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Converged Policy in 5G

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Contents

Summary

A seamless converged policy design will drive 5G monetization

Operators believe 5G will revitalize stagnant revenue streams, business models, and customer loyalty. There are several 5G migration routes operators can take, the choice of which will depend on a combination of moving parts, including cloud maturity of current architectures, transition speed to 5G new radio (NR), and market conditions specific to their own networks. The industry response includes exploring the convergence of services and policy across all networking domains.

Over the last year, there was a notable uptick in momentum for converged policy solutions as the industry moved closer to 5G implementation. A cloud-native converged policy provides a way for operators to monetize 5G more immediately, and it ensures they future-proof 5G investment, since with the right solution, they can make policy modifications that align with their evolving 4G LTE/5G non-standalone (NSA) to 5G standalone (SA) architecture migration. For this reason, a cloud-native converged policy will be an essential component of any successful 5G strategy.

How will converged policy evolve in 5G?

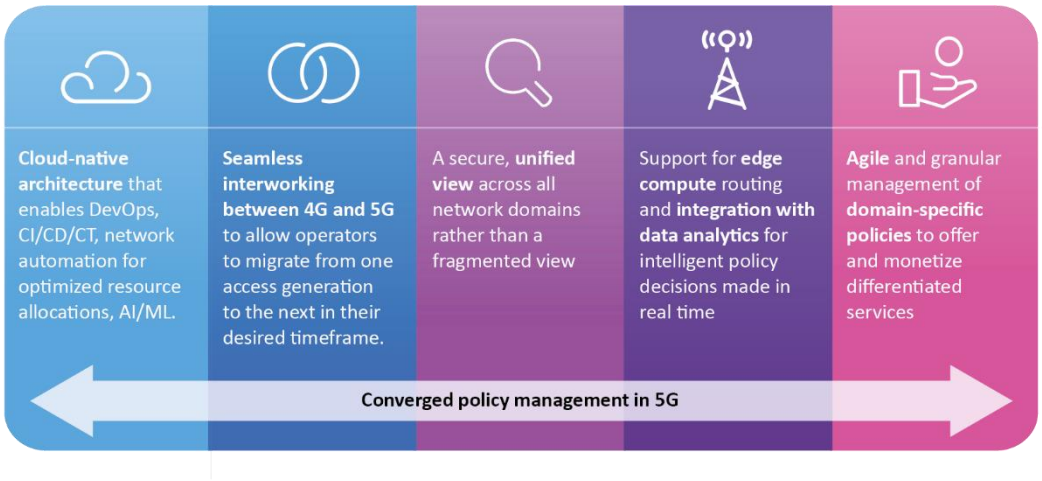
Converged policy will play a critical role in next-generation networks, because when policy, charging, and monetization elements are integrated into the network, operators can get creative with the services they are selling.

Why is this important in 5G? Operators want to save costs through network optimization and create new revenue streams using policy control to enable new service capabilities (e.g., consumer or enterprise services delivered via a dedicated network slice). This leads to the creation of service differentiation and faster time to market. Converged policy will provide transparency and control over network resources running over cloud-native architectures. This is essential for operators that strive to securely monetize services in 5G.

For converged policy and charging to play a critical role in the 5G ecosystem, it needs to support a wide variety of traditional and next-generation networking functions. For example, policy will continue to manage and govern network behavior and drive quality-of-service control. It will also continue to support traffic steering, subscriber spending, usage monitoring, interworking with IMS, and roaming support. Crucial for 5G will be additional support for next-generation functionality such as network slicing, integration with network data analytics functions (NDAF), and perhaps most importantly, enablement of differentiated services.

For a network policy solution to be successful in 5G, it will need to evolve to meet these new requirements for 5G networks. The ideal converged policy solution will have the characteristics outlined in Figure 1.

Figure 1: Characteristics of converged policy management in 5G



Source: Omdia

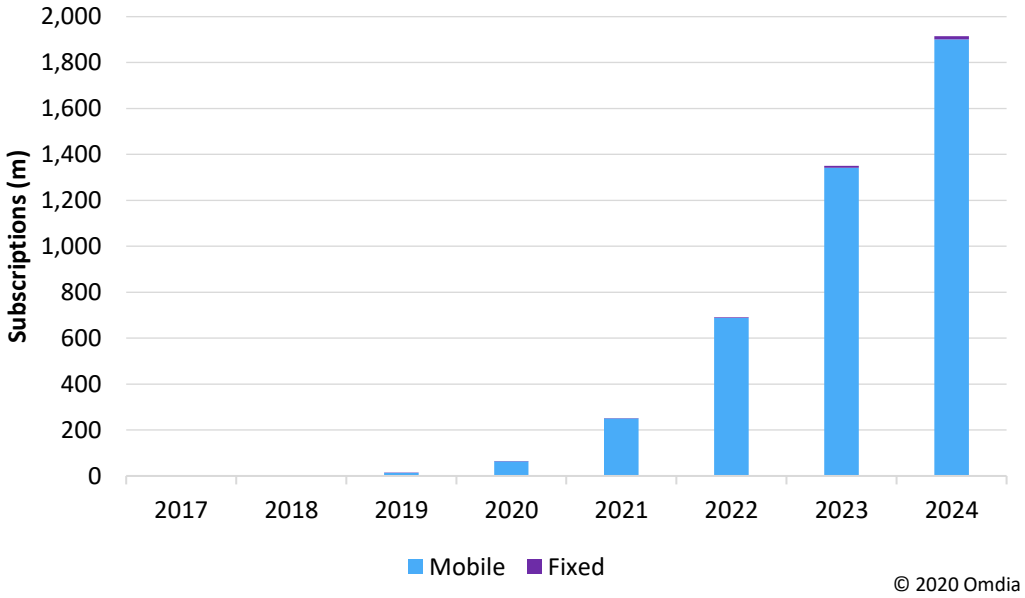
If operators want to compete effectively in 5G and offer customized services to enterprises, they must ensure their converged policy solution integrates these key characteristics.

Why do operators need converged policy?

Operators need a seamless transition from 4G to 5G core

Omdia estimates that by 2024 there will be 1.91 billion subscriptions to the next-generation 5G network. But 5G will have more demanding operational and service delivery requirements, and these requirements are driving a fundamental change to operators' core network architecture.

Figure 2: Omdia 5G subscription forecast, 2017–24



Source: Omdia

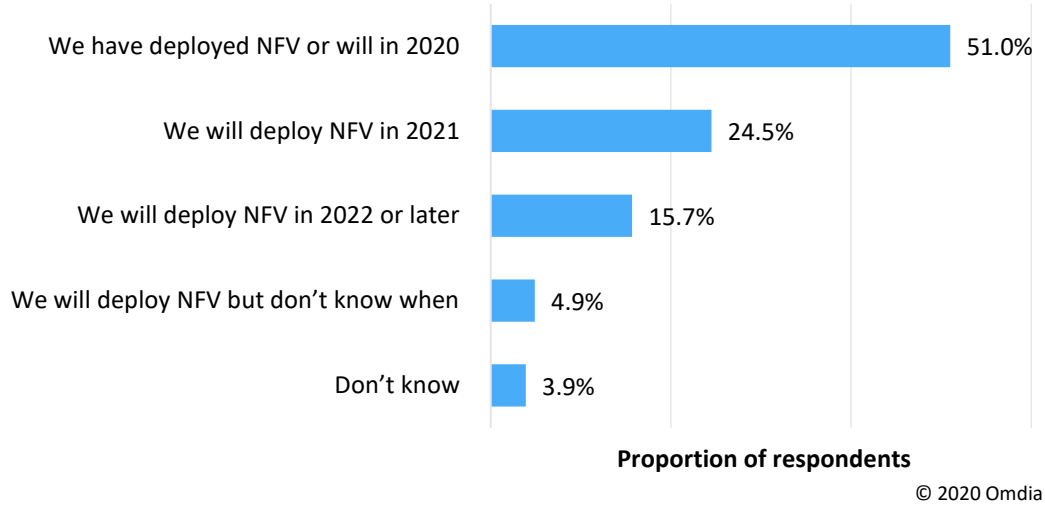
Operators need trusted partners that can provide them with guidance in moving from the 4G to 5G core. During the transition, the interworking between 4G and 5G will be essential as operators continue to support 4G services as they roll out the 5G network and new business models. Operators will also want to migrate their 4G-enabled policy use cases over to 5G platforms. A cloud-native policy framework for 4G/5G interworking will be required, because it will allow operators to migrate and rewrite current use cases in a consistent way for both 4G and 5G subscribers. This is critical for operators that strive to provide a reliable customer experience during 5G migration, which is essential to ensuring uptake of 5G services.

Operators want to transition to 5G based on their own cloud maturity and timeline

The transition to 5G will be a phased process, and migration paths to 5G should be seamless. Operators will look for partners that can provide guidance on how to develop 5G use cases and communicate realistic migration timelines. Leading vendors know they should be aware of operators' cloud maturity curve and help them transition as quickly, or as gradually, as desired.

Omdia conducted a study of 102 leading operators in June 2020 to understand their attitudes and behaviors around network functions virtualization (NFV) adoption. NFV adoption signals a broader snapshot of operators' plans to upgrade network elements via software, and operators timelines differ on a global scale. According to the survey, 51.0% of operators are currently deploying NFV in their networks, with an additional 45.1% planning to deploy in 2022 or beyond. The remaining 3.9% have yet to start NFV deployments into networks.

Figure 3: Phased NFV deployments toward 5G



Source: Omdia

This data underscores the point that operators' virtualization readiness and migration timelines for all network functions, including policy, will occur at a different pace. The interoperability between 4G and 5G network elements is critical, because a policy solution interacts with other network functions (e.g., charging, user data management, application function) in different customer environments. An ideal converged policy solution for 5G will have a consistent interface and user experience during software upgrades from 4G Policy and Charging Rules Function (PCRF) to 5G Policy Charging Function (PCF). This allows the operator to take an incremental migration approach to new infrastructure based on its preferred timeline, saving costs and adding agility to its evolving service delivery requirements.

Operators demand cost savings through optimized resource utilization across policies

Operators are pressured to meet the increasingly stringent service level agreement (SLA) demands from enterprise customers. The ability to optimize network resources to specific use cases through converged policy will lead to faster 5G monetization opportunities.

With traffic migration, the resource utilization can be erratic and lead to inefficient utilization of resources. Distributed network functions add to the complexity of dimensioning resources when subscriber traffic is changing rapidly. The traffic mix between 4G and 5G will continue to be dynamic, and resource allocation across policy platforms can lead to costly inefficiencies. Operators need a converged policy solution that uses common resources and microservices across 4G and 5G networks. The resources committed to the policy ecosystem are more efficiently used and based on the specific network traffic demands, and this network resource optimization will be a key driver for cost savings.

How will operators monetize services today?

Ensure a converged policy solution is truly cloud native

There are many 5G migration paths operators can take; which they choose will depend on a combination of parts including cloud maturity of current architectures, required speed of transition to 5G NR, and market conditions specific to their own networks. Leading vendors understand that operator needs are extremely divergent; they must work closely with each carrier to create a 5G core and radio roadmap that aligns with customer demands.

In addition, to achieve the necessary scale and performance for 5G networks, operators need an automated, cloud-native virtualized infrastructure that will allow them to monetize new services. The value-added features of cloud-native architectures include support for continuous integration/continuous delivery (CI/CD) and DevOps workflows, VM-based and container-based network functions, increased automation, and analytics. A cloud-native architecture will bring operators closer to self-managed networks that automate, scale, and heal in real time for enhanced service delivery.

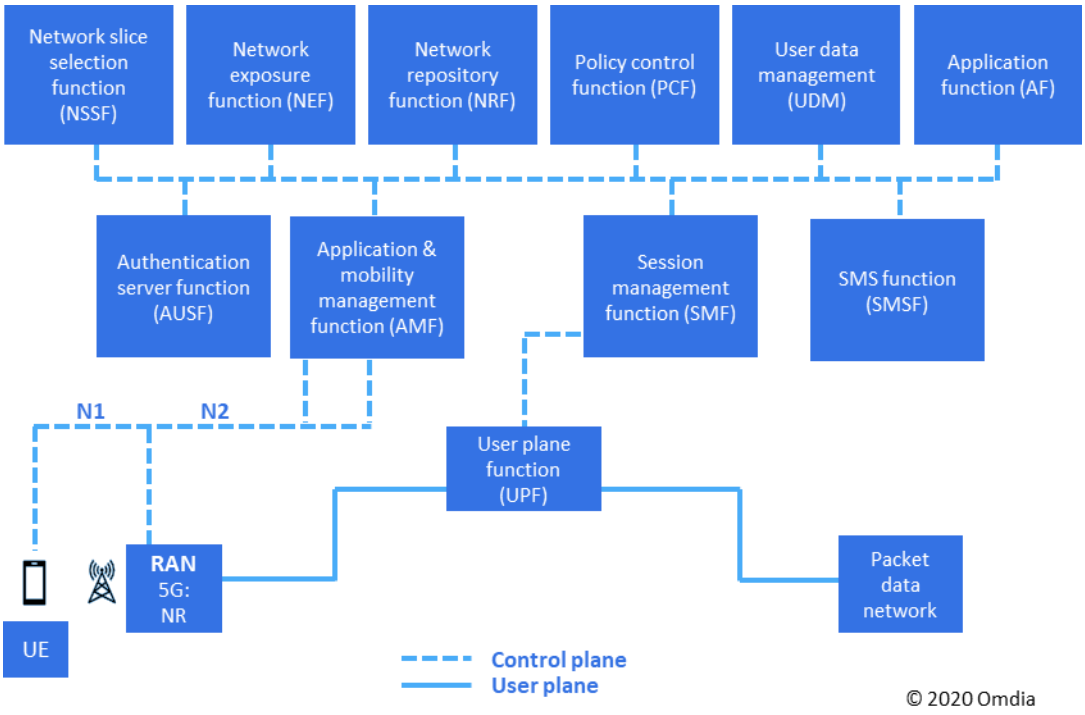
Underlying this dynamic is the need for a converged policy framework that is cloud native and provides a seamless interworking between 4G and 5G. With a cloud-native solution that runs over next-generation network architectures, operators will be able to reduce complexity, improve time to market, and protect investment in existing infrastructure and policy during 5G migration.

Future-proof policy framework investment

Several innovations to support new services are introduced by 5G. The first is upgrading the legacy mobile core to a service-based architecture (SBA) 5G core. The new core is built as elements to give operators greater flexibility to support new use cases. These elements are broken down into network functions that take advantage of virtualization and cloud-ready software.

Figure 4 shows the breakdown of the network functions and the split of control plane and user plane. These network functions are flexible, allowing operators to combine them to provide new and unique services for their customers, and use a 5G core to support legacy 3G or 4G services. These functions can also be upgraded individually, allowing operators to apply new software quickly.

Figure 4: 5G core service-based architecture



Source: Omdia

Still, a recent Omdia 5G survey shows that 31% of operators want to maximize 4G investments. A cloud-native independent converged policy solution will help operators avoid multiple platform migrations and move the policy solution to SBA when the time is right, which protects current policy investments.

The importance of a cloud-native independent converged policy solution

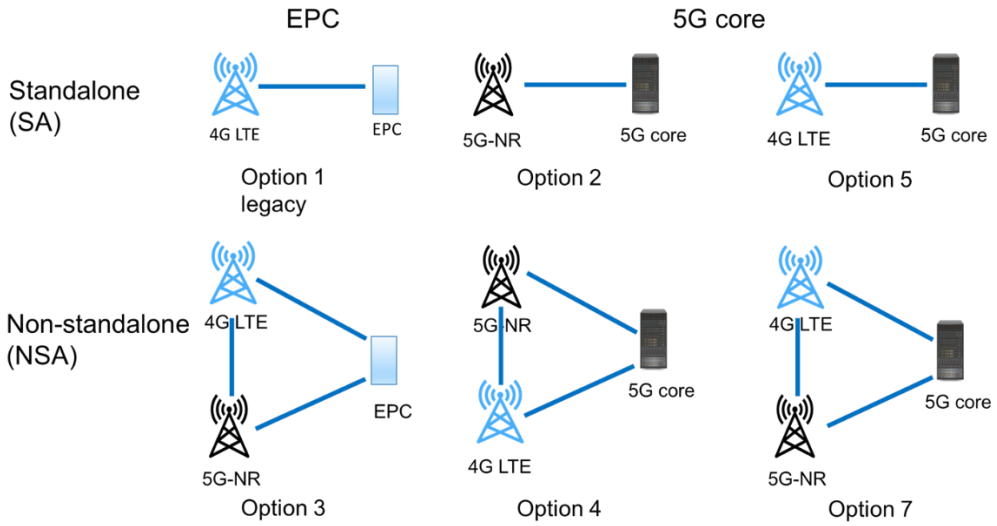
To future-proof policy investments, operators can integrate an independent converged policy solution that will easily interoperate with key network components such as charging. This is because live networks can only be built on a component-by-component basis. Each new component requires verification against surrounding components, even when they are from the same vendor. With the level of interoperability that an independent solution can offer, operators will be able to have one platform to manage 4G and 5G subscriber policy with independent scaling of PCRF and PCF.

Conclusion

Trust in the importance of cloud-native policy across NSA to SA migration

A cloud-native policy solution provides a way for operators to monetize 5G more immediately, and it ensures they future-proof 5G investment, since with the right solution, they can make policy modifications that align with their evolving 4G LTE/5G NSA to 5G SA architecture. Operators need partners that have a deep understanding of their network assets and service goals and can map them to the different 5G core migration paths offered today. This allows operators to invest in 5G business cases that will yield results in the near term, with plans to evolve as 5G technology proves itself in global deployments.

Figure 5: NSA to SA migration



Source: GSMA

Vendors should continue to push cloud-native architecture deployments over the next year to allow operators to migrate more seamlessly to 5G. And a cloud-native, independent policy solution integrated into these architectures will provide a unified view of network resource allocation across all access technologies. It will also integrate easily with incumbent charging and billing and revenue management solutions. The ultimate benefit is that operators will be able to bring services to enterprises faster and monetize in 5G as soon as possible.

Appendix

Methodology

Omdia used a combination of primary research and secondary sources to complete this report. Primary research included relevant Omdia research supported by qualitative interviews with global providers of policy solutions along with those vendors that provide network software and virtualization portfolios and services.

The NFV forecast model is prepared as part of a collaborative, integrated process involving both quantitative and qualitative analysis. The forecast is the result of a rigorous process of scoping, market mapping, data collection, statistical modeling, and validation. The data collection stage involves robust research and analysis of operational, socioeconomic, and demographic metrics. All forecasts have undergone robust validation throughout the process to ensure accuracy and consistency across all segments, markets, and regions.

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