Brought to you by Informa Tech

The Convergence of Private 5G and Wi-Fi 6 to Propel the New Enterprise Private Network

Publication date:
July 2024
Author(s):
Pablo Tomasi, Principal Analyst, Private Networks and Enterprise 5G

The rise and relevance of private 5G

The rise of private 5G as a transformative platform for the enterprise has been connected with the wider industry 4.0 trend. Industry 4.0 is the next wave of industrial transformation underpinned by the connection and digitalization of a wide variety of assets. This enables the delivery of innovative use cases creating the IT-OT convergence within the enterprise. However, to achieve this goal, a new connectivity paradigm is needed, one that can deliver stringent requirements while also enabling a more flexible and reconfigurable network and leveraging existing networks. This new paradigm will create an enterprise that is resilient and capable of meeting the fast-changing needs of global markets.

Private 5G can take the role of this new connectivity paradigm serving many needs. In fact, according to Omdia's data, 15% of enterprises see security, data management, and privacy as the main drivers for the deployment of their private network. This is followed by support for the wider enterprise digital transformation (11%), workforce productivity (11%), improved data computing (10%), and enabling new applications (9%).

Private 5G becomes a key building block within the complex environments of industry 4.0. It delivers predictable wireless performance, reliability, and latency across complex indoor and outdoor RF environments. It is also secure leveraging licensed spectrum and SIM/eSIM authentication. These characteristics enable private 5G to serve a wide set of innovative applications including predictive maintenance, digital twins, worker safety and productivity, remote control, AMRs, and xR.

Commissioned Research

What are the key considerations for the enterprise looking to deploy private 5G?

While benefits of private 5G are many, the fact that it is a new technology in many vertical markets creates some challenges. According to Omdia's data, high deployment and operating costs (34%), integration (31%), and a lack of compatible industrial devices (24%) are among the key challenges in the eye of the enterprise that wants to deploy a private network. To overcome these challenges a possible way forward can be by providing a single point of accountability for a complex ecosystem of technologies and partners while leveraging existing assets to lower the price as well as delivering integration with the whole enterprise business logic and technologies.

Another challenge related to being a new technology is that many verticals are not yet aware of the potential of private 5G. It is critical for the enterprise to experience first-hand the private 5G network architectures and use cases in a lab or testing center. Use cases demonstration as well as consulting to find the right use cases are essential to help the enterprise achieve the right return on investment.

Experiencing how private 5G works and which use cases are best served by this new technology can also help the enterprise to realize that the best way to strategically use private 5G is by augmenting existing investments and particularly Wi-Fi.

Why does the enterprise need to think about private 5G plus Wi-Fi?

Any enterprise has multiple needs, some better served by private 5G and some by Wi-Fi. The enterprise should therefore think of how private 5G, and Wi-Fi can improve each other. Connectivity for the enterprise should be achieved using the right combination of access technologies to support the various needs and therefore private 5G and Wi-Fi should be deployed side by side.

With Wi-Fi widely used in the enterprise environment it is a business necessity for the enterprise to optimize this investment with private 5G augmenting the enterprise connectivity landscape where Wi-Fi struggles. Private 5G should therefore be used to deliver on areas such as mission critical scenarios, specific quality of service, reliable low latency, scalability, and wide area coverage. This will complement Wi-Fi's high speed, wide ecosystem of devices, and ease of use in carpeted environments such as the office space.

Architecturally, this convergence is starting now as the interworking of 3GPP access with non-3GPP untrusted access architecture and specifications have become available as part of 3GPP release 15 and 16. This will enable Wi-Fi access points to be managed alongside the cellular network in the same platform with Wi-Fi traffic passing through the 5G core. This unified platform will enable traffic routing across multiple access points with a unified management delivering on access visibility, network management, and policy control—this will result in the reduction of networking cost. In this way, critical use cases such as 5G retrofitted or native industrial applications as well as non-critical Wi-Fi based devices and sensors will be served by a single network.

Commissioned Research

What expertise does the enterprise need from its partner?

To reap the benefits of industry 4.0 with private 5G as an enabler, the enterprise needs to find a partner with hands-on experience, a diverse set of skills and a broad ecosystem of partners. As previously discussed, private 5G and industry 4.0 are not only about connectivity and infrastructure but they are also about services and finding and delivering the right use cases. Network planning and design, use case testing and network support through a network operation center (NOC) are all needed by the enterprise starting its private 5G journey.

With private 5G networks often combining different partners for RAN, core, cloud, edge computing, applications, and devices, there is the risk of high complexity. This creates the need for a partner that can orchestrate and manage this complexity.

Among the active players, Tata Consultancy Services (TCS) is a global leader that provides complete transformation solutions comprising IT-OT integration, GenAI based applications, edge computing, analytics and private 5G for the enterprise. The company leverages an AI-ML based integrated platform for end-to-end deployment, monitoring and management in its engagements with enterprise and telco customers. TCS' 5G labs and global innovation hubs (TCS Pace Port™) showcase these solutions and its domain expertise spanning several industries. It has worked on the convergence of private 5G and Wi-Fi and has over one hundred use cases across industries including Automotive, Agriculture, Healthcare, Education, Manufacturing, Mining, Ports, Energy Resources and Utilities.

Author(s)

Pablo Tomasi, Principal Analyst, Private Networks and Enterprise 5G

askananalyst@omdia.com

Omdia Commissioned Research
This piece of research was commissioned by Tata Consultancy Services.

https://www.tcs.com/what-we-do/services/network-solutions-and-services

Citation policy
Request external citation and usage of Omdia research and data via citations@omdia.com.

Omdia consulting
We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help you. For more information about Omdia's consulting capabilities, please contact us directly at consulting@omdia.com.

CONTACT US
omdia.com

customersuccess@omdia.com