SOLUTION BRIEF

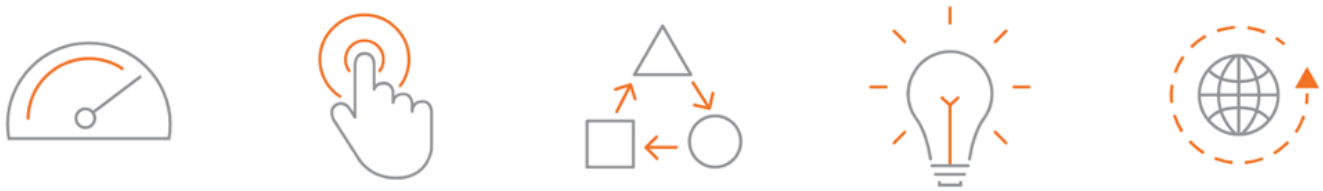
# RUCKUS Advantage in MWL

The modern landscape of manufacturing, warehousing, and logistics (MWL) facilities has transitioned from simple barcode scanning environments to data-rich, interconnected ecosystems. This evolution introduces unique challenges in establishing robust wireless networks due to the complex physical architectures and diverse use cases inherent to MWL spaces. At RUCKUS®, we understand these complexities and are here to help you navigate them. Our advanced networking solutions are designed to meet the demands of industry 4.0, ensuring seamless connectivity for a diverse array of devices.

This white paper elucidates the challenges faced in designing and deploying wireless networks in MWL environments, explores the diverse array of devices requiring connectivity, and proposes best practices to optimize network performance and reliability.

## The convergence of technology and industry

As technology and industry converge, MWL facilities are becoming increasingly sophisticated, requiring more than just basic connectivity. The integration of internet of things (IoT) devices, automated systems, and real-time data analytics demands a network that is not only robust but also highly adaptable. RUCKUS provides the cutting-edge solutions needed to support this convergence, offering unparalleled performance and reliability. Our purpose-driven networking approach ensures that your specific needs are at the forefront, enabling you to stay ahead in a competitive landscape. Join us in embracing the future of industrial connectivity with RUCKUS.



**Performance**

A RUCKUS network consistently delivers the required network performance to every end user, no matter how challenging the environment.

**Simplicity**

RUCKUS Networks provides a single platform to manage multiple access networks with zero-touch provisioning and simple, intuitive management.

**Adaptability**

Our interchangeable deployment options offer easy capacity expansion for future flexibility and investment protection.

**Innovation**

RUCKUS Networks delivers patented RF core technologies, AI-driven cloud RRM, AI-driven network assurance and more.

**Interoperability**

Open APIs enable RUCKUS technologies to integrate with third-party and homegrown applications.

**Performance:** In manufacturing, network performance is critical. RUCKUS excels in providing reliable and high-speed connections. Imagine a factory floor where machines communicate seamlessly—transmitting real-time data on production status, quality control, and inventory levels. RUCKUS ensures that these connections remain robust, minimizing downtime and optimizing efficiency.

**Simplicity:** Manufacturing environments can be complex, with various devices, sensors, and machinery interconnected. RUCKUS simplifies network management through intuitive interfaces and automated provisioning. Whether it's configuring new devices, monitoring network health, or troubleshooting, RUCKUS streamlines the process, allowing IT teams to focus on production rather than intricate network setups.

**Adaptability:** Factories evolve over time, with changes in layout, machinery upgrades, and new production lines. RUCKUS systems are adaptable—they can handle diverse connectivity requirements. Whether it's supporting legacy equipment or integrating cutting-edge IoT devices, RUCKUS ensures seamless coverage and capacity adjustments without disrupting operations.

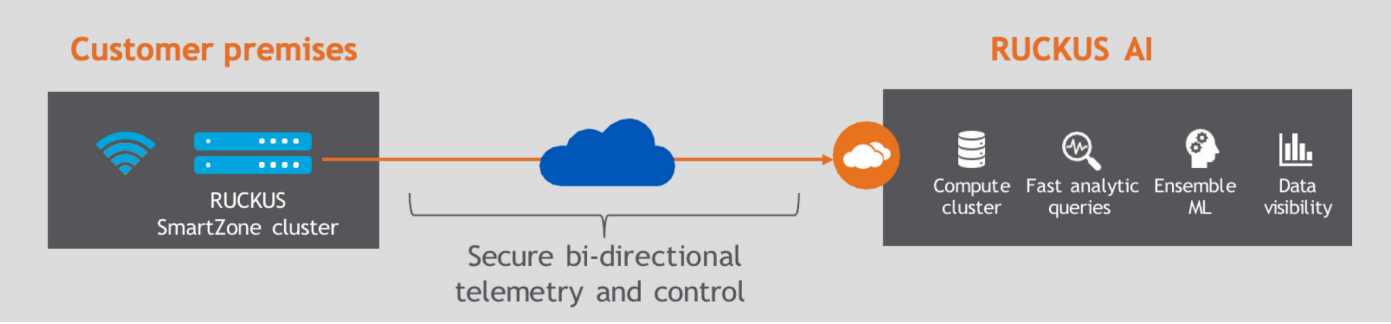
**Innovation:** Manufacturing is embracing industry 4.0, where data-driven insights drive efficiency and predictive maintenance. RUCKUS networks deliver modern technologies like Wi-Fi® 7, enabling faster data transfer, reduced latency, improved device density and superior resiliency with MLO (multi-link operation). Additionally, cloud-driven artificial intelligence (AI) and machine learning (ML) enhances network optimization, ensuring optimal performance even during peak production hours.

**Interoperability:** Manufacturing ecosystems involve collaboration among various vendors, suppliers, and partners. RUCKUS's open APIs facilitate interoperability, allowing integration with other systems. Whether it's connecting with inventory management software, robotics, or supply chain analytics, RUCKUS ensures compatibility and efficient data exchange.

RUCKUS's advantages empower manufacturing networks to operate efficiently, adapt to changing demands, and embrace technological advancements—all while maintaining simplicity and robust performance. Features such as RUCKUS AI™, smart adaptive antennas, and flexible converges management platform will be essential for the factory and warehouse floor:

## RUCKUS AI

Manufacturing IT teams are often overwhelmed by the increasing demands of user connectivity and network complexity, lacking the necessary tools to maintain required network service levels. This often results in a pile-up of helpdesk tickets and difficulty in identifying the root causes of service issues. However, RUCKUS AI from CommScope, a cloud service powered by AI and ML, provides a solution to these challenges. It offers comprehensive visibility into network operations, accelerates troubleshooting, and helps IT teams meet their network service-level agreements. RUCKUS AI identifies network assurance incidents, classifies them by severity, traces root causes, and provides AI-driven recommendations for remediation.



In the ever-changing environments of warehousing and manufacturing, deployed wireless infrastructure can be blocked or experience increased levels of interference due to floor reconfigurations. RUCKUS AI, with its advanced AI capabilities, offers a transformative approach to radio resource management (RRM). It optimizes each zone of your network by recommending the ideal channel plan, channel bandwidth, and adjustments to AP transmit power. This reduces interfering links and enhances speed throughput for users. RUCKUS AI presents a visual prediction of this optimization and the resulting reduction in interference. It runs simulations every 24 hours, striving for the best possible solution to minimize interference to zero.

Additionally, RUCKUS AI provides the flexibility to schedule the application of recommended settings and to revert if necessary. This AI-driven approach to RRM not only improves network performance but also empowers network administrators with actionable insights and control.

**Adaptive antennas:** In a manufacturing or warehouse environment, reliable and robust wireless connectivity is crucial. RUCKUS's patented BeamFlex™ technology offers a significant advantage in these challenging settings. BeamFlex is a smart antenna technology that actively adapts and targets the Wi-Fi signal of the access point (AP) to optimize signal quality for specific situations. This technology is particularly beneficial in environments with RF-unfriendly obstacles, steel racks, and electromagnetic noise, which are common in manufacturing facilities and warehouses. These obstacles can degrade Wi-Fi performance, but, with BeamFlex, the Wi-Fi signal is optimized—resulting in higher-speed data rates at longer ranges and eliminating many "Wi-Fi dead spots."

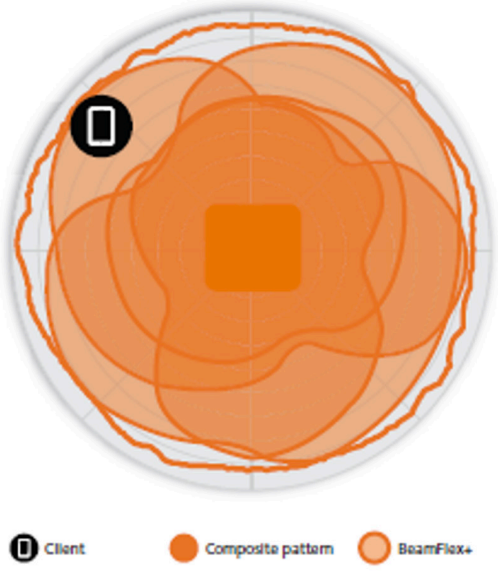



**Figure 1. Example of BeamFlex+ pattern**

BeamFlex not only focuses RF energy where it's needed but also mitigates interference coming from other directions. This ensures that the highest possible PHY rate is used and that the highest possible throughput is achieved for all clients.

Furthermore, BeamFlex simplifies AP deployment. With BeamFlex, there's no need to worry about the concentric reach of the signal when installing each individual unit. This not only makes the setup process easier but also reduces the overall cost due to the smaller number of APs required. The technology allows for a larger number of devices to be connected to each AP, improving the efficiency of the network. In essence, BeamFlex technology enhances the performance of handheld devices used for supply chain management and inventory control—leading to increased productivity and lower costs.

R1: RUCKUS One™ is designed to simplify the deployment and management of multi-access public and private enterprise networks, both Wi-Fi and wired. Its intuitive, intent-based workflows expedite the provisioning, management, and control of multiple access networks across various sites through a single pane of glass. The "configure once, deploy everywhere" model makes it straightforward to provision and manage your network with speed and accuracy. Moreover, the native mobile app allows you to provision, manage, and monitor the entire network from anywhere, at any time.

RUCKUS One is built on a cloud native microservices architecture—delivering superior scalability and availability and better response times. This modern, event-driven architecture enables rapid deployment and shorter release cycles, resulting in faster delivery of new features. The platform also includes a built-in service catalog featuring services from RUCKUS Networks—enabling IT to easily extend the platform at the click of a button. This service catalog offers a variety of services, including network connectivity, security, productivity, and industry-specific solutions.

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- Unified converged network management
- AI-driven network assurance
- AIOps to automate IT operations intelligently
- Secure network access and policy management
- Service catalog

## About RUCKUS Networks

RUCKUS Networks builds and delivers purpose-driven networks that perform in the demanding environments of the industries we serve. Together with our network of trusted go-to-market partners, we empower our customers to deliver exceptional experiences to the guests, students, residents, citizens and employees who count on them.

www.ruckusnetworks.com

Visit our website or contact your local RUCKUS representative for more information.



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