How private wireless networks are driving efficiency and innovation in distribution and logistics

The pressure is on. Distribution centers, warehouses and logistics operations play a central role in the global supply chain, but ongoing labor shortages and an ever-increasing volume of shipments puts the worldwide flow of goods at risk.

To scale operations and compete more effectively, many distribution centers and warehouse operators are turning to technologies and tools that enable and accelerate automation. From autonomous mobile robots (AMRs) to Internet of Things (IoT) sensors and artificial intelligence (AI)-driven video analytics, innovative technology solutions are transforming the distribution and logistics industry.

But before they can take full advantage of advances in automation technology, distribution center and warehouse operators must answer one key question: Is the network connectivity we have in place today able to support the supply chain of tomorrow?

Is the network connectivity you have in place today able to support the supply chain of tomorrow?

Wireless connectivity is critical to success

Moving goods in an efficient manner has never been easy work

A large distribution center typically includes an indoor warehouse—ranging in size from 100,000 square feet to over 500,000 square feet—a large outdoor yard with parking for trucks and trailers, and temporary storage for goods that can safely be stored outdoors. Receiving a huge number of pallets, breaking the inventory down into smaller sizes for storage and then building a mixed pallet for delivery requires the careful tracking and orchestration of goods, people, vehicles, data and devices.

Using handheld tablets, computers and communication devices along with AMRs and other connected tools to optimize operations requires highly reliable, consistent wireless connectivity.

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Indoors and outside, handheld bar code scanners and other inventory tracking devices, intelligent security cameras, and environmental sensors all need consistent connectivity to maintain smooth operations. It is imperative that these tools have reliable, site-wide access to cloud-based platforms for customer service, human resources and inventory management.

Warehouse and distribution companies that rely on Wi-Fi alone to cover their operations may find that this type of connectivity on its own doesn't provide the scalable and consistent connection needed to support their increased use of innovative technologies. And that's a primary reason why private wireless networks are growing in popularity.

When Wi-Fi alone is not enough

Wi-Fi has long been the conventional choice for wireless connectivity in distribution and logistics. While Wi-Fi is a great fit for home or office environments, it doesn't perform as well in vast outdoor/indoor areas like distribution centers. Their large footprints and need for consistent connectivity throughout the premises pose specific challenges for Wi-Fi.

Spotty wireless coverage

Unreliable connectivity causes delays in gathering and transmitting data, often resulting in a loss of productivity. The constant movement of personnel and equipment across a large area requires endpoint devices to move from one Wi-Fi access point to another, and connections can drop in the process.

High total cost of ownership

To cover the footprint of a distribution center, Wi-Fi requires a large number of access points—especially in outdoor yards. Significant engineering resources are needed to undertake complex mesh deployments and install new cabling to connect the access points. Securing an ever-expanding collection of access points adds additional operational complexity.

Unreliable service quality

Wi-Fi does not generally provide the throughput and latency levels for mission-critical business applications.

Private wireless networks have become a strategic complement to Wi-Fi

Increasingly, distribution companies are implementing private wireless networks to complement their existing Wi-Fi infrastructure and to take advantage of the unique, innovation-enabling attributes of private 4G LTE or private 5G.

A private wireless network is a customized solution, right-sized for each facility and its unique operational requirements and use cases. It provides consistent, predictable coverage and bandwidth for business-critical applications. Leveraging licensed spectrum, a private wireless network from Verizon gives your people and business-critical devices:

Reliable connectivity: Private wireless provides consistent, dedicated connectivity and performance from one end of your facility to the other.

Security: Private 4G LTE and 5G cellular networks have enhanced security controls built into the networks, including options for secure remote access to on-site operational processes and applications.

Agility: Private networks are designed to be scalable for any size facility, any spectrum and many quality of service (QoS) levels to match business requirements.

Ease of use: With a managed private wireless network, companies can spend more time running their businesses and less time and effort managing their connectivity.

Private wireless networks can help businesses to not just achieve their current goals but also imagine and realize a whole new set of strategic objectives.

In fact, recent research sponsored by Verizon shows that enterprises see private wireless networks as vital to successfully addressing connectivity challenges around security, network control and greater digital innovation.[1]

Integrate, rather than "rip and replace"

When deployed together, private wireless networks and Wi-Fi can prove a powerful and efficient combination. Wi-Fi can provide the capacity needed for more contained indoor environments and for non-mission-critical applications.

At the same time, private wireless networks can provide connectivity across sprawling indoor/outdoor complexes, keeping everything from always-on-the-go forklifts to perimeter security cameras connected. Private wireless networks can provide the low latency needed to support near-real-time inventory tracking, predictive maintenance and collision-avoidance systems.

In short, it's not a matter of either/or—distribution and logistics enterprises can use both types of connectivity, depending on the requirements of each facility, its occupants and its devices.

Why Verizon

Verizon Business has the proven expertise and experience to deliver more than just digital transformation to your business. Combined with the appropriate network strategy, Verizon can enable your organization to realize true "enterprise intelligence."

Verizon Business experts will work with your team to create an effective network strategy—be it private wireless or a combination of Private 5G, wired LAN and Wi-Fi, to ensure your distribution centers, warehouses and logistics operations can achieve their full potential—today and tomorrow.

Learn more

For more information about Verizon Private 5G Networks, visit verizon.com/business/products/networks/connectivity/private-5g-network.

1. IDC InfoBrief, sponsored by Verizon Business, Private 4G/5G Networks Driving Operational and Strategic Gains for Enterprises, doc #US51854324, April 2024. https://www.verizon.com/business/resources/analystreports/private-4g-and-5g-networks-driving-operational-strategic-gains-for-enterprises.pdf

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