White paper

Unlocking the potential of smart distribution

How private 5G networks enable the full benefits of Industry 4.0

verizon business

While processes and output differ widely by industry, all distribution organizations face the same set of business challenges: the need to increase productivity and operational efficiency, reduce costs and downtime, maintain safety and security.

Industry 4.0 aims to meet these challenges by revolutionizing distribution with new digital business models that allow organizations to more quickly pivot their operating processes to better meet the demands of the market. Underpinning this revolution are key technologies such as Industrial Internet of Things (IIOT), artificial intelligence (AI), machine learning and edge computing. But running an Industry 4.0-enabled distribution center or warehouse on existing wired networks or traditional wireless technologies, like Wi-Fi, means that processes are slower and often plagued by interference in the facility environment.

Fast, reliable private 5G networks are needed to make the distribution center more efficient and cost-effective. They are more agile than wired networks, allowing easier control of autonomous guided vehicles or robotics. They move data faster from IoT sensors to support near real-time video feeds with more flexibility and security built in helping to reduce the risk of breaches that could affect production and reputation.

Implementing industrial IoT solutions with private 5G networks is a key step to realizing the full potential of smart distribution and gaining a competitive edge in today's digital environment.

5G private networks in distribution centers

Today's distribution centers and warehouses are increasingly digitized and leverage robotics, Internet of Things (IoT) sensors, autonomous vehicles, augmented reality (AR) and other advanced technologies. Wired networks provide basic functionality for these systems, but they can be expensive to upgrade, reroute and extend and they can limit end-device mobility.

While distributors appreciate the agility and flexibility of wireless, they have largely continued to use wired connections for critical operations because they perceive them as providing higher performance, reliability and security. Private 5G networks now offer a solution, because for the first time, a wireless approach can provide high-quality performance, reliability and security, giving distributors the best of both worlds.

These types of wireless networks are made possible by 5G technology, which offers greater processing power and lower latency for consistent, predictable coverage and high bandwidth. It has the power to enable an emerging set of technologies and applications that can help distribution organizations transform their businesses. It will allow them to accelerate use of Industry 4.0 technologies like industrial IoT, AI, machine learning, AR, digital twins and edge computing. And once these technologies are in place, private 5G networks enable large-scale connectivity for connected devices and the ability to capture near-real-time data throughout the facility.

Leveraging a private 5G network allows for even higher data transmission speeds and more resilient connections than typically possible with public Wi-Fi and 4G.

With these advantages, adoption of private 5G networks is projected to grow significantly. According to a 2022 report from Research and Markets, the global private 5G network market is expected to reach $36.08 billion by 2030, with a CAGR of 47.5% across the eight-year period.[1]

Private wireless networks become a viable — and strategic — alternative

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 either citizens broadband radio service (CBRS) or licensed spectrum, a private wireless network from Verizon gives your people and business-critical devices:

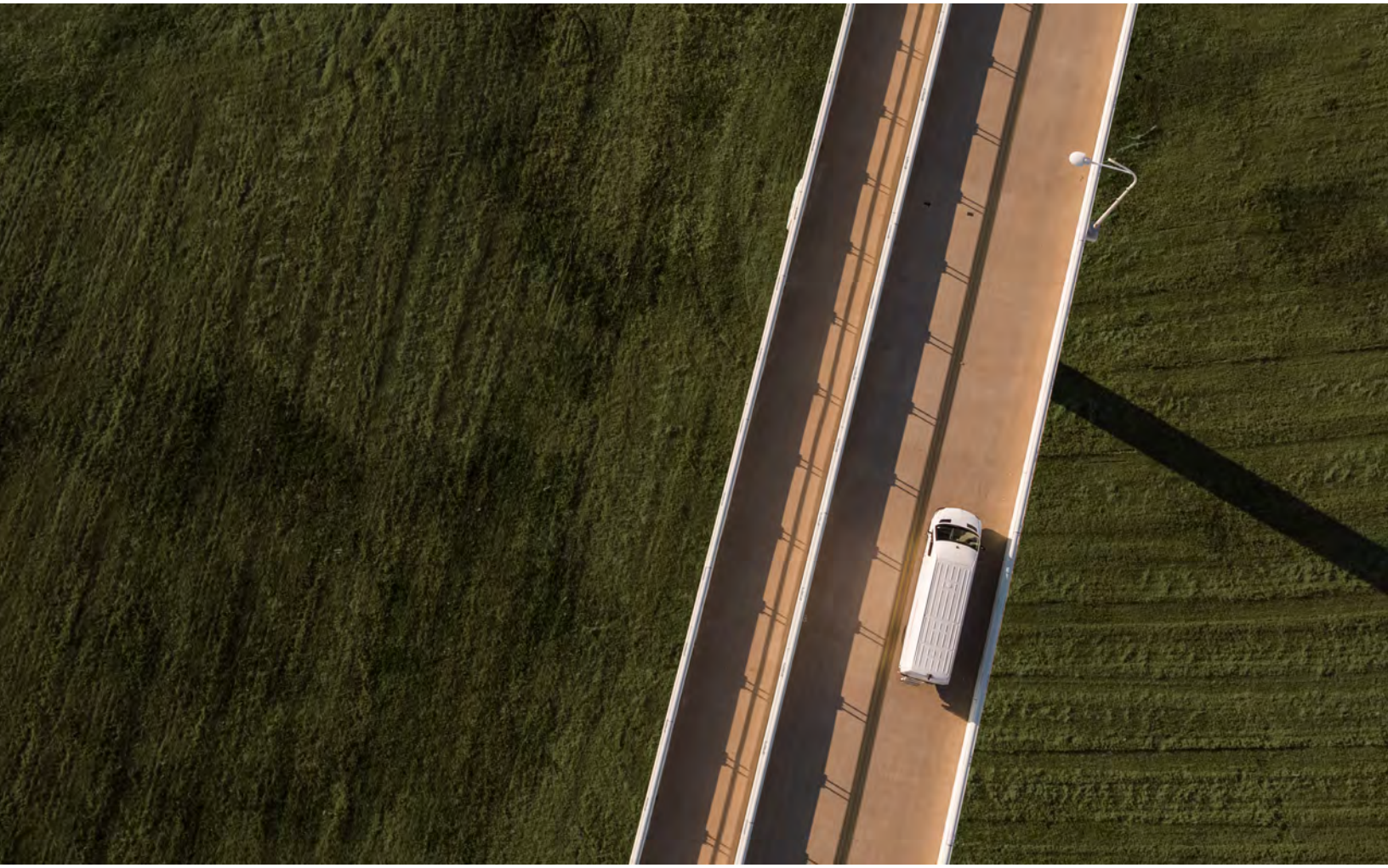
Reliable connectivity: Private wireless provides consistent, dedicated connectivity and performance from one end of your facility to the other.

Security: Private 4G LTE and 5G private networks have robust cybersecurity controls built in, including options for secure remote access to onsite operational processes and applications.

Agility: Private 4G LTE and 5G private networks are designed to be scalable for any size facility, any spectrum and 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 business and less time and effort managing their connectivity.

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



Getting started with private 5G networks

Distribution organizations can have their private 5G networks up and running in just a a few months when working with an experienced technology solutions partner like Verizon.

One often-overlooked early step is to start conducting the time- consuming but relatively inexpensive baseline assessments of current infrastructure and cybersecurity in the production environment(s). Once they have determined their current capabilities and needs, Verizon can deploy the fast, secure network that will optimize every distribution site across the business. But even while leveraging private 5G networks, it is essential that distribution organizations have the option to match use cases with the right wireless spectrum. Verizon's ability to provide and manage bandwidth all along the wireless spectrum, including unlicensed spectrum like CBRS, gives industrial customers a single partner to enable them to align their industry 4.0 initiatives with the right service.

With the increasing pressure to move to digitization, businesses are realizing that high-speed, high-performance connectivity is a distribution essential today and going forward. By maximizing use of advanced technologies, these enterprises can operate more efficiently and more effectively and stand out as leaders in today's market.

Read more at verizon.com/business/products/networks/connectivity/private-5g-network

1. de Fremery, R. Private 5G use cases for your industry. Verizon. https://www.verizon.com/business/resources/articles/s/private-5g- use-cases-for-your-industry/