Magic Quadrant for CSP 5G RAN Infrastructure Solutions

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This Magic Quadrant helps communications service providers identify and evaluate network equipment providers for their 5G RAN infrastructure. It will guide CSP chief technology officers (CTOs) toward the right 5G RAN vendor choices in a complex and rapidly evolving market.

Market Definition/Description

Gartner defines the market of communications service provider (CSP) 5G radio access network (RAN) infrastructure solutions as consisting of hardware and software components that support CSPs in providing connectivity services. Such services include mobile broadband, fixed wireless access and voice communication over a 3rd Generation Partnership Project (3GPP)-based 5G network. Gartner considers 5G to be a foundational technology, implemented to evolve a CSP's services, including in the consumer and enterprise business sectors. This CSP 5G RAN infrastructure market encompasses CSPs' deployment of RAN solutions for public 5G.

5G RAN infrastructure solutions mainly support CSPs in upgrading their existing 4G RAN infrastructure, while providing an enhanced user experience and keeping costs under control. For instance, the introduction of 5G massive multiple input/multiple output (MIMO) and dynamic spectrum sharing between 4G and 5G can improve user throughput and rapidly expand 5G coverage. These solutions not only enhance network quality, but also serve as part of the 5G platforms addressing challenges faced by enterprises.

Mandatory Features

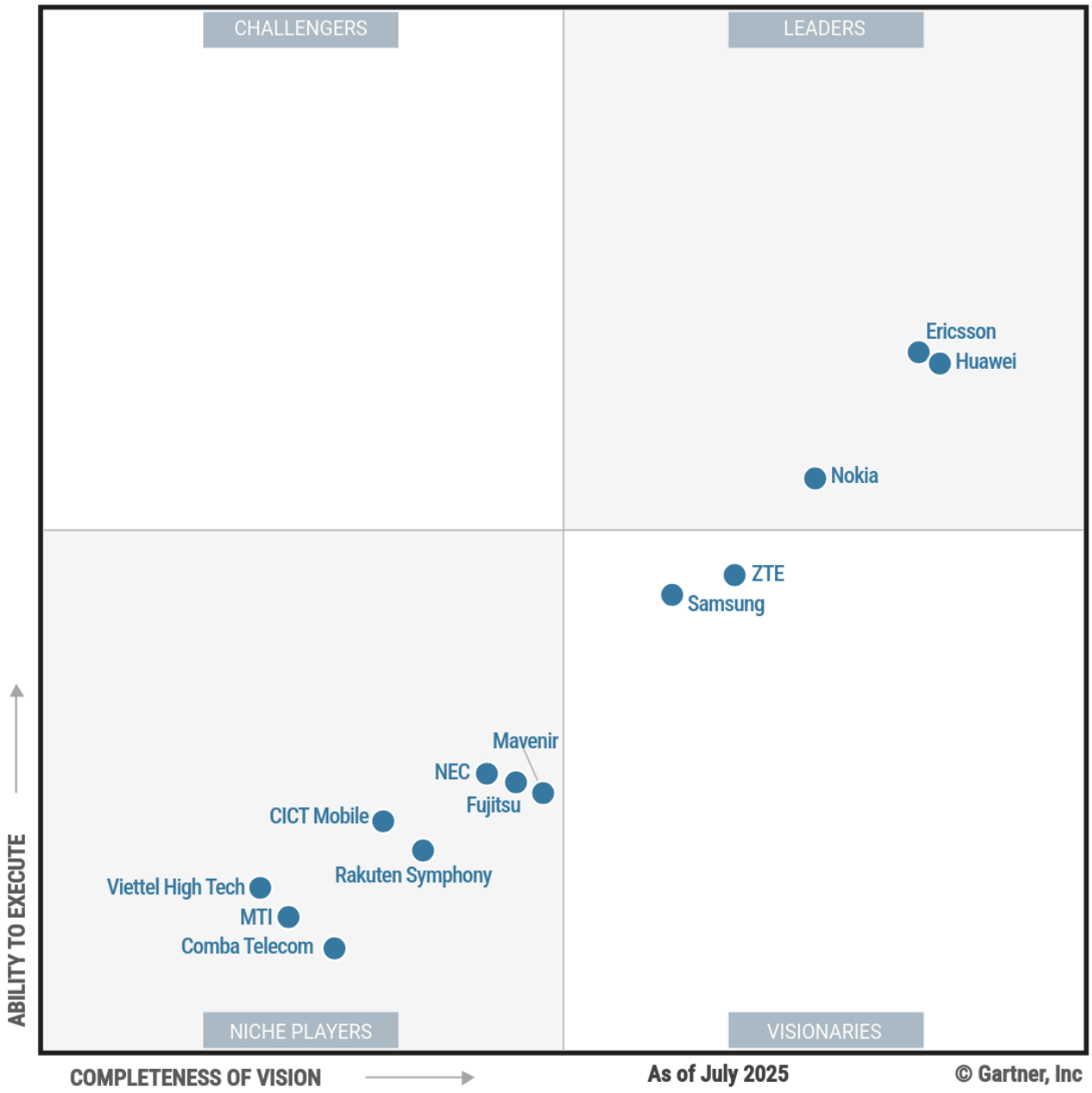
- RAN equipment, including radio units (RUs) and baseband units (BBUs) for 5G new radio. Examples include passive antennas, RUs, active antenna units (AAUs), virtualized BBUs (vBBUs), BBUs, distributed units (DUs), centralized units (CUs), virtualized DUs (vDUs), virtualized CUs (vCUs) and small cell.

Common Features

- Network infrastructure services — for design, build, run and support.
- 2G/3G/4G LTE RAN equipment, including passive antennas, RU, vBBU, BBU and small cell.
- Components provisioning open RAN and vRAN, including chipsets, servers, hypervisors and cloud-native platforms, and related open RAN/vRAN system integration.

Magic Quadrant

Figure 1: Magic Quadrant for CSP 5G RAN Infrastructure Solutions



Gartner

Vendor Strengths and Cautions

CICT Mobile

CICT Mobile is a Niche Player in this Magic Quadrant. Headquartered in Wuhan, China, CICT Mobile specializes in providing mobile communications technologies, products and services for the communications industry. The company's products include network equipment, antenna feeder equipment and small cells, as well as services such as system integration, network management and operations. In the mobile infrastructure business, CICT Mobile offers end-to-end solutions for Time Division-Long Term Evolution (TD-LTE) networks and 5G, including core, radio access and optical transport.

Strengths

- As a state-owned optical company, CICT Mobile has close relationships with domestic CSPs (e.g., China Mobile, China Telecom, China Unicom) and can leverage these connections to participate in scaled 5G rollouts in the Chinese market.
- China Information and Communication Technology (CICT) Group is a major supplier of optical equipment in China and Southeast Asia. CICT Mobile can leverage its parent company's business network for optical products to support the expansion of its 5G RAN product and service in the region.
- CICT Mobile has a good portfolio, IP and industrial 4G/5G solution, especially in intelligent manufacturing, smart energy and cellular vehicle-to-everything (C-V2X).

Cautions

- CICT Mobile has a limited 5G-related product portfolio, with fewer RU and BBU variations, compared with Leaders in this Magic Quadrant. In addition, it lacks a clear strategy for emerging technologies like Open RAN, cloud-native infrastructure and AI adoption. This limits its capabilities in embracing the new 5G technology ecosystem.
- CICT Mobile is a local Chinese 5G equipment vendor with a small market share. The company's lack of system integration, service capability and presence in the global market limit its ability to serve global clients outside China.
- Tensions between the U.S. and China are ongoing, along with political resistance and security concerns about Chinese vendors' products in certain nations and regions. This limits its market exposure outside China.

CICT Mobile did not respond to requests to provide supplemental information for this document. Gartner's analysis is, therefore, based on other credible sources, including public information.

Comba Telecom

Comba Telecom is a Niche Player in this Magic Quadrant. Headquartered in Hong Kong, Comba Telecom's major business derives from antenna and subsystems, including base station antennas, combiners and filters, and a distributed antenna system (DAS). However, since 2020, the company has expanded its network product portfolio by providing Open RAN RUs. Its Open RAN solutions cover open radio RUs for macro urban/rural environments,

open radio small cell for indoor enterprises, and open radio DAS for neutral host venues. Comba Telecom also offers a wide array of services, including network design, optimization and maintenance services.

Strengths

- Comba Telecom has developed a notable presence in the 5G antenna market, particularly with its innovative Helifeed 2.0 Green Antenna series, which has been widely deployed in China and Asia markets. The credibility of its antennas allows the company to rapidly cultivate relationships with CSPs and other ecosystem players, as well as penetrate markets.
- Comba Telecom provides comprehensive antenna, DAS and indoor small cell solutions that have been commercially deployed (e.g., China Mobile) in a range of environments, such as airports, subway stations, railways and tunnels, and landmark buildings. This approach diversifies its business and reduces dependency on any single scenario.
- Comba Telecom's services include consultancy, network design, drive tests and maintenance. This range of services ensures CSP clients receive continuous support — from planning through postdeployment — thereby enhancing customer satisfaction and retention.

Cautions

- Recognized as an antenna specialist, Comba Telecom has limited capability to provide Tier 1 local support on RAN business for CSPs outside China and Asia. This hinders its ability to secure CSP contracts as a 5G RAN vendor.
- Comba Telecom's business is focused on small cell and private mobile networks, and its products are not yet proven for large-scale 5G macro RAN rollouts. When considering Comba Telecom, CSPs need to position it in specific use cases and carefully evaluate product features and capabilities, service support, references and future roadmaps.
- Comba Telecom's 5G RAN product portfolio is not as comprehensive as those of Leaders in this Magic Quadrant. Its limited resources — such as system integration and support in markets outside China and Asia — restrict its growth potential in these regions.

Comba Telecom did not respond to requests to provide supplemental information for this document. Gartner's analysis is, therefore, based on other credible sources, including public information.

Ericsson

Ericsson is a Leader in this Magic Quadrant. It is a multinational networking and telecommunications company headquartered in Stockholm. Ericsson provides services, software and infrastructure for the communications industry. It has long maintained a strong focus on 3GPP-based mobile networks, and has for years been at the forefront in terms of volume of LTE deals. Ericsson's 5G RAN offerings, which include Ericsson Radio System, Antenna System, Radio Site System, Cloud RAN, Radio Dot System and Orchestrator, together with its professional services, help it maintain a strong position in the 5G RAN infrastructure market.

Strengths

- Ericsson's leading role in the evolution of 5G technology, including such innovations as dual polarization beamforming for massive MIMO radios and the in-house Ericsson Silicon, has given the company a first-mover advantage and enhanced its mind share as a technological thought leader.
- In February 2025, Ericsson reported that it had been working with CSPs to establish 159 commercial live 5G RAN networks. Based on Gartner counting, Ericsson has concluded more 5G deals with CSPs than any of its competitors. This success can be attributed to its diverse product portfolio, strong service and delivery teams, and broad market presence.
- Ericsson's R&D investments in 5G, 6G and adjacent technologies have helped maintain its thought leadership. These investments include energy-efficiency features, contributions to various standardization bodies (for example, 3GPP and O-RAN ALLIANCE) and its industry benchmark Ericsson Mobility Report.

Cautions

- Ericsson's RU product portfolio is not as extensive as that of some competitors in this Magic Quadrant. For example, Ericsson currently offers fewer massive MIMO product variations, such as larger antenna array massive MIMO (e.g., 384 antennas), frequency division duplexing (FDD) massive MIMO, active-passive antennas, and multiband 8T8R RUs.
- In some cases, Ericsson has been said to lack flexibility and a customer-oriented culture. For instance, some CSPs have noted that they have to align with Ericsson features, roadmap and delivery priorities, rather than the other way around.

- Although Ericsson announced its Open RAN support and related deal with AT&T in 2023, and commercial deployment of vRAN in 2024, its priorities are single-vendor Open RAN supported by end-to-end Ericsson RAN solutions. Ericsson's approach to Open RAN fronthaul multivendor integration is conservative, based on its perception that both the market and technology are at a low level of readiness.

Fujitsu

Fujitsu is a Niche Player in this Magic Quadrant. It is an information and communications technology (ICT) vendor headquartered in Kawasaki, Japan. Fujitsu focuses on five key technology areas, including networks with 5G solutions. While its mobile network infrastructure business — up to 4G — was heavily focused on the Japanese market, the company is now leveraging 5G to expand its international sales efforts. Fujitsu has been promoting Open RAN, vRAN and AI-RAN, and is initially concentrating on selling 5G O-RAN RU (O-RU) to the global market. Fujitsu's network business was spun off into a separate company in July 2025, and its 5G RAN research, development and business have begun as 1Finity, a Fujitsu group company.

Strengths

- In November 2024, Fujitsu and SoftBank announced a partnership to realize AI-RAN commercialization. Together, they have already deployed an outdoor proof of concept for AI-RAN at Keio University in Japan. Fujitsu is agile and advanced in providing vRAN software and RUs, which support Layer 1 software development based on the NVIDIA AI Aerial platform that runs on the NVIDIA GH200 Grace Hopper Superchip.

- Fujitsu has proven itself a trusted partner for Japanese CSPs, such as NTT DOCOMO, KDDI and Rakuten Mobile. NTT DOCOMO has been commercially deploying Fujitsu 5G vRAN since 2023. For KDDI, Fujitsu has commercially deployed 5G Open RAN massive MIMO RUs. In 2025, Rakuten Mobile selected Fujitsu's 5G RU to accelerate coverage. Thanks to its leadership and local presence in Japan, Fujitsu has developed the ability to rapidly improve the quality of its products.

- Fujitsu has been proactive in organizing multivendor O-RAN-compliant integration testing with various BBU and RU vendors, and providing network infrastructure services to CSPs. This has resulted in early wins and engagements with Boost Mobile, Deutsche Telekom and AT&T. Fujitsu helps CSPs integrate and certify multivendor Open RAN networks via its interoperability labs in the U.S., Japan and India.

Cautions

- Fujitsu has limited geographical reach (Japan and the U.S.) and is still establishing a presence in Europe and the rest of Asia.
- Fujitsu's go-to-market strategy, including its sales plan (direct sales rather than channel sales) and target customers, is not clear outside Japan, and its localization capabilities are not assured.
- Fujitsu's 5G infrastructure product portfolio is not as comprehensive as those of Leaders in this Magic Quadrant. Outside Japan in particular, Fujitsu lags behind Leaders in areas such as massive MIMO multiband RUs and 5G BBU solutions.

Huawei

Huawei is a Leader in this Magic Quadrant. It is a global ICT and smart devices provider headquartered in Shenzhen, China. Huawei's diverse business spans ICT infrastructure, enterprise, consumer electronics, cloud computing, energy and automotive sectors. Huawei's success in the 5G RAN market stems from its comprehensive and robust cellular network portfolio, which encompasses macrocells, small cells, single RAN BBUs and professional services. Huawei remains committed to investing in 5G and leading 5G-Advanced R&D, with a particular emphasis on leveraging innovative hardware and software to enhance network performance, capacity, intelligence and energy efficiency.

Strengths

- Huawei has established itself as a technological leader in the 5G RAN market, spearheading 5G-Advanced standards development and innovative technologies. Huawei's 5.5G products, with "Native Giga" and "Native Green" initiatives, include Extremely Large Antenna Array (ELAA) technology (dual-band MetaAAU), ultrawideband and multiantenna technologies, and "0 Bit 0 Watt" energy solutions.
- Huawei offers an AI-centric 5.5G RAN portfolio to CSPs. This includes its Meta BladeAAU, mmWave AAU, and sub-1GHz Massive MIMO. Huawei has developed a number of leading innovative features, such as the massive MIMO iBeam algorithm, Super Uplink, iHashBand2.0, and the distributed massive MIMO software feature for its indoor base stations. The company's RAN Intelligent Agents, with telecom foundation models, enable intent-driven networks, improve analysis accuracy and reduce operational complexity.

- Huawei has strong deployment and services capabilities. It has a greater volume of 5G equipment deployed in China (e.g., China Mobile, China Telecom, China Unicom, China Broadnet) than any other vendor, and benefits from the large-scale, stand-alone 5G implementation in China. Huawei's 5G business is also well-positioned in some countries in Asia/Pacific, Europe and the Middle East. Huawei has established a global professional services organization to support its global operations, ensuring rapid response to customer needs.

Cautions

- Huawei's market presence and growth opportunities in regions such as North America, parts of Europe and Asia/Pacific are impacted by ongoing geopolitical challenges and security integrity concerns around its network portfolio.
- Due to restrictions imposed by the U.S. government, Huawei lacks access to some leading advanced silicon technology for 5G RAN chipsets. This may hinder its ability to keep pace with key competitors in chipset development.
- Huawei has been slow to respond to emerging trends like Open RAN and public cloud partnerships. This limitation constrains Huawei's capacity to participate in strategic Open RAN, vRAN and public cloud initiatives pursued by various CSPs.

Mavenir

Mavenir is a Niche Player in this Magic Quadrant. It is a privately owned network software provider in the telecommunications industry headquartered in Richardson, Texas, U.S. Mavenir offers end-to-end, cloud-native 5G network software. A significant early player in Open RAN, the company launched a fully virtualized 4G/5G Open RAN solution in 2019, and offers a 5G SA core together with multigenerational support and system integration capabilities. Mavenir has added 2G capabilities, intelligent edge and RAN Intelligent Controller (RIC) to its portfolio. Mavenir positions itself to help CSPs break out of vendor lock-in and discontinue old legacy business models as quickly as possible.

Strengths

- Mavenir focuses on open, multivendor interoperability on various interfaces and platforms. This includes X2 and Xn interfaces for base station handovers, integration with commercial off-the-shelf servers, and prevalidation and preintegration with different cloud platforms, all with full automation — for example, Red Hat's telco cloud, Amazon

EKS Anywhere, VMware Telco Cloud Platform and Google Distributed Cloud Edge. Its Network Intelligence-as-a-Service provides full-stack telco AI capability with layers of AI agents generating and exchanging intelligence with each other over services-based interfaces.

- Mavenir offers flexibility and adjustability for CSPs to support both look-aside acceleration and in-line acceleration methods, as well as multiple external hardware acceleration options.
- Mavenir has closed a number of 4G/5G vRAN deals with both "greenfield" and Tier 1 operators, as well as smaller CSPs, for mobile and fixed wireless access (FWA) and nonterrestrial network (NTN) providers. These key operators include Airtel, AT&T, Boost Mobile, Bell Canada, Deutsche Telekom, Ligado Networks, Paradise Mobile, STC, Terrestar Solutions, Virgin Media O2, and Vodafone Idea.

Cautions

- Mavenir has cut about 2,000 employees, or one-third of its workforce, in the past two years. Its decision to exit RAN hardware could also affect its end-to-end 5G portfolio, product development, sales and marketing engagements, and product quality. This is an area of continued concern.
- The slow pace of investment by CSPs in vRAN and Open RAN solutions at scale has hampered Mavenir's growth.
- Mavenir's market approach has been to focus on vRAN and not develop traditional purpose-built solutions. As a result, it has limited experience at scale with commercial 5G RAN. Mavenir also lacks long-term established relationships as a trusted RAN provider, and is not positioned to bid for the non-vRAN portion of 5G RAN, which continues to be a major investment focus for many CSPs.

MTI

Microelectronics Technology Inc. (MTI) is a Niche Player in this Magic Quadrant. Headquartered in Taiwan, it specializes in the design and manufacture of radio frequency (RF)/microwave and satellite communication products. Since the 3G era, MTI has established itself as a key OEM/ODM partner for other network equipment providers. With the advent of 5G, MTI has ventured into the Open RAN market by offering 5G RUs, signaling its ambition to become a 5G network equipment provider. MTI has been a member of the Foxconn group of

companies since 2012, and Foxconn itself is aiming for new growth in the 5G network business, including developing and providing 5G small cells.

Strengths

- MTI's technology expertise in RF and microwave positions it to become a bigger player in the Open RAN ecosystem. Additionally, MTI is an active contributor to the O-RAN ALLIANCE and Telecom Infra Project (TIP).
- With over 40 years as an OEM/ODM, MTI has developed capabilities in technical innovation, efficient production, quality control and customer support. Its flexible business model provides O-RUs directly to CSPs (e.g., Boost Mobile), or indirectly through partners, enabling MTI to effectively meet diverse customer needs in the O-RAN market.
- MTI's early engagements and achievements in the area of interoperability coordination with multiple BBU vendors are more advanced than those of other O-RU vendors.

Cautions

- MTI has limited brand recognition and mind share among CSPs, as it was previously known as an OEM/ODM player and RF specialist. This could lead to MTI being misunderstood, causing the company to miss opportunities or encounter additional hurdles due to limited awareness of its new identity as a 5G network equipment provider.
- MTI's 5G RAN solution is in the early stages and not yet proven for large-scale rollouts. CSPs should assess the quality, performance and support of MTI's Open RAN products, and consider initial deployments in specific scenarios (e.g., 4G rural outdoor).
- MTI has limited portfolios, offering only Open RAN RUs and small cells, while lacking essential components like BBUs, massive MIMO and related services capabilities. This constrains its ability to service CSPs that need end-to-end offerings and primary system integration partners.

NEC

NEC is a Niche Player in this Magic Quadrant. It is an ICT vendor, with headquarters in Tokyo. NEC's advanced technologies include networks, AI and security, while its "purpose" is to create "the social values of safety, security, fairness and efficiency to promote a more sustainable world where everyone has the chance to reach their full potential." NEC, along with its fully owned subsidiary Netcracker, provides 5G products and solutions to CSPs and

industry players through the integration of IT, cloud and network technologies. In addition to being a 5G product and solution supplier in Open RAN, NEC is also a system integrator. It delivers multivendor solutions under the brand NEC Open Networks.

Strengths

- NEC is a pioneer of Open RAN massive MIMO RUs, which have been commercially available since 2020. NEC is agile and adaptable to business change. Since 2024, it has been licensing its advanced radio technologies and sharing its know-how in carrier-grade mass production with its partners (e.g., Tejas Networks).
- NEC's Open RAN business is shifting from RAN hardware to software — including vRAN, RIC and xAPPs — to support sustainable growth and profitability in Open RAN markets. The company aims to provide this software to CSPs in Japan and internationally, with a goal of deploying more than 50,000 vRAN base stations by fiscal 2026.
- OREX SAI — a joint venture between NEC and NTT DOCOMO — was established in 2024 and announced its first commercial agreement with PT Solusi Sinergi Digital Tbk (SURGE), a greenfield CSP in Indonesia. Its preintegrated and tested Open vRAN solutions could contribute to its early commercialization in 2026.

Cautions

- NEC is experimenting with multiple go-to-market models (direct, indirect, licensing), but it lacks a clear, unified global strategy. Its fragmented approach and heavy reliance on partners for its global business could dilute NEC's brand and reduce direct customer engagement.
- While incumbent Tier1 CSPs such as AT&T and Deutsche Telekom are adopting single-vendor Open RAN — primarily installing network components from established vendors — emerging Open RAN vendors, including NEC, appear to be neglecting the best-of-breed vision. Instead, they are competing for small wins without cooperation.
- NEC's 5G infrastructure product portfolio, which includes multiband RUs, 5G BBU and mmWave support, is not as comprehensive as those of Leaders in this Magic Quadrant, particularly outside Japan.

Nokia

Nokia is a Leader in this Magic Quadrant. It is a global telecommunications and IT company headquartered in Espoo, Finland. Nokia's business focuses on mobile, fixed IP and optical networks, cloud and network services. Its patent, technology and brand licensing via its Technologies business group is supported by long-term research, innovation and standards work from Nokia Bell Labs. In 2023, Nokia launched a new brand identity, including an updated logo, to help shift perceptions of Nokia from a mobile phone company to a B2B innovation and technology company. Nokia is one of the market leaders in terms of volume of 4G LTE deals, which has contributed to its ability to maintain a steady stream of 5G contracts.

Strengths

- Nokia introduced anyRAN to the market in 2023, offering CSP clients and prospects the possibility of using a single RAN software solution across cloud and purpose-built network infrastructure. The anyRAN solution can run on various architectures, including a blueprint Cloud RAN solution on top of leading third-party server suppliers. It can also run within major public cloud data centers, which offers a great deal of flexibility and performance assurance to CSPs wanting to take a phased approach to Cloud RAN.
- Nokia has more than 110 live 5G commercial networks (across RAN and Core). Based on our count, Nokia is one of the market leaders in terms of the number of 5G deals, thanks in part to its strong sales team and customer-oriented culture focused on the needs of the CSP market.
- Nokia has invested heavily in cloudification, including support for CSPs that are transitioning to cloud-based network deployment and operation. Nokia has an advanced software and services organization that addresses areas such as 5G monetization, use of advanced analytics and AI for energy efficiency in 5G, and enhanced network upgrade planning.

Cautions

- While Nokia has improved its chipset performance with its ReefShark chipset, it still has room to catch up with other advanced vendors in areas such as chipset design (for example, it has a smaller process node) and software optimization. CSPs should be mindful of Nokia's chipset development, delivery and product integration, and monitor for further improvements.

- While Nokia is active in terms of Open RAN/vRAN development and standardization, it has not yet achieved large-scale commercial deployments. AT&T chose Ericsson over Nokia in its $14 billion Open RAN network contract. Nokia's Cloud RAN solution only became generally available in February 2024; hence, it lags some of its competitors in this area.

- Nokia has lost or seen a decline in market share with incumbent CSP clients in advanced markets, including the U.S, China and Japan. This could result in missed opportunities for Nokia, including product enhancements and business profitability, from continuing 5G investments globally.

Rakuten Symphony

Rakuten Symphony is a Niche Player in this Magic Quadrant. It is headquartered in Tokyo. Rakuten Symphony aims to accelerate the adoption of AI-powered, cloud-native, Open RAN-based mobile networks worldwide. It takes the operational, network, and knowledge management software and hardware products and platforms already adopted for Rakuten Mobile's commercial 4G and 5G network in Japan, and sells them to global CSPs under its AI, OSS, Cloud and Open RAN product and solution lines. Rakuten Symphony enables CSPs with a cloud-native telecom platform that is highly scalable, demand-elastic and automated.

Strengths

- Rakuten Symphony's alignment with the Open RAN supply chain, along with its portfolio of Open RAN, OSS, Cloud and AI solutions, has enabled Rakuten Mobile to extend its 4G Open vRAN coverage to 99.9% of Japan's population (including the KDDI roaming area). Over the past five years, Rakuten Mobile has established 94,000 base stations, including for 4G and 5G. It also aims to maintain a consistent operational headcount by automating operational, business and management processes. This early best practice contributed to Rakuten Symphony's first Open vRAN deal with a CSP, namely 1&1 in Germany.

- Altiostar Networks, which was acquired by Rakuten Group in August 2021, was a leading vRAN vendor. This acquisition has expanded Rakuten Symphony's Open RAN/vRAN portfolio, primarily by adding 4G and 5G vRAN capabilities, which were missing from the company's own product portfolio.

- Rakuten Symphony is strong in terms of agility and flexibility. The company launched its Real Open RAN Licensing Program in February 2024 to accelerate global Open RAN adoption, and announced deals with partners (Cisco, Airspan and Tech Mahindra) in March 2025.

Cautions

- Rakuten Symphony's limited telecom expertise has resulted in commercial network deployments for both Rakuten Mobile and 1&1 falling behind the original schedules promised to regulators. CSPs should be mindful of the difference between the company's vision and its real products, solutions, execution of deployment plans, and delivery and operation capabilities.
- While Rakuten Mobile achieved profitability with around 8 million subscribers in December 2024, and Rakuten Symphony announced it was close to profitability in the same year, both company divisions implemented cost controls and reductions. Combined with increased product and service prices, these measures may reduce Rakuten Symphony's competitiveness and lead to the postponement of new product and service launches.
- Product-oriented, preintegrated and preconfigured solutions derived from specific vendor combinations by the Rakuten Mobile commercial network in Japan are unlikely to appeal to many CSPs. This is especially true for those considering Open RAN to mitigate vendor lock-in, or those with different needs and scenarios.

Rakuten Symphony did not respond to requests to provide supplemental information for this document. Gartner's analysis is, therefore, based on other credible sources, including public information.

Samsung

Samsung is a Visionary in this Magic Quadrant. It is a multinational conglomerate that includes Samsung Electronics, Samsung Heavy Industries, Samsung E&A and Samsung C&T. The company's headquarters are in Suwon, South Korea. Samsung Electronics is responsible for the network business and, given its relatively late entry into the 3GPP-based cellular technology market, it has focused on 5G to drive growth. While Samsung's local CSP clients adopt both its RAN and core solutions, its global 5G network business comes mainly from RAN. Samsung is an early innovator in new cellular technologies such as small cell, mmWave, vRAN and Open RAN, and virtual evolved packet core (vEPC).

Strengths

- Samsung contributed to the world's earliest massive commercial adoption of 5G in South Korea, and leads in market share among the top three local CSPs. Given its leading experience domestically, Samsung has driven advanced features and capabilities, such as

massive MIMO RUs, in-house chipsets and virtualized solutions, which translate well to other markets.

- Samsung is one of the most influential Open RAN and vRAN innovators. It has won several commercial deployment deals, including 5G stand-alone Open vRAN at KDDI, 5G Open RAN at NTT DOCOMO, vRAN at Verizon, Open vRAN at Boost Mobile, Open vRAN at TELUS, and vRAN/Open RAN with Vodafone U.K. and Romania. As of 2024, Samsung had deployed 38,000 vRAN sites globally, and this number is expected to increase to 53,000 in 2025.

- With its flexible approach to network solutions, supporting various architectural approaches (for example, single RAN vendor, multivendor or vRAN), Samsung has the potential to become another vendor partner for CSPs. This is especially the case for CSPs that have struggled to find multiple vendor partners for their 5G networks.

Cautions

- Samsung has a smaller global scale than Leaders in this Magic Quadrant and thus, may not be as suitable for all global markets.

- While some leading Tier 1 CSPs, such as AT&T and Deutsche Telekom, are implementing single-vendor Open RAN solutions by relying mainly on established suppliers, Open RAN vendors like Samsung seem to be prioritizing incremental gains over promoting a best-of-breed approach. This has resulted in limited collaboration within the ecosystem.

- Samsung's 5G infrastructure product portfolio, which includes multiband RUs, active-passive antennas and 2G/3G support via its BBUs, is not as comprehensive as that of Leaders in this Magic Quadrant, especially outside South Korea.

Viettel High Tech

Viettel High Technology Industries (VHT) is a Niche Player in this Magic Quadrant. It is headquartered in Hanoi, Vietnam. As the key research and production unit of Viettel Group, VHT focuses on electronics and telecommunications, hi-tech defense and the civil industry. In Vietnam, VHT's parent company commercialized 5G services using 2.6GHz from 2024, adopting VHT's 5G Open RAN under the slogan "Make in Vietnam, Made by Viettel." VHT's 5G network portfolio covers 5G gNodeB base stations and 5G core networks, including NSA and SA, IMS, OSS and transport equipment.

Strengths

- VHT is an active contributor to the O-RAN ALLIANCE and has been participating in O-RAN plugfests since 2022. VHT's openness and flexibility can enable CSPs to find interoperable solutions for 4G and 5G networks.
- VHT's first commercial 5G experience, which included 500 32T32R massive MIMO commercial deployments for Viettel, marked an important milestone for the company. It helped VHT gain recognition as a 5G RAN vendor and to be considered in CSPs' RFPs and RFQs.
- The commercially deployed 32T32R massive MIMO uses Qualcomm's QRU100 chipset, which enhances coverage, capacity and improves data speeds at the cell edge. This ASIC-based Open RAN solution provides significant power and cost savings compared with VHT's other Open RAN RU solutions (which are FPGA-based).

Cautions

- VHT is a late entrant to the Open RAN/vRAN market, which was pioneered by emerging Open RAN/vRAN vendors in the late 2010s. This may impact its ability to catch up with the maturity and ecosystem integration of established players.
- While VHT has announced a 5G deal with a CSP (its parent company, Viettel), its deployments outside Vietnam are still in the early stages and limited in scale. This raises questions about VHT's ability to execute and support large-scale, multicountry projects.
- VHT's 5G infrastructure product portfolio, which includes singleband RUs, 5G BBU and small cells, is not as comprehensive as those of Leaders in this Magic Quadrant.

ZTE

ZTE is a Visionary in this Magic Quadrant. The company is a global ICT solution provider headquartered in Shenzhen, China. The core business areas in which ZTE operates are: telecommunications equipment, computing infrastructures and digital energies, and smartphones and mobile terminals. It also provides system integration services. The company delivers an end-to-end 5G product line, covering wireless and wired hauling infrastructure, core networks, software systems and services, and IoT. This broad portfolio, along with deployment and system integration expertise, enables ZTE to meet a diverse set of customer requirements. ZTE continues to invest heavily in R&D, with the aim of driving innovation in AI-powered intelligent RAN and gaining technology leadership in 5G advanced.

Strengths

- ZTE's end-to-end 5G RAN product portfolio includes massive MIMO RUs, multiband RUs, purpose-built BBUs, and small cell series for indoor (Qcell) and outdoor (Pad) deployments. This diverse portfolio enables CSPs to address varied deployment scenarios — from dense urban environments to rural coverage — with cost-effective, scalable solutions that deliver strong price/performance value across all network density requirements.
- ZTE demonstrates substantial commitment to R&D, positioning itself as a major technological innovator in the 5G and 5G-Advanced spaces. The company delivers advanced AI-powered intelligent RAN solutions that provide measurable business value through improved video experiences, ARPU growth, energy savings and enhanced operational efficiency. These solutions feature automated troubleshooting, smart scheduling with service guarantees, and comprehensive coverage extending from terrestrial to satellite networks.
- ZTE is a reliable partner in China for China Mobile, China Telecom and China Unicom, and in various global markets — such as Southeast Asia, Europe and Africa — due to its strong deployment expertise, ability to customize solutions, and quick response to customer requests. In 2024, ZTE gained new RAN contracts across Asia/Pacific, Europe, Africa and Latin America, demonstrating strong market momentum and delivery capability.

Cautions

- ZTE faces challenges in securing 5G contracts outside China due to ongoing geopolitical issues and security concerns about its network equipment. This limits its market exposure in regions such as North America, parts of Asia and Europe.
- ZTE's brand recognition, mind share among CSPs and overall industry influence are lower than those of Leaders in this Magic Quadrant. The company's reliance on the Chinese market has limited its go-to-market strategy and potential for business growth in international markets.
- ZTE has been slow to support emerging technology such as Open RAN, vRAN and GPU-based AI-RAN, which has restricted its opportunities to engage in strategic projects pursued by various CSPs, potentially limiting its market reach in these emerging areas.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant may change over time. A vendor's appearance in a Magic Quadrant one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

Viettel High Tech

Inclusion and Exclusion Criteria

To qualify for inclusion, a vendor needs to possess radio access network equipment (at least macro RU or BBU, or small cell) for 5G, and these products should be generally available as of December 2024. General availability is defined as something a vendor’s clients have in a production environment, rather than something they are testing or evaluating. Vendors are also required to possess at least one 5G RAN commercial contract/deployment with CSPs.

Evaluation Criteria

Ability to Execute

We determined each vendor’s position by evaluating it against the following criteria.

Product or Service: This criterion includes products and services offered by the vendor that compete in the defined market (that is, radio network elements for 5G carrier infrastructure as well as network infrastructure service). It includes current product and service capabilities, quality, feature sets and skills, whether offered natively or through OEM agreements or partnerships, as defined in the Market Definition section.

Overall Viability: This criterion includes an assessment of the organization’s overall financial health, which underpins the financial and practical success of the relevant 5G RAN business unit. It also considers the likelihood of that business unit continuing to invest in the product, offer it and advance the state of the art within the organization’s portfolio.

Market Responsiveness and Track Record: This is the vendor's ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customers' needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness, its market share and its market traction, demonstrated through 5G RAN contract wins. Disclaimer: For this subcriterion, Gartner has applied contract data information and considered only publicly verifiable 5G RAN contracts with named customers. Please note that vendors evaluated in this Magic Quadrant may have a larger number of 5G RAN contracts that cannot be revealed publicly due to nondisclosure agreement limitations.

Marketing Execution: This criterion includes the clarity, quality, creativity and efficacy of programs designed to deliver vendors' messages to influence the market, promote vendors' brands and businesses, increase product awareness, and establish positive identification with vendors' products, brands and organizations in CSPs' minds. This mind share can be driven by a combination of publicity, promotional activity, thought leadership, social media, referrals and sales activities. The criterion also includes the vendor's ability to market offered solutions under different regulatory contexts and adapt to different carrier 5G RAN business models.

Customer Experience: This criterion includes relationships, products, services and programs that enable CSPs to succeed with the products evaluated. Specifically, it includes the ways in which CSPs receive technical support or account support. It may also include ancillary tools, customer support programs (and the quality thereof), the availability of user groups, SLAs, ecosystem of vendors and prepackaged solutions for services leveraging the 5G RAN network.

Ability to Execute Evaluation Criteria

Evaluation Criteria	*Weighting*
Product or Service	High
Overall Viability	Medium
Sales Execution/Pricing	NotRated

Evaluation Criteria	*Weighting*
Market Responsiveness/Record	High
Marketing Execution	Medium
Customer Experience	Medium
Operations	NotRated

Source: Gartner (September 2025)

Completeness of Vision

We determined each vendor's position by evaluating it against the following criteria.

Market Understanding: This criterion includes an ability to understand customer needs and translate them into products and services. Vendors must show a clear vision of their market — listen, understand customer demands, and shape or enhance market changes with their added vision. The ability to see 5G RAN in the wider context of CSPs' overall network transformation strategies is particularly important, provided this insight is reflected directly in the product roadmap of the vendor.

Marketing Strategy: This criterion includes clear, differentiated messaging consistently communicated internally and externalized through social media, advertising, customer programs and positioning statements. Vendors must demonstrate alignment of the vendor's 5G RAN marketing strategy with its current market position and its overall 5G RAN portfolio strategy, including a market segment focus.

Offering (Product) Strategy: This criterion includes an approach to product development and delivery that emphasizes market differentiation, functionality, methodology and features as they map to current and future requirements. This approach includes differentiated approaches to the different 5G RAN segments, including Tier 1, 2 and 3 CSPs.

Vertical/Industry Strategy: This criterion includes the strategy to direct resources (sales, product and development), skills and products to meet the specific needs of individual market segments, including verticals.

Innovation: This criterion includes direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, and defensive or preemptive purposes, including sustained evidence of technological expertise and leadership. Vendors must have an appropriate budget for R&D planning, actively participate and demonstrate leadership of 5G RAN standardization and following technologies, and support ecosystem partners via interfaces and interoperability. Vendors also need to possess co-innovation facilities and participate with partners, customers, academic institutions and others.

Geographic Strategy: This criterion includes the vendor's strategy to direct resources, skills and offerings that meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries, as appropriate for that geography and market.

Completeness of Vision Evaluation Criteria

Evaluation Criteria	*Weighting*
Market Understanding	Medium
Marketing Strategy	Medium
Sales Strategy	NotRated
Offering (Product) Strategy	High
Business Model	NotRated
Vertical/Industry Strategy	Medium
Innovation	High
Geographic Strategy	Medium

Source: Gartner (September 2025)

Quadrant Descriptions

Leaders

Leaders typically have a significant number of commercial references for the 5G network equipment market. They also have momentum in this area, as exemplified by new contract wins. They have a broad portfolio and, even where they need partners, they are CSPs' preferred primary vendors. They appear in nearly all CSP procurements and trials of 5G RAN infrastructure as de facto suppliers, and their presence in the Leaders quadrant tends to be fairly stable. These are high-viability technology providers. They are well-positioned with their current product portfolios and are likely to continue delivering leading products. Leaders do not necessarily offer the best solution for every customer requirement, and their products may not be "best of breed" in every area. Overall, Leaders provide solutions that offer relatively low risk and can achieve and sustain high-quality deployments.

Challengers

Challengers have strong market execution capabilities and good solutions, but overall, their products lack the breadth and depth of Leaders' offerings. Their solutions do not indicate a clear vision for how the market is evolving, and they are not as innovative or advanced as those of Leaders. There are no Challengers in this year's Magic Quadrant.

Visionaries

Visionaries demonstrate a clear understanding of the market and provide key innovative elements that exemplify the market's future. However, they may lack the ability to influence a large part of the market, have not fully expanded their sales and support capabilities to achieve global reach, or do not have the funding and scale to execute Leader-like capabilities.

Niche Players

Niche Players tend to offer products that focus on a particular segment of the market (for example, a given country, such as Japan) or a subset of functionality (such as vRAN). Their technology and products also tend to be more specialized. This specialization can be an advantage, because CSPs aligned with the focus of Niche Players can find these vendors' offerings very suitable. In some cases, Niche Players have made specific decisions about where and where not to compete, so being a Niche Player does not preclude having a well-

defined strategy. They could also be attractive partners for some of the larger vendors in this market, thanks to their market specializations or technological strengths.

Context

Use this Magic Quadrant as a reference, but explore the market further beyond these providers. The Magic Quadrant is not Gartner's sole tool for creating a vendor shortlist. You should also consider other Gartner reports (see the Gartner Recommended Reading section) and Gartner analyst discussions. Gartner advises CSPs to base their choice of external vendor on the following:

- An evaluation of multiple (at least two) 5G RAN infrastructure vendors to ensure service continuity and a smooth negotiation process
- Vendors' willingness to work together with other stakeholders (sometimes including their competitors) to achieve the CSP's overall network modernization aims
- A business value assessment against the CSP's most important goals

Market Overview

As of January 2025, more than 340 3GPP-compliant 5G networks have been commercially launched in 127 countries and territories, according to the Global Mobile Suppliers Association (GSA). Most of these 5G networks rely on an anchor in the 4G radio access and core network. This is called non-stand-alone (NSA) architecture, and incumbent mobile CSPs naturally adopt it as an interim solution. According to GSA, about 65 CSPs were known to have deployed or launched public 5G SA networks as of January 2025. However, just launching 5G SA is not enough to achieve end-to-end network modernization. To provide real value through 5G, CSP networks need to be more agile, flexible and reliable by implementing technical innovations, including edge computing, software-defined network/network function virtualization (SDN/NFV) and cloudification, orchestration/automation, and network slicing.

Five years into 5G development, use cases are focused mainly on enhanced mobile broadband services for consumers. 5G technology and related businesses and services will continue to evolve in the next five years until 6G. Currently, 5G nationwide coverage is

achieved in many advanced markets, but higher spectrum bands adoption, including C-band (e.g., 3.5GHz) and mmwave (e.g., 28GHz), are still limited, and there are 4G-5G cannibalism challenges. These challenges facing CSPs' consumer businesses will be solved gradually over the next several years and are similar to those CSPs encountered with 2G, 3G and 4G.

However, the monetization of the 5G enterprise business will remain a key challenge for the telecom industry throughout the 2020s. A "radio-access-only" or "technology-oriented" approach will not be enough to help CSPs succeed with 5G. Instead, 5G vendors need to collaborate with CSPs to identify client demands and provide issue-driven solutions. New vendors have emerged or positioned themselves to use the transition to 5G as an entry point into the RAN and broader network infrastructure market. Their momentum is driven by virtualization, cloudification, open source and network automation.

This Magic Quadrant examines vendors of 5G RAN infrastructure. The number of vendors are increasing as barriers of entry are lowering with new Open RAN, vRAN and AI-RAN technologies; regional players have also emerged based on techno-nationalism. Gartner also monitors various vendors that do not yet meet the minimum criteria for inclusion because some of them do not possess 5G RAN commercial agreements with CSPs or do not possess generally available 5G RAN solutions. For example, JMA Wireless, Parallel Wireless and Radisys (a member of the Reliance Industries family) provide vRAN solutions; Baicells and Benetel provide Open RAN solutions; and CommScope, KMW and Mitsubishi Electric offer radio antenna products. In addition, EdgeQ, Intel, Marvell and Qualcomm provide external hardware accelerators for vRAN; and Amazon Web Services (AWS), Dell, Red Hat and VMware provide NFVI and cloud-native platforms.

According to Gartner's **Market Share Analysis: Communications Technology and Services, Worldwide, 2024**, the market share of the top four vendors (Ericsson, Huawei, Nokia and ZTE) on the mobile carrier network infrastructure was about 91% in 2024. While "greenfield CSPs" such as Boost Mobile and Rakuten Mobile are deploying 5G supported by new vendors of Open RAN and vRAN, incumbent CSPs such as AT&T and Deutsche Telekom are adopting Open RAN/vRAN from incumbent vendors mainly. SoftBank in Japan has been adopting AI-RAN to optimize network performance, automate resource management, and enable new AI-driven services. Open ecosystems could eliminate the existing vendor lock-in situation and require multivendor interoperability between different network nodes. Incumbent network equipment providers, such as Ericsson, Fujitsu, NEC, Nokia and Samsung have also committed to Open RAN, vRAN and AI-RAN. CSPs now have more

options when selecting vendors for open RAN or vRAN, or AI-RAN deployments. This competition will contribute to CSPs' future success with 5G.

The race to win business in the 5G infrastructure market is still less than halfway through the full life cycle of 5G, and vendors are achieving different degrees of traction in terms of securing commercial contracts with CSPs. To gauge how well vendors meet requirements as the 5G market and technologies evolve, Gartner evaluates them using its own criteria developed to capture their ability to address CSPs' evolving wants and needs for 5G RAN infrastructure, as described above. These criteria are summed up in our framework as vendors' Ability to Execute and Completeness of Vision.

Acronym Key and Glossary Terms

ARPU	Average revenue per user
ASIC	Application-specific integrated circuit
FPGA	Field programmable gate array
IMS	IP Multimedia Subsystem
NSA	Non-Standalone
OSS	Operations Support System
SA	Standalone

⊕ Evaluation Criteria Definitions