



CONNECTED WORKERS: A Key Imperative for Distribution Centers



Exploring the critical role that robust connectivity plays in the modern warehousing environment.



The modern distribution center is a dynamic operation that relies on real-time data, seamless communications and efficient workflows. And while Wi-Fi has been a staple in these expansive facilities for decades, new constraints and opportunities are forcing operators to reimagine what a “connected warehouse” looks like, how it operates and how it supports the employees who keep the fulfillment machine running.

Younger generations of workers are driving the charge on the connectivity front. After all, anyone who was “born” with digital technology at their fingertips has come to expect their devices to work 24/7, particularly in the workplace. When that doesn’t happen, frustrations set in pretty quickly, productivity is throttled and efficiency goes down the drain.

These frustrations can spill over into the breakroom, where poor cellular reception can leave workers feeling isolated from their families, friends and lives. With the next warehouse job opportunity just one screen tap away, companies that don’t take this into consideration may wind up losing one of their most valuable assets—human capital.



A key motivator right now is a persistent labor shortage that’s forced companies to hone their recruiting and retention strategies and deploy more automation to help offset the deficit. With more humans and robots now working side-by-side, the need for strong connectivity has increased exponentially. Unfortunately, most warehouses are vast spaces constructed from thick cement slabs and filled with metal racking and machinery—all of which can interfere with Wi-Fi networks.

This interference can translate into substantial productivity and efficiency problems when everyone from the forklift driver to the picker using wearable technology to the facility manager needs good connectivity to be able to do their jobs. To address these challenges, more organizations are turning to private wireless networks that create highly reliable, secure connectivity for the end-to-end operating environment.

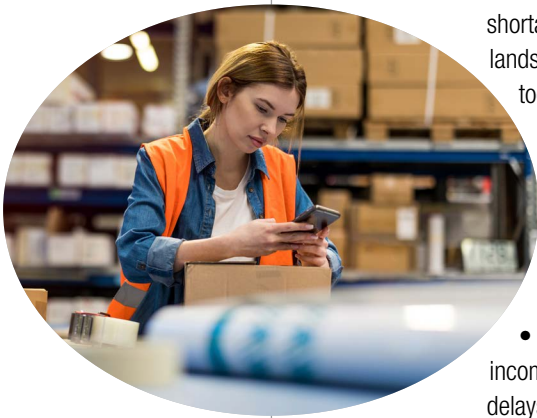
As mobile tools continue to transform distribution center operations, empowering workers with information and capabilities to perform their tasks efficiently and accurately, the need for reliable, secure connectivity will only expand. By addressing the challenges and considerations outlined in this white paper, warehouse operators can continue to leverage mobile technology while also achieving significant improvements in productivity, accuracy and customer satisfaction.

Mobile solutions are no longer a “nice to have” in distribution centers

The e-commerce boom, shifting consumer demands and ongoing labor shortage are all impacting the distribution environment right now. The landscape is also evolving rapidly as companies invest in more mobility tools, automation, robotics and other advanced technologies that promise better agility and accuracy.

These tools have revolutionized distribution center operations, offering real-time data access and improving efficiency. In the typical warehouse, employees are using mobile devices to:

- **Receive goods.** They'll scan barcodes or QR codes to quickly confirm incoming shipments against purchase orders, reducing errors and delays. Employees also use devices to record product details like weight, dimensions, and batch numbers using the device camera or through barcode/RFID scanning.
- **Pick orders.** Mobile devices guide workers through the warehouse with the most efficient picking routes, thus reducing travel time. Voice-picking solutions allow workers to receive picking instructions and confirm picks hands-free, while mobile devices provide real-time visibility into current inventory availability.
- **Pack and ship orders.** Employees can create packing lists and shipping labels directly from their mobile devices, effectively streamlining the process and reducing errors. They can also track order status in real time, allowing for better communication and visibility throughout the shipping process.
- **Manage the warehouse workforce.** Managers can use mobile devices to assign tasks and track progress in real-time, improving workforce productivity and accountability. The devices also facilitate communication between workers and supervisors through instant messaging or push notifications, and can be used to deliver training materials and onboarding information to new employees.



Traditional Wi-Fi just doesn't cut it in the DC

Technological advancements help improve warehouse operations, but they also present a new challenge: how to keep everything and everyone connected, productive and efficient. Currently, most of these operations rely on 802.11 wireless ("Wi-Fi") to keep their people, processes and technology connected and operating as expected.

Reliable for some indoor applications, Wi-Fi simply doesn't cut it in the modern warehouse, where the need for advanced connectivity is paramount. Public cellular networks (often accessed via an employee's own mobile device) also may fall short and can leave managers and workers frustrated by the poor coverage and limited range. These and other roadblocks are driving the need for more reliable, robust connectivity solutions for busy distribution centers.

Wi-Fi serves as the primary connectivity for most warehouses and distribution centers. These connections are made possible by broadband, with routers and repeaters serving as the transmitters of the Wi-Fi signals throughout the facility.

And while this setup may suffice in the typical residential or office setting, warehouses are a completely different animal. "The amount of shelving and metal alone dictate the need for a lot of wireless access points throughout the building," says David Naumann, marketing strategy lead at Verizon.

Those access points don't always guarantee connectivity. For example, if a robot or other automated system travels into a Wi-Fi "dead zone" and loses connectivity, it may be rendered useless or even dangerous.

Or, if a fulfillment center employee is using a mobile device to pick an order—and if that device loses connectivity and freezes up—the picking, packing and shipping processes may all be delayed. These are just some of the issues that surface when companies rely on Wi-Fi to support their connected warehouses.



“That latency doesn’t happen with private cellular... There’s one network within the building plus access points, with very low latency as signals are handed off, which translate into uninterrupted connectivity for employees plus robots and any other types of automation.”

*— Katie Riddle,
global retail strategy lead, Verizon*

Private wireless networks to the rescue

To solve these and other connectivity problems, companies are turning to private wireless networks that use cellular signals to provide a strong, reliable, secure signals that can work through walls and other elements that may interfere with regular Wi-Fi.

Private wireless networks are especially beneficial in the distribution environment, where handoffs between devices via Wi-Fi “take time” (tenths of seconds or even seconds) that companies can’t afford to spare.

“That latency doesn’t happen with private cellular,” says Katie Riddle, global retail strategy lead at Verizon. “There’s one network within the building plus access points, with very low latency as signals are handed off, which translate into uninterrupted connectivity for employees plus robots and any other types of automation.”

THE BENEFITS OF A NEUTRAL HOST NETWORK

Sometimes employees just want to be able to use their own phones while at work, but they can’t always do that if their carriers don’t have coverage in that area (or, if all of the racking is interfering with their signals). Enter the Verizon Neutral Host Network, which facilitates seamless connectivity for public subscribers from various mobile carriers.

By employing a common radio access network, the neutral host network provides optimal connectivity for all users regardless of their chosen mobile service provider. That way, employees have the flexibility of using their personal phones while on lunch break, regardless of which mobile carrier they use.

David Naumann, marketing strategy lead at Verizon, says neutral host networks can be configured for full coverage within the four walls of the warehouse, or they can be programmed to only allow certain carriers to use the network.

Companies that want to extend this opportunity to their valued employees can do so by deploying a neutral host network and optionally adding a private wireless network, with one common investment.

Key reasons to make the switch now

Verizon's Private LTE and Private 5G network are cellular networks stood up by the enterprise and exclusively cater to that operation's wireless needs. With highly reliable and secure connectivity, the network can support a large number of connected devices, data volume and high-fidelity applications across a variety of operating environments.

These attributes excel in distribution center environments to mitigate against no "dead spots" for coverage, and particularly when compared to traditional 802.11 wireless deployments.

Other core benefits of using a Verizon Private Wireless Network include increased efficiency and accuracy; improved communication and worker engagement; and higher productivity levels. These networks are also secure—yet another compelling "win" in a business world where companies are putting more time, energy and investment into ensuring that their networks are secure.

"A private wireless network is far more secure than using Wi-Fi," Riddle explains, "in terms of the user data, company data, and other information that's constantly being transmitted."

As companies continue to invest in automation, reduce manual tasks and tap into the power of innovations like artificial intelligence and machine learning, the need for reliable networks that cover the expanse of the warehouse will continue to increase.

The labor shortage, changing customer demands and high volumes of e-commerce orders are also driving this need and pushing organizations to replace their existing Wi-Fi networks with private wireless networks.

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GET MORE POWER FOR PEAK

A warehouse's connectivity needs may differ from one season to the next. For example, peak season may find thousands of mobile devices using the network, and those numbers may drop into the hundreds during the slower times of the year.

To help "even things out" a bit, Verizon offers a Network as a Service (NaaS) platform. Flexible and scalable, this cloud-based infrastructure provides higher bandwidth as needed and then scales back during times of lower order throughput.

"It's a 'pay for bandwidth' type of service," says Katie Riddle, global retail strategy lead at Verizon. "The system is very agile, so it can ebb, flow and modify based on your company's current needs. That way, you're never paying for bandwidth that you don't need."

Read more at
[verizon.com/business/products/networks/
connectivity/private-5g-network/](https://www.verizon.com/business/products/networks/connectivity/private-5g-network/)

