

Private 5G Network Deployment Tracker & Forecasts: 2024 – 2030

<https://marketpublishers.com/r/PAF743D00C69EN.html>

Date: June 2024

Pages: 0

Price: US\$ 1,500.00 (Single User License)

ID: PAF743D00C69EN

Abstracts

Private LTE networks are a well-established market and have been around for more than a decade. However, private networks based on 3GPP-defined 5G specifications are just beginning to move beyond proof-of-concept trials and small-scale deployments to production-grade implementations of standalone 5G networks, which are laying the foundation for Industry 4.0 and advanced application scenarios.

Compared to LTE technology, private 5G networks can address far more demanding performance requirements in terms of throughput, latency, reliability, availability and connection density. In particular, 5G's URLLC and mMTC capabilities, along with a future-proof transition path to 6G networks in the 2030s, have positioned it as a viable alternative to physically wired connections for industrial-grade communications between machines, robots and control systems. Furthermore, 5G's wider coverage radius per radio node, scalability, determinism, security features and mobility support have stirred strong interest in its potential as a replacement for interference-prone unlicensed wireless technologies in industrial IoT environments, where the number of connected sensors and other endpoints is expected to increase significantly over the coming years.

As end user organizations in the United States, Germany, France, China, Japan, South Korea, Taiwan and other countries ramp up their digitization and automation initiatives, some private 5G installations have progressed to a stage where practical and tangible benefits – particularly efficiency gains, cost savings and worker safety – are becoming increasingly evident. Among other examples, Tesla's private 5G implementation on the shop floor of its Gigafactory Berlin-Brandenburg plant has helped in overcoming up to 90 percent of overcycle issues in the factory's general assembly shop; aluminum die-castings supplier IKD has replaced 6 miles of cables connecting 600 pieces of machinery with a private 5G network; the East-West Gate Intermodal Terminal's private

5G network has increased productivity from 23-25 containers per hour to 32-35 per hour and reduced the facility's personnel-related operating expenses by 40 percent; NEC Corporation has improved production efficiency by 30 percent through the introduction of a local 5G-enabled autonomous transport system at its Kakegawa factory; JD Logistics has reduced the likelihood of connection timeouts by an impressive 70 percent since migrating AGV communications from unlicensed Wi-Fi systems to private 5G networks at its logistics parks; and Wagyu beef producer Ushino Nakayama has achieved labor cost savings of more than 10 percent using local 5G-connected patrol robots and image analytics.

SNS Telecom & IT estimates that global spending on private 5G networks for vertical industries will grow at a CAGR of approximately 42% between 2024 and 2027, eventually accounting for nearly \$3.5 Billion by the end of 2027. Although much of this growth will be driven by highly localized 5G networks covering geographically limited areas for Industry 4.0 applications in manufacturing and process industries, sub-1 GHz wide area critical communications networks for public safety, utilities and railway communications are also anticipated to begin their transition from LTE, GSM-R and other legacy narrowband technologies to 5G towards the latter half of the forecast period.

The "Private 5G Network Deployment Tracker & Forecasts: 2024 – 2030" datasheet includes an extensive database of over 7,000 global private cellular network engagements across 120 countries – including more than 2,400 private 5G installations – as of Q2'2024. In addition, it provides global and regional market size forecasts for private 5G network investments from 2024 to 2030. The forecasts cover three infrastructure submarkets, 16 vertical industries and five regional markets.

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