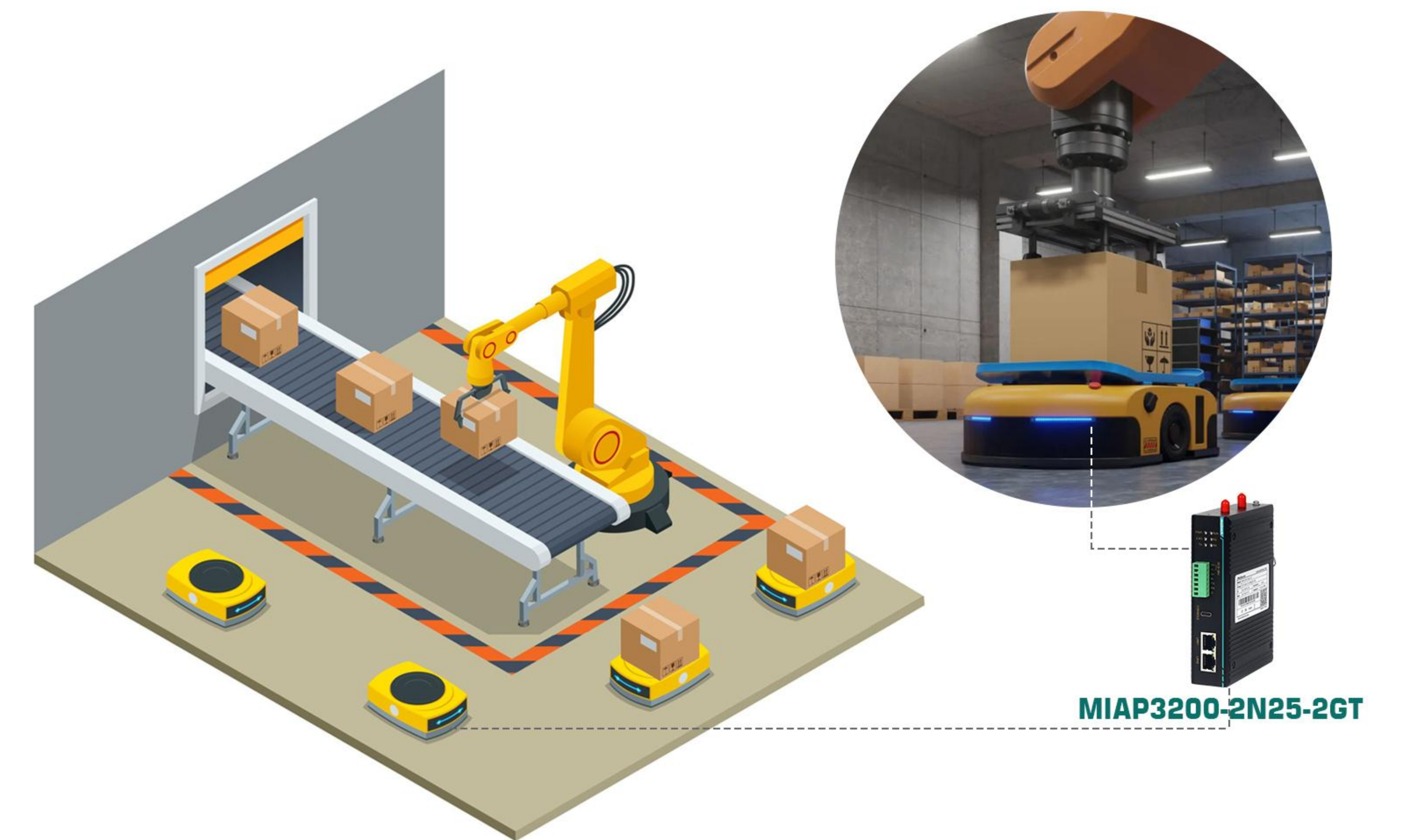
A tier-one manufacturing facility required a synchronized network for 200+ AGVs operating in a 50,000 sq. ft. area with high electromagnetic noise.

The Deployment

Infrastructure: MIAP7200-2N25-2GT industrial APs deployed in a grid topology with optimized cell overlap.
Client Integration: MIAP3200-2N25-2GT clients integrated into the robotic chassis, connected via Gigabit Ethernet to the onboard IPC.

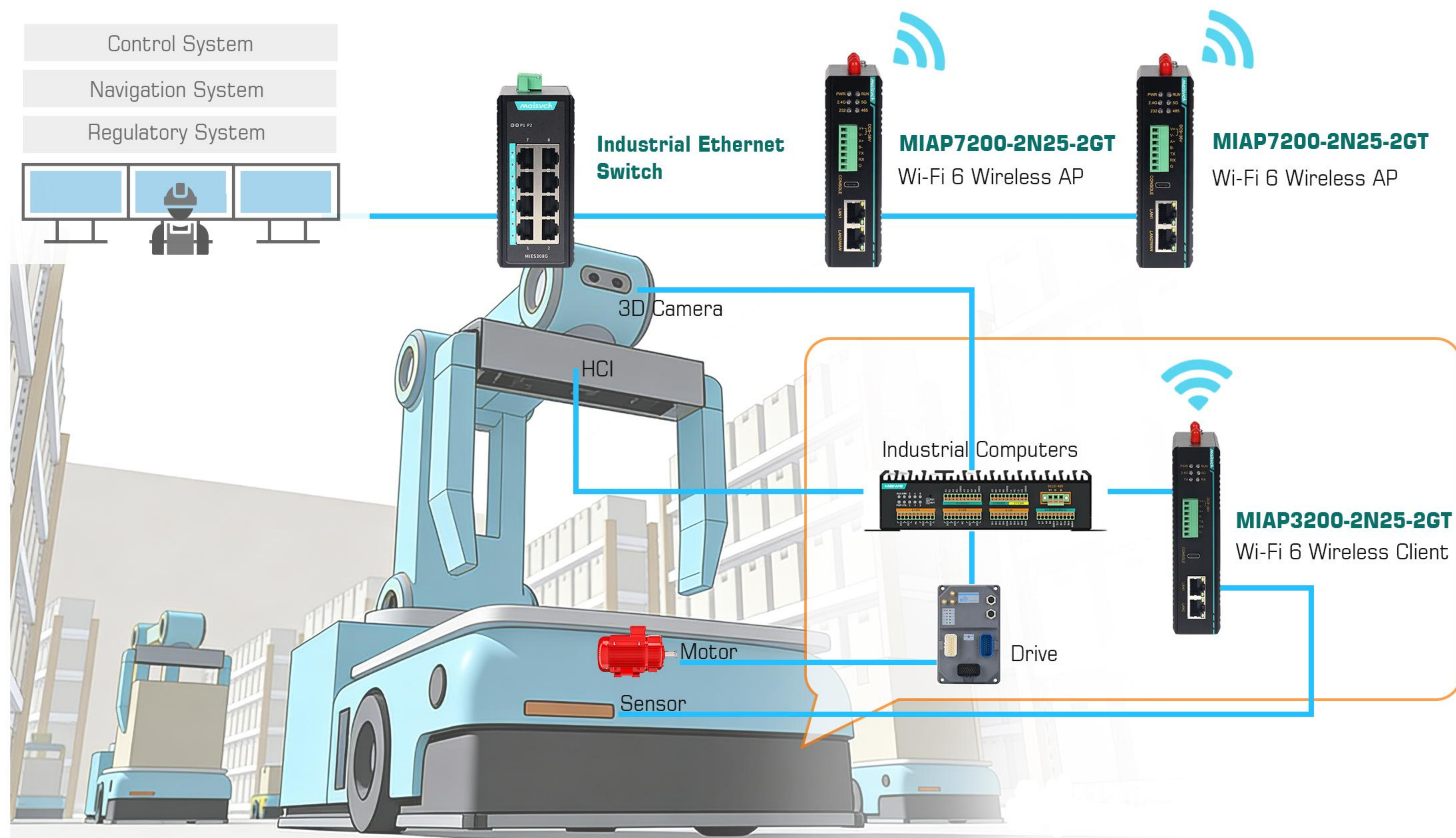
The Outcome

Zero Packet Loss: Seamless roaming across the entire facility.
System Uptime: 99.99% network availability sustained during peak operational hours.
Scalability: The infrastructure remains ready for future expansion without hardware replacement.



5. Why choose Maisvch

Wuhan Maisvch Technology Co., Ltd. has independently developed industrial wireless APs specifically designed as high-performance network bases for AGV/AMR cluster communication. The MIAP7200 series wireless AP utilize next-generation WiFi 6 (802.11ax) technology, achieving an ultra-high transmission rate of 2976 Mbps. Its unique millisecond-level intelligent roaming algorithm compresses network switching time to within 150ms, ensuring real-time response to AGV control commands and smooth 4K video transmission even in scenarios with 200 concurrent devices.



6. Products



MIAP7200-2N25-2GT

2-Port Full Gigabit DIN-rail Industrial-Grade 2.4/5GHz Dual-Band Wi-Fi 6 Wireless AP



MIAP3200-2N25-2GT

2-Port full Gigabit, with 1 data port, DIN-rail Industrial 2.4/5GHz Dual-Band Wi-Fi 6 Wireless Client

7. CONCLUSION: EMPOWERING INDUSTRIAL PARTNERS

At Maisvch, we believe that reliability is the prerequisite for innovation. By providing the industrial backbone for mobile robotics, we empower our partners to focus on their core logic while we handle the complexity of the RF environment.

Empowering partners with reliable industrial connectivity
Contact us for your customized solution.



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Maisvch Technology Co., Ltd.

