



Private 5G Market

Maturity Indicators and
What to Expect in 2025



Introduction



The private cellular network market stands at an important stage of development in 2024, warranting a detailed assessment of its maturity and future trajectory. This report evaluates market evolution across nine key dimensions - from enterprise awareness to revenue projections - based on comprehensive surveys conducted in December 2024 with enterprise leaders, service providers, and equipment vendors.

Our analysis reveals clear market sentiment and adoption patterns, with some areas showing promise while others indicate significant room for growth. By examining these maturity indicators alongside emerging market forces, this report provides actionable insights into the industry's development and anticipated trends for 2025.

Measuring Progress: Private Network Maturity Indicators

The private 5G cellular network industry shows varying maturity levels across several key dimensions. Enterprise awareness and adoption levels remain areas of concern, while technology readiness and use case diversity demonstrate more encouraging progress. Many enterprise verticals still lack a complete understanding of relevant business cases and implementation approaches.

Our survey, conducted in December 2024 with enterprise leaders, service providers, and equipment vendors, provides insight into where the industry stands today across nine critical dimensions, from technology readiness to business model development. Survey respondents were asked to score these maturity indicators from 1 to 5 (5 being the highest).

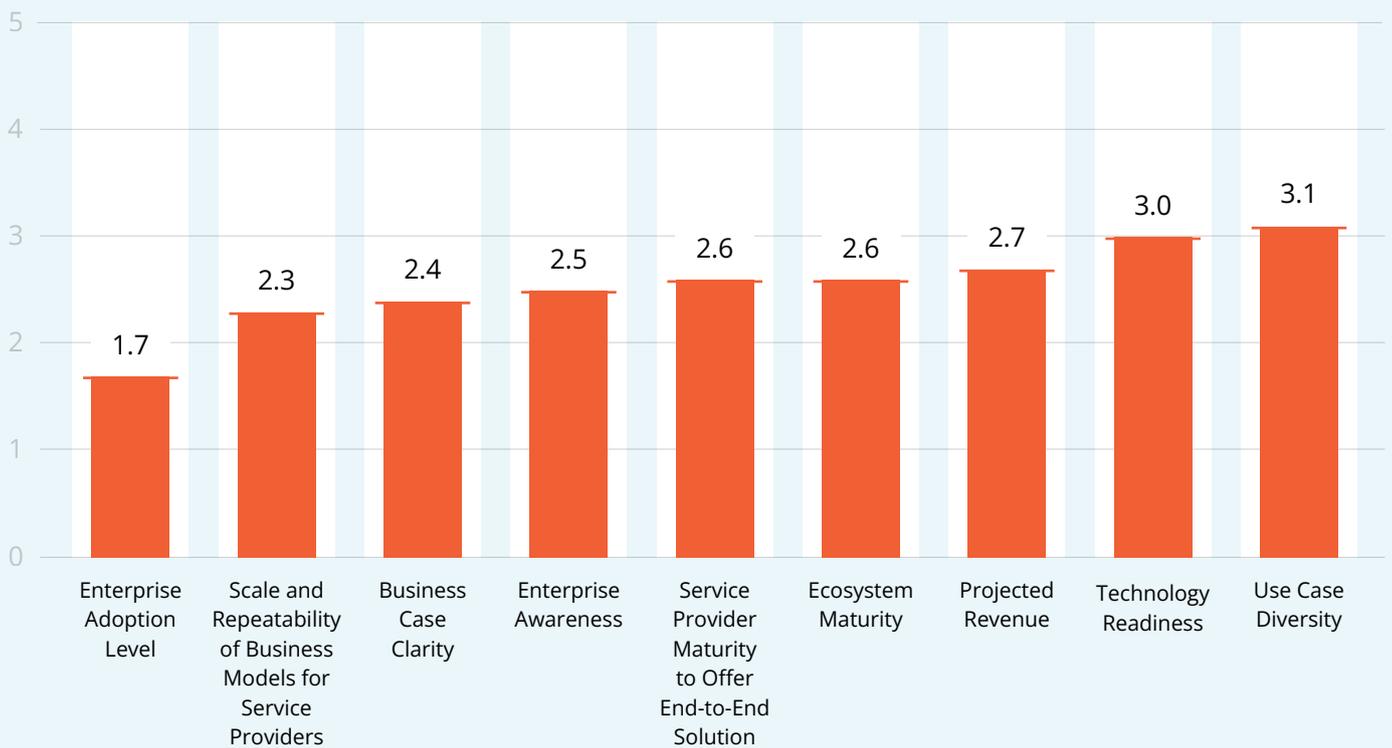


Questions for Private Network Maturity Indicators Survey

- ☑ How knowledgeable do you think enterprises are about the availability of private cellular (4G/5G) networks and the capabilities they bring to businesses?
- ☑ How would you describe enterprises' adoption levels of private cellular (4G/5G) networks across multiple industry verticals?
- ☑ Is the business case for the adoption of private cellular (4G/5G) networks by enterprises clearly laid out? Is the ROI justified?
- ☑ Are you aware of a wide variety of private cellular (4G/5G) network applications across different industry verticals?
- ☑ Is the private 4G/5G network technology ready for widespread adoption, i.e., is it easy to deploy, integrate with enterprise infrastructure, and manage?
- ☑ Is the device ecosystem (e.g., cameras, sensors, IoT devices, dongles) sufficiently mature for enterprises to deploy private cellular (4G/5G) networks with the functionality needed?
- ☑ Do service providers (MSPs, SIs, MNOs, NaaS providers) have the skills, resources, and infrastructure to offer complete private cellular (4G/5G) network end-to-end solutions for their enterprise customers?
- ☑ Have service providers developed clear business models for the deployment, use, and management of private cellular (4G/5G) networks?
- ☑ Is the projected growth in revenue for private cellular (4G/5G) networks sufficient and clearly understandable?

Maturity Indicators for Private Cellular (4G/5G) Networks

(Source: PrivateLTEand5G.com Survey)



The survey results reveal a private network market with distinct areas of strength and challenge. Use case diversity shows the highest score at **3.1**, followed by technology readiness at **3.0**, suggesting that private networks' technical foundations and application potential are relatively well established. However, enterprise adoption remains the lowest-scoring dimension at **1.7**, indicating significant barriers to market penetration.

Enterprise awareness (**2.5**) and business case clarity (**2.4**) show room for improvement, highlighting the need for better education and more compelling ROI frameworks. The ecosystem's maturity and service provider maturity both score **2.6**, suggesting that while progress has been made in building out the necessary infrastructure and capabilities, there is still work to be done in creating a robust support system for enterprise deployments.

Service provider business models score **2.3**, indicating that sustainable and scalable approaches to market are still being developed. Projected revenue expectations stand at **2.7**, reflecting cautious optimism about the market's financial potential while acknowledging current challenges in monetization.

The survey also explored what industry stakeholders see as the primary obstacles to widespread private cellular network adoption. Respondents rated various potential barriers on a scale of 1 to 5, where 1 indicated "this is not a problem" and 5 indicated "this is a major problem."

The barriers included:



Confusion on whether to use 4G or 5G networks



Lack of confidence in the 5G technology



Lack of understanding of regulatory and spectrum licensing requirements



Lack of benefits over their existing wireless (Wi-Fi or other) network



Lack of enterprise device ecosystem to natively support 4G/5G network



Integration challenges between private cellular networks and existing enterprise IT/OT systems



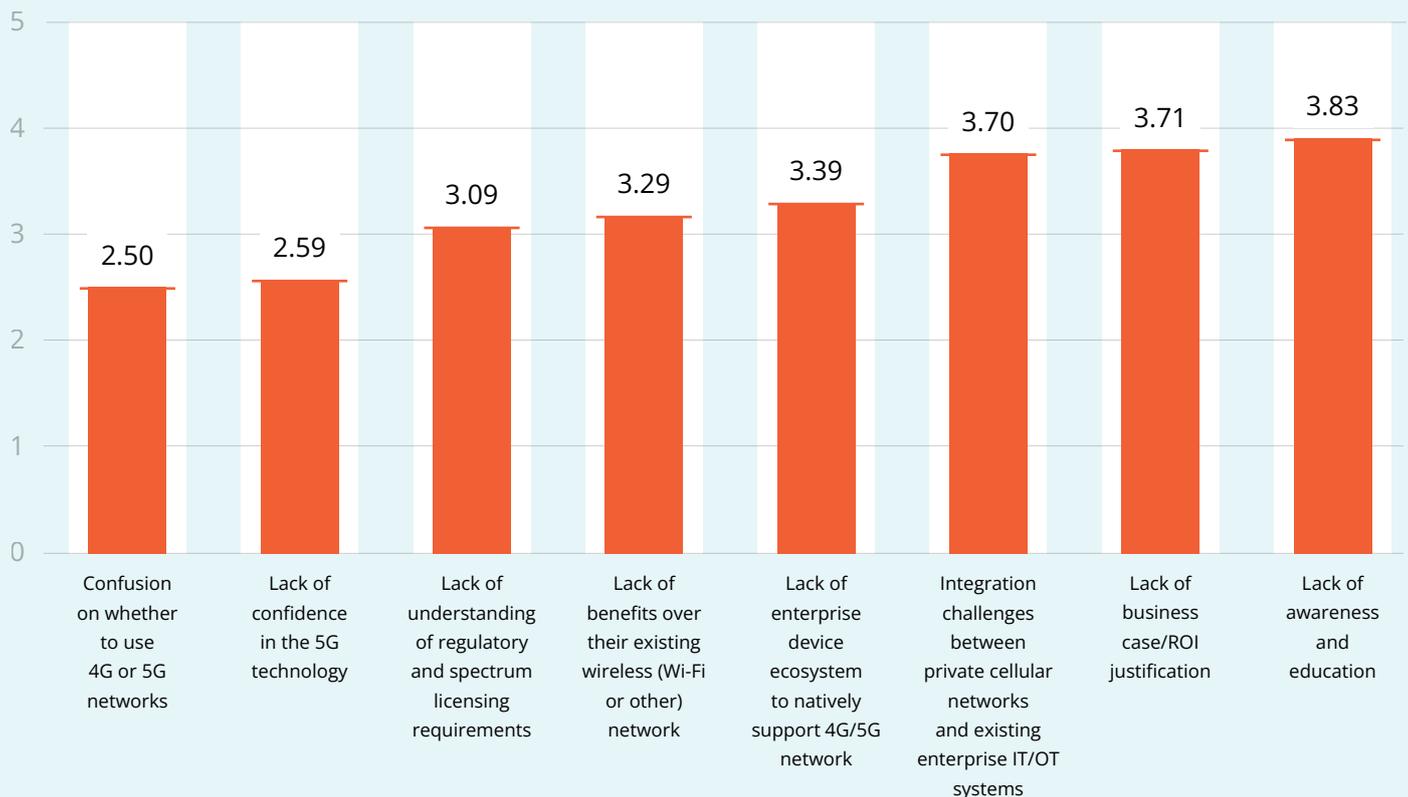
Lack of business case/ROI justification



Lack of awareness and education

Top Barriers to Widespread Adoption of Private Cellular Networks (Rated 1-5)

(Source: PrivateLTEand5G.com Survey)



The results reveal a clear hierarchy of industry challenges across three distinct tiers. The top tier consists of three critical barriers: lack of awareness and education (3.83), lack of business case/ROI justification (3.71), and integration challenges between private cellular networks and existing enterprise IT/OT systems (3.70). The clustering of these scores above 3.7 suggests these are the most significant obstacles facing the industry today.

A middle tier of challenges emerges with a lack of enterprise device ecosystem (3.39), lack of benefits over existing wireless networks (3.29), and regulatory understanding (3.09). These barriers, while significant, show notably lower scores than the top tier, suggesting they represent secondary concerns in the current market landscape.

The lowest tier consists of two technology-related challenges: lack of confidence in 5G technology (2.59) and confusion about 4G versus 5G implementation (2.50). These markedly lower scores suggest that technical understanding and confidence in the underlying cellular technology have primarily been established. This pattern indicates that the primary barriers to adoption are not technical in nature but rather stem from business, educational, and integration challenges.

What does it all mean?

The private cellular network market shows a mixed maturity profile based on our 2024 survey results and industry discussions. While technical foundations are solid, with use case diversity (3.1) and technology readiness (3.0) leading the indicators, adoption barriers remain significant. The notably low enterprise adoption score (1.7) paired with moderate enterprise awareness (2.5) suggests fundamental market penetration challenges.

The barrier analysis provides crucial context - while confidence in 5G technology is strong (shown by low concern scores of 2.50-2.59 for technical issues), the highest-rated challenges center on awareness, ROI justification, and integration complexity (all scoring above 3.70). This indicates that market growth is primarily hindered by business and operational factors rather than technological limitations.

These initiatives could help accelerate adoption rates and unlock the market's potential, particularly in sectors showing readiness for private network deployment.

Success in 2025 will require focused efforts in three key areas



Looking Ahead: Market Forces Shaping 2025

While not as aggressive as some have hoped, key indicators lead us to predict that the private network landscape in 2025 will continue to grow at a steady pace.

The private network market is following adoption patterns similar to previous enterprise wireless technologies like Bluetooth and Wi-Fi, where broad adoption didn't occur until prices and complexity were reduced significantly.

The integration of the Internet of Things (IoT) with private networks is expected to accelerate, enabling more sophisticated and scalable applications. Industries are increasingly leveraging IoT for automation, monitoring, and data analytics, further driving the expansion of IoT-enabled private networks.



Key market accelerators that emerged in 2024 will continue in 2025



Decreasing hardware costs and size of form factors



Simplified deployment and management aligned with IT practices rather than carrier methodologies



Maturing ROI models, making business cases more compelling



Growing demand for real-time connectivity supporting advanced applications such as robotics, AGVs, and drone operations for business-critical use cases, particularly in industrial settings



Business model innovations will be crucial in developing private networks, with clear differentiation emerging between large enterprises and SMBs. Large organizations with established IT departments typically prefer to own and operate their private network infrastructure, leveraging their existing technical expertise and maintaining direct control over their critical communications infrastructure. In contrast, the adoption of Network-as-a-Service (NaaS) models is anticipated to rise among small and medium-sized enterprises, providing them with greater flexibility and lower upfront costs. This model will be particularly attractive to SMBs looking to leverage advanced network capabilities without significant capital expenditure or the need to develop internal cellular expertise. Thus, the market will likely see parallel growth in both owned infrastructure and NaaS deployments, each serving distinct enterprise segments based on their resources, expertise, and operational requirements.

Partnerships and ecosystems involving network providers, technology vendors, and industry-specific solution providers will become more prevalent, driving innovation and creating comprehensive solutions tailored to specific industry needs. These combinations of solutions and services will make it easier for enterprises to fill the skills and knowledge gaps.

We can expect innovation in new use cases and applications for private networks to continue across various sectors. In smart manufacturing, private 5G networks will continue to lead in enabling advanced processes such as real-time monitoring, predictive maintenance, and autonomous operations, enhancing productivity and reducing downtime. Other industries, such as transportation, logistics, oil & gas, and mining, with mission-critical applications that have performance and safety issues due to network limitations, will accelerate the pace of deployments.

System Integrators will emerge as crucial players in the private network ecosystem, particularly those with vertical-specific expertise. This specialization trend reflects the market's recognition that successful private network deployments require a deep understanding of industry-specific workflows, compliance requirements, and operational technologies. We expect to see SIs developing dedicated practice areas combining traditional IT integration capabilities with cellular expertise, potentially driving a significant portion of new deployments.



Network API marketplaces will begin showing meaningful revenue growth as operators and private network providers expand their API exposure strategies. This shift marks a fundamental change in how networks are monetized, moving beyond basic connectivity to enabling application-aware networks and advanced service delivery. The combination of standardization efforts through initiatives like CAMARA and the GSMA Open Gateway and increasing enterprise demand for network-aware applications will drive this growth. We anticipate early success in manufacturing and logistics verticals, where applications requiring precise quality of service controls and network responsiveness can leverage these APIs to enhance operational performance.

Regulatory changes will also shape the future of private networks. Governments worldwide are expected to allocate more spectrum for private networks, facilitating their deployment and

expansion. Regulatory frameworks will evolve to support the growing demand for private network infrastructure, while stricter security and compliance standards will be implemented to protect data and ensure network integrity.

We remain skeptical that Open RAN's impact on private networks will be significant in 2025. While some enterprises cite vendor lock-in concerns, Open RAN compliance currently represents a "nice-to-have" feature rather than a critical requirement for most deployments.

These projections and trends highlight the dynamic nature of the private network landscape in 2025. As the market evolves, businesses will need to stay agile and adapt to new technologies and regulatory environments to fully capitalize on the opportunities presented by private networks.

Several key trends will be crucial to watch in 2025



Integrating edge computing with private networks will enable faster data processing and reduced latency for time-sensitive applications.

Artificial intelligence and automation will significantly manage and optimize private networks, leading to more efficient operations and enhanced network performance.



There will be a growing focus on sustainable network solutions, emphasizing energy efficiency and reducing the environmental impact of network infrastructure.



If you are an SI or MSP looking to learn how to offer private wireless services or want to connect with potential partners who can help you deliver network expertise to your customers, [join our membership program here.](#)

About PrivateWirelessPro

PrivateWirelessPro.com is dedicated to equipping system integrators with the expertise needed to excel in the rapidly evolving field of private 5G networking. Recognizing the gap in cellular solutions knowledge among system integrators, we offer comprehensive training, thought leadership, and expert guidance to empower them to meet their clients' growing demands for private 5G deployments. Our services cover every aspect of the industry, from identifying market opportunities and selling private 5G solutions to mastering installation, deployment, and providing tailored solution recommendations, ensuring integrators are well-prepared to lead in this cutting-edge technology space.

For more resources and guidance for system integrators and private cellular networks, visit us at: PrivateWirelessPRO.com



About PrivateLTEand5G.com

PrivateLTEand5G.com is the industry's only B2B media publication for everything related to Private Cellular Networks. The publication provides network operators, telecom vendors, service providers, and enterprises with critical insights to commercialize private LTE and 5G networks. It regularly shares significant enterprise private wireless deployments around the globe.

The publication hosts the podcast "Alynment" to have engaging discussions with industry leaders on the supply as well as demand side, revealing their thoughts and plans for wireless connectivity, as well as other diverse yet related topics, including IoT security, the distributed edge, CBRS, and navigating the myriad choices available for private networks.

PrivateLTEand5G.com is a division of KAIROS Pulse, a strategic consulting company specializing in aligning technology with business value for B2B technology companies.

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