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Strategic TCO aspects to accelerate 5G core deployment

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Contents

Summary

Since 2019, most communications service providers (CSPs) have been deploying 5G networks on non-standalone (NSA) architecture, which refers to deploying 5G New Radio (5G NR) for coverage and capacity reasons but leveraging legacy 4G evolved packet core (EPC) assets. However, CSPs will need to find cost-efficient ways to deploy 5G standalone (SA) core to benefit fully from all the potential 5G networks can offer and deliver new, monetizable use cases.

The combination of 5G core, 5G NR, and edge computing will deliver a powerful end-to-end 5G fabric that will facilitate new capabilities, such as network slicing and monetizable use cases (e.g., augmented reality/virtual reality [AR/VR], mobile cloud gaming, and low-altitude economy).

However, deploying 5G core is challenging, which has caused many CSPs to delay their investments. The challenges are twofold. First, the transformation journeys organizations must undertake to become cloud-native organizations as part of 5G core deployment are not trivial—especially for small players. Thus, many CSPs need external support. Second, operators have been under significant financial pressure for over a decade, which has required cost-reduction exercises. Consequently, making new investment plans is more challenging.

The industry is also undergoing significant change, in which—given the declining average revenue per user (ARPU) over the last decade—CSPs understand that they must shift from traffic-based monetization to experience-based monetization and roll out monetizable use cases beyond mobile broadband. However, they cannot achieve this without a distributed user plane, low-latency services, and network slicing capabilities, all of which require 5G core deployments.

CSPs must make important strategic decisions regarding the core network architecture and deployment options, which will affect their business agility and cost structure for years to come.

Some of the key choices and decisions include the following:

- Deploy a 5G core as a silo or as a combined 4G and 5G “dual-mode” core
- A single-vendor full stack or a unified stack across multi-vendor applications
- Virtual machine (VM)-based or bare-metal cloud infrastructure
- Integrated probing solutions for data collection or the use of third-party solutions
- Integrated value-added user plane service or external solutions

This paper explores topics from these areas of cost-saving studies based on an Omdia survey of 50 global CSPs carried out in November 2024 in addition to CSP interviews. This paper aims to guide CSP decision makers and simplify their journeys so they can deliver their 5G core with a suitable total cost of ownership (TCO).

Some of the survey results and observations found include the following for each of the aforementioned study areas:

- Improved infrastructure costs is ranked by 43% of CSP respondents as the most important cost savings driver for implementing a combined 4G/5G core
- TCO savings in the range of 16% to 20% are expected for a single-vendor, full-stack deployment by 34% of respondents
- TCO savings in the range of 11% to 20% are expected from cloud-native, bare-metal deployments compared with virtualized deployments, according to 64% of respondents
- Most respondents (47%) expect cost savings in the range of 10% to 20% by collecting core network data at network functions compared with traditional external probing solutions
- TCO savings in the range of 10% to 20% are expected from deploying value-added services in the user plane function (UPF), according to 40% of respondents

An accelerated migration to 5G core calls for simplification

5G core is a top strategic asset for CSPs

Fast-moving CSPs started to deploy their 5G networks in early 2019. Since then, the number of operators with varying sizes of 5G networks has grown to over 320. However, most of these deployments are what the industry calls NSA architecture, in which the 5G radio access network (RAN) is deployed as an overlay to the existing 4G RAN, with both utilizing 4G EPC.

Although this approach has allowed CSPs to pace their investments and introduce a new network generation into their markets, 5G NSA brings only modest performance improvements over 4G relative to the performance and service differentiation capabilities an end-to-end 5G NR with a 5G core in a SA network can achieve. Moreover, 5G NSA does not enable the many use cases 5G SA can—such as those requiring ultra-reliable low latency, those powered by distributed user plane architecture, and edge computing or network slicing—thereby affecting CSPs' full 5G monetization opportunities.

Cloud native moves the core network into a new era in terms of both technology and operations. However, CSPs must transform to best leverage the new technologies. The network functions are built using cloud-native design principles, which facilitate the use of microservices that run in containers, enabling modular function designs that are, in turn, more efficient than VMs.
The benefits of cloud native can be achieved for both 4G and 5G with a "dual-mode," cloud-native design.

Cloud native enables agility, efficiency, and scalability. This means that when a new service is instantiated—for example, using network slicing capabilities—the relevant resources can be spun up and scaled up quickly for the required time. When no longer needed, the resources can then be torn down, releasing them.

Additionally, CSPs that deploy a combined 4G and 5G, or "dual-mode," core can sunset their legacy 4G core platform, reducing their operational costs from operating multiple platforms. They can also leverage all the benefits cloud native brings for their existing 4G and 5G NSA networks.

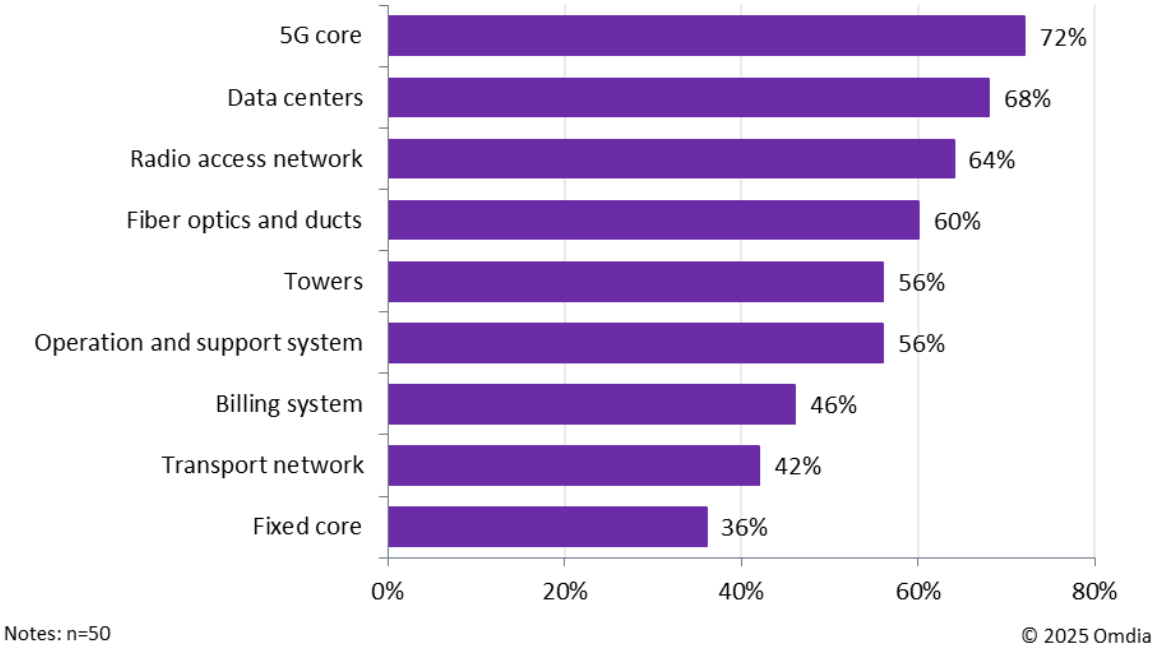
Over the past few years, many CSPs delayed their investments in 5G core. Some of the reasons for this, as indicated during Omdia's conversations with both CSPs and vendors, range from technology reasons (such as the need to become familiar with operating cloud-native technologies) to business reasons (such as the challenges presented by the macroeconomic environment over the last several years). Although the higher-than-usual interest rates are coming down, economic factors continue to affect CSPs' investment plans.

Nonetheless, the technology capabilities cloud-native 5G core brings will enable CSPs to deliver new features (such as network slicing), revenue-generating use cases (such as AR/VR), mobile cloud gaming, and low-altitude economy (such as drone services).

Beyond packet core functionalities, 5G core introduces several new network functions, such as the network data analytics function (NWDAF), which can enhance AI/ML tools' decision-making processes based on network-wide data to deliver improved QoS to the customers.

Naturally, the respondents of the latest Omdia survey of 50 global CSPs carried out in November 2024 rightly ranked 5G core at the top of their list of the most strategic technology assets, according to 72% of respondents (**Figure 1**).

Figure 1: CSPs' most strategic technology asset for delivering new revenue streams



Source: Omdia

Nevertheless, CSPs also understand that deploying 5G core and becoming a cloud-native organization are two separate but intertwined journeys. For the latter, they must embrace new and more efficient ways of working and increase their software skills to manage their cloud infrastructure. Another organizational change required is to introduce DevOps ways of working, which means bringing the network operations and IT teams—until now, two siloes—together to work closer.

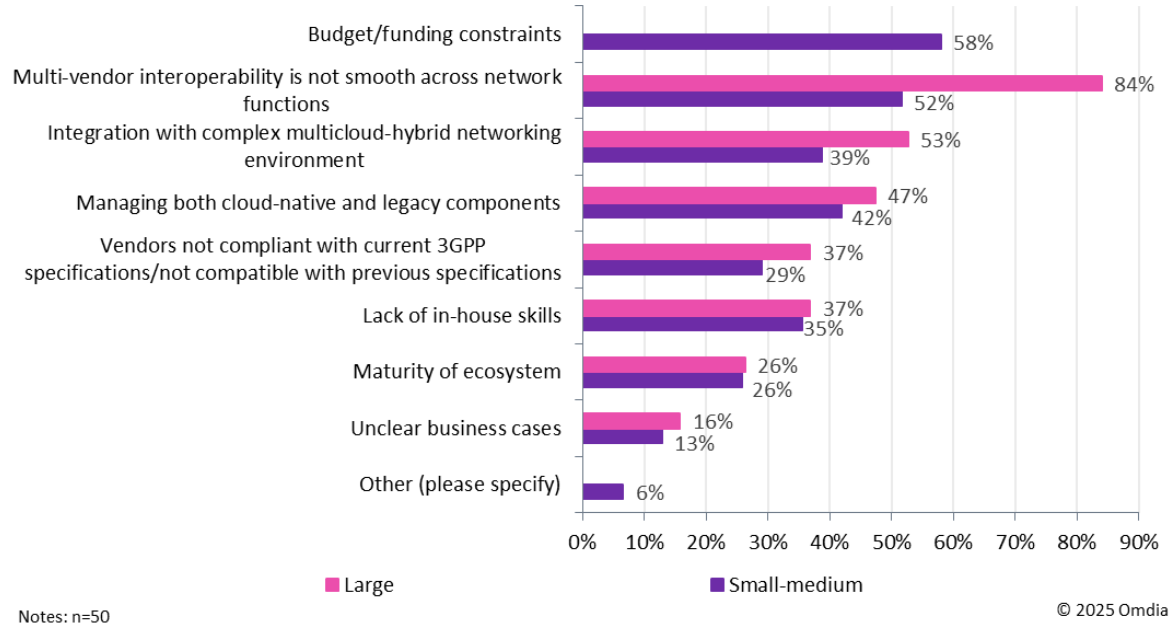
The business case is there, but transformation challenges remain

Respondents indicated that large (those with revenues over $5bn) and small to medium-sized (those with revenues less than $5bn) CSPs exhibit broadly similar concerns but have different priorities (**Figure 2**). Compared with smaller CSPs, larger CSPs tend to have more in-house resources and skillsets, allowing them to take on more complex multi-vendor deployment choices. Respondents indicated that the top three challenges they face are related to technology: 84% said multi-vendor interoperability is not smooth across network functions, 53% said integration with complex multicloud-hybrid networking environments, and 47% said managing both cloud-native and legacy components.

For small to medium-sized CSPs, the primary challenge is financial (budget and funding constraint challenges), as indicated by 58% of respondents. These CSPs do not have the resources of the larger players and tend to opt for simplification and single-vendor strategies. Hence, multi-vendor interoperability issues, integration with complex multicloud-hybrid networking environments, and managing both cloud-native and legacy components are of a lower concern than for the larger players.

These CSPs also remain more cautious with security concerns, as highlighted by the “Other” category. Interestingly, the lack of a clear business case ranks relatively low among CSPs’ challenges, indicating their general understanding of the monetization opportunities.

Figure 2: CSPs' top challenges in deploying 5G core network



Source: Omdia

The CSP interviews Omdia carried out as part of the research for this paper revealed that there is a need to deploy additional infrastructure equipment for 5G core, such as cloud infrastructure and common off-the-shelf (COTS) servers, in both Europe and Latin America. In these markets, CSPs will decommission the purpose-built hardware over time.

Despite the aforementioned challenges, CSPs that want to capture value from both the consumer and enterprise markets should dive into action and simplify their cloud-native 5G core rollouts to meet their business goals.

CSPs must act urgently with the right core strategy to meet their business goals

In some markets, CSPs have been able to charge a premium for their 5G services. However, those advantages are usually short-lived unless CSPs take further action and introduce network efficiencies and new revenue-generating use cases. According to Omdia's *World Cellular Information Series (WCIS)* database, the global ARPU has declined by 45% over the last decade. The database further forecasts that the global ARPU will decline with a five-year CAGR of -1.3% through 2028, from $6.10 in 2023 to $5.72 in 2028.

Considering revenue pressures, speed in rolling out 5G core and monetizing the aforementioned use cases is even more paramount. Years of revenue declines have put CSP decision makers under extreme pressure to reduce costs.

Omdia undertook several cost savings studies as part of this research to support CSPs in their decision-making processes. The choices for CSPs are as follows:

- Deploy 5G core as a silo or as a combined "dual-mode" 4G and 5G
- Full stack or a unified stack
- VM-based or bare-metal cloud infrastructure
- Probing and data collection at network functions or external probing solutions
- Integrated value-added user plane service or external solutions

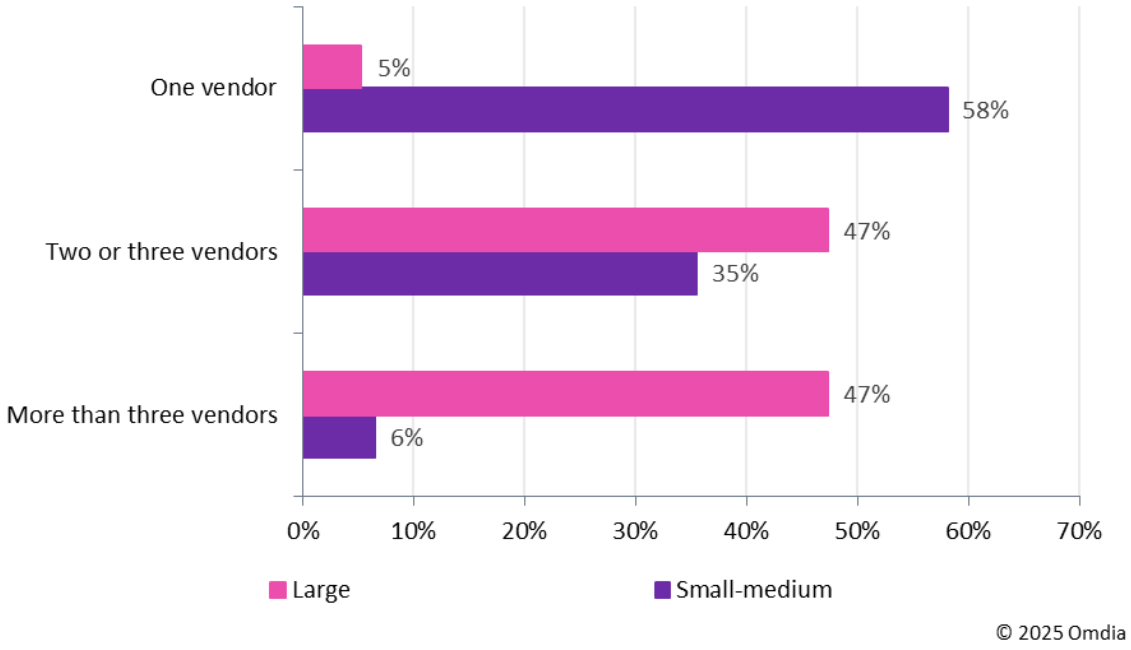
Therefore, CSPs must be pragmatic and choose the right 5G core strategy according to their resources and in-house skillsets to achieve their business goals in a timescale that will allow them to compete for new 5G opportunities.

Drive down TCO by building a "dual-mode" 4G/5G core

CSPs must decide whether to build 5G core as a separate silo to the existing 4G EPC or build a new combined "dual" 4G/5G platform. According to the Omdia survey, 58% of small-medium CSP respondents said they would use one network function vendor to deploy their 5G core (**Figure 3**), whereas only 5% of large CSPs suggested the same. The percentage of small to medium-sized CSP respondents that chose the two or three vendors category decreased to 35%, while those that picked more than three vendors fell to 6%. Large CSP respondents had a similar 47% for both two or

three and more than three vendor categories, indicating their appetite for more complex multi-vendor deployments.

Figure 3: The number of network function vendors CSPs will use to build 5G core



Source: Omdia

Regionally, there was a contrast between European and North American respondents. European CSP respondents were more in favor of a single vendor (48%), whereas those from North America leaned toward two or three vendors (50%). Respondents from Latin America were in equal favor of both one vendor and more than three vendors (36%) options.

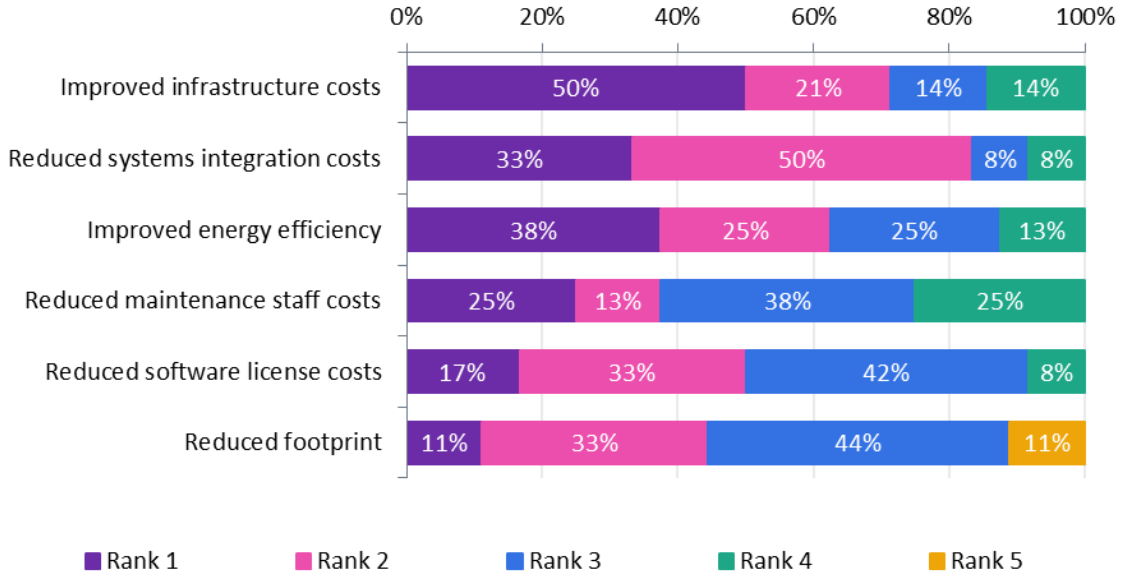
Building a combined 4G/5G core would boost the utilization of the underlying infrastructure capacity and deliver on network efficiency goals. Indeed, although several CSP interviewees told Omdia that they must save on capex investments and would "sweat" the existing assets until end-of-life (EOL), it is very likely that those that choose the strategy to maintain the existing legacy 4G EPC will not fully benefit from the new tools cloud-native technologies will bring, such as automation. Additionally, the operations teams will need to manage two separate systems, creating inefficiencies. Furthermore, over-dimension of both platforms will be required to meet peak capacity requirements during busy hours. All these factors add to the CSPs' overall costs.

The assessment is echoed by survey respondents that ranked improved infrastructure costs as the most important cost savings driver for implementing a combined 4G/5G core for both large and small to medium-sized CSPs (**Figure 4** and **Figure 5**). The second and third drivers, however, differ for

each CSP category. For the large players, reduced systems integration is the second most important. Meanwhile, the second most important for smaller players is reduced maintenance staff costs. These results make sense, considering it is usually the larger CSPs that might want to deploy a multi-vendor core network, which requires significant systems integration costs versus deploying a combined 4G/5G from a single vendor.

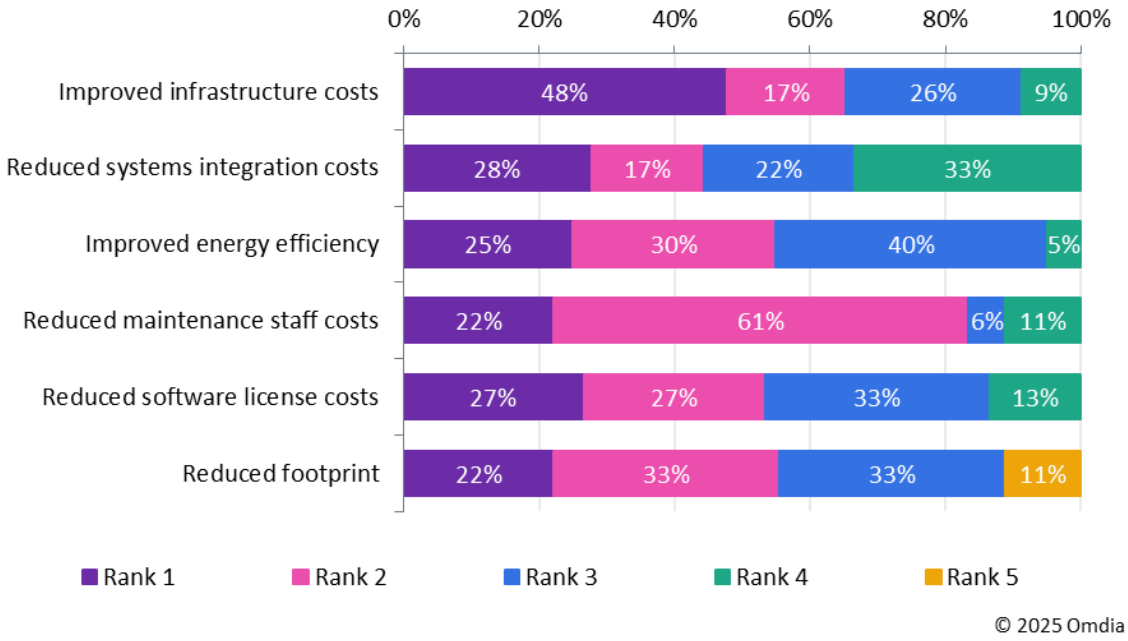
Last, 44% of large CSP respondents placed reduced footprint as the third most important cost savings driver, while 40% of small-medium CSP respondents chose improved energy efficiency as the third most important.

Figure 4: Large CSPs' top cost savings for implementing a combined 4G/5G core



Source: Omdia

Figure 5: Small-medium CSPs' top cost savings for implementing a combined 4G/5G core

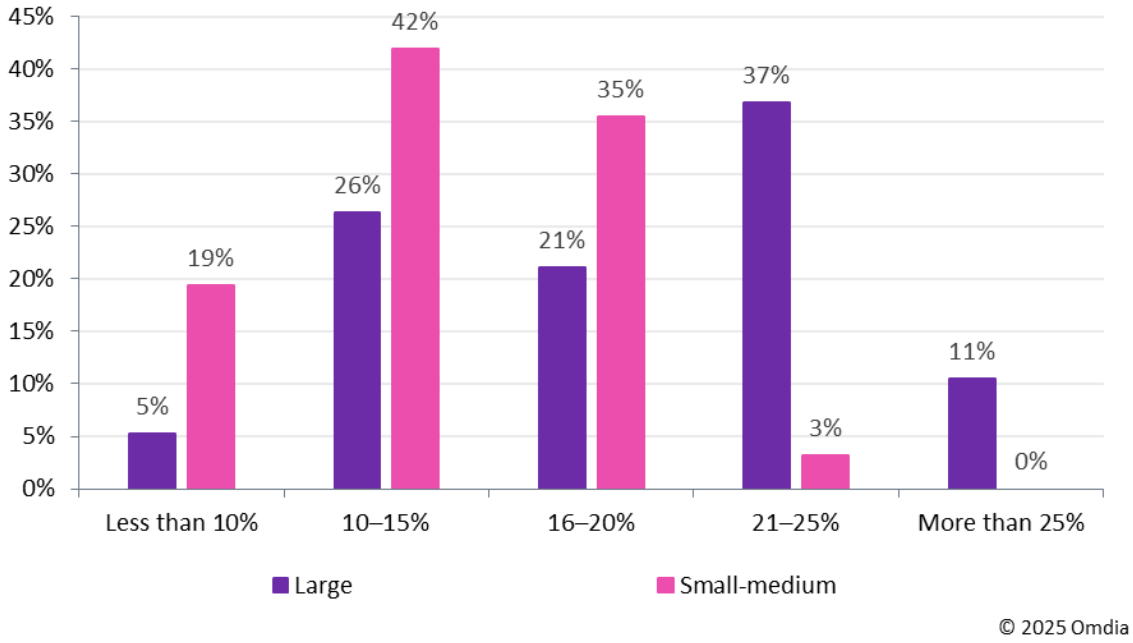


Source: Omdia

In a further question on capex savings, the survey respondents were asked to indicate the range of capex savings percentages in deploying a combined 4G/5G platform compared with separate systems, and 66% said between 10% and 20%. Of those, 36% indicated that savings would be in the 10% to 15% range. These responses indicate the respondents' firm belief that deploying several network functions of similar types—such as access management function (AMF), session management function (SMF), and UPF, in which these have many common microservices—in the same Kubernetes cluster can result in capex savings.

The data from the same question can be examined by CSP size (**Figure 6**), in which 37% of respondents from larger CSPs indicate a higher capex saving (21% to 25%) compared with 42% of respondents from small to medium-sized CSPs that indicate 10% to 15% capex savings.

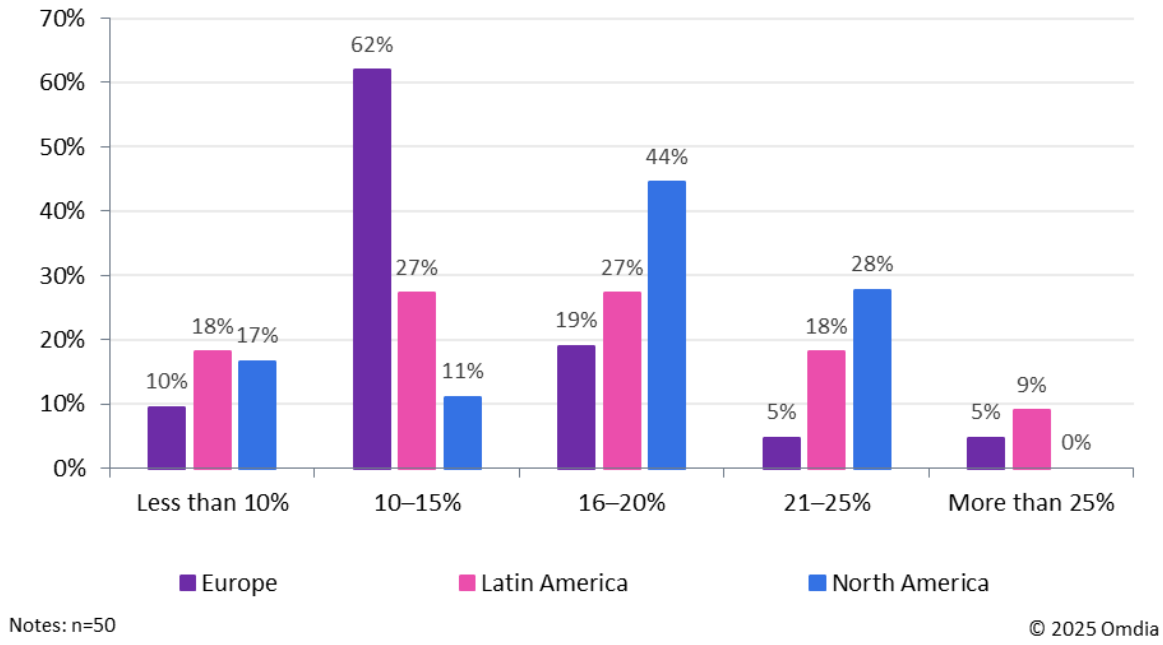
Figure 6: CSPs' expected capex savings for implementing a combined 4G/5G core



Source: Omdia

A regional view (**Figure 7**) of the data from this question indicates that a high percentage of respondents from Europe (62%) believe the savings would be in the 10% to 15% range, while 44% of those in North America believe savings would range from 16% to 20%. Meanwhile, Latin American respondents were split between the two categories, with 27% saying savings of 10% to 15% and 16% to 20%.

Figure 7: Regional CSPs' expected cost savings for implementing a combined 4G/5G core



Source: Omdia

A full-stack solution will reduce transformation efforts and help simplify the journey

Some CSPs may choose to pursue a multi-vendor strategy for their network functions, which necessitates a cloud vendor separate from the application provider. This could create many vendor siloes, or CSPs could opt for a common horizontal cloud layer to integrate the network functions from the various vendors.

As previously indicated, multi-vendor deployment strategies will create integration challenges. CSPs that choose this approach must be aware of the time delays not only in the early implementation and rollout of the project but also during the ongoing operation of such an architecture. Software upgrades will pose a critical challenge. CSPs must have strong internal software testing teams and have established processes to avoid a breakdown of collaboration between parties.

One interviewee from the European region stated the following:

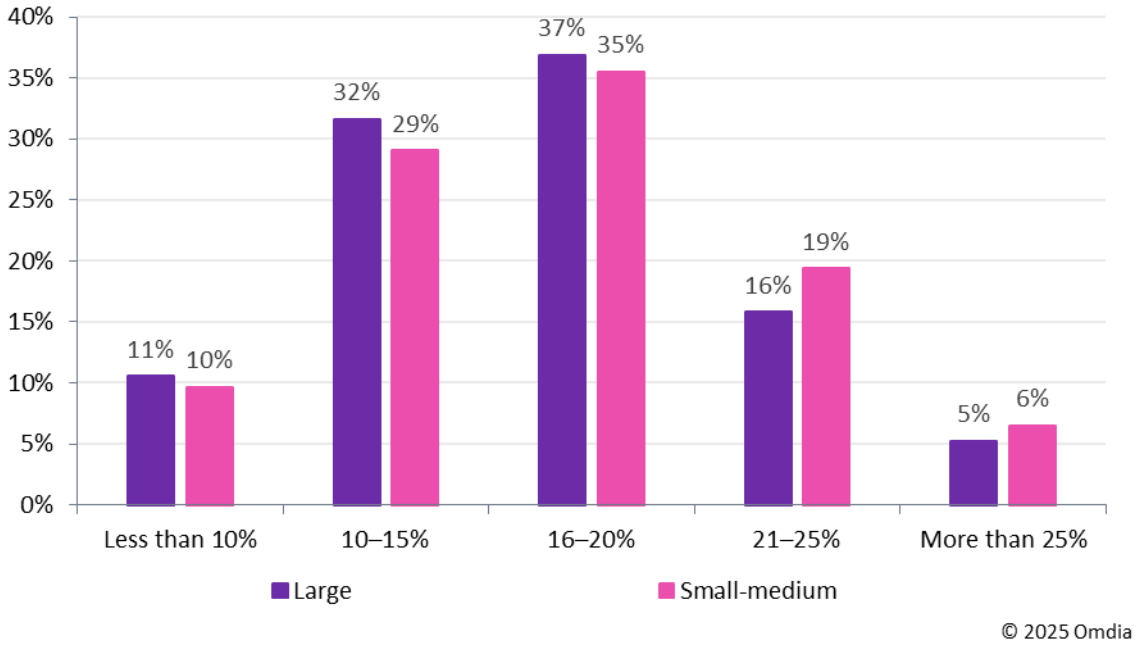
> *Troubleshooting issues and identifying who will fix them has become a concern, and you need to have a strong quality assurance team. Furthermore, vendors can deliver a patch, but this then becomes customized software.*

When asked about TCO savings from using a unified stack across multi-vendor network functions, most respondents from both large and small to medium-sized CSPs shared the expectation of between 16% and 20% (**Figure 8**).

This is quite an interesting result, given the similarity among the responses from the two segments. Larger CSPs tend to opt for multi-vendor deployments, but this result indicates that many of the larger CSPs have changed their strategies and are opting for single-vendor solutions owing to the complexities of multi-vendor deployments.

There are also some regional differences, in which CSPs in North America and Europe believe savings would be in the range of 16% to 20%, while Latin American CSPs suggest savings would be lower (10% to 15%). This indicates that CSPs in Latin America may need to invest more in outsourcing integration activities.

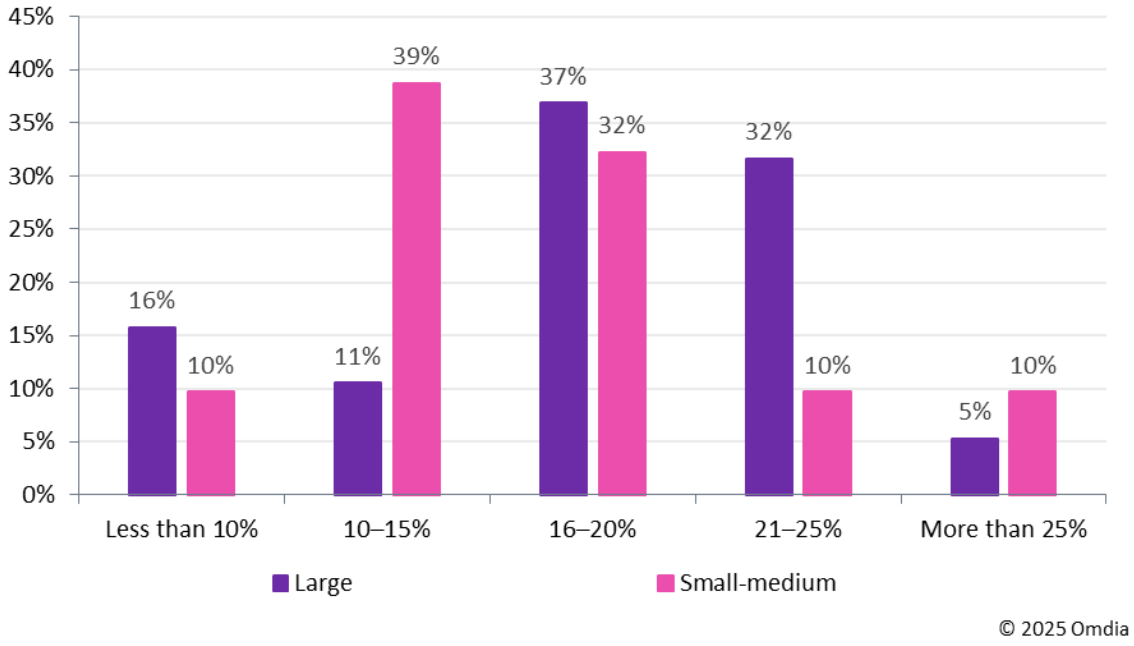
Figure 8: CSPs' expected TCO benefits from using a unified stack across multi-vendor core network functions



Source: Omdia

Considering a single-vendor, full-stack solution, respondents from larger CSPs suggest TCO savings in the range of 16% to 25%. In contrast, respondents from small to medium-sized players believe savings would be somewhat lower (10% to 20%) (**Figure 9**). Considering the regional perspective, CSPs in North America suggest savings between 16% and 20%, while those in Europe suggest lower savings (10% to 15%).

Figure 9: CSPs' expected TCO benefits from using a single-vendor full stack



Source: Omdia

Bare metal delivers higher efficiency than VM-based

One of the key benefits of cloud native is the use of new automation tools and continuous integration, continuous testing, and continuous deployments (CI/CT/CD), which will enable CSPs to increase the rate of new software rollouts and perform the upgrades necessary to quickly deliver new services to the market and meet customer demands. The upgrades further include timely security fixes and patches to ensure telecom networks—now considered strategic assets in many markets—are secure and up to date.

A further benefit is the decomposition of network functions into more granular microservices in a cloud-native infrastructure, which improves resiliency and scalability. Microservices are deployed efficiently in containers in which automation tools can orchestrate their lifecycle management, ensuring scalability and self-healing.

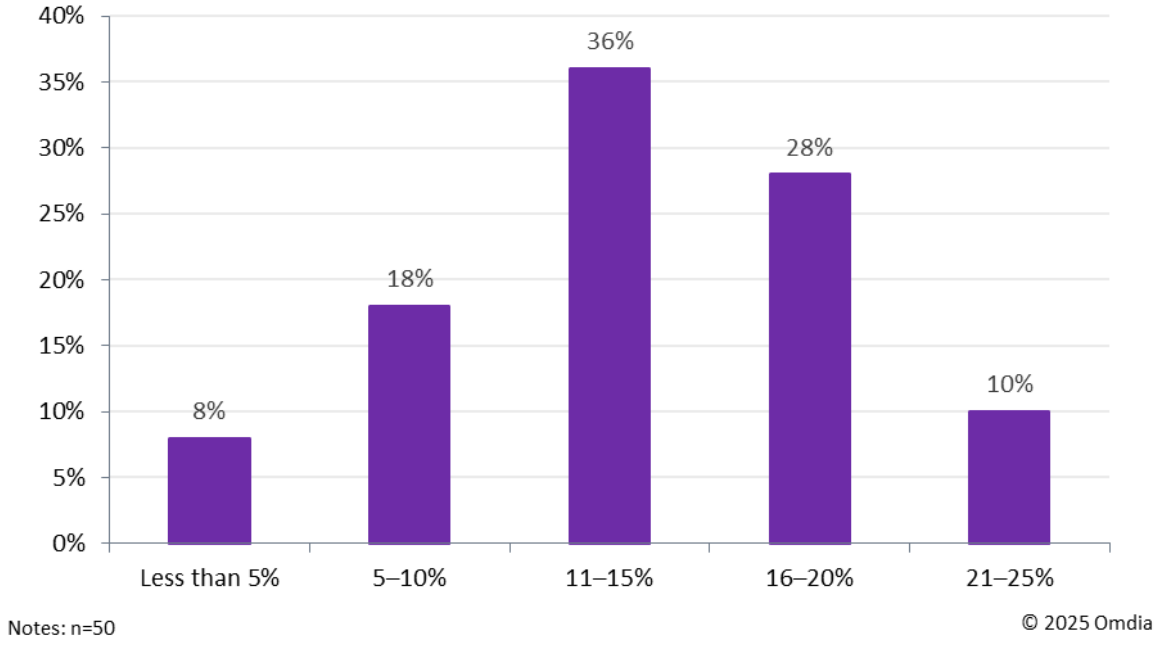
Where in the past, virtual network functions (VNFs) were executed as separate VMs on infrastructure as a service (IaaS), CNFs can run on a container as a service (CaaS) platform. There are two options for executing this: the CaaS runs less efficiently on top of the IaaS and compute infrastructure, or the CaaS is executed directly on the compute infrastructure (i.e., a bare-metal configuration) for improved performance, eliminating the need for the IaaS layer.

The latter architecture improves system stability and allows multiple CNFs to be scaled and deployed more efficiently on the worker nodes, reducing both license costs and compute infrastructure resource requirements. In turn, energy requirements are also decreased. This resonates with a statement from one European interviewee:

> *I need to balance risk. While cost is of extreme importance, my decision-making process is focused on stability and capacity.*

When asked about the TCO improvements expected from cloud-native, bare-metal deployments compared with virtualized deployments (**Figure 10**), 64% of survey respondents said 11% to 20% savings were possible, of which 36% indicated that 11% to 15% savings could be achieved.

Figure 10: Bare-metal TCO improvements compared with virtualized deployments

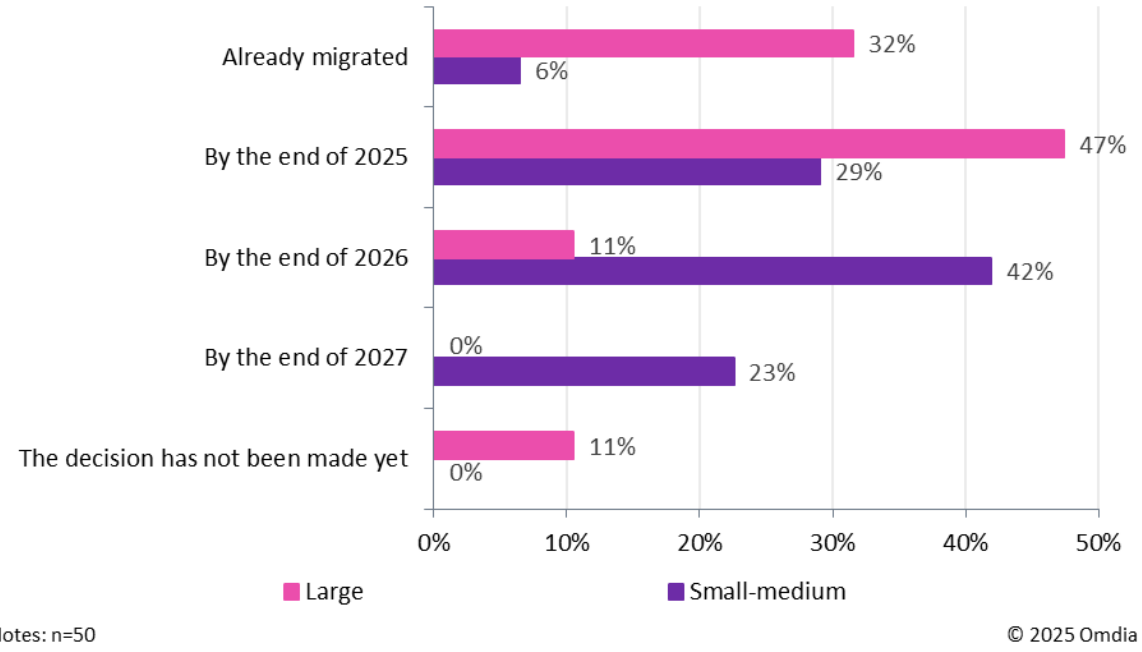


Source: Omdia

Organizations will deploy 5G core on bare metal at their own pace. The Omdia survey indicates that large CSPs appear about 12 to 18 months ahead of small-medium CSPs (**Figure 11**). Over 79% of

large CSP respondents said they will have deployed their 5G CNFs on bare metal by the end of 2025. Of those, 32% of respondents said they had already done so. For small-medium CSPs, the percentage of those that will deploy their 5G CNFs by the end of 2025 drops to 35%. This number will increase to 42% in 2026. Only 6% answered they had already done so.

Figure 11: CSPs' infrastructure migration timelines to bare metal



Source: Omdia

Unified network data probing solutions

As CSPs deploy use cases beyond just mobile broadband, the number of network functions will scale according to the number of subscribers or the amount of data that flows through the network. This will add to the core network complexity and the need for improved troubleshooting to maintain service key performance indicators (KPIs) and customer satisfaction. CSPs will need to monitor the health of the services delivered. To manage this, they must collect data from the network functions in real time and analyze them without affecting system performance.

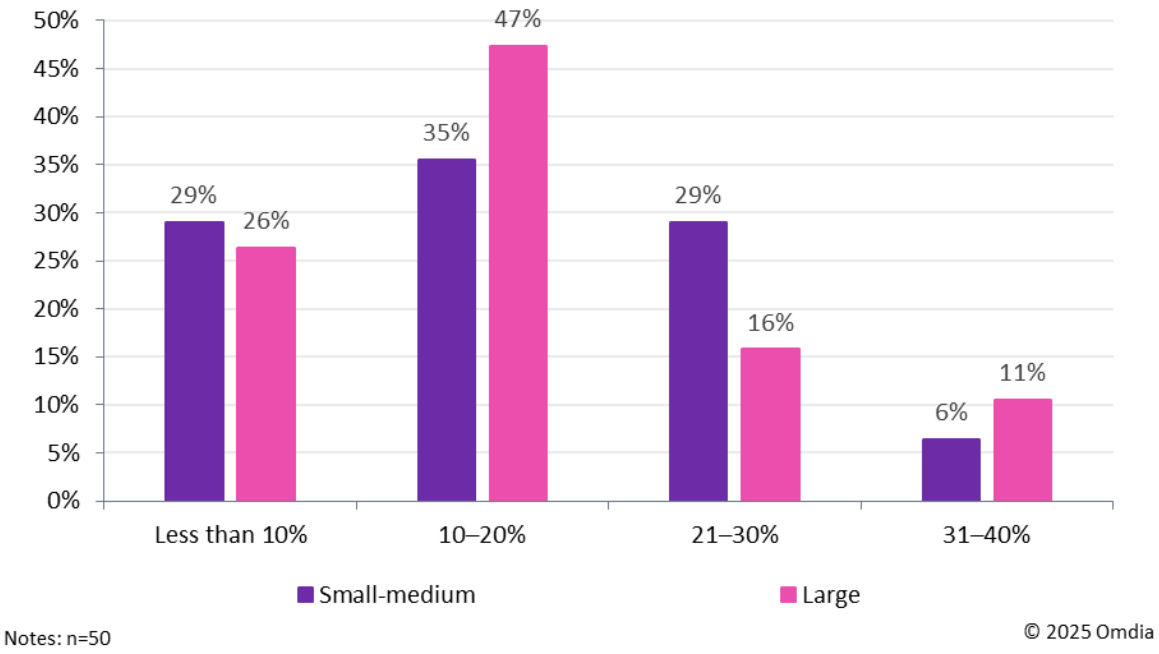
Although the control plane or signaling data that flows between network functions via the service-based interface (SBI) (the interface that connects all the network functions within the 5G core service-based architecture [SBA]) is limited, the same is not true for the user plane data. Hence, the probing solution must have adequate filters and logic available before offloading the data.

Interviewees have told Omdia that it is critical to ensure that the solution can collect only the required data.

There are several probing solutions available on the market. CSPs must ensure that the one they choose meets their business requirements and delivers enough analytics, such that service KPIs are maintained and there is no impact on the footprint required.

When asked about the cost savings expected from collecting EPC and 5G core network data at network functions compared with traditional external probing solutions, it is interesting to note that most respondents from both large (47%) and small to medium-sized (35%) CSPs believe that 10% to 20% savings can be achieved (**Figure 12**).

Figure 12: Cost savings expected from collecting 4G/5G core data at network functions compared with external probing solutions



Notes: n=50

Source: Omdia

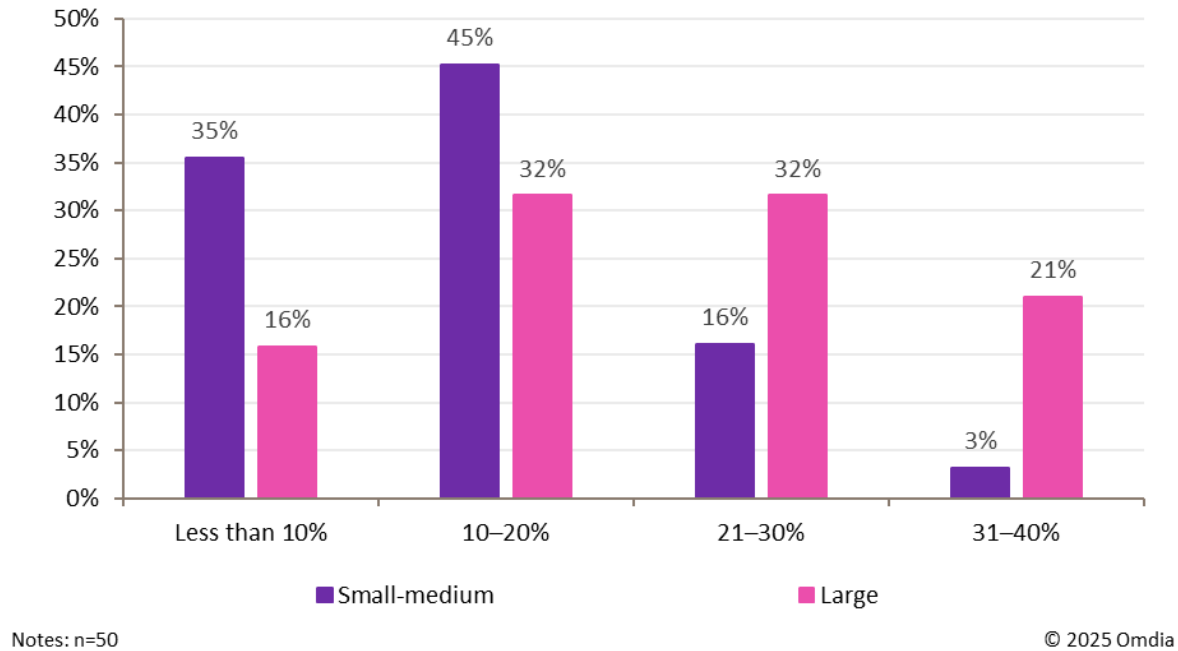
Optimized solution for user plane traffic

5G networks are destined to deliver over 10Gbps per user, a much higher throughput rate than previous generations. CSPs must architect their networks, especially their UPF, to not only deliver high data rates (e.g., fixed wireless access [FWA] use cases) but also deliver value-added services (e.g., deep packet inspection [DPI], firewall, network address translation [NAT], and data traffic optimization) without affecting overall latency or require over-dimensioning the UPF.

Furthermore, CSPs must have visibility of the user traffic that flows through their networks to ensure adequate prioritization of real-time applications (e.g., voice calls and video streaming) over non-real-time applications (e.g., downloading a large file). It is also critical to eliminate non-desirable content from the network to maintain network security and meet regulatory requirements.

Answering the question of what TCO savings could be expected from deploying value-added services (e.g., DPI, firewall, NAT, and traffic optimization incorporated in the UPF), most of the combined respondents (40%) suggested 10% to 20% savings were possible. When considering CSP respondents by revenue size, a significantly higher proportion of respondents from large CSPs (21%) said savings could be as much as 31% to 40%, compared with only 3% from small-medium CSPs that believe the same (**Figure 13**). This clearly indicates that larger CSPs expect significantly higher traffic on their networks, in which economies of scale will help them negotiate better commercial agreements with their vendor partners.

Figure 13: Cost savings using integrated value-added services in the UPF

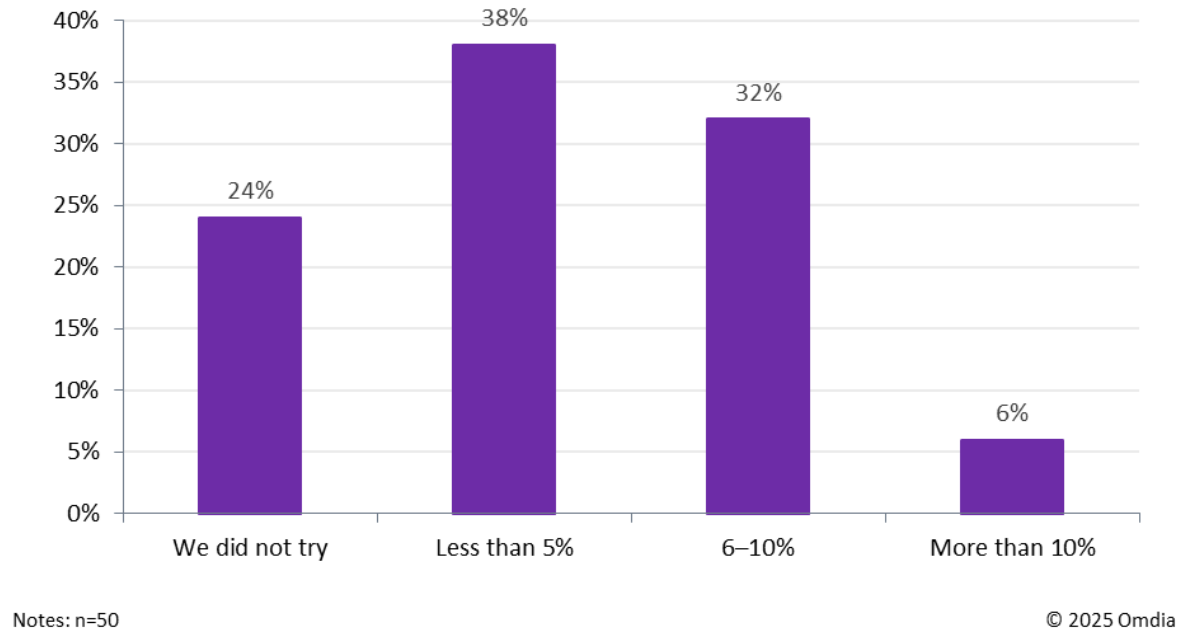


Source: Omdia

In the age of high-definition (HD) and ultra-high-definition (UHD) video streaming services, Omdia's WCIS forecasts indicate that global mobile data traffic will increase with a five-year CAGR of 20.7% through 2028, from 1.1 zettabytes in 2023 to 2.9 zettabytes in 2028. Thus, CSPs must take steps to reduce the load on their networks. Furthermore, given the high throughput rate modern radios can deliver, RAN represents the highest portion of total network energy consumption.

An efficient user plane solution with appropriate optimization tools, such as adaptive bit rate (ABR), will enable CSPs to create efficiencies and reduce the amount of user plane traffic that flows from the RAN to end-user devices. The largest proportion of survey respondents (53%) believe that using such tools will enable CSPs to improve energy efficiency between 6% and 10% in the RAN (**Figure 14**).

Figure 14: RAN energy efficiency expected through user plane optimization, such as ABR



Source: Omdia

Improve 5G core lifecycle through efficient software upgrades

The core is the brain of the network, and CSPs are conscious that any system failure will mean service loss, which will result in economic damage and loss of reputation on top of regulatory fines. For this reason, most CSPs do not carry out more than one or two annual core network upgrades, and when they do, the teams spend weeks preparing the upgrades.

However, in the cloud age, CSPs' infrastructure is evolving more toward IT than traditional telecom infrastructure. In line with this evolution, the ways of working must change. The industry talks about CSPs evolving their operating models and becoming more like hyperscalers. The approach these organizations have taken is to test new service features quickly, but this requires software rollouts and upgrades at a far more aggressive rate than CSPs are used to.

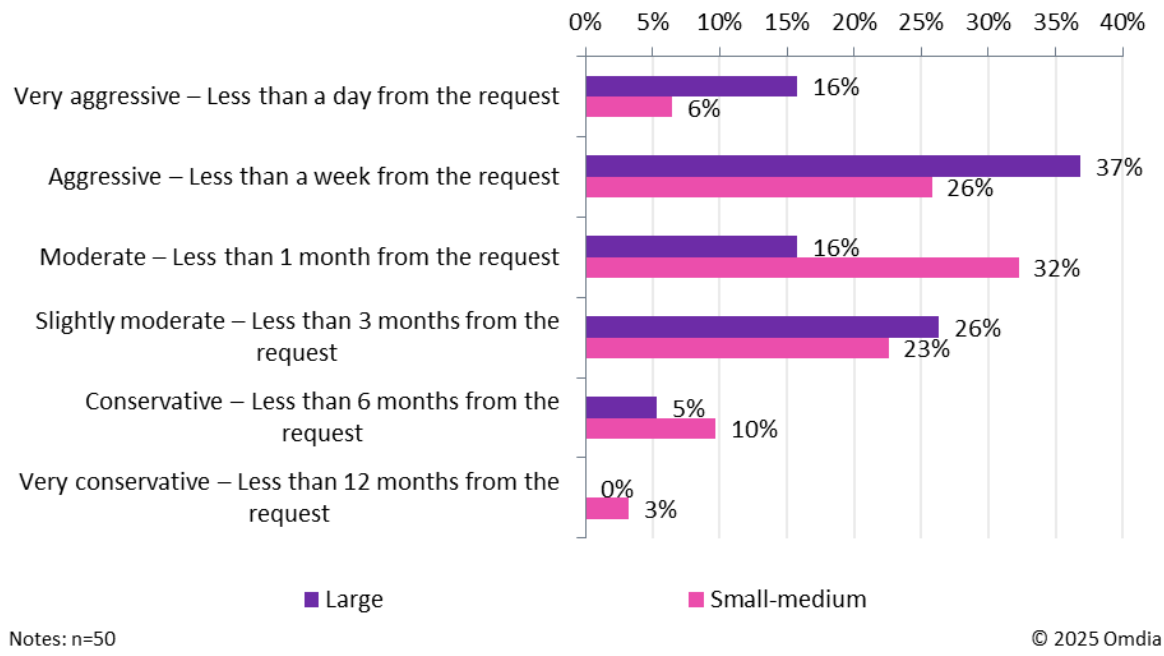
As CSPs move toward cloud-native deployments, the number of components that will need to be upgraded will increase. Consequently, CSPs must ensure that—for example—a cloud layer upgrade does not negatively affect the network function applications executed on top of it. One CSP interviewee told Omdia that for a major release update, the teams spend three to four weeks doing in-house testing of all the features, during which some tailoring of the software could also be needed.

In the cloud-native 5G core era in which services need to be upgraded on an ongoing basis, CSPs will need far faster upgrade processes. They must leverage automated acceptance testing and in-service software upgrades (ISSU) to meet the use cases' requirements and deliver on customers' requests.

When asked, large CSP respondents were significantly more inclined (16%) to carry out very aggressive software rollouts (less than a day from request) than those from small to medium-sized CSPs (**Figure 15**). Furthermore, larger CSPs (37%) also preferred aggressive, less than a week from request compared with smaller CSPs (26%). Note that significant process transformation is required to meet these high expectations.

Larger CSPs will prepare their networks and internal processes so that they can address more complex use cases and even more stringent enterprise use cases, which may require faster upgrade rates.

Figure 15: CSPs' expectations for rolling out new core network updates in the next two to three years



Source: Omdia

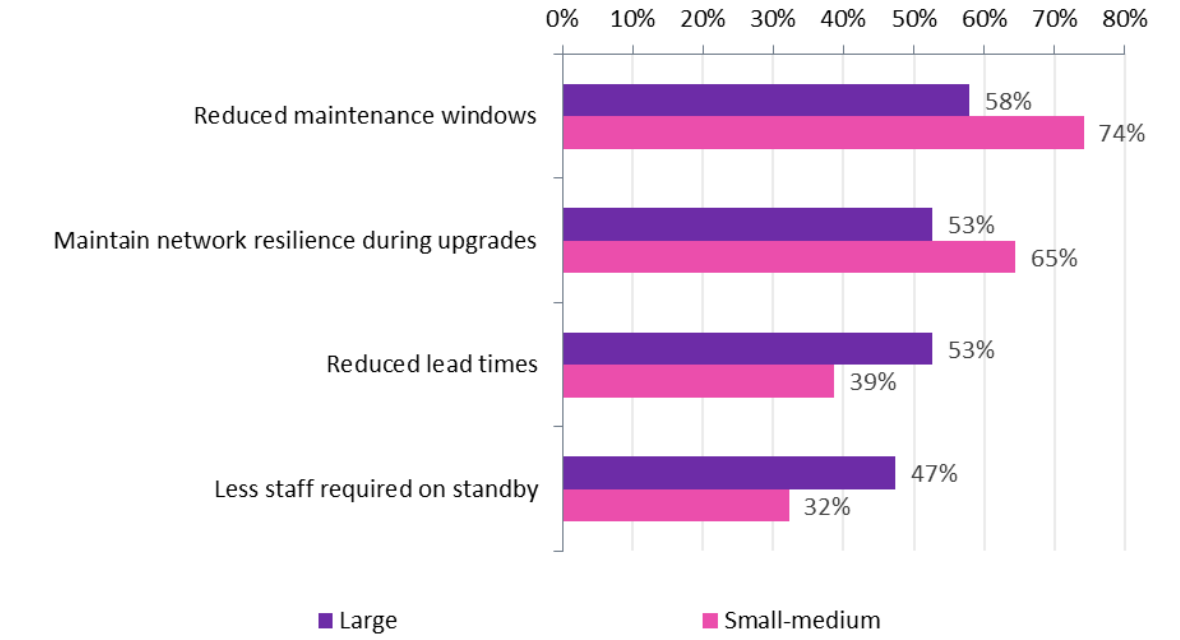
Leverage ISSU to speed up upgrades

Core software upgrades require rigorous planning. Without ISSU, planned downtime will be needed—usually at night when network traffic is at its lowest. During this period, existing traffic is moved to another node ahead of the upgrade process. The downtime and maintenance windows are quite costly for CSPs, considering the node becomes unusable for the duration of the upgrade process and the need for engineering staff to be on standby in case there are any issues or a need to roll back the upgrade.

The goal is for CSPs to reduce the risk to the upgrade process and be able to carry out these in an automated and repeatable manner. For this, ISSU is required, which is set to solve the aforementioned challenges and ensure a smooth upgrade process, thus eliminating the need for downtime and costly resources on standby. Furthermore, multiple nodes can be updated at the same time without affecting traffic.

Figure 16 indicates the major benefits CSPs receive from using ISSU tools. Although large CSPs experience similar benefits from all the categories, small to medium-sized CSPs clearly believe reduced maintenance windows (74%) and maintaining network resilience during upgrades (65%) are the most important benefits of using ISSU tools.

Figure 16: CSPs' major benefits from using ISSU tools



Notes: n=50

Source: Omdia

Next steps…

It is well-understood that without 5G core, CSPs will not benefit from revenue-generating use cases (e.g., mobile gaming, low-altitude economy, and AR/VR), which require ultra-reliability, low latency, or new service features (e.g., network slicing) to deliver services with stringent KPI requirements to both the enterprise and consumer markets.

However, to fully benefit from some of the improved toolsets cloud-native 5G core will bring, CSPs must undergo transformation journeys, which include staff software reskilling to benefit from new automation tools and organizational changes (e.g., creating the necessary DevOps teams to manage day-to-day operations).

Some small to medium-sized CSPs may be more resource-challenged than the larger CSPs, and this may vary according to the region. Ultimately, CSPs face a series of strategic choices in how they want to deploy their new core.

Some of the important cost savings options researched for this report include the choice between deploying a separate 5G core as a silo next to existing legacy 4G EPC or deploying a new 4G and 5G "dual-mode" core, leveraging the new platform to deliver TCO benefits. Other choices are between a full stack and unified stack and VM-based or bare metal.

Despite the financial, organizational, and technological challenges, it remains paramount that CSPs work with their vendor partners, understand the pros and cons of the choices, and understand which strategies are right for their businesses as they look to simplify the migration process to achieve their business goals in a timescale that will allow them to compete for new 5G opportunities. The decisions reached will affect their business agility and cost structure for years to come.

Methodology

- For this report, a total of 50 CSP respondents were surveyed. Qualifying respondents met the following criteria:
  - **Service provider:** Mobile or mobile and fixed operator
  - **Role:** Corporate management, product/service management, IT/DevOps, network operations, network planning/strategy, technology strategy, R&D
  - **Revenue size:** Up to $500m, $500m to $999m, $1bn to $4.99bn, $5bn to $9.99bn, $10bn or more
  - **Markets:** Targeted respondents are in three regions: Europe, Latin America, and North America
  - **Influence:** Targeted those with a lot of influence, primary decision makers, some influence, no direct influence but a good understanding of the decision process
  - **Language:** The survey was conducted online in English
- Furthermore, a total of four interviews were conducted, with CSP staff covering the roles of IT, technology, and network strategy in Europe, Latin America, and North America.

Appendix

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Omdia consulting

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We hope that this analysis will help you make informed and imaginative business decisions. If you have further requirements, Omdia's consulting team may be able to help your company identify future trends and opportunities.

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