TÉRAL RESEARCH
WIRELESS INDUSTRY ANALYSIS

5G SA Core, SDM, and Policy Update

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STÉPHANE TÉRAL

FINAL REPORT

ABOUT THIS REPORT

This report analyzes the 5G standalone (SA) mobile core market worldwide and covers 5G core network elements and functions including subscriber data management (SDM), and policy and charging functions, PCF and CHF, respectively. It presents historical data from 2016 to 2025, annual market size and vendor market shares, and a detailed market forecast through 2031 for 5G SA Core, SDM and PCF/CHF revenue, for each region: North America, Europe Middle East Africa, Asia Pacific, Caribbean and Latin America. The historical data accounts for sales of more than 30 mobile core vendors, including a few vendors that shared confidential sales data with TÉRAL RESEARCH. In addition, the report provides a key vendor barometer (i.e., Amdocs, Enea, Ericsson, Huawei, Mavenir, NEC, Netcracker, Nokia, Oracle, Samsung and ZTE) that is based on market traction derived from ongoing tracking and regular discussions with more than 30 CSPs worldwide.

The analysis is provided in a PowerPoint format; the data along with the vendor ecosystem, the definitions and the methodology are included in an Excel file that accompanies the analysis.

TABLE OF CONTENTS

KEY TAKEAWAYS: THE 5G SA MIGRATION MOMENTUM GOES ON

In last year's report, we said that the migration to 5G SA had picked up some steam, this year, we confirm that the migration to 5G SA is gaining momentum. As of December 31, 2025, according to the GSA reports, there were **381 commercial 5G networks** in the world, including at least **88** CSPs in 35 countries that have launched commercial public **5G SA networks**, which means that about **21 SA networks have been added in 2025**. This solid activity produced sales and revenue growth of 19% over 2024 for the global 5G SA core + 5G data management + policy control and charging function (PCF and CHF). Key findings or the full year 2025 include:

- The 5G software architecture accelerates the capital expenditure (capex) to operational expenditure (opex) shift and cloud native software platforms account for two-thirds of global 5G SA deployments. For sovereignty reasons, private cloud continues to be the preferred approach.
- Fixed wireless access (FWA) remains the chief driver and API exposure is increasingly rising as a major driver. Reduced capacity (RedCap) also remains a driver but the momentum has somewhat slowed. By contrast, voice over new radio (VoNR), which was among the drivers in last year's report, is struggling to get any traction and network slicing remains largely confined to isolated, high-profile event activations.
- Sustained by its domestic market, Huawei leads global 2025 sales for 5G SA Core + SDM + Policy & Charging, followed by Ericsson and Nokia, respectively. However, Ericsson and Nokia are neck and neck for global commercial 5G SA footprint. Removing China moves Ericsson and Nokia ahead of Huawei, which falls to third place.
- New this year is the introduction of a vendor barometer based on number of commercial SA networks, number of SA contracts, sales and revenues, number of 5G core network functions (NFs) in the product portfolio, and market momentum. Ericsson and Nokia came at the top as powerhouse followed by Huawei as a front runner and Mavenir as the rising star.

Looking forward, 2026 and beyond, our analysis is as follows:

- Based on the robust 5G SA activity we have seen in 1H16, our model produced strong growth for the global market: $5B by the end of the year, an 11% YoY growth, to continue to grow at a 2025-2031 CAGR of 11% to reach $8.4B by 2031. In fact, the whole 5G core service-based architecture (SBA) is one of the very bright spots in the global cellular industry.
- Due to the sheer size of both China and India, Asia Pacific will remain the world's largest market throughout the forecast period.
- Our discussions with CSPs and vendors suggest that 5G FWA will stay as the chief 5G monetization driver as the reality is that 5G monetization is still in its early innings. Our research indicates that the 5G monetization process is a long journey characterized by a long tail of 5G use cases.
- Finally, many challenges and inhibitors are lingering, including the presence of legacy equipment as the main one followed by device readiness and certification, cloud transformation and operation, software upgrade cycles to cite a few.

2025 MARKET REVIEW

37 5G COMMERCIAL NETWORKS LAUNCHED IN 2025, INCLUDING 21 SA

THE GLOBAL MARKET GREW 19% OVER 2024

THE 5G SOFTWARE ARCHITECTURE ACCELERATES THE CAPEX TO OPEX SHIFT

FWA REMAINS THE CHIEF DRIVER

API EXPOSURE IS INCREASINGLY BECOMING A MAJOR DRIVER

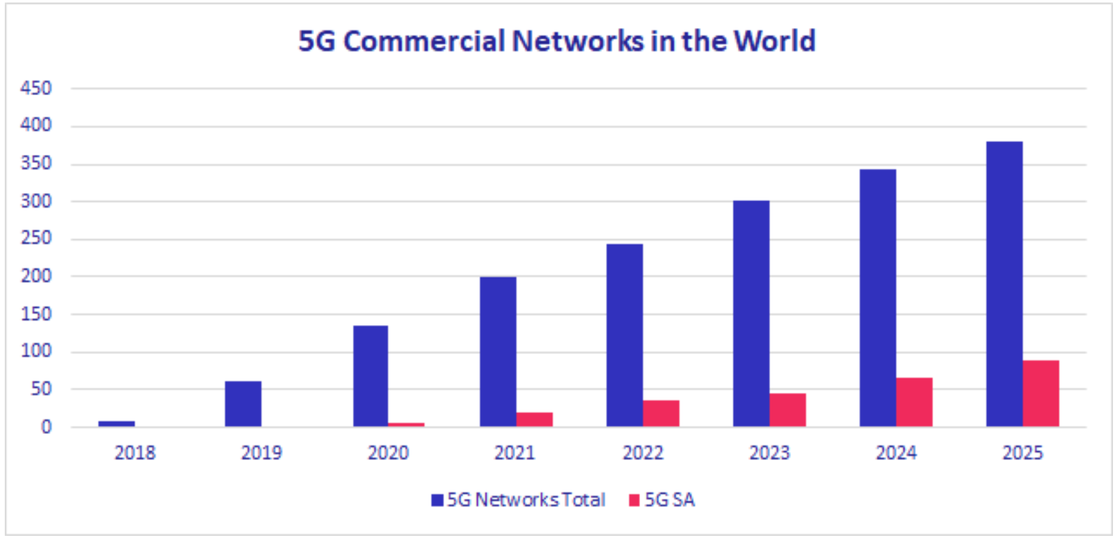
VoNR IS STRUGGLING TO GET TRACTION, THE RedCap MOMENTUM KEEPS BUILDING BUT SLOWLY, AND NETWORK SLICING IS LOSING STEAM

37 NEW 5G COMMERCIAL NETWORKS LAUNCHED IN 2025; 88 5G SA NETWORKS

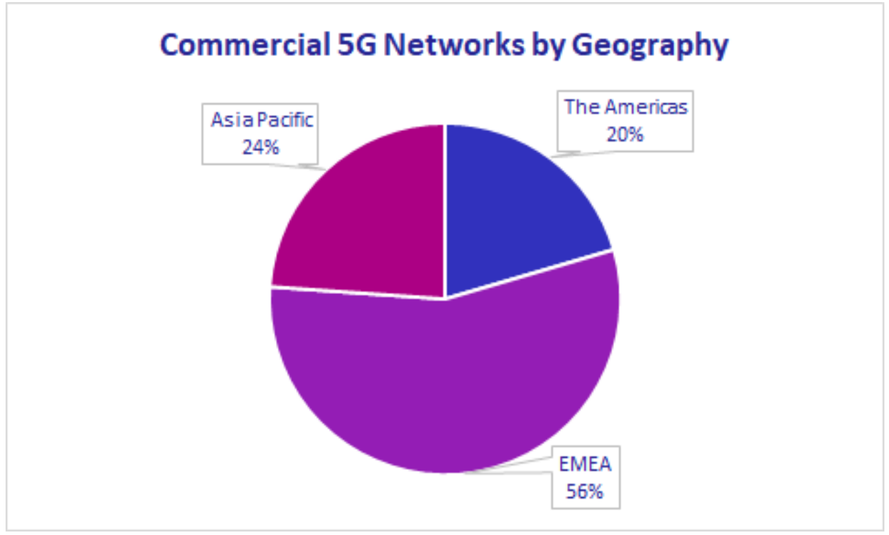
EMEA hosts more 5G commercial networks than the Americas and Asia Pacific combined

As of December 31, 2025, according to the GSA reports, there are **381 commercial 5G networks** in the world, including at least 88 CSPs in 35 countries that have launched commercial public 5G SA networks, which means that about 21 SA networks have been added in 2025.

In addition, the GSA has identified another 90 CSPs that are investing in 5G SA for public networks (including those evaluating/testing, piloting, planning, or deploying). Lastly, a total of 642 CSPs are investing in 5G worldwide, including 183 in the Americas (78 launches), 147 in Asia Pacific (91 launches), and 312 in EMEA (212 launches).



Source: TÉRAL RESEARCH with GSA data



Source: TÉRAL RESEARCH with GSA data

5G CORE + DATA MANAGEMENT + PCF & CHF SALES IN 2025 ROSE 19% OVER 2024

The global market rose to $4.6B from $3.8B in 2024

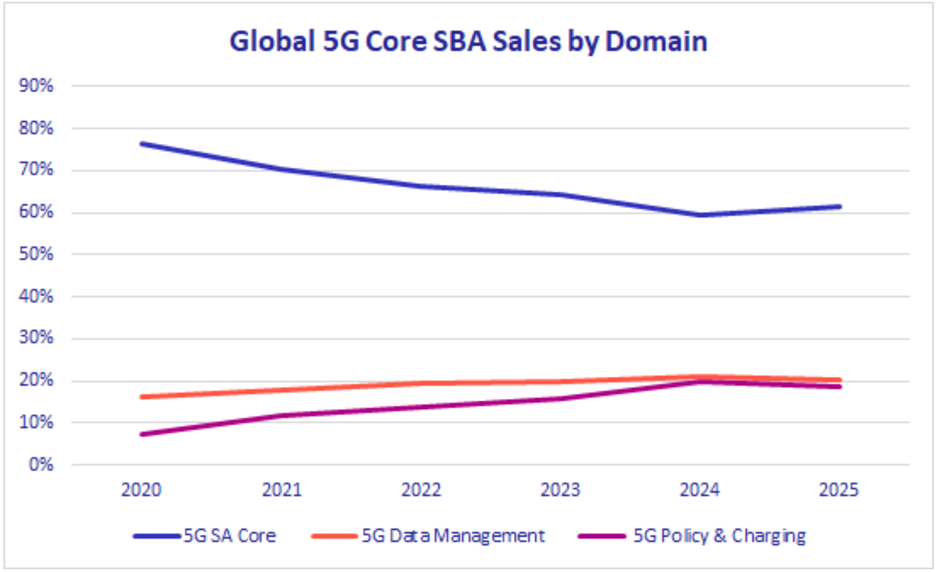
Actual sales came 1% below our forecast and the details are as follows: Once again China, followed by North America, drove the bulk of the growth.

- **5G SA core**: (61% of total, see chart below) hit $2,8B, 23% YoY growth vs. 3% the previous year, driven by the migration from NSA to SA.
- **5G Data Management**: (20% of total) topped $911M, 14% YoY growth vs. 18% the previous year, driven by HLR to HSS to UDM migration.
- **5G Policy & Charging**: (18% of total) reached $838M, 11% YoY growth, vs. 38% the previous year, driven by the transition from diameter to SBA architecture and convergent billing.

It's important to state that 5G data management and 5G policy and charging are derived from the subscriber data management (SDM) and the 4G EPC/vEPC policy and charging rule control function (PCRF) markets, respectively. Combining 5G SA core with SDM and PCRF lead to a global market of $10.2B in 2025, up 7% YoY.

As described in the *Methodology* section of the accompanying Excel file, our model is based on current typical software business models for vEPC, vPCRF, and SDM, and their typical $/subscriber and/or $/connection and $/Gbps, broken down in the 3 major categories above. For more details, see Excel spreadsheet, they can be summed up as follows:

- **5G SA Core** numbers come from our latest quarterly Wireless Infrastructure report and only include the session and user plane functions derived from 4G EPC/vEPC (e.g., UPF, SMF, AMF) + 5G core resource and registry functions (e.g., NSSF and NRF) + NEF + AF + SCP.
- **5G Data Management** numbers are derived from SDM numbers that we collect and/or estimate annually. These include UDM, UDR, FE, and AUSF derived from SDM numbers composed of HLR/ngHLR and HSS.
- **5G Policy and Charging** numbers are derived from vPCRF numbers that we collect annually. These include PCF, BSF and CHF derived from vPCRF market size and forecast.

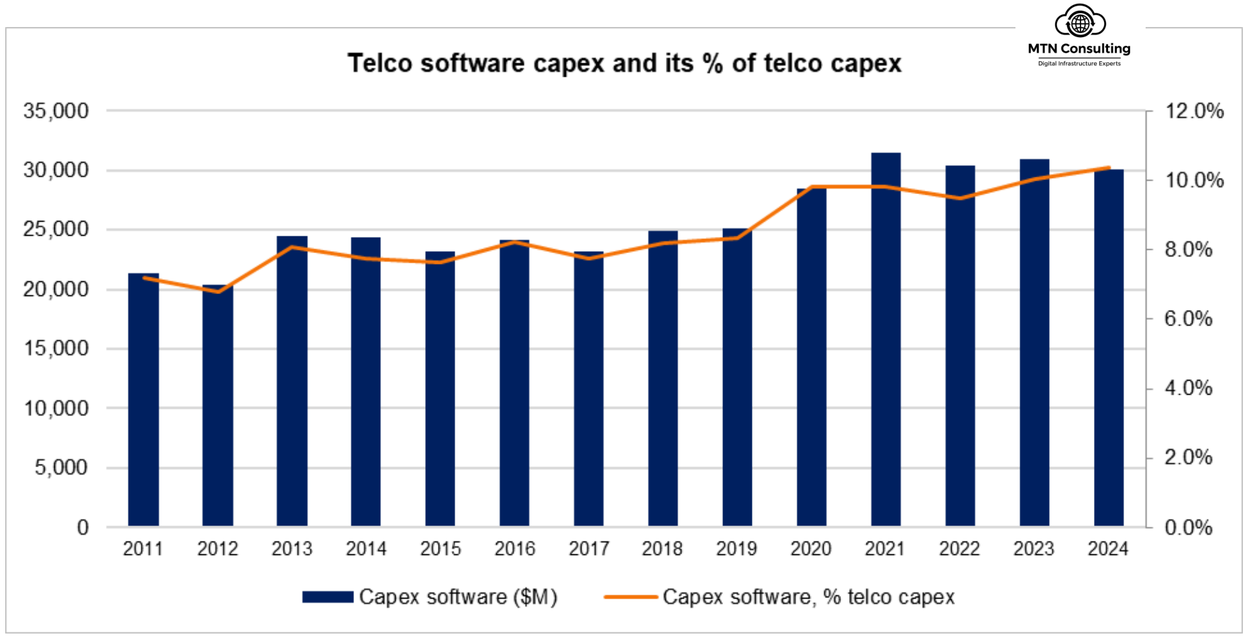


THE 5G SOFTWARE ARCHITECTURE ACCELERATES THE CAPEX-TO-OPEX SHIFT

Although it's hard to obtain the full picture, available data makes it clear. Let the numbers speak

Our analysis is backed up by our partner MTN Consulting: CSPs are transitioning from hardware-centric to software-defined networks, but traditional capex metrics miss the full picture. While software represented just **10% of capex ($30.1B) in 2024**, the reality is far more significant.

Over the past 12 months, the **big three cloud providers (AWS, Microsoft, Google)** generated roughly **$9.6B in sales to CSPs** for network infrastructure–related services – equivalent to about **3.3% of global telecom /telco capex** in the same period. A significant portion of this spend reflects the ongoing **capex-to-opex shift**, as **CSPs rely more on webscalers for virtualized network workloads, AI platforms, and automation tools**. Moving forward, the migration to 5G SA that picked up momentum in 2025, will drive software sales because 5G SA core market is broken down into three distinct categories: **Private Telco Cloud, Public Cloud, and Legacy Bare-Metal Appliances.**



Source: MTN Consulting, a TÉRAL RESEARCH partner

CLOUD NATIVE SOFTWARE PLATFORMS ACCOUNT FOR 2/3 OF 5G SA ROLLOUTS

The remaining third still relies on legacy virtualized or appliance-based architectures

However, the physical hardware hosting that cloud software remains predominantly on-premise within private telco data centers rather than the public cloud. When we looked at how the 88 5G SA cores are engineered, here is what we found:

- **65% to 70% (Two-Thirds):** Are fully **Cloud-Native Network Functions (CNFs)** running inside software containers (usually Kubernetes-based).
- **30% to 35% (One-Third):** Are either legacy **Virtual Network Functions (VNFs)** running on older virtual machines (VMs) or, in rarer cases, legacy hardware appliances.

It's worth reminding that because 3GPP standards strictly mandate a **Service-Based Architecture (SBA)** for 5G Standalone, an operator *cannot* build a true 5G SA core using old-school, locked-down hardware appliances. It fundamentally requires a cloud platform.

For sovereignty reasons reported in last year's report, the vast majority of tier-1 CSPs deploy their 5G SA cores on **private clouds** that they own and operate. They buy the software from mainly either Ericsson or Nokia but run it on their own on-premise cloud infrastructure (e.g., Red Hat OpenShift, VMware Tanzu, or Wind River).

Running a primary, national macro 5G SA core entirely on a **public cloud** provided by AWS, Azure, or Google Cloud is still a distinct minority strategy, though it is growing rapidly. The irony is that **Dish Wireless (EchoStar)** in the US was the first to run its entire 5G SA core on AWS. More recently, brownfield operators like **O2 Telefónica** in Germany and **Comcast** have migrated core production workloads to AWS.

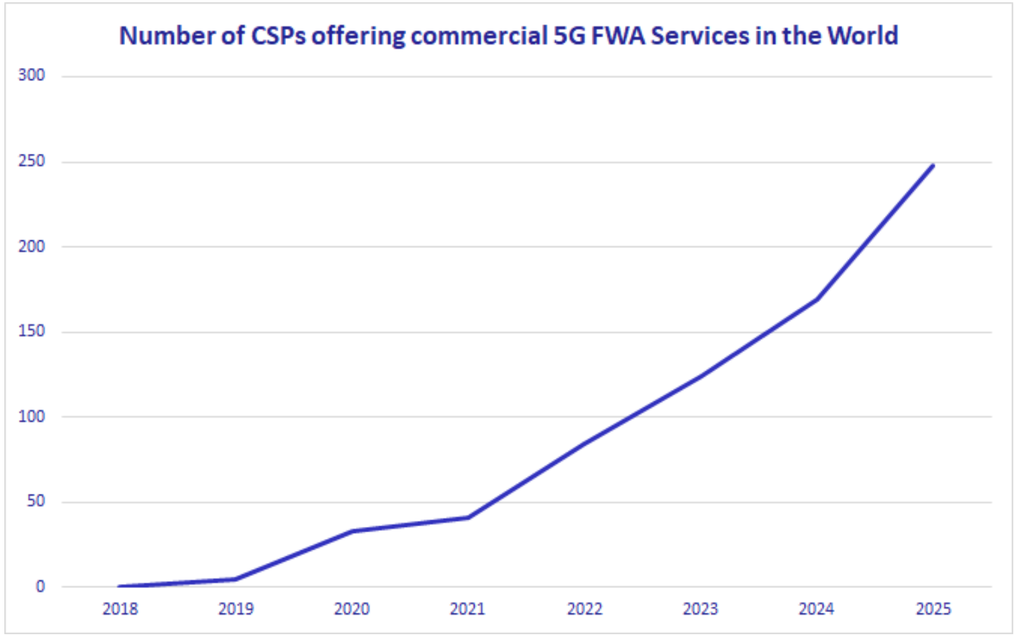
5G FWA REMAINS THE CHIEF MARKET DRIVER

5G SA is crucial for scaling, optimizing, and fully monetizing FWA in the long term

Based on a combination of GSA and our collected data, our research indicates that the number of CSPs offering commercial 5G FWA services in the world hit 248 in 2025, which is 47% up YoY. As we have seen since the beginning of this 5G cycle, most CSPs launch their FWA service on 5G NSA and at some point, migrate to 5G SA. In 2025, our numbers show that only 35% of these FWA services were running on 5G SA. The good news is that 65% have yet to move to 5G SA.

The success of 5G FWA can be broken down into three core dimensions: **the economics for CSPs**, **the user experience for consumers**, and **the technological leaps** that made it viable.

- **Economics**: many CSPs spent billions of dollars to acquire mid-band spectrum (e.g., over $120B for C-band in the US). In many suburban and rural areas—or even urban areas during specific times of day—mobile networks have excess capacity and FWA allows CSPs to sell this leftover capacity. And according to Verizon, unlike fiber-to-the-home (FTTH), which requires tearing up roads, laying trenches, and securing expensive municipal permits, FWA utilizes existing macro cell towers. The "last mile" of infrastructure is entirely virtual, drastically reducing the cost to connect a new household. Lastly, 5G FWA acts as a crucial bridge for the digital divide by allowing CSPs to serve thousands of scattered households from a single, strategically placed macro tower.
- **User experience**: FWA has successfully disrupted the traditional cable and DSL monopolies by targeting pain points that consumers have endured for decades. Case in point: FWA provides zero-touch self installation and transparent attractive pricing.
- **Technology leaps**: while 4G FWA has been widely available for more than a decade, it failed to scale because it lacked the capacity and speed to compete with wired broadband. Instead of broadcasting a wide, shared signal across an entire neighborhood, 5G uses massive MIMO to direct highly focused, individual beams of data directly to a home's customer premises equipment (CPE). This vastly diminishes interference and multiplies network capacity.

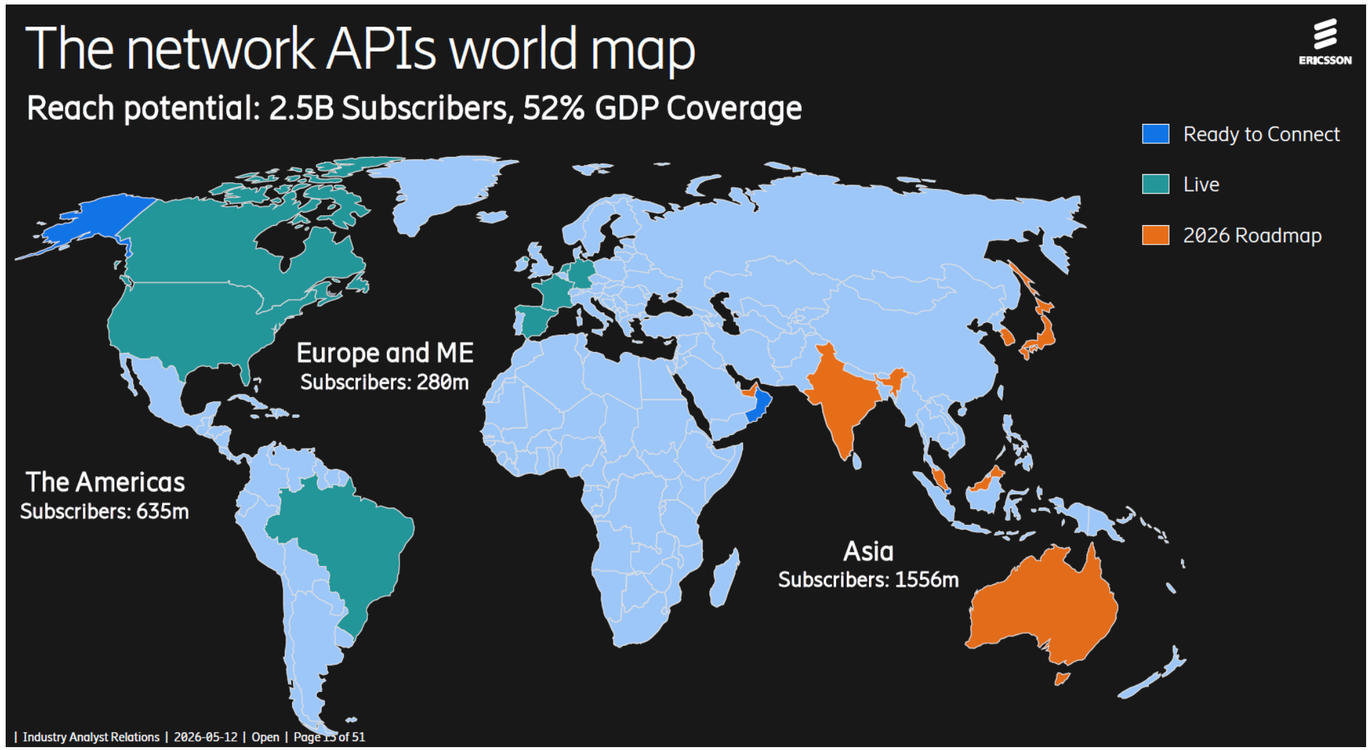


Source: TÉRAL RESEARCH with GSA data

API EXPOSURE IS INCREASINGLY BECOMING A MAJOR 5G SA MARKET DRIVER

APIs allow CSPs to securely open their network functions to developers and make money

While initial 5G NSA deployments focused on delivering faster mobile broadband (eMBB) using a 4G core, 5G SA introduces the cloud-native **Service-Based Architecture (SBA)** that makes programmable network API exposure technically viable and commercially scalable. The good news is that live APIs, as illustrated in Ericsson's chart below, are spreading all over the world and offering new opportunities for CSPs to monetize their 5G SA networks.



Source: Ericsson

According to our CSP and vendor survey, API exposure shifts the economic model from B2C to **B2B and B2B2C**:

- Instead of selling generic data buckets, CSPs can use APIs to sell **QoS-on-demand**.
- The industry-wide push for standardized APIs ensures that developers don't have to write different code for every single CSP. Initiated by the GSMA and the Linux Foundation, the **CAMARA project** defines universal APIs (e.g., SIM Swap, Device Location, Number Verification). This allows global scales that attract hyperscalers (AWS, Azure, Google Cloud) and system integrators.
- FinTech and e-commerce sectors are actively driving demand for 5G SA security APIs. APIs like **SIM Swap** (checking if a SIM card was recently changed) and **Device Status** provide real-time, network-level authentication that is far more secure than SMS-based two-factor authentication.

In fact, fraud prevention and identity verification are currently the most widely deployed network API use cases globally.

LIKE VoLTE BACK IN THE DAYS, VoNR IS STRUGGLING TO GET TRACTION

As of mid-2026, only a dozen CSPs are offering VoNR

At least, CSPs are not trying to ask for a premium for VoNR by claiming superior voice quality as it was the case in 2012 in South Korea; remember KT and SK telecom? It ended very badly. Like for VoLTE, consumers expect high-quality voice calls to be bundled into their flat-fee monthly subscriptions. No CSP can charge a premium for "5G Voice" over "4G Voice." As a standalone product, VoNR doesn't generate new consumer ARPU (Average Revenue Per User), making it a costly backend compliance and infrastructure upgrade rather than a commercial blockbuster.

What's interesting is the discrepancy between what CSPs say and what's really happening on the user/consumer front. In last year's report, we had 49 CSPs out of a total of 74 SA commercial networks in 2024 claiming offering a VoNR service. When conducting the same process for 2025, we found that 60 CSPs out of 88 were offering VoNR. Among them we have:

- **United States:** T-Mobile US leads the North American market, having launched commercial VoNR in 2022 and steadily expanding it across various cities. Then we had Boost Mobile until its network was decommissioned.
- **China:** China Mobile introduced one of the world's first commercial VoNR offerings and operates the largest 5G SA user base globally. In April 2022, China Telecom and China Unicom jointly launched commercial VoNR services under the branding of **"5G Ultra HD Voice"** (sometimes promoted as part of their 5G Call initiatives), playing the failed Korean game.
- **India:** Reliance Jio Infocomm has enabled pan-India native 5G voice services, shifting massive amounts of voice traffic away from 4G infrastructure.
- **Europe:** MasOrange in Spain and Vodafone Germany and Vodafone UK started to roll out 5G SA-based voice capabilities in 2025.
- **Asia-Pacific:** Early adopters include CSPs like Smart Philippines and Softbank in Japan.

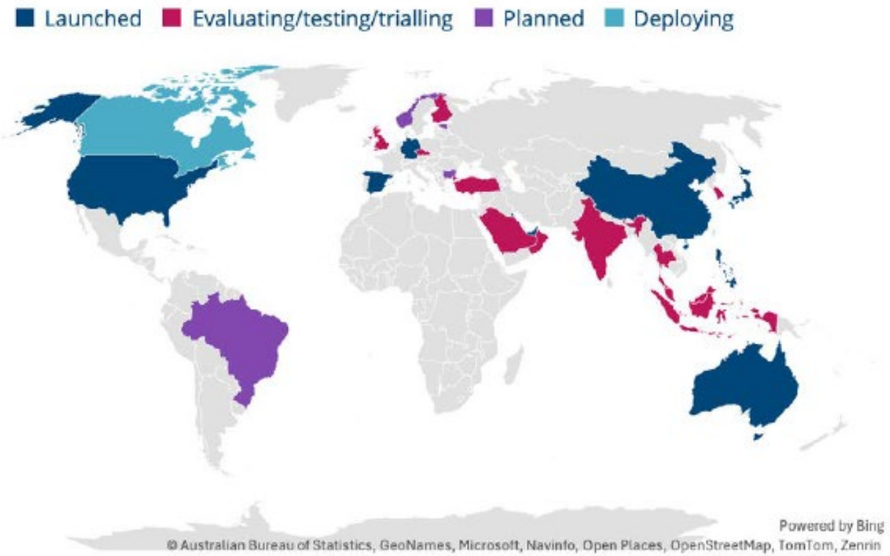
Let's put it this way: VoNR is a highly successful engineering milestone that is mandatory for the future of cloud-native telecom infrastructure. However, it is an infrastructure enabler, not a consumer product. Its ultimate commercial success hinges on whether CSPs can successfully productize VoNR+ data channels for enterprise call centers and B2B workflows over the next few years.

THE REDCAP MOMENTUM KEEPS BUILDING BUT SLOWLY THOUGH

As of early 2026, 14 CSPs worldwide have officially launched commercial 5G RedCap (Reduced Capability) services

In last year's report, there was excitement about ReCap. This time around, while market interest is growing, the ecosystem is still largely in its early stages. According to global industry tracking by the Global mobile Suppliers Association (GSA) and to our discussions with the vendor ecosystem, RedCap development breaks down as follows:

- Some of the CSPs that have commercially deployed the technology include Deutsche Telekom and Telefónica Deutschland O2 in Germany, MasOrange in Spain, T-Mobile US, China Mobile, China Unicom, China Telecom, stc in Kuwait, and DITO in the Philippines.
- A total of **42 CSPs** across 27 countries are investing in or conducting trials of the technology.
- Companies across the UK, Europe, the Middle East, and Asia-Pacific (such as testing in Bahrain, Finland, and Oman) are evaluating 5G RedCap viability



Source: GSA

UNSURPRISINGLY, NETWORK SLICING IS LOSING STEAM

The excitement and momentum reported the past two years has been greatly exaggerated

While the technical capability of **5G network slicing** is proven, its commercial rollout has been frustratingly slow. Despite the Ericsson Mobility Report reporting an uptick to 84 commercial slicing offerings globally (up from 65), it remains largely confined to isolated, high-profile event activations like the 2026 Formula 1 Japanese Grand Prix, the 2024 Olympics… rather than mainstream enterprise adoption. We have never been too excited about network slicing in the first place for the reasons listed below:

- **The persistence of legacy BSS**: although telecom networks across the board have been upgraded, billing support systems are stuck in the past, in a mess! To sell a network slice, a CSP must guarantee a strict Service Level Agreement (SLA)—for example, a guaranteed 20ms latency or a specific uplink speed. If network congestion occurs and that SLA drops, the system must automatically adjust the pricing or trigger a credit. Most CSPs' BSS and charging engines were designed for static consumer data buckets. They cannot handle dynamic, real-time, multi-dimensional B2B billing based on slice metrics, leading to massive revenue leakage risks.
- **The rise of private 5G networks**: network slicing was envisioned as a way for CSPs to carve up their public macro networks and sell virtual private slices to enterprises. However, enterprises have voted with their wallets for physical private 5G networks instead. Heavy industries like manufacturing, ports, and logistics centers do not want to share a radio or core infrastructure with the public or competitors, even if a slice is virtually isolated. With a Private 5G network, the enterprise owns or completely controls the spectrum and data on-premise. Network slicing requires trusting the operator to manage the orchestration smoothly. That being said, our research indicates that 70% of live private cellular networks run on 4G LTE; the share of 5G is increasing though.
- **The end-to-end (E2E) gap**: true network slicing cannot just happen in the core; it must be E2E—spanning the core, the transport network, and the RAN. Mapping a slice dynamically across thousands of cell sites from different RAN vendors requires an incredibly high level of automation and AI-driven orchestration. We are getting there but many CSPs still lack a unified, automated operations support system (OSS) that can provision an enterprise slice dynamically without manual intervention, making it too slow and expensive to deploy on a whim. We have been saying this since the European Telecommunications Standards Institute (ETSI) introduced its initial Network Slicing Support specifications as part of its Network Functions Virtualization (NFV) Release 3 in December 2017.
- **The presence of legacy devices**: For a network slice to work seamlessly, the device itself must understand how to route specific traffic to specific slices. This relies on a feature called URSP (User Equipment Route Selection Policy). While Android 14+ and iOS have introduced better hooks for on-demand slicing, the enterprise device ecosystem—ranging from ruggedized tablets and factory IoT gateways to older smartphones—is highly fragmented. If the device cannot request the slice correctly, the network capability sits idle.

Overall, this sounds like we are stuck with 3GPP Rel. 13 with DECOR that allows CSPs to route specific types of user devices to dedicated core network servers. This improves efficiency, enhances data security, and was supposed to lay the groundwork for 5G network slicing.

VENDOR SALES MARKET SHARES

THE VENDOR LEADERSHIP BOARD DOES NOT BUDGE: HUAWEI RULES THE WORLD

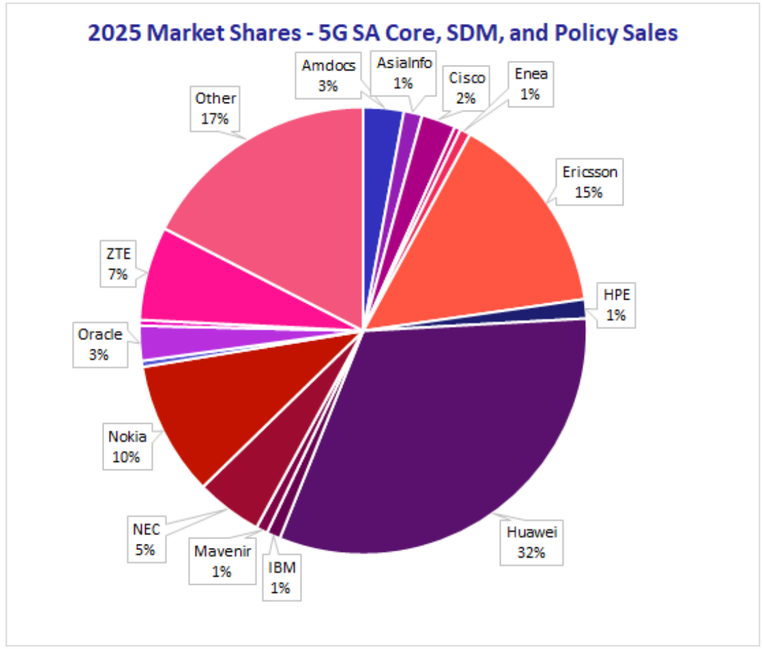
EXCLUDING CHINA, ERICSSON LEADS, FOLLOWED BY NOKIA

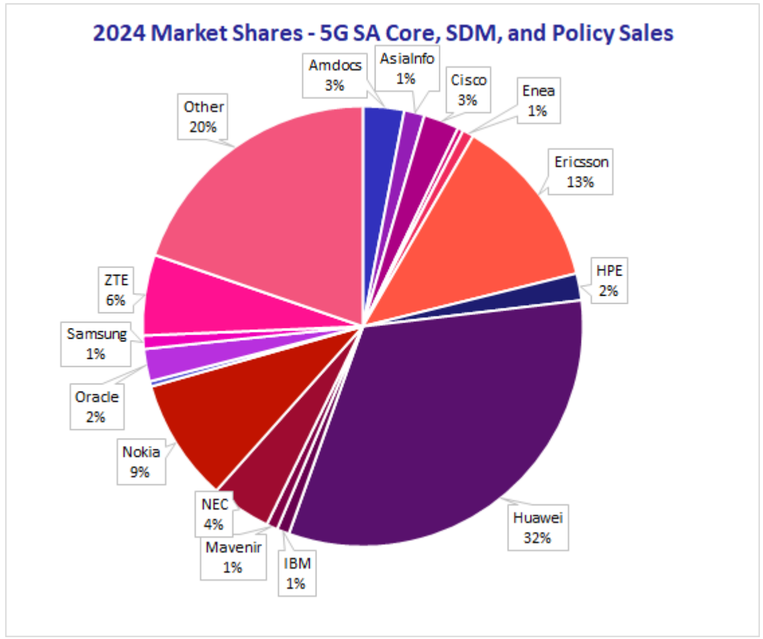
ERICSSON AND NOKIA ARE NECK AND NECK FOR LIVE 5G SA FOOTPRINT

THE 5G SA CORE + SDM + PCF VENDOR LEADERSHIP BOARD DOES NOT BUDGE

Huawei stays #1, followed by Ericsson and Nokia, which slightly increased their share

For various reasons explained in the next page, sales market shares have remained static for the past 5 years or so, despite the ban on Chinese vendors. In fact, our tracking shows that Huawei's share has slightly increased from 28% in 2021 to 32% in 2024 and stayed at that level in 2025. Number two Ericsson increased its share from 13% in 2024 to 15% in 2025 while Nokia gained 1 percentage point. This reflect the 5G SA market pick up reported at the beginning of this report and the strong 5G SA pipeline of the two European vendors we have been consistently reporting since we initiated this report in 2020.





THE PERSISTENT DOMINANCE OF HUAWEI SHOULD NOT BE UNDERESTIMATED

It’s driven by a combination of massive domestic scale, aggressive pricing and a first mover R&D advantage

Put another way, listen to Depeche Mode’s 1983 song: “everything counts in large amounts.” Seriously, we have been telling for years our customers and other people who are shocked by the magnitude of numbers that the Chinese vendors benefit from unique structural advantages that can be broken down into four key pillars:

1. The Power of their Domestic Market: The sheer scale of 5G deployment in China provides a massive "sandbox" that Western vendors lack.

- **Massive Volume:** with close to 5M 5G BTS and over 1B 5G subscribers as of 1Q26, China has the world's largest 5G SA footprint. This allows Huawei and ZTE to refine their core software and hardware at a scale that brings down unit costs significantly compared to vendors serving smaller, fragmented markets.
- **State Support:** The Chinese government's "Made in China 2025" and 5G five-year plans ensure that state-owned carriers (China Mobile, China Telecom, China Unicom) prioritize domestic vendors, providing them with guaranteed revenue to reinvest in 5G SA development.

2. Economic and Financial Incentives: Cost is often the deciding factor for operators in emerging markets.

- **Price Advantage:** Huawei’s equipment is frequently cited as being **20–30% less expensive** than European alternatives.
- **Strategic Financing:** Through China's "Digital Silk Road" and Belt and Road Initiative, Chinese state banks often provide low-interest loans or aid packages to developing nations (particularly in Africa and Southeast Asia) to purchase telecommunications infrastructure, effectively bundling technology with finance.

3. Technological Prowess and R&D: Despite political narratives, the dominance is also fundamentally technological.

- **R&D Investment:** Huawei consistently spends over **$20 billion annually** on R&D—rivaling the likes of Apple and Google. This has allowed them to lead in 5G patents and the development of "AI-native" core networks.
- **Early 5G SA Focus:** While many Western carriers initially focused on NSA, the three Chinese CSPs moved directly to SA in 2020 in the middle of the COVID-19 pandemic. This gave Huawei and ZTE a 2- to 3-year head start in perfecting the cloud-native architectures required for true 5G SA.

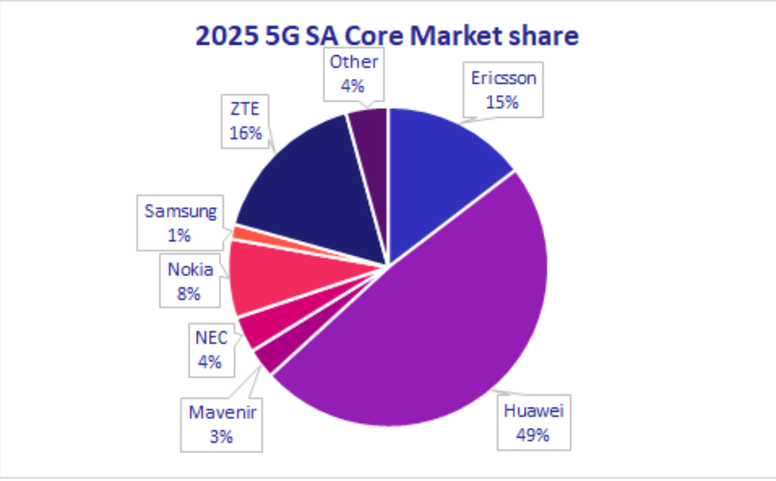
4. High "Switching Costs" and Path Dependency: Many CSPs are locked into Chinese ecosystems due to previous 4G deployments. Because 5G often relies on existing 4G infrastructure for smooth handover, operators who built their 4G networks using Huawei or ZTE find it significantly cheaper and technically easier to stick with the same vendor for 5G SA to avoid "transaction costs" associated with multi-vendor integration. See who Huawei’s and ZTE’s customers are in the vendor analysis section.

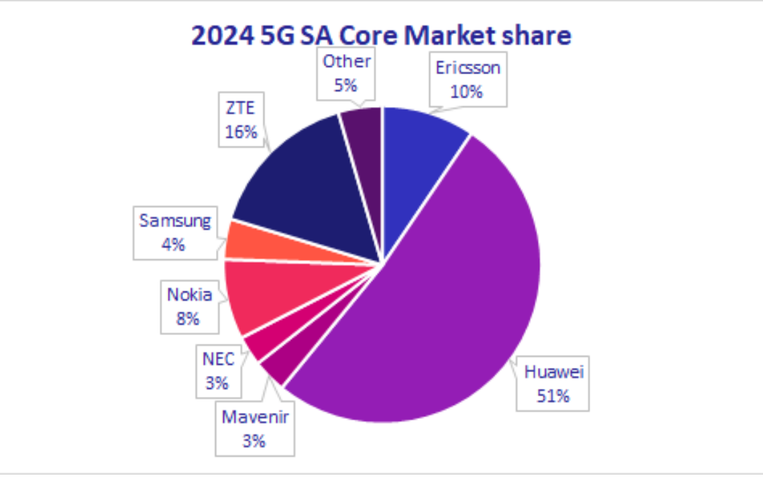
AS USUAL, THE CHINESE VENDORS LEAD 5G SA CORE 2025 SALES

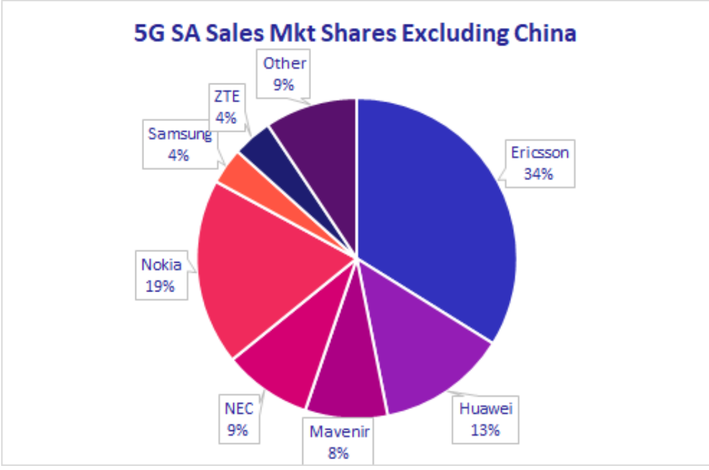
But excluding China leads to Ericsson and Nokia combined commanding 53% of the market

However, it's important to notice that Huawei's share of the global 5G SA Core market has decreased YoY from 51% to 49%, which comes from China Mobile's upgrade cycles. On the other hand, Ericsson managed to gain 5 percentage points while Nokia's share remained stable at 8% due to the lag between both vendors' 5G SA contract pipeline. In other words, back in 2020, Ericsson started to win 5G SA contracts ahead of Nokia which began to catch up in 2021.

Excluding China leads to a different ranking: Huawei falls to the third position followed by NEC and Mavenir.





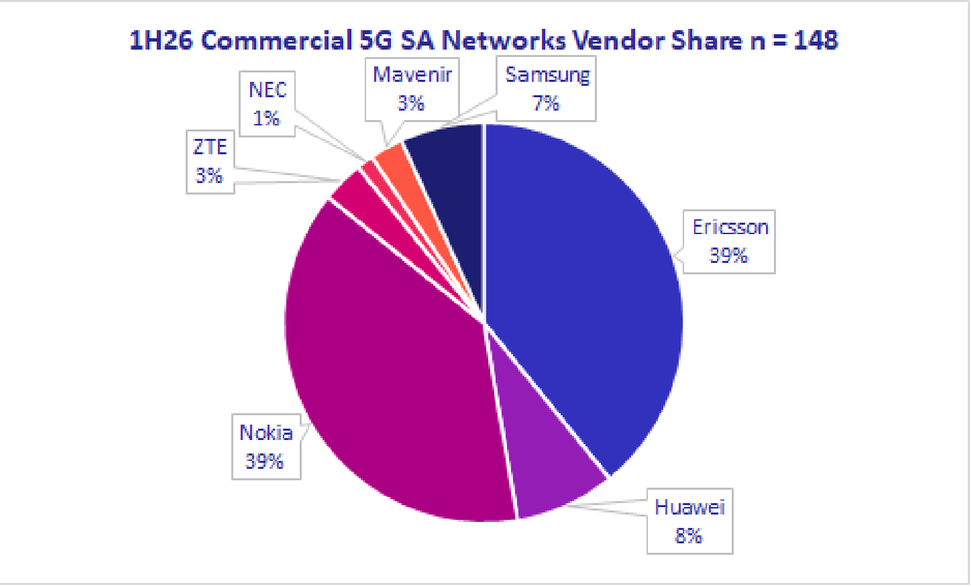


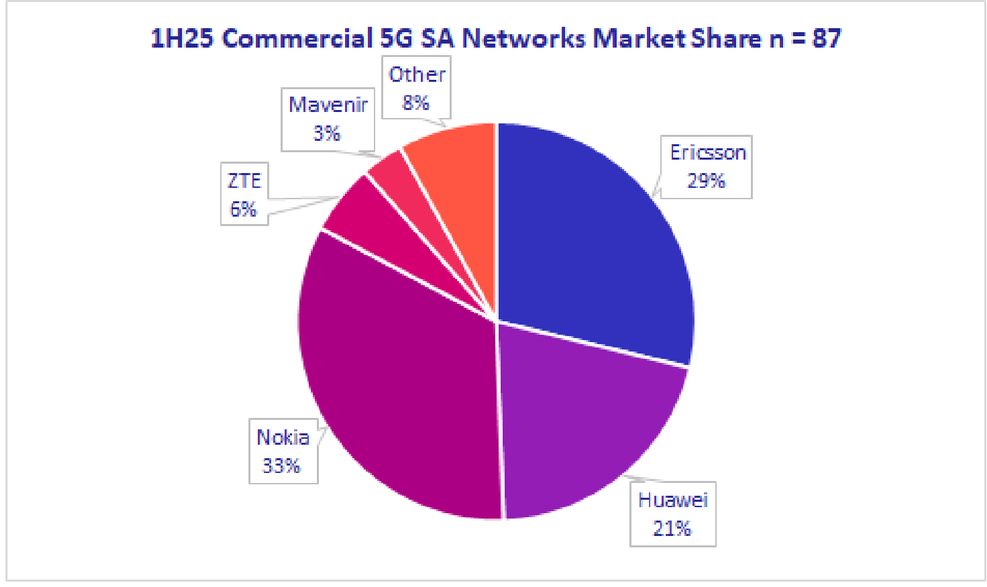
NOKIA AND ERICSSON ARE NECK AND NECK FOR LIVE 5G SA FOOTPRINT

Huawei's and ZTE's share is decreasing

This outcome comes as little surprise because of the ban and now the rise of data sovereignty in Europe in particular. Both Ericsson and Nokia have picked up the Chinese vendor leftover, so has Mavenir actually. It's important to state that as many of these commercial 5G SA networks use both Ericsson and Nokia, the total n = 148 is 30% higher than that reported by GSA, which is 92 as of 1Q26 but rose above 100 according to our research.

Nonetheless, this picture provides a strong backing to our evaluation of each vendor to build our barometer.



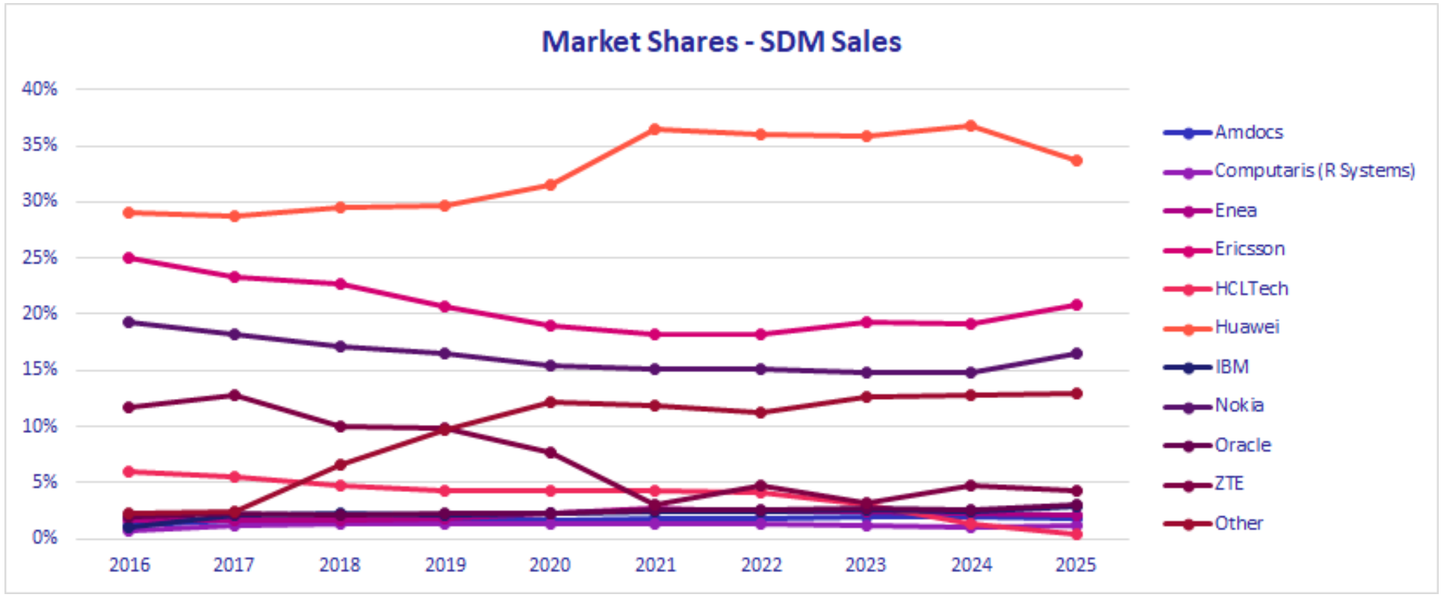


HUAWEI LEADS SDM 2025 SALES, FOLLOWED BY ERICSSON AND NOKIA

But Ericsson and Nokia gained share at the expense of Huawei and ZTE

Overall, 2025 was not a good year for the SDM business in China. By contrast, the momentum reported for both Ericsson and Nokia is once again showing up here:

- Gains: Ericsson and Nokia, both +2 percentage points YoY
- Losses: Huawei (-4%) and ZTE (-1%)

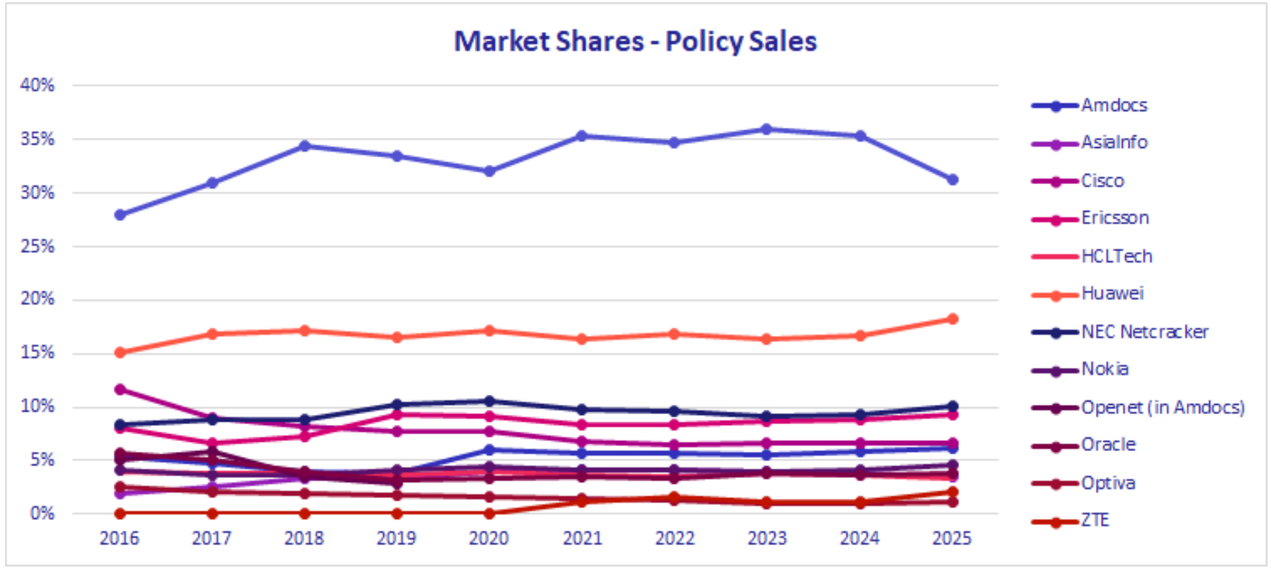


BY CONTRAST, THE POLICY (vPCRF & PCF) MARKET REMAINS VERY FRAGMENTED

As a result, Huawei's share is only 18%, up 2 percentage points YoY

Our understanding is that Huawei managed to win more business at the expense of Asiainfo which reported weak sales in 2025 due to challenging conditions in China. Overall, the policy market is very fragmented with a flurry of players hidden in the Other category.

With 10% share, Netcraker commands the #2 position after Huawei. While Ericsson, Huawei, and Nokia sell the PCF as a bundled, native component of their broader end-to-end 5G core contract wins, vendors like Amdocs, Enea (in the Other category), Netcracker and Oracle Communications compete heavily by pitching best-of-breed, vendor-agnostic converged policy engines that prevent CSPs from getting locked into a single network equipment provider. Altogether, they command 20% of the global policy market.



VENDOR ANALYSIS & BAROMETER

MARKET EXIT AND M&A

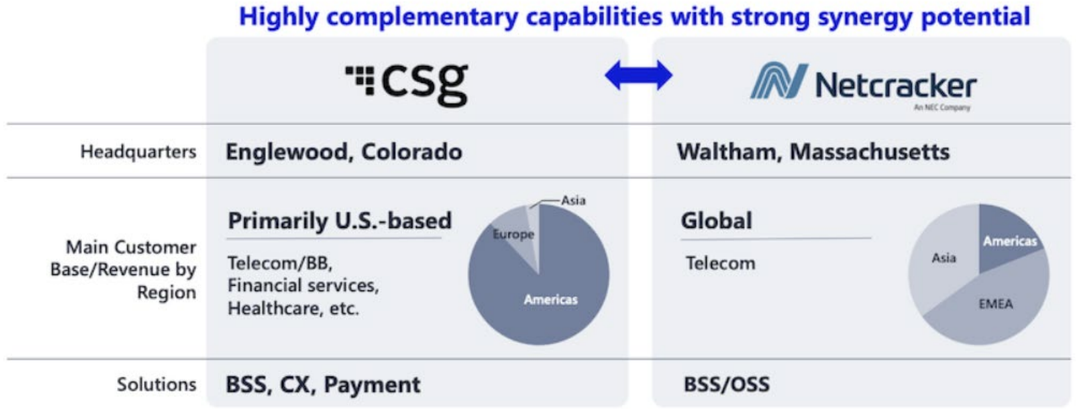
BAROMETER: AMDOCS, ENEA, ERICSSON, HUAWEI, MAVENIR, NEC/NETCRACKER, NOKIA, ORACLE, SAMSUNG AND ZTE

MARKET EXIT, MERGERS AND ACQUISITIONS

January 2026: **Amdocs** acquired **MATRIXX Software**, a cloud-native real-time charging and monetization platform, in a distressed $200M cash deal. The consolidation move closed in early 2026 and rescues MATRIXX from escalating long-term debt pressures. The acquisition boosted Amdocs' revenue share in the global charging product market and helps Amdocs to expand its charging business. Last, this move is additive to its $180M acquisition of Openet in 2020 and gives Amdocs footholds in 12 new accounts. By acquiring Matrixx, Amdocs gains some added ground across 7 contested accounts including Orange, Rogers, T-Mobile US, Telefonica, Telus, Verizon, and Vodafone.

May 2026: **NEC Corporation** finalized its $2.89B acquisition of **CSG Systems International, Inc.** and following the transaction, CSG was integrated into NEC's wholly owned subsidiary, **Netcracker Technology**, with Netcracker assuming operational leadership of the combined digital BSS/OSS and monetization business. The deal heavily expands NEC and Netcracker's footprint in the Americas—specifically the U.S. broadband and telecom sectors, which in turn will further weaken **Amdocs**' market share.

December 2025: **HPE** offloaded OSS, telco IT unit to **HCLTech**. The latter, which has more than 226,000 staff and annual revenues of $14.2B, said it gained a portfolio of OSS tools (service assurance, orchestration and fulfilment, and automation solutions) as well as HSS and 5G SDM systems that support more than 1B devices across 200+ deployments globally. 1,500 engineering and telecom specialists from 39 countries joined HCLTech's global delivery team, including 1,225 who are employees and 260 contractors. It paid $160M in cash for HPE's Telco Solutions business (including $15M based on 2025 business performance), with the acquisition expected to close during 1H26. The two companies have M&A history, as HCLTech previously acquired HPE's telco BSS, network applications, service cloudification and data intelligence portfolio, a deal that closed in December 2024 and saw the transfer of 1,500 HPE staff to the Indian company. HCLTech says the BSS business has been successfully integrated and is now growing. Both Telco Solutions and the BSS portfolio were formerly part of HPE's Communications Technology Group (CTG).



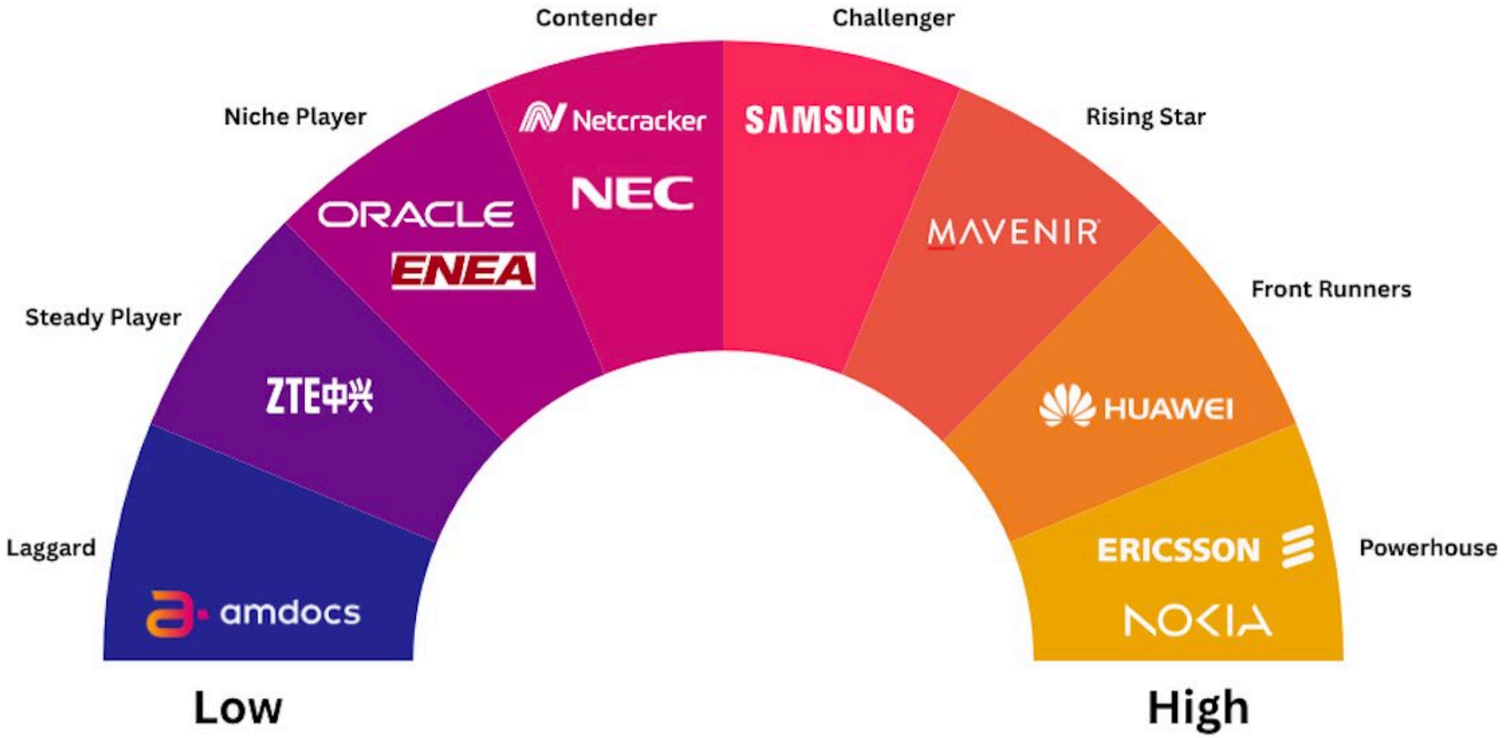
Source: NEC Corporation

OUR 5G SA CORE VENDOR BAROMETER

For the first time this year, we are introducing a Vendor Barometer. Our assessment is based on the following criteria: number of commercial SA networks, number of SA contracts, sales and revenues, number of NFs in the product portfolio, and market momentum.

Vendor	Barometer	Reasons of the positioning on our barometer
Ericsson	Powerhouse	World's largest 5G footprint, large SA contract base, broad product portfolio, high market momentum.
Nokia	Powerhouse	Neck and neck with Ericsson on live 5G SA networks, large SA contracts, broad product portfolio, high market momentum. Sales below Ericsson's.
Huawei	Front Runner	Massive domestic scale fueling sales and advanced broad product portfolio but lagging number of networks and contracts due to the ban. The momentum remains high though.
Mavenir	Rising Star	Leverages large IMS footprint, drives revenue scale through global Tier-1 led expansion as proven by the Deutsche Telekom swap. High momentum justified by its presence in many RFXs worldwide and increasing market shares.
Samsung	Challenger	Small but expanding SA footprint and contracts by bundling RAN and 5G core together in its offers, fair momentum despite YoY market share loss related to contract terms.
NEC	Contender	Comprehensive product portfolio but small commercial footprint and contract pipeline. Momentum sustained by Netcracker.
Netcracker	Contender	Part of NEC, 5G policy and charging portfolio has carved out a highly competitive and strategic position in the market
Enea	Niche Player	Best-of-breed SDM vendor-agnostic specialist that is maintaining a good momentum.
Oracle	Niche Player	Established itself as the neutral, cloud-native data and control layer that glues multi-vendor 5G cores together.
ZTE	Steady Player	Substantial domestic scale fueling sales and advanced product portfolio, but like Huawei, lagging number of networks and contracts due to the ban.
Amdocs	Laggard	SDM business facing a structural growth slowdown and aggressive market share pressure.

ERICSSON & NOKIA ARE POWERHOUSES; MAVENIR THE RISING STAR



LAGGARD – AMDOCS IS LOSING GROUND ON SDM; ITS STOCK TAKES A BEATING

While the company consistently reports stable fundamentals, beats near-term earnings expectations, and recently raised its dividend, the market is pricing in structural concerns rather than short-term execution failures. The downward pressure stems from a mix of secular macroeconomic trends and deep-seated structural anxiety about how AI will alter the company's business model. The most significant existential drag on Amdocs' stock is a growing skepticism surrounding its core business model in an AI-driven world. Historically, Amdocs' competitive advantage wasn't just its software; it was the sheer complexity of its integration. Over 80% of Amdocs' revenue is tied to services and consulting. CSPs have been staying with Amdocs because replacing massive BSS and SDM systems meant embarking on a risky, multi-year, multi-million-dollar migration requiring armies of consultants.

Our research suggests that Amdocs' SDM business is not experiencing a terminal operational decline, but it is facing a structural growth slowdown and aggressive market share pressure. Case in point: at AT&T and T-Mobile US that combined account for 70% of Amdocs' total revenue, Nokia has captured a significant share. SDM used to be primarily about IT and billing database synchronization. But in 5G SA, the SDM functions such as UDM and UDR sit deep inside the network control plane. As a result, Tier-1 CSPs are increasingly favoring **Ericsson** and **Nokia** for their 5G cores because they can naturally bundle 5G SDM software natively into their massive RAN and core network contracts. This leaves Amdocs fighting an uphill battle as an independent software vendor trying to insert its standalone SDM stack into a space where network infrastructure giants hold structural advantages. Because Amdocs relies heavily on managed services and system integration hours—80% of Amdocs' total revenue—to wrap around its SDM software, any decision by a major telco to pause a cloud migration or optimize their existing data architecture results in a highly visible slowdown in Amdocs' backlog conversion.

Source: Yahoo Finance

Moreover, the shift toward cloud-native, containerized telecom networks has opened the door to Enea and Oracle, and various cloud-native challengers to offer lightweight, highly scalable network data layers that can run seamlessly on public clouds like AWS.

At least, Openet's PCF and Converged Charging System (CCS) are now the primary engines driving Amdocs' **5G Value Management** and network slicing portfolios. It has secured critical, high-profile implementations at AT&T and T-Mobile US. When Amdocs bought Openet in August 2020, the main goal was to acquire a truly cloud-native, microservices-based architecture to replace Amdocs' older, clunkier legacy charging systems. In that regard, the integration has been a home run. And finally, the MATRIXX Software acquisition should help the expansion of its charging business.

NICHE PLAYER – ENEA STRATUM IS ENEA'S WINNING SDM PORTFOLIO

Enea's SDM and broader core network data business is in a period of strategic transition, shifting from a standalone product focus to an integrated pillar within its highly prioritized "Growth Portfolio." This portfolio represents the modern, cloud-native telecom and security products that drive 80% of Enea's top-line revenue. Stratum—as the underlying 5G data engine—is one of the key structural pillars of this group, funded heavily by Enea's 23–27% R&D reinvestment strategy to capture the 5G SA wave.

On Enea's formal commercial product menu, Stratum is classified under the **Network Efficiency & Intelligence** solutions segment, specifically labeled as the **Network Data Layer (NDL)**. Stratum is composed of two major elements:

- **Stratum UDR** (Unified Data Repository for structured user data)
- **Stratum UDSF** (Unstructured Data Storage Function for stateless session data)

It's worth mentioning that in May 2024, **Oracle** and **Enea** announced the certification of Enea's cloud native solutions for subscriber data management, Stratum, and Data Management Applications on Oracle Cloud Infrastructure (OCI). With this certification, Enea joined the ecosystem of ready-to-deploy 5G solutions on OCI, allowing customers to easily cloudify their networks in an agile and scalable manner with validated solutions. In addition, Stratum is also deployed by CSPs who leverage hybrid AWS/Azure stacks to host stateless 5G network functions.

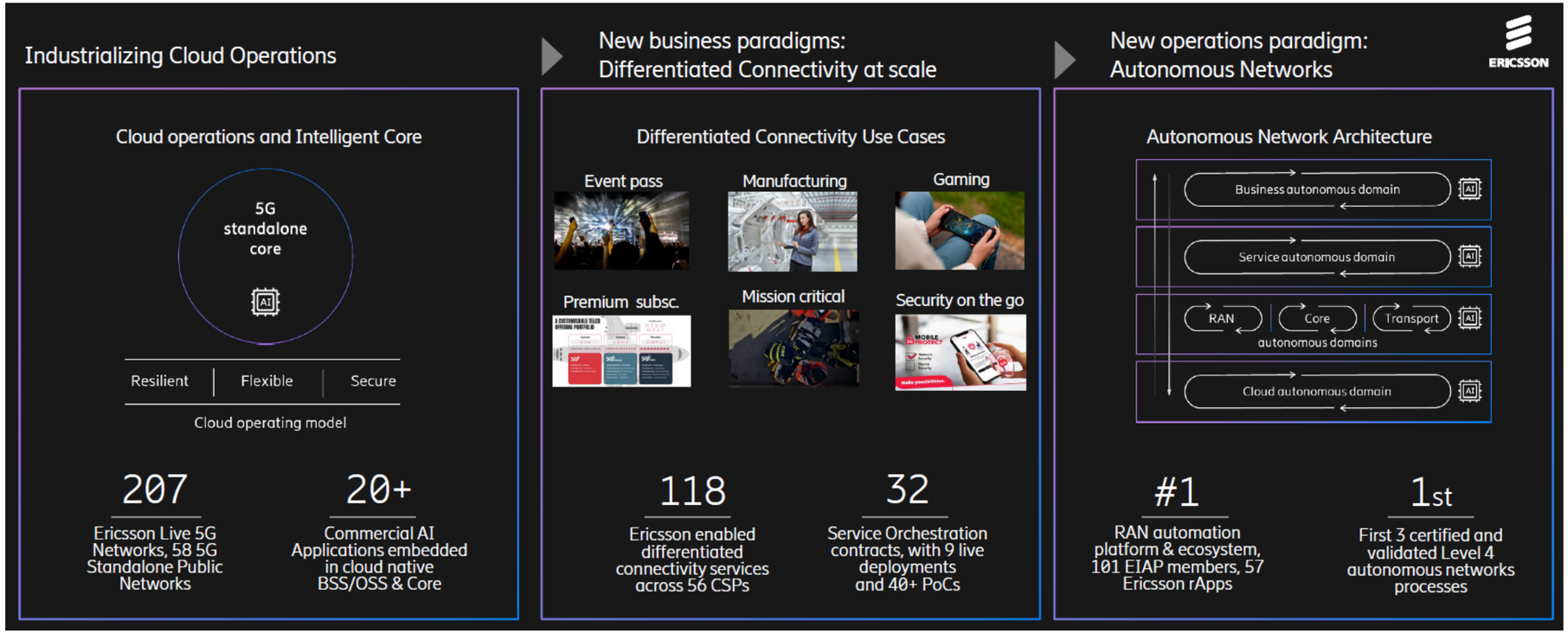
By separating the data layer from the application layer, Stratum prevents vendor lock-in. Put another way, a CSP can run an Enea Stratum data layer underneath a multi-vendor core, meaning they can swap out or upgrade network functions from different vendors over time without having to completely re-architect their underlying subscriber database or undergo complex data migrations.

Enea Stratum customers include **Tier-1 and Tier-2 CSPs** in North America, Europe, and the Middle East. The company did not want us to release the names of the customers and said that globally, over **3B people** rely on networks running Enea technology.

POWERHOUSE – ERICSSON BOASTS A HUGE FOOTPRINT

As of May 12, 2026, Ericsson has 207 5G network contracts, including 150+ commercial live 5G cloud core customers and 58 5G SA live networks; the vendor's cloud native dual-mode 5G Core is now widely deployed. It's worth mentioning that private/on-prem preference is reflected in the maturity of current deployments: Ericsson has more than 50 cloud-native core live deployments on Ericsson Cloud Native Infrastructure (CNIS), more than 15 cloud-native core live deployments on third-party cloud, and more than 600M subscribers worldwide on Ericsson cloud-native core. These proof points show that private/on-prem cloud remains the most proven and widely adopted model for 5G Core, while also confirming that CSPs want choice within that category from a fully integrated Ericsson stack to validated third-party infrastructure options.

As CSPs acknowledge that broadband is no longer enough to recoup 5G investments, the emphasis has shifted toward **differentiated connectivity**—offering tailored, high-performance, and programmable network slices for consumers and enterprise use cases alike. At the **Ericsson Core Network Summit 2026**, hosted in partnership with Telecom Italia Mobile (TIM) in Rome in May 2026, Ericsson demonstrated target use cases across shipping, manufacturing, and logistics, showcasing how strict SLAs (Service Level Agreements) can be guaranteed over a packet core.



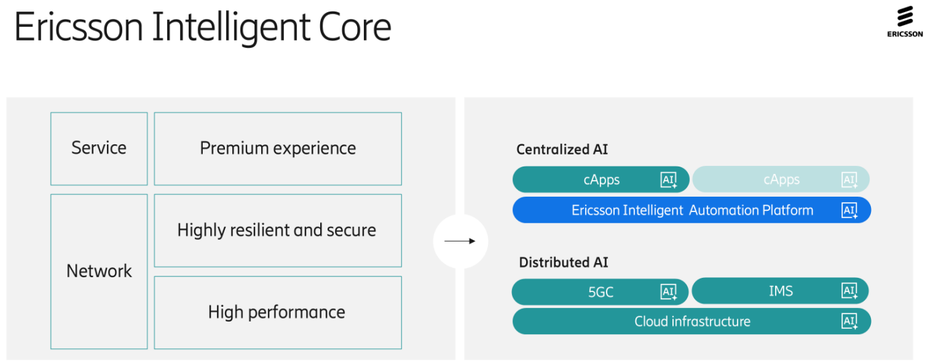
Source: Ericsson

POWERHOUSE – ERICSSON: EIAP ONBOARDS 5G CORE [CONT'D]

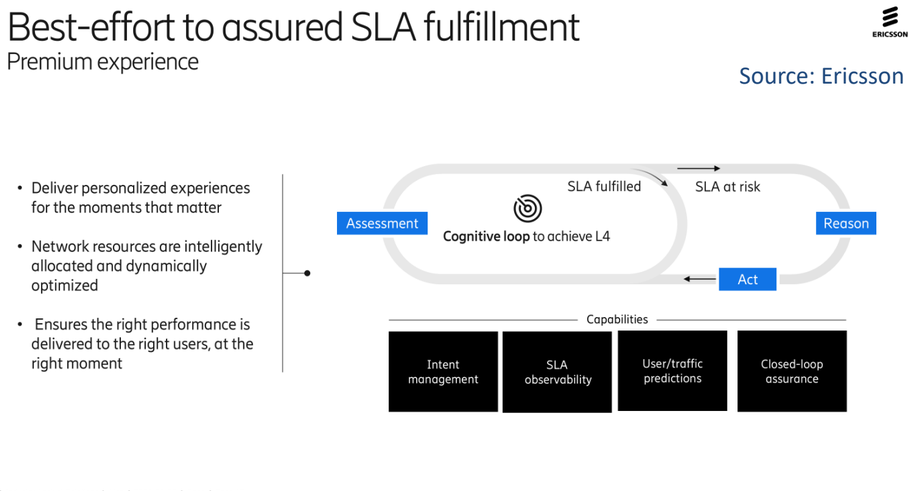
The big news at Ericsson in 1H26 is the decision to run intelligent core automation on the **Ericsson Intelligent Automation Platform (EIAP)** to enable CSPs to turn the core network into an AI-native, intent-driven engine that uses agentic closed loops to enhance resilience and performance and unlock differentiated services. Put another way, Ericsson is expanding its automation layer beyond open RAN. The platform now supports streaming near-real-time data from both the RAN and the core into a single control plane, giving birth to **cApps** (Core Apps) to complement existing rApps.

Ericsson's vision for intelligent core automation reflects a clear shift from today's partially automated, human-dependent networks to truly autonomous, AI-native, cross-domain, and intent-driven networks that keep network behavior continuously aligned with business intents and outcomes. In this future state, the core network is no longer governed by static, reactive rules; instead, AI-powered, agentic closed loops interpret high-level intents, observe live network conditions, and take autonomous actions across domains to enhance performance, resilience, and overall experience at scale. The journey will span multiple years, but the direction is already defined: an autonomous, AI-native core in which self-configuration, self-optimization, self-healing, and self-protection are inherent properties of the network fabric rather than externally added features.

- By applying AI from day-zero design through ongoing operations, CSPs can streamline deployment, reduce integration time, and make capacity planning a continuous, data-driven process. This ensures networks are correctly dimensioned, reduces the risk of incidents, and improves hardware efficiency.
- The core network is also moving toward self-healing operations. With end-to-end observability, anomaly detection, and predictive analytics, issues can be identified before they affect customers. AI agents can correlate network data, find root causes, and recommend or execute corrective actions, improving reliability, security, and customer experience.
- Intelligent core automation enables new premium services. CSPs can move beyond best-effort connectivity to assured, tiered offerings with guaranteed performance in areas such as latency, throughput, reliability, and prioritization. Combined with AI-driven fraud prevention, this strengthens trust and creates new opportunities for service differentiation and monetization.



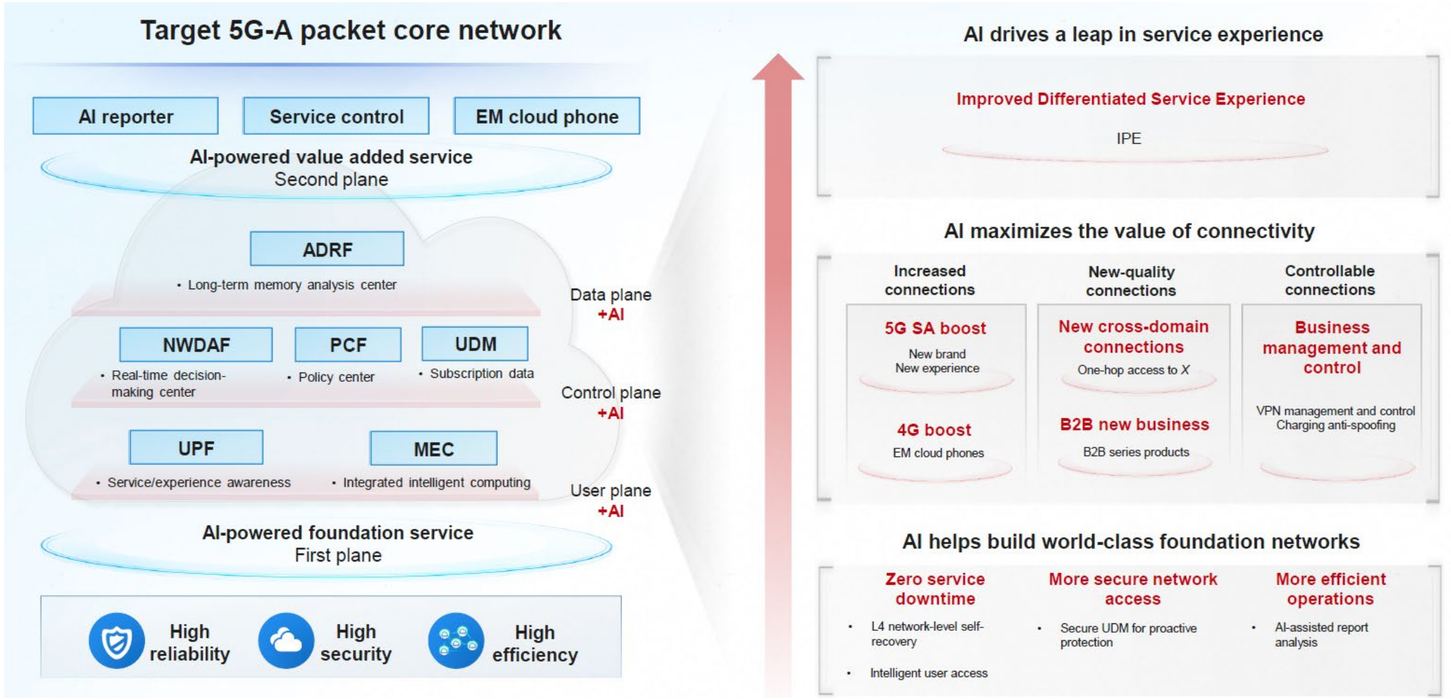
Source: Ericsson



Source: Ericsson

FRONT RUNNER – HUAWEI LAUNCHED ITS AGENTIC CORE AT MWC26…

As of mid-2026, Huawei has transitioned its focus from 5G SA, branded 5.5G, toward **5G-Advanced (5G-A)** and what it calls the **"Agentic Core.“** As a reminder, it’s at MWC25 that Huawei presented an evolution of its 5.5G platform, including its Telco Intelligent Converged Cloud, with the integration of AI at every layer. It’s worth mentioning that most of the development was achieved through collaboration with China Mobile Zhejiang. Huawei’s Agentic Core framework integrates AI agents directly into network elements to handle complex tasks autonomously. Launched at MWC 2026, this new core moves from scenario-specific automation to **full autonomy (Level 4 Autonomous Networks)**. The core now supports "New Call" (immersive 2.0 calls), "MEC to X" (private industry networks), and "Deterministic Performance" (latencies under 4ms for industrial automation). It also uses "Digital Twins" and the **EDNS 2.0 foundation model** to predict network faults before they happen (T-1 stage), transitioning from reactive to autonomous management. Huawei is pioneering "Agentic Mobile Broadband," where the network doesn't just provide a pipe but acts as an intelligent engine supporting billions of AI agents.



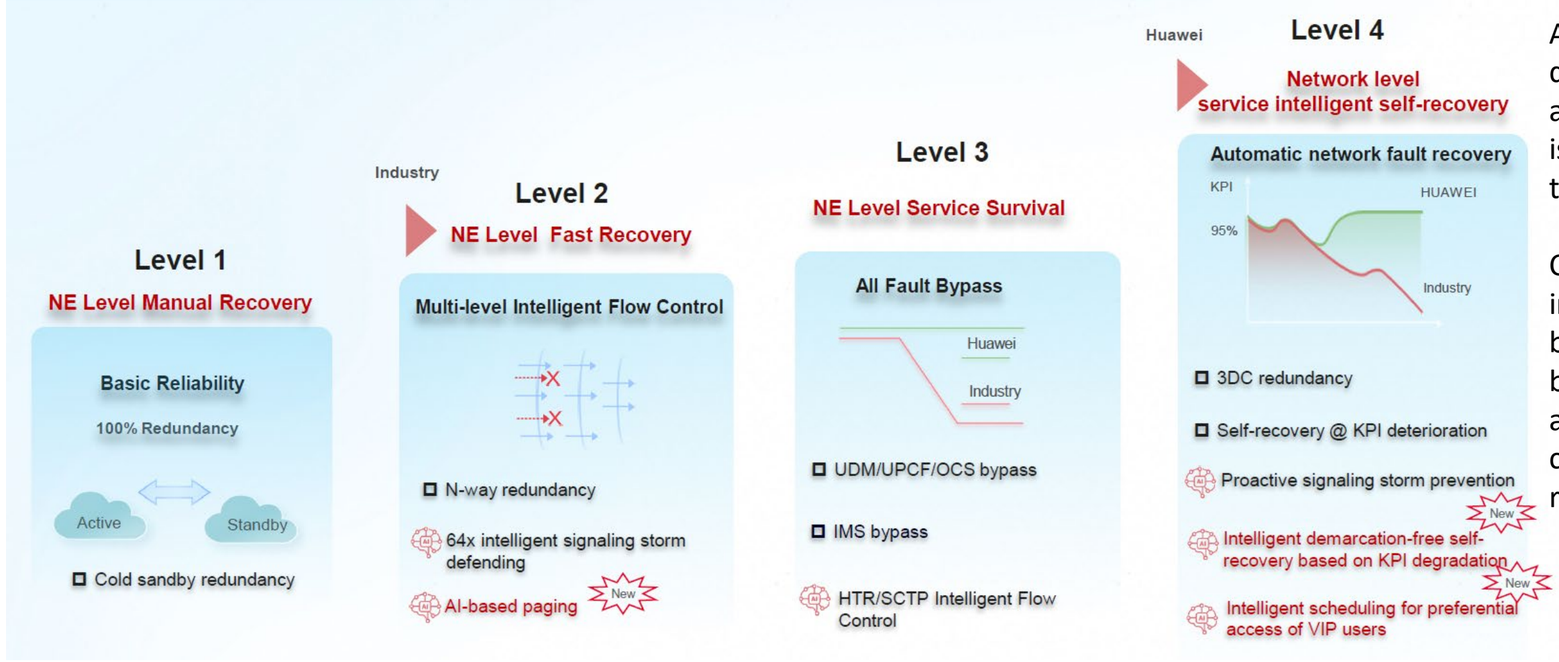
Source: Huawei

Looking at Huawei’s customers, Australia, Canada, India, the UK, the U.S. and New Zealand are the other countries where the vendor has been banned for the past 5 years or so.

Meanwhile, the vendor boasts **50 5G SA** networks worldwide and obviously remains active outside of China with a few customers left in Europe, the Middle East and Africa, Latin America, and Southeast Asia. Some of the longtime Huawei customers include Malaysian Celcom Digi, Emirati-based CSP du, Safaricom in Kenya, Telkomsel (Indonesia), Globe (Philippines), Smart (Cambodia), Orange (Bostwana), MTN (Uganda), Vodafone Turkey, Zain Group, Vodafone and VDF Group in Italy, LG U+, Telefonica Group, Veon Group, AIS Thailand, and HKT Hong Kong.

…AND BELIEVES IT LEADS THE LEVEL 4 AUTONOMOUS NETWORKS RACE!

According to Huawei's assessment illustrated in the chart below, the industry stands far behind! As explained earlier (page 16) Huawei has an undeniable scale advantage, driven heavily by its close partnership with China's CSPs who are aggressively pushing for fully autonomous operations to manage their massive 5G-Advanced footprints. Huawei is running large-scale L4 trials and live deployments with **all major Chinese CSPs plus from our primary research at least 17 international CSPs** predominantly across the Middle East (i.e., *Zain Kuwait, Zain KSA, du, stc, STC Bahrain, e&, and Omantel*) Southeast Asia (i.e., *AIS Thailand, XL Axiata Indonesia, Smart Cambodia, Dialog Sri Lanka, Globe Telecom and PLDT in the Philippines, and Viettel in Vietnam*), and Africa (i.e., *MTN South Africa, MTN Ghana, and MTN Group*). At MWC26, Huawei launched its **AN L4 Phase 2 solution**, explicitly targeting the biggest hurdles to widespread adoption: getting the RAN, transport, and core networks to talk to each other. And lastly, At MWC 2026, Huawei and China Mobile open-sourced the **A2A-T (Agent-to-Agent Transit) protocol** to allow independent AI agents to coordinate with one another, even across different hardware vendors. By open-sourcing it, Huawei is attempting to establish the global standard for how autonomous networks communicate.



Source: Huawei

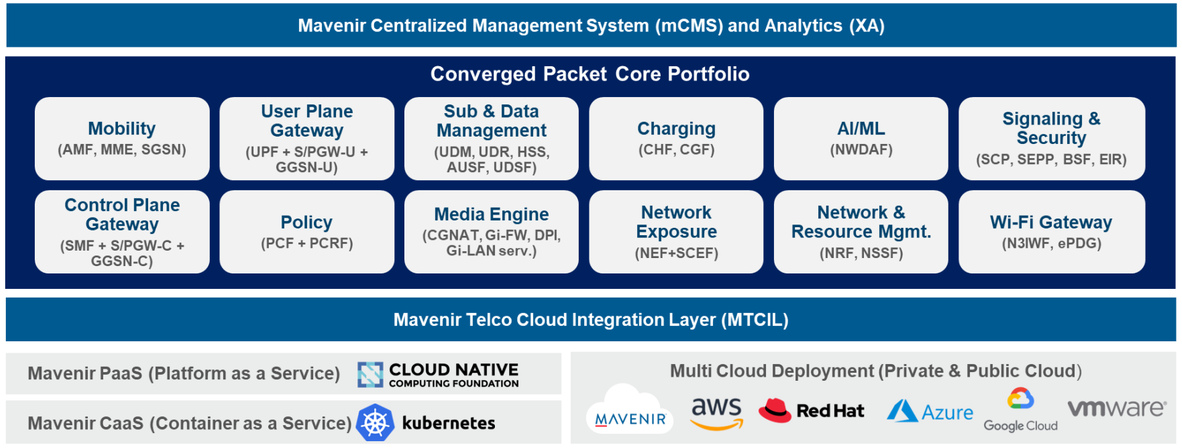
Anyway, from what we've seen so far, L4 automation deployments conducted by Huawei, Nokia, and Ericsson are still **scenario-isolated** and consequently, our position is that true Level 4 autonomy across an entire global telecom network does not exist yet.

Case in point: a network might achieve true L4 autonomy in *energy saving* by shutting down bands dynamically based on traffic predictions or *fault isolation*, but we believe full, cross-domain, zero-touch network automation is a multi-year journey we expect to mature closer to 2028-2030 as 5G-A gives way to early 6G rollouts.

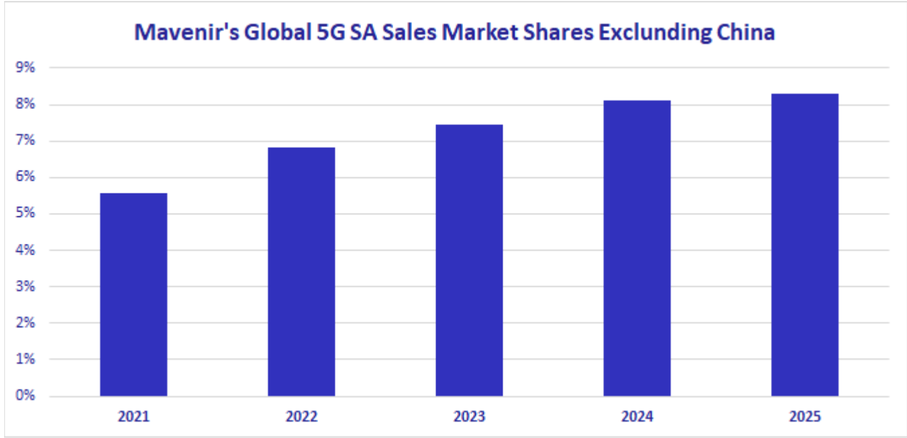
THE RISING STAR – MAVENIR SWAPS ERICSSON AT DEUTSCHE TELEKOM

Mavenir has established itself as a **strategic and preferred packet core supplier**, challenging traditional vendors through its **cloud-native Converged Packet Core (CPC)** enabling intelligent, automated, programmable networks through the development of telco-first, cloud-native, AI-by-design software solutions for mobile operators. Our research indicates that the vendor posted 5 consecutive years of growth and overall, global Tier-1 CSPs increasingly view Mavenir as a top-tier packet core vendor, particularly for 5G SA transformation and converged core deployments across multi-generational networks. This is supplemented and supported by a growing installed base and expanding footprint in 5G SA deployments. Case in point: Deutsche Telekom's transition from Ericsson to Mavenir as its primary 5G SA core provider represents a fundamental rethinking of how Tier 1 CSPs architect and operate networks in the cloud-native era. Mavenir now carries all 5G SA traffic in Germany, while Ericsson handles legacy 4G and non-standalone 5G.

Mavenir's packet core is the central monetization and service-enablement layer underpinning a broader set of next-generation connectivity use cases, than simply a legacy mobile core replacement cycle. The platform operates on **GitOps** principles: enabling continuous reconciliation, and new sites deployed in under **20 minutes** to accelerate service innovation and Time-to-Market. Mavenir's **CPC** is strategically aligned with operator investment priorities across Network Slicing, 5G SA Roaming, MVNO/MVNE enablement, IoT, VoNR, MEC and private/campus network architectures. It also enables higher-growth adjacencies including NTN and D2D satellite communications, RedCap, globally connected cars, and 5G transport via Ethernet PDU-based frameworks, supporting differentiated performance and 5G SA monetization.



Source: Mavenir



Source: TÉRAL RESEARCH

TÉRAL RESEARCH
WIRELESS INDUSTRY ANALYSIS

THE RISING STAR – MAVENIR IS FORGING AHEAD [CONT'D]

2026 marks Mavenir's most significant push covering all regions on both expansion and new customers across key use cases. The vendor has established strong positions globally with strategic partnerships and expansions of European and American operators; Tier-1 groups, including Deutsche Telekom in Germany and Vodafone in Portugal, while also supporting expansions of greenfield and digital-native operators such as 1&1 in Germany with its portfolio.

Although many customers are under NDA, some of the 2026 public announcements the company shared with us include:

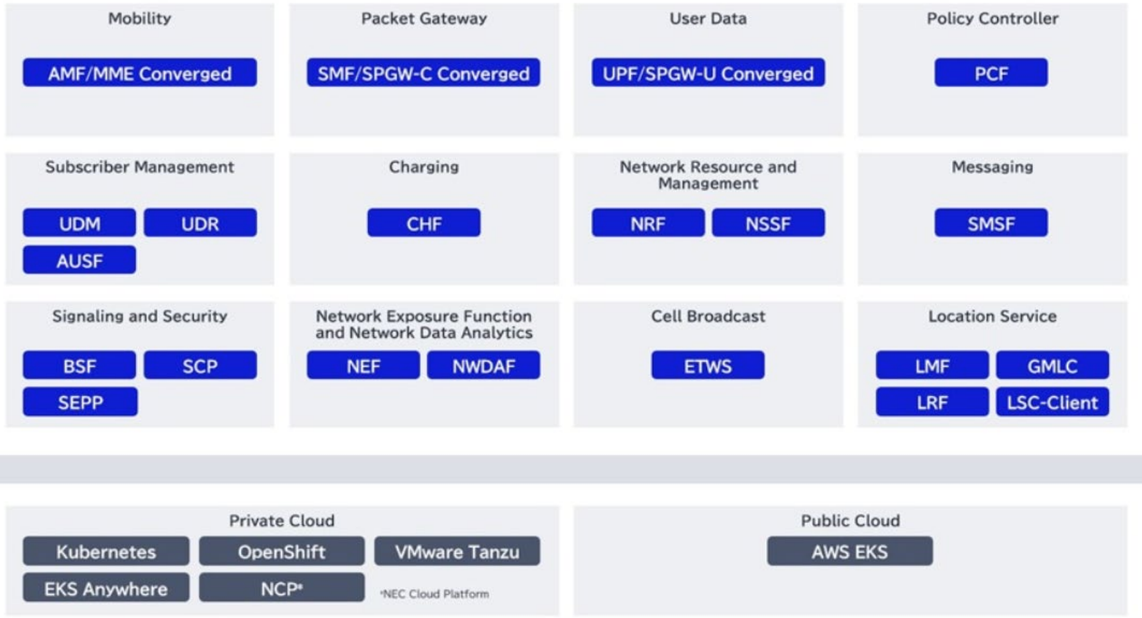
- February 2026:
  - **Deutsche Telekom** reported up to 65% Energy Savings in 5G Core Network. Mavenir provided **cloud-native 5G Core software and energy-aware automation**, enabling Deutsche Telekom to achieve up to **65% energy savings** through dynamic scaling and full-stack efficiency. Also acted as a **key technology partner in the Horizontal TelCo Cloud**, helping design a unified, cloud-native architecture to scale energy optimizations across the core network.
  - **Terrestar** launched Canada-Wide Hybrid Satellite IoT Service Powered by Mavenir's Cloud-Native Core (and RAN). Mavenir's fully containerized, cloud-native Converged Packet Core delivers the complete suite of network functions required for Non-Terrestrial Network (NTN) services delivering carrier grade reliability, high availability, and elastic scalability to support commercial traffic.
  - Telefónica, S.A. and Mavenir announced the signing of a Memorandum of Understanding to create a joint AI Innovation Hub designed to accelerate the integration of artificial intelligence into Core Networks.
- April 2026:
  - Mavenir announced that its Converged Packet Core is now live in **Rakuten Mobile**'s nationwide mobile network, deployed on Rakuten Cloud Platform. This deployment plays a key role in enabling Rakuten Mobile to provide multi-carrier roaming through 'JAPAN Roaming,' a new nationwide emergency roaming service in Japan launched by Japan's leading mobile carriers.
  - **Rural Independent Network Alliance**, selected Mavenir to modernize its voice core, deploying IMS, VoLTE, VoWiFi, and Voicemail solutions as part of a multi-vendor equipment swap.
- June 2026:
  - Mavenir become First Major Network Software Vendor to Receive 5G Packet Core Network Function Certification Under Germany's BSI NESAS Scheme.

CONTENDER – NEC OFFERS A VIABLE ALTERNATIVE AND LOOKS FOR PARTNERS

NEC's 4G/5G converged core shows a high level of cloud-native maturity through its evolution from early cloud-native adoption to large-scale commercial deployment and advanced automation; so far, NTT docomo, Rakuten Mobile and Softbank Mobile remain the key customers. NEC has validated cloud-native scalability and resilience through implementations such as control-plane auto-scaling and hybrid cloud configurations, including deployments on public cloud platforms such as AWS. The Japanese vendor is advancing automation and operational optimization through the application of AI, supporting efficient design, deployment, and operations. In February 2026, NEC and AWS successfully demonstrated how Agentic AI autonomously manages the entire lifecycle of the UPF, from design, construction, and deployment through to operational monitoring. Furthermore, NEC has demonstrated commercial progress in cloud-native core adoption through its collaboration with NTT docomo on 5G core deployment in the cloud.

The diagram illustrates the NFs supported by NEC's 5G Core (5GC). It comprehensively covers essential areas indispensable for the deployment and operation of 5G services, including core functions such as mobility control, session control, and the user plane, as well as cell broadcast and positioning services.

NEC is strengthening its global market presence through strategic partnerships. For example, in its collaboration with **Tejas Networks**, the partner leverages an IP licensing model for NEC's 4G/5G Converged Core software. This approach enables more flexible business expansion beyond traditional turnkey deployments and supports broader market reach through partner ecosystems



Source: NEC

CONTENDER – NETCRACKER LEVERAGES ITS CCS TO CRACK THE PCF/CHF MARKET

Anchored by its **Convergent Charging System (CCS)** and integrated closely with its Digital BSS and core domain orchestration, Netcracker's 5G policy and charging portfolio has carved out a highly competitive and strategic position in the market. While traditional BSS/OSS players face a sluggish 5G core deployment cycle globally, Netcracker is performing well by focusing heavily on cloud-native multi-vendor environments, network slicing monetization, and the integration of **Agentic AI**.

Netcracker's strongest differentiator is its vendor-agnostic approach. Because many tier-1 operators deploy hybrid environments (e.g., mixing Ericsson, Nokia, or Huawei cores across 4G and 5G), Netcracker positions its CCS as a single, decoupled platform. It handles 3GPP-compliant 5G SA charging while natively bridging legacy 4G LTE online charging system) protocols. This has made it an attractive option for CSPs trying to avoid vendor lock-in from their core network providers.

Netcracker has successfully transitioned its charging architecture to a fully containerized, microservices-based model. It runs on any Kubernetes-compatible environment and is deeply integrated with public clouds (i.e., AWS, Google Cloud, and Microsoft Azure). Crucially, it supports distributed edge deployment to enable latency-critical session management at the edge cloud while keeping balance management and unified data storage centralized.

In September 2025, Netcracker launched an **Agentic AI solution** aimed at telecom monetization. For policy and charging, this means shifting from static, rule-based policy configurations to intentional, closed-loop automation. The system uses AI to analyze network performance and dynamically adjust resource quotas or pricing models during peak periods to mitigate revenue leakage.

Noteworthy customer wins include:

- **Telenet (Belgium):** Deployed Netcracker's OCS/CCS to consolidate multiple IT stacks into a single converged platform handling fixed-line, 4G, and 5G standalone charging.
- **DISH Wireless (USA):** Leveraged Netcracker for its cloud-native 5G network, utilizing their orchestration and monetization capabilities to support dynamic, automated wholesale and enterprise business models.
- **SLT-MOBITEL (Sri Lanka):** Extended its revenue management partnership to scale up converged digital services.

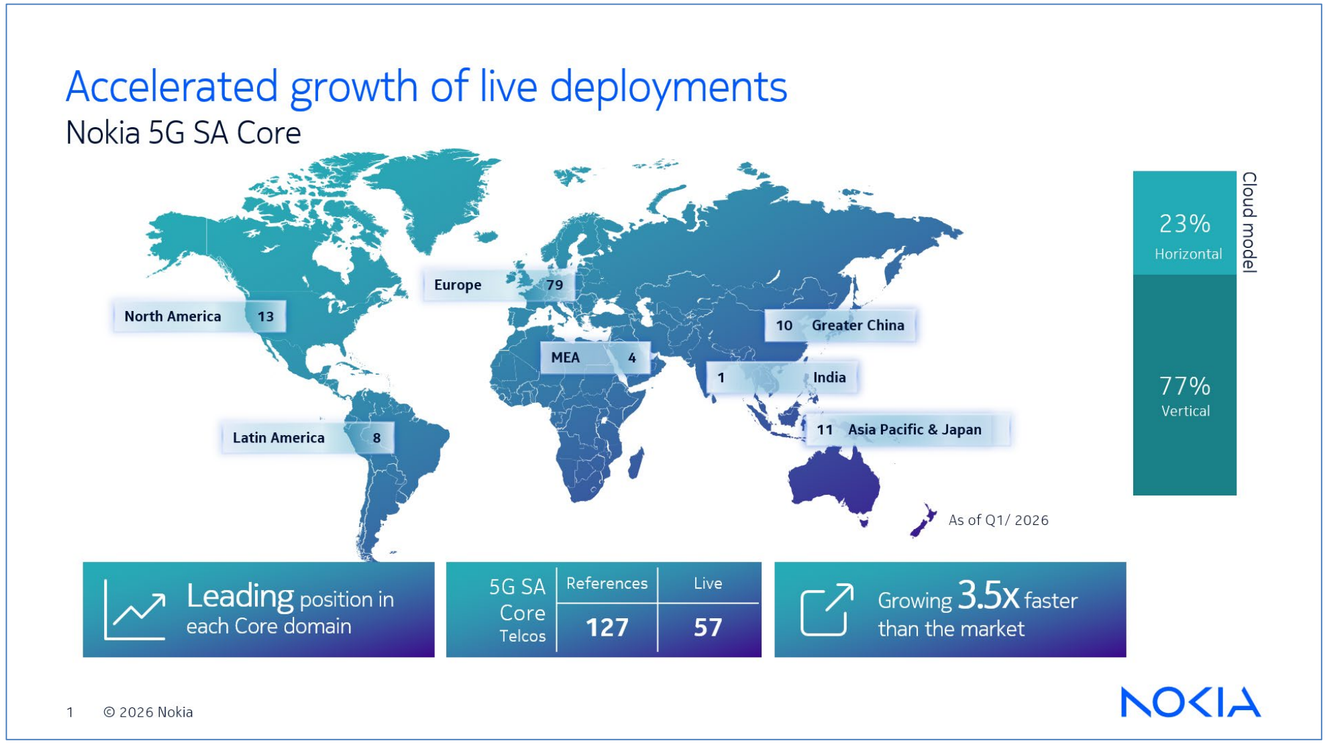
Finally, as a wholly owned subsidiary of NEC Corporation, Netcracker frequently partners with NEC and DigitalRoute to deliver end-to-end, pre-integrated 5G monetization stacks globally. NEC's **$2.9B May 2026 acquisition of CSG Systems International**, brings instant domination of North American 5G monetization, a market Netcraker has been struggling to breach.

POWERHOUSE – NOKIA COMMANDS A VAST FOOTPRINT

As of March 31, 2026, Nokia has 127 CSPs deploying its 5G SA Core versus 125 last year. Although Nokia won five new CSPs, eight were merged or acquired. Currently, 57 CSPs are providing live commercial service using Nokia 5G SA Core, and 29 commercial service. Nokia also reported these commercial deployments, which are mostly cloud-native: 81 Policy Control, 161 Packet Core, 221 SDM, 55 signaling and 160 IMS.

Nokia is actively pursuing strategies that extend beyond its traditional focus on CSP connectivity, particularly in areas like autonomous networks, cloud technology, and artificial intelligence. This shift aligns with the evolution of 5G, 6G and the broader transformation, where AI, automation and resilience are increasingly crucial. Nokia is also expanding its presence in wide area enterprises, by developing mission critical solutions for power utilities, mainline railways, public safety, and defense.

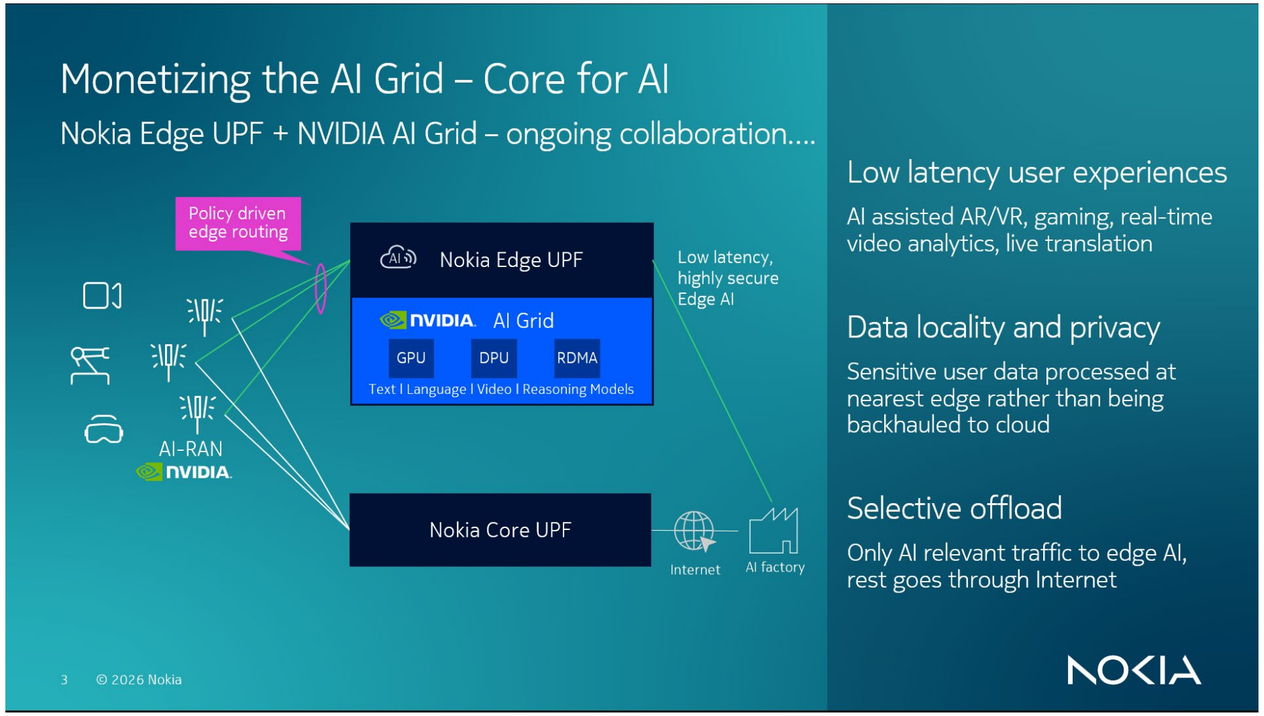
Nokia sees four primary trends affecting the core and driving its evolution: modernizing to cloud-native, enablement on public cloud, operations paradigm shift, and AI-native transformation. This translates Nokia's implementations of: monetizable service experiences, distributing the core to the edge using either appliances or Core SaaS, implementing AI/ML and agentic AI for the core's self-care operations, simplifying the core by consolidating several network functions into a single CNF, and gaining ever more resiliency with disaster protection in the public cloud, SDM offline secure backup solutions, and even Core SaaS as backup protection.



Source: Nokia

POWERHOUSE – NOKIA LEVERAGES ITS NVIDIA PARTNERSHIP [CONT'D]

Nokia's cloud-native maturity is seen in its multi-cloud strategy with deployments of mobile core and IMS core directly on hyperscalers' clouds, in addition to deployments on Red Hat OCP, VMware Tanzu, Rakuten Cloud Platform, Deutsche Telekom Horizontal Telco Cloud, Orange Telco Cloud, etc. Publicly announced deployments of its mobile core and IMS core on hyperscaler clouds include Boost Mobile US (AWS), Comcast US (AWS), Telus Canada (AWS), Telenet Belgium (Google), Telefonica Germany (AWS and Google), Tune Talk Malaysia (AWS), plus several instances of its Core SaaS on AWS for Citymesh Belgium and other CSPs. Nokia's programs empower CSPs and wide area enterprises with resiliency and simplicity, in that it is secure by design, provides automation at scale, and has AI-driven autonomy. This includes:



Source: Nokia

- **Nokia Mobile Core Early Access** gives CSPs and enterprises a practical way to explore the latest mobile core software in a live, controlled environment. It is designed to help them see current capabilities in action, understand how it works and, depending on the engagement model, interact directly with selected features and use cases. Unlike a static demonstration, this environment is updated periodically, so that customers can explore recent innovations and relevant use cases as it becomes available.
- Nokia's 5G SA Core & IMS Core, functioning as warm standby cores deployed on AWS, scale in minutes from a small instance to millions of subscribers. AI/ML-enabled AMF predicts and manages demand spikes during recovery. Use-cases in live commercial service at two North American CSPs include mass calling events and disaster protection, both using AWS public cloud.

During **Nokia Core User Group 2026**, in front of 300 customers, the company unveiled an AI-enhanced 5G edge UPF. The Dell server is equipped with Intel CPUs for traditional 5G UPF processing, and Nvidia GPUs for AI inferencing. Nokia's AI-enhanced 5G edge UPF consequently provides Core for AI, where the edge location provides more floorspace and electricity than an AI RAN site. Such UPF edge locations provide engineered capabilities to perform AI inferencing, aligned with Nvidia's AI Grid vision. The enhanced UPF also provides AI for Core, where the GPUs provide capabilities to enhance the UPF, particularly for the emerging token economy.

NICHE PLAYER – ORACLE STRIVES ON MULTI-VENDOR 5G SA CORE

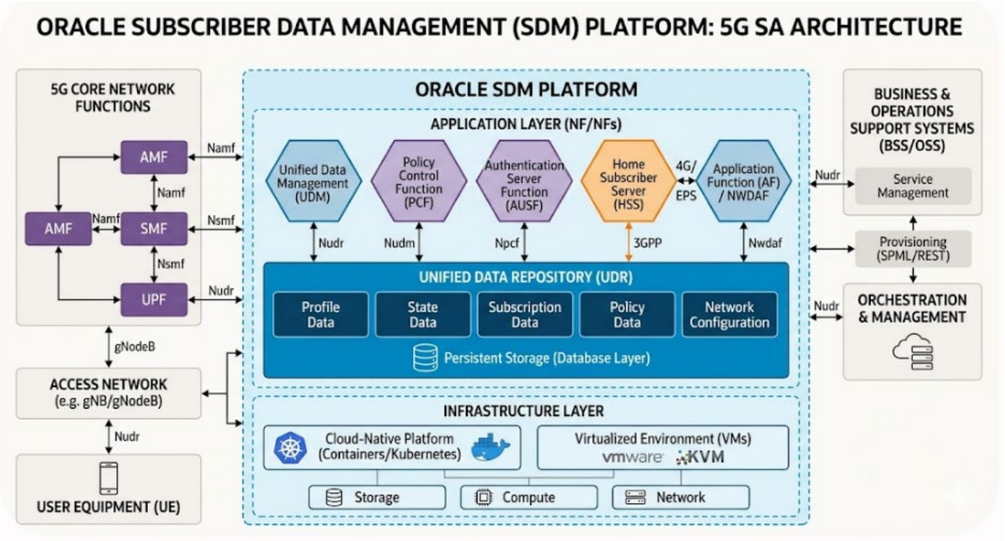
Oracle's SDM and Policy business occupies a distinct, highly strategic niche within the global telecommunications infrastructure market. Unlike full-stack infrastructure giants like Ericsson, Huawei and Nokia, Oracle has purposefully avoided building the 5G packet core. Instead, the vendor has doubled down on being the premier best-of-breed, multi-vendor signaling, routing, policy, and data management provider.

Oracle's 5G core explicitly enforces a **three-tier architecture** separating the *Connectivity tier* (routing), the *Business Logic/Application tier*, and the *Data tier*. The diagram cleanly presents this split between the Application Functions and the Persistent Storage Layer. By showing the HSS directly tying into the UDR alongside 5G **UDM** and **PCF**, the diagram illustrates Oracle's active **Converged Policy & Subscriber Data Solution**. This allows CSPs to run a single database tier using tools like Oracle MySQL NDB Cluster to handle multi-generational subscriber records simultaneously. The right-hand side correctly labels provisioning via **SPML/REST**, which matches Oracle's Cloud Native Configuration Console (CNCC) ingestion pathways.

The foundation highlights Kubernetes/Containers, which aligns with Oracle's Cloud Native Environment (OCCNE) frameworks. Notably, it retains **VMware/KVM (Virtual Machines)** alongside bare-metal containers. This is highly realistic for telecom networks where CSPs still host some hybrid infrastructure and legacy 4G signaling elements on virtualized setups rather than going 100% bare-metal right out of the gate.

Oracle's SDM and Policy platform is deployed across **more than 60 Tier-1 CSPs globally**, actively protecting and managing profiles for over **500M subscribers**. Major customers include:

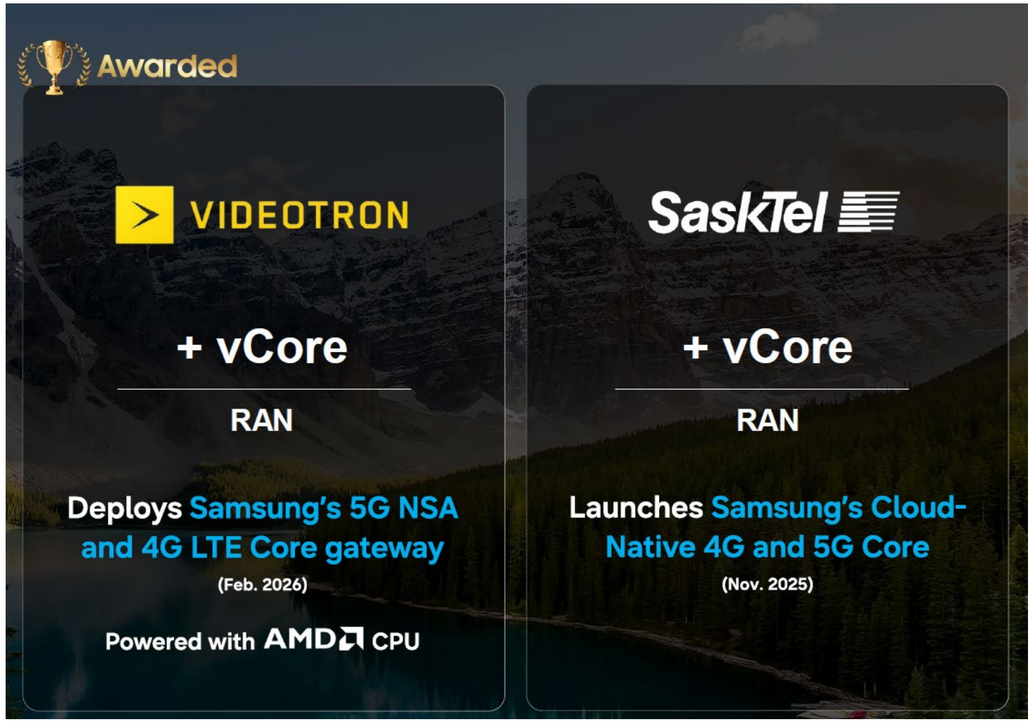
- **AT&T** and **Verizon:** While both operators utilize multi-vendor setups (relying heavily on Ericsson and Nokia for packet cores), both have deep, legacy dependencies on Oracle (and formerly Tekelec) for signaling, routing, and subscriber data federation. Oracle helps map their transition paths as they migrate legacy 4G HSS data blocks into modern 5G UDM/UDR frameworks.
- **Telefónica** and **Vodafone Group** in Europe, and **stc** and **e&** in the Middle East.
- Tier-1 CSPs in Japan, South Korea, and Southeast Asia utilize Oracle's data tier solutions.

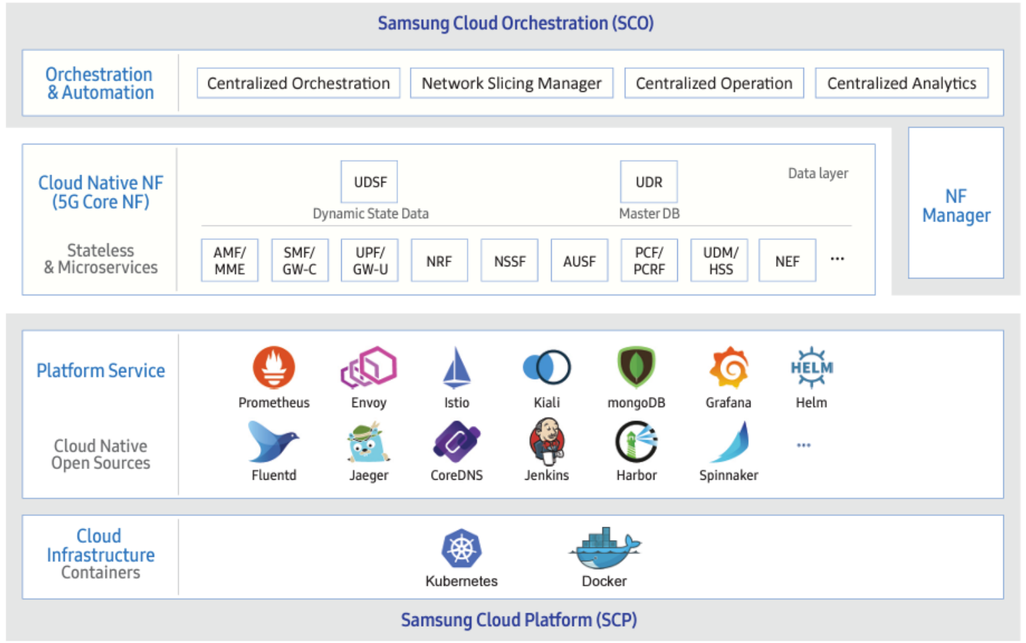


Source: Oracle

CHALLENGER – SAMSUNG LEVERAGES ITS RAN FOOTPRINT

As the vendor announced the commercial availability of its next generation 5G core solution at MWC 2017 along with a library of 5G VNFs that were developed in 2015, it positioned itself as another 5G core pioneer. Samsung's next generation 5G core was successfully tested by SK telecom and has since been deployed in South Korea by the 3 local CSPs (KT, LG U+ and SK telecom). In October 2020, Samsung and VMware (now part of Broadcom) started a partnership to create containerized network functions, which led to the development of its current cloud-native platform that supports both 4G and 5G. In February 2023, KDDI, a long time Samsung customer, selected the vendor's cloud-native 5G core for the operator's commercial network across Japan. Although we believe Samsung's total number of 5G core contracts is more than 10; Vidéotron in Canada is the most recent win.



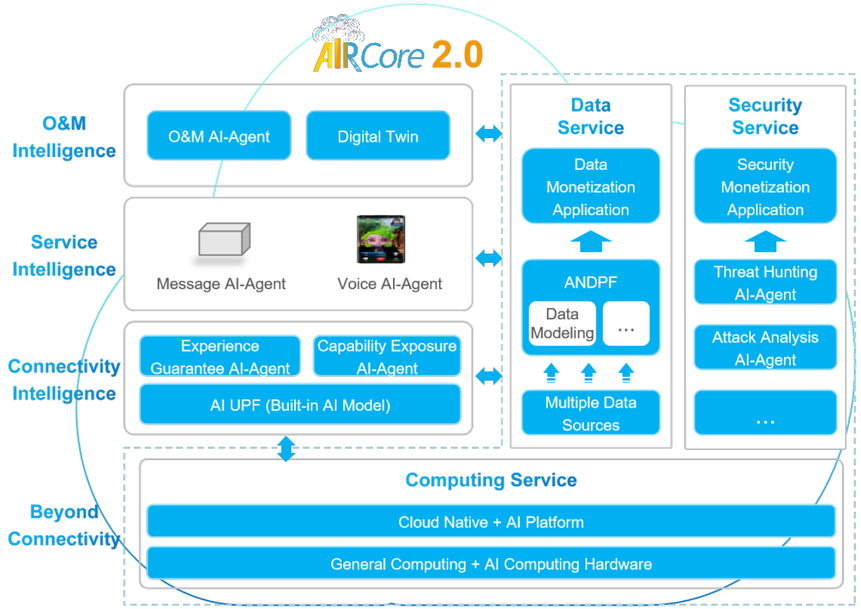


Source: Samsung

STEADY PLAYER – ZTE AIR CORE 2.0 PLATFORM

This is now **AIR CORE 2.0,** another evolution of ZTE's 5G Common Core and AIR CORE solutions launched at MWC 2018 and MWC 2025, respectively, which is a common mobile core platform that supports all VNFs. ZTE's common core platform supports all Gs including 5G NSA and 5G SA, CDMA, Wi-Fi and fixed access deployments, and provides full convergence of control plane, user plane, and voice and user data to reduce signaling interaction. It is cloud-native by design and uses open microservices components, a carrier-grade visual DevOps tool and container technology.

In this cloud era, cloud-native empowers elastic, agile, and automated networks while in the AI era, ZTE believes core network will continue to evolve from cloud-native to AI-native. The vendor claims that AI-driven networks will become intelligent in all aspects, promoting the transformation of networks into intent-driven, agent, and higher-order autonomous networks. As a result, ZTE launched an AIR (AI Reshaping) core platform that provides service intelligence, creates new connection values in connection intelligence, and builds a highly resilient network in operation and maintenance intelligence, through diversified AI capabilities such as multi-mode communication, large language models, and digital twins. Besides, core for AI can provide AI with one-stop ubiquitous intelligent computing power, an out-of-the-box model, and an efficient network.



Network Service Intelligence

"Open × Intelligence" dual engines, driving a three-dimensional user experience upgrade

Network Connectivity Intelligence

From differentiation to personalization, unlocking network value

Network O&M Intelligence

Agentic operations, a new paradigm advancing towards L4+

Beyond Connectivity

Expanding data, computing, and security services to position for future networks

Source: ZTE

STEADY PLAYER – ZTE AIR CORE 2.0 [CONT'D]

In its AIR CORE 2.0, ZTE integrates AI/ML with Core Network in four key areas: Network Service Intelligence, Network Connectivity Intelligence, Network O&M intelligence, and Beyond Connectivity.

1. Network Service Intelligentization: Focuses on the intelligent transformation of voice and messaging services, building an AI Open Platform through triple upgrades in interaction, perception, and entry points. Leveraging OpenClaw-like intelligent agents as the pull-in force, upgrade the voice entry point to an 'Intelligent Life Portal', driving voice from functional services toward an intent-driven intelligent service ecosystem.

2. Network Connectivity Intelligentization: Based on the NWDAF + 5GC collaborative architecture, builds an end-to-end intelligent connectivity closed loop. Offer a "first-class" exclusive experience for VIP users; for general users, drive proactive services, video speed up, and dynamic segment through network large models, advancing from 'differentiated connectivity' to 'personalized connectivity,' driving upgrades in experience monetization and traffic stimulation.

3. Network O&M intelligentization: Establishes agent-based operations and maintenance, leveraging multimodal large models to achieve intent-driven service provisioning and script generation. It enables automatic fault diagnosis and resolution through a multi-agent collaborative architecture and integrates digital twin technology for dynamic network operations. This facilitates end-to-end pre-verification of high-risk changes and predictive maintenance, accelerating the evolution toward L4+ autonomous networks.

4. Beyond Connectivity: Expand new services such as data, computing, and security to layout the future networks. Release data value through a unified data plane; provide computing services via network edge cloud; and build Multi-AI Agent collaborative security services.

ZTE AIR core has been commercially deployed in China Mobile at large scale. By leveraging its full-stack intelligent computing solution, ZTE helps CSPs quickly build AI-driven computing platforms, providing customized services for users and seizing new opportunities in the AI-driven digital economy. However, our research indicates that ZTE boasts more than 110 mobile core customers and partners with Asiainfo, Fortnet, Red Hat and Whale Cloud for swap projects that require virtual machines or containers. The vendor still commands 29% of China Mobile's 5G contract and 36%, the same portion as Huawei, of China Unicom's and China Telecom's combined one. At a recent Analyst Conference, ZTE mentioned RAN market progress with Beeline in Kazakhstan (Veon Group), Orange in Cameroon, and Telefonica in Chile, Ecuador and Argentina. Overall, the vendor maintains a strong presence in Austria, Bangladesh, Cameroon, Brazil, Chile, Côte d'Ivoire, Ecuador, Hungary, Indonesia, Italy, Kyrgyzstan, Malaysia, Nigeria, Pakistan, South Africa, Thailand and Turkey.

LOOKING FORWARD: 2026 AND BEYOND

SEVEN 5G SA COMMERCIAL NETWORKS WERE ADDED IN 1Q26

THE 5G SA CORE MARKET IS POISED FOR SOLID GROWTH

ASIA PACIFIC WILL REMAIN THE WORLD'S LARGEST MARKET

FWA WILL REMAIN THE CHIEF MONETIZATION DRIVER

5G MONETIZATION IS STILL IN ITS EARLY INNINGS BUT SPECIFIC OPPORTUNITIES ARE EMERGING

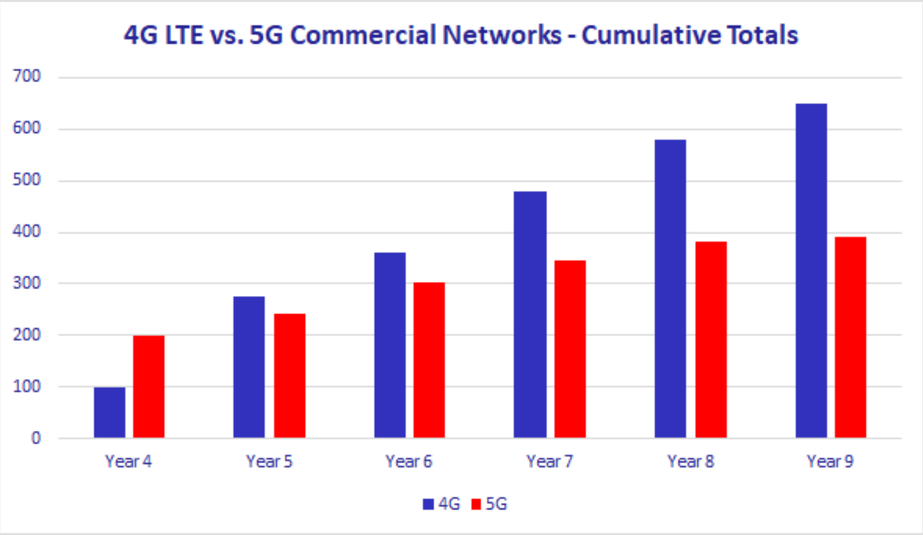
FINALLY, THE SAME CHALLENGES ARE LINGERING AND CLOUD THE OUTLOOK

11 NEW 5G COMMERCIAL NETWORKS LAUNCHED IN 1Q26; 92 5G SA NETWORKS

EMEA hosts more 5G commercial networks than the Americas and Asia Pacific combined

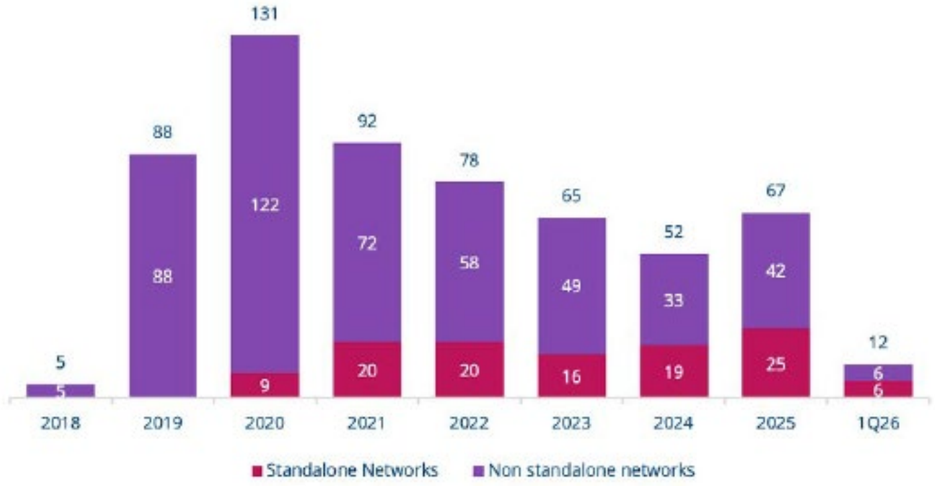
As of March 31, 2026, according to the GSA reports, there are **392 commercial 5G networks** in the world, including at least 92 CSPs in 35 countries that have launched commercial public 5G SA networks, which means that about 7 SA networks have been added in 1Q26. In addition, the GSA has identified another 90 CSPs that are investing in 5G SA for public networks (including those evaluating/testing, piloting, planning, or deploying). Lastly, a total of 642 CSPs are investing in 5G worldwide, including 183 in the Americas (78 launches), 147 in Asia Pacific (91 launches), and 312 in EMEA (212 launches).

We have now entered Year 9 and compared to LTE launches, it's clear 5G lags, despite its strong start during the years 1 (2018), 2 (2019), and 3 (2020). The lack of 5G use case monetization was the chief reason. In other words, there has been no rush to 5G SA but the success of FWA is encouraging and changing the perception of the market.



Source: TÉRAL RESEARCH with GSA data

Commercial 5G Networks in the World: NSA vs. SA Breakdown



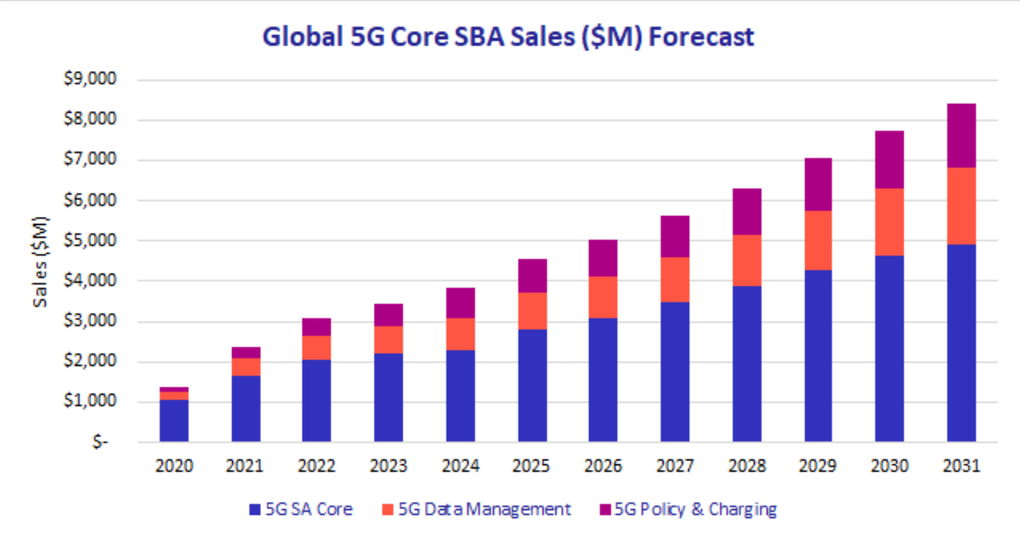
Source: GSA

CONSEQUENTLY, THE 5G SA CORE MARKET IS POISED FOR SOLID GROWTH

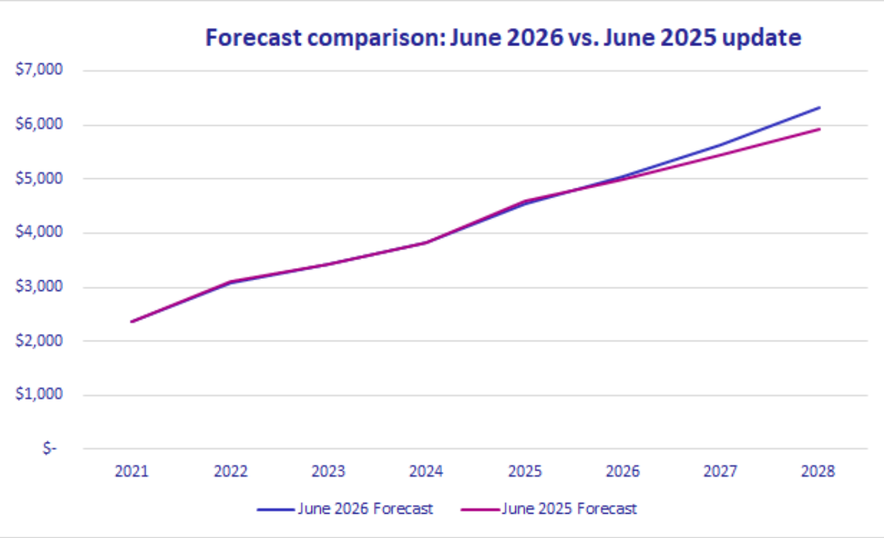
The migration to 5G SA will be a very long journey

As our model that factors in the number of 5G contracts won by Ericsson and Nokia has been trending accordingly, we have not made any significant changes to our forecast; it ended up slightly higher. Therefore, we expect the total 5G core SBA market to hit $5B by the end of the year, an 11% YoY growth, and to continue to grow at a 2025-2031 CAGR of 11% to reach $8.4B by 2031. We foresee the continuity of the significant ramp up in CSPs' migration to 5G SA that started in 2H24, coming from the pent-up demand created by the delays seen from 2020 to 2023 (see charts in page 5 at the beginning of the report and the previous page).

The share of **5G SA core ($3B in 2026, up 11% YoY, to $4.9B in 2031)**: will decrease to 58% in 2031 from 62% of global sales in 2026. **Data management ($1B, up 10% YoY, to $1.9B in 2031)**: from 20% of global sales in 2026 to 23% in 2031. **Policy and charging ($927M, up 11% YoY, to $1.6B in 2031)**: from 18% of global sales in 2026 to 19% in 2031. All details are included in the Excel file).



Source: TÉRAL RESEARCH



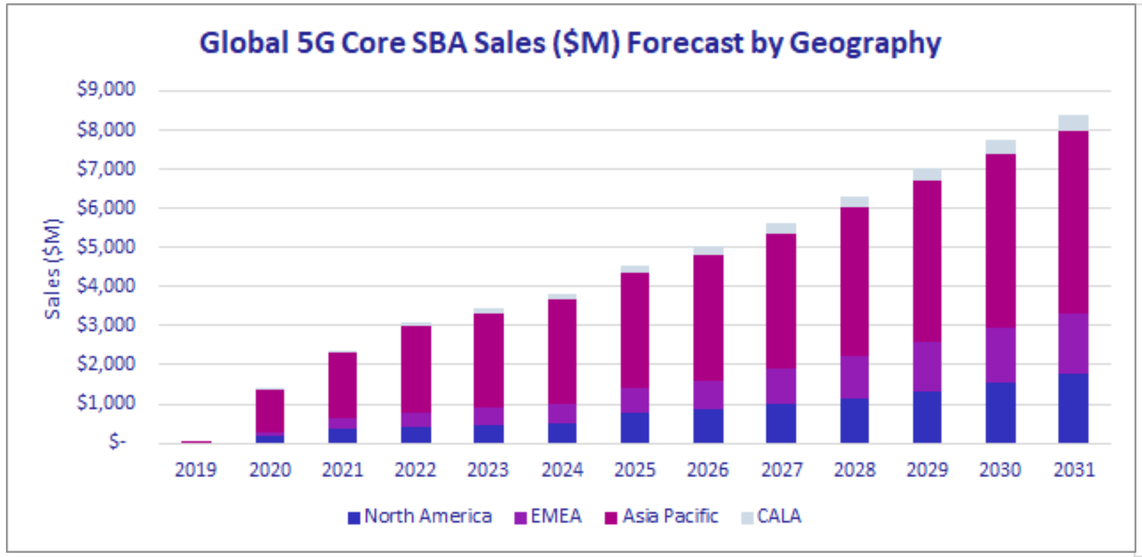
Source: TÉRAL RESEARCH

ASIA PACIFIC WILL REMAIN THE WORLD'S LARGEST MARKET

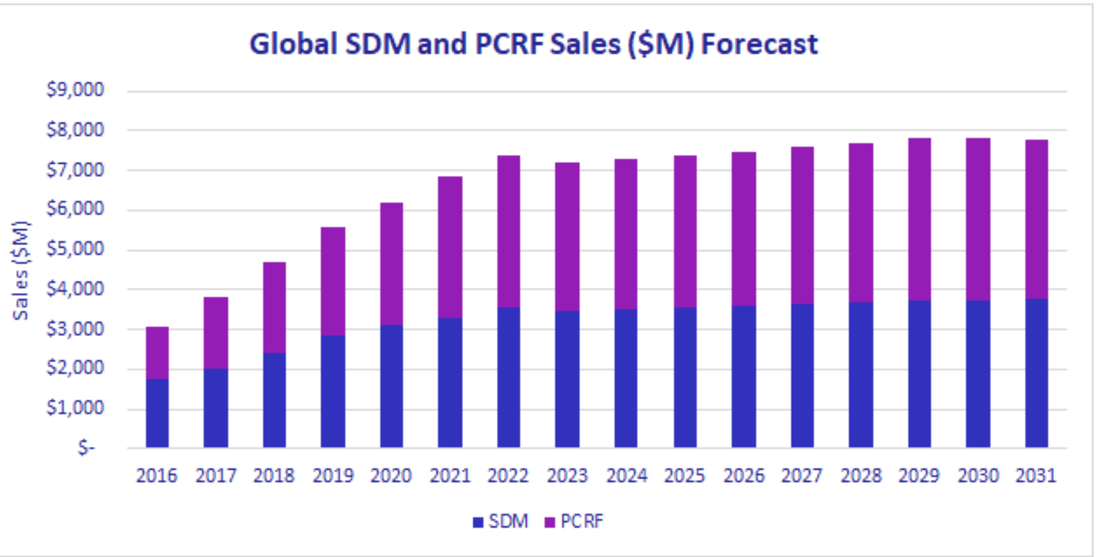
But its share will be shrinking though

With 1.82B mobile subscribers in China and another 1.28B in India, there is no surprise—and look at Huawei's market share—to find that our model (see *Methodology* in the Excel file) produced a 5G core SBA market for Asia Pacific accounting for 64% of the total in 2026 and will shrink to 55% by 2031 as other regions come on board. Case in point: North America will increase its share from 17% in 2026 to 21% in 2031 and EMEA from 15% this year to 19% in 2031.

Another important factor to consider is the fall of $/connection cost in Asia Pacific, this has a direct negative impact on the SDM market, which in turn feeds our 5G data management model.



Source: TÉRAL RESEARCH



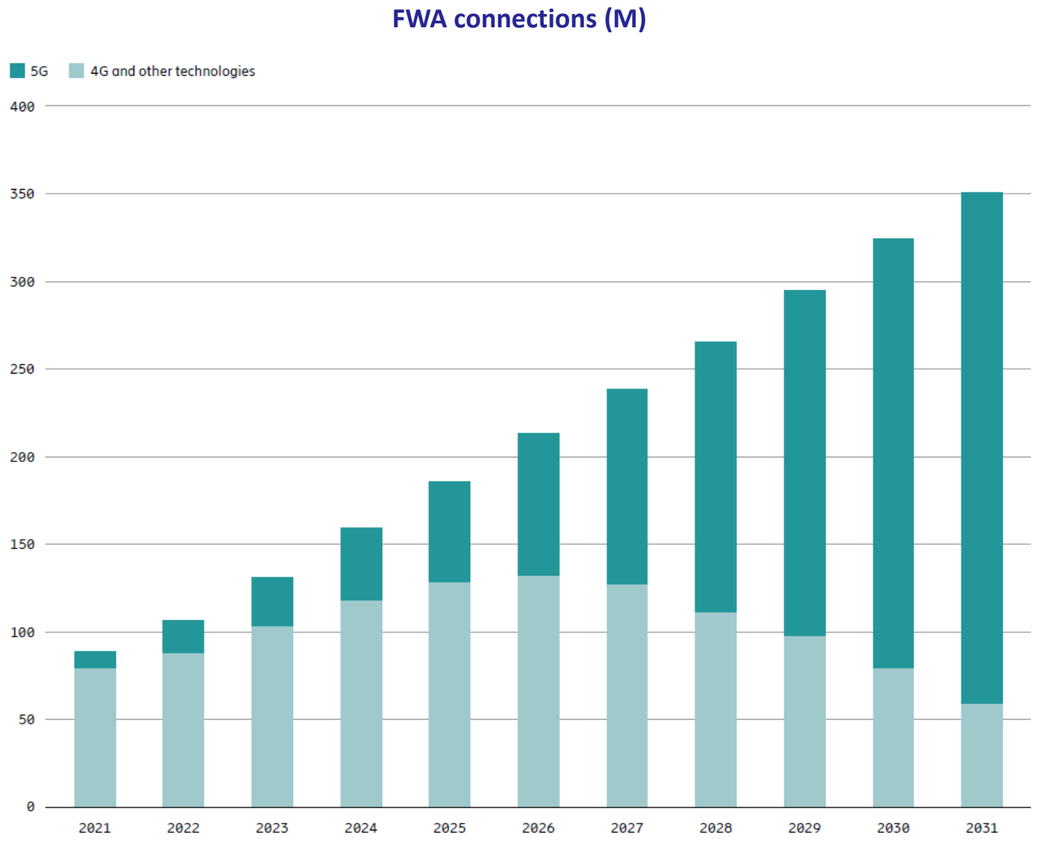
Source: TÉRAL RESEARCH

FWA WILL REMAIN THE CHIEF 5G MONETIZATION DRIVER

…according to both our discussions with CSPs and vendors, and the June 2026 Ericsson Mobility Report

Ericsson forecasts global FWA connections to grow from 185M at the end of 2025 to 350M by the end of 2031, representing 17% of all fixed broadband connections with 85% expected to be over 5G.

As illustrated in the chart, 4G FWA connections are predicted to peak sometime this year. Another interesting statistics Ericsson provided is by assuming that a global average household has four people, 350M FWA connections equates to approximately 1.4B individuals being served by FWA broadband by the end of 2031.



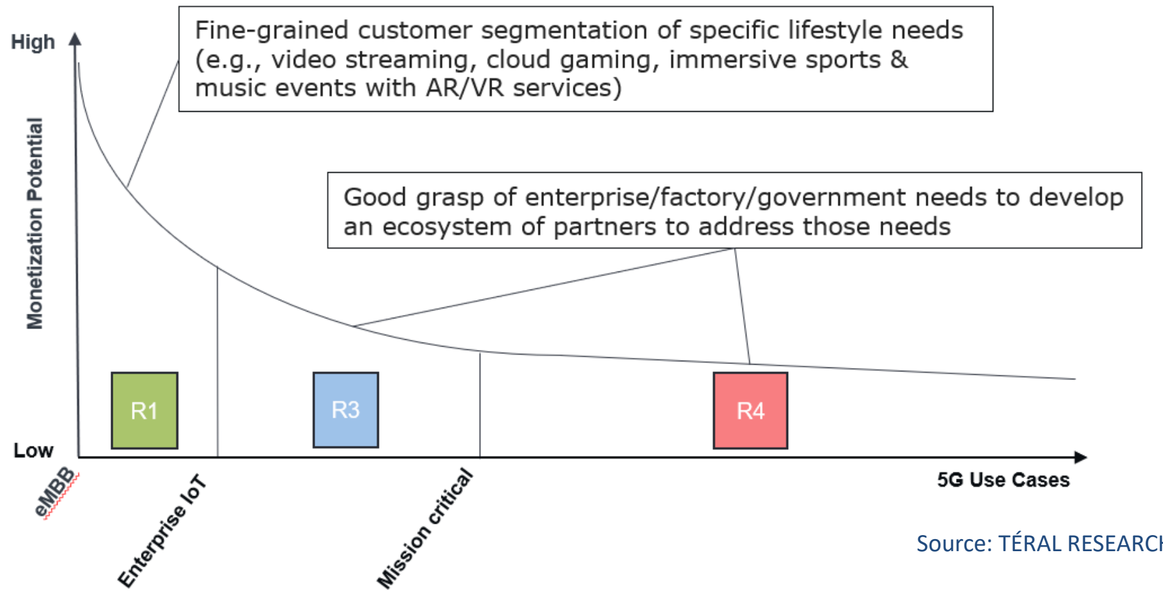
Source: Ericsson

IRONICALLY, 5G MONETIZATION IS STILL IN THE EARLY INNINGS

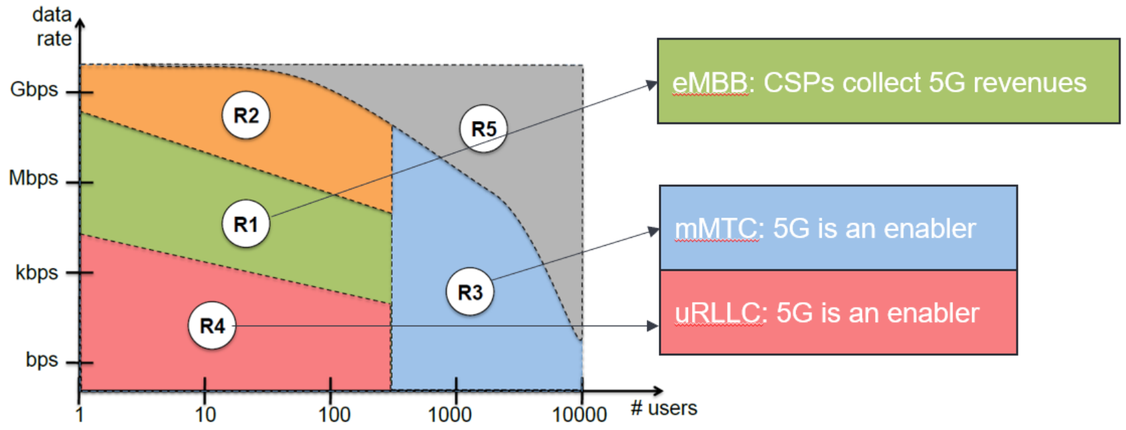
We are now halfway with 5G and still trying to figure out which use cases can generate money!

There is no shortage of use cases. Published initially in February 2022 Stéphane Téral's Perspective *"The 5G money is in your pocket*," the figure illustrates the long 5G monetization tail characterized by **eMBB as the low hanging fruit** CSPs are going after to harvest, providing consumers are willing to pay a premium for a 5G package. Then, gradually, the promised 5G use cases will eventually kick in with the expectation that by 2035, the revenue they generate will surpass that of eMBB.

While operating in region 1 (R1), we're slowly moving to R3 and R4: The framework of our analysis comes from a Bell Labs research paper released in December 2013: *Five Disruptive Technology Directions for 5G, IEEE Communications Magazine*. The "data rate vs. # users" chart depicts Bell Labs researchers' operating regions and illustrates where cellular systems stood almost 10 years ago, which remains valid today, and how the research efforts are expanding them. R2 is the region that reflects current research aimed at improving the spectral efficiency and R5 indicates the region where operation is not feasible due to fundamental physical and information-theoretical limits—Bell Labs' Claude Shannon's limit



Source: TÉRAL RESEARCH



Source: Nokia Bell Labs, TÉRAL RESEARCH

TÉRAL RESEARCH
WIRELESS INDUSTRY ANALYSIS

MEANWHILE, SOME SPECIFIC MONETIZATION OPPORTUNITIES ARE EMERGING

Our CSPs and vendor survey delivers a glimpse of hope

Here is a non-exhaustive list of 5G R1, R3 and R4 use cases that we have identified—beyond FWA and private 5G—and are significant drivers for 5G SA deployments and monetization; many were listed in last year's report :

- **Cloud gaming and immersive media**: 5G SA's low latency and differentiated connectivity have enabled commercial launches for cloud gaming services, immersive AR/VR, and live event streaming with application-based quality-of-service. These consumer-facing experiences require advanced network features like slicing and service assurance, realized only with 5G SA.
- **Event connectivity and fan experiences**: CSPs have prioritized 5G SA rollouts to deliver enhanced connectivity and real-time interactive services at large venues (e.g., mega sporting events in Europe). These deployments leverage slicing and network APIs to provide premium mobile experiences for fans and broadcasters.
- **Public safety, connected vehicles, and URLLC**: use cases for ultra-reliable low-latency communications (URLLC) such as public safety (for mission-critical communications), connected vehicles (including autonomous driving, automated guided vehicles), and time-critical IoT (like remote control of machinery and robotics) have demanded new capabilities that only 5G SA delivers.
- **Smart manufacturing and logistics automation**: 5G SA is being deployed to address the automation of factories, warehouses, and supply chains, supporting control of industrial robots, process automation, asset tracking, and real-time analytics at scale. These industry applications benefit from network slicing and guaranteed service levels.
- **Broadcast and live video production**: use cases such as dynamic quality-of-service control for live video production/broadcast (enabling remote and mobile TV crews, or instant broadcaster uplinks) have prompted operators to deploy 5G SA, as these services need reliable uplink and configurable network resources.
- **Banking and security**: API-enabled services like bank fraud prevention (using call state and authentication APIs) illustrate how SA capabilities make entirely new business models possible, stimulating ecosystem adoption and driving deployments.
- **Drones and smart mobility**: management, tracking, and remote control of drones (UAVs), as well as other transport/logistics applications requiring deterministic network behavior, are cited as use cases driving 5G SA deployments. These examples show that the adoption of 5G SA has been propelled by the need to deliver differentiated, reliable, and programmable connectivity across both consumer and enterprise verticals, especially where performance, security, and agility cannot be met by previous network generations.
- **Defense and military**: eMBB for ultra-high-speed data transfer for intelligence, surveillance, and reconnaissance (ISR); URLLC for real-time autonomous systems, remote piloting, and robotics, and mMTC for logistics and asset tracking.

BUT THE SAME CHALLENGES ARE LINGERING AND CLOUD THE OUTLOOK

Many CSPs and vendors say legacy stay as the main inhibitor; meanwhile the laundry list is long

Get rid of it! Wait a minute, let's look at the reality, for most CSPs, 5G SA is not a greenfield deployment and must coexist with EPC and existing OSS/BSS processes, legacy billing, policy and charging environments, and a large installed base of 4G/NSA devices. This makes migration and interworking complex, especially around subscriber data, mobility, policy consistency and service continuity between 4G and 5G domains. In practice, the challenge is not only deploying a 5G core but integrating it cleanly into a live multi-generation network without disrupting existing services. Beyond legacy coexistence, CSPs continue to face many recurring challenges (in no particular order):

- Device readiness and certification: still slow 5G SA activation, especially when CSPs offer bundles, VoNR readiness and feature validation must align across handset vendors.
- SIM readiness: since full 5G SA security and authentication features such as SUCI protection and 5G AKA often require modern USIM profiles, while CSPs are reluctant to force mass (e)SIM replacement.
- Cloud core transformation complexity: moving to 5G SA cloud core is operationally complex, with issues around quality, integration, and readiness.
- Cloud-native operations introduce a new skill and process burden around lifecycle management, observability, resiliency and automation.
- End-to-end integration, orchestration and testing remain demanding, because the 5G core must interwork cleanly with RAN, devices, charging, policy, OSS/BSS and security functions in a live multi-vendor environment. Many CSPs still lack integrated service or slice orchestration across RAN, core, OSS, and BSS domains. This leads to manual operations and fragmented service fulfillment.
- Delayed software upgrade cycles: Core network delivery and software upgrades are often slow or deprioritized, which increases the cost and complexity of enabling slicing management and orchestration.
- OSS and assurance silos: Orchestration and assurance often run in separate silos, making it difficult to manage differentiated connectivity services consistently.
- Limited service-level visibility: CSPs often lack SLA-anchored visibility at the service or slice level, making it hard to prove performance and support premium service guarantees.
- Proof of value beyond technical KPIs: CSPs need to show business-level value, not just network performance metrics, to justify customer migration to 5G SA and support monetization.
- Industrialization beyond pilots: CSPs often struggle to scale new 5G SA use cases beyond initial trials due to lack of reusable orchestration, assurance, and operational blueprints.
- Network slicing lifecycle management: CSPs need clearer blueprints and processes for managing the full lifecycle of network slices, including design, provisioning, assurance, and scaling.
- Slice dimensioning and configuration: CSPs must correctly configure and dimension network slices to ensure they can deliver the intended performance across the network.

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THANKS

Related research:

- 6G Infrastructure Outlook (Dec 25)
- 4Q25/FY25 Wireless Infrastructure (Feb 26)
- Japan Wireless Infrastructure (Apr 26)

Upcoming research:

- 5G for Defense and Military Use Cases (July 26)
- 2Q26 Wireless Infrastructure (Aug 26)
- Open vRAN 2nd Edition (Sept 26)
- RAN Automation (Oct 26)
- 3Q26 Wireless Infrastructure (Nov 26)
- 6G Infrastructure Outlook (Dec 26)

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