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The Telco Ecosystem Evolution

How partners are advancing digital service provider strategy

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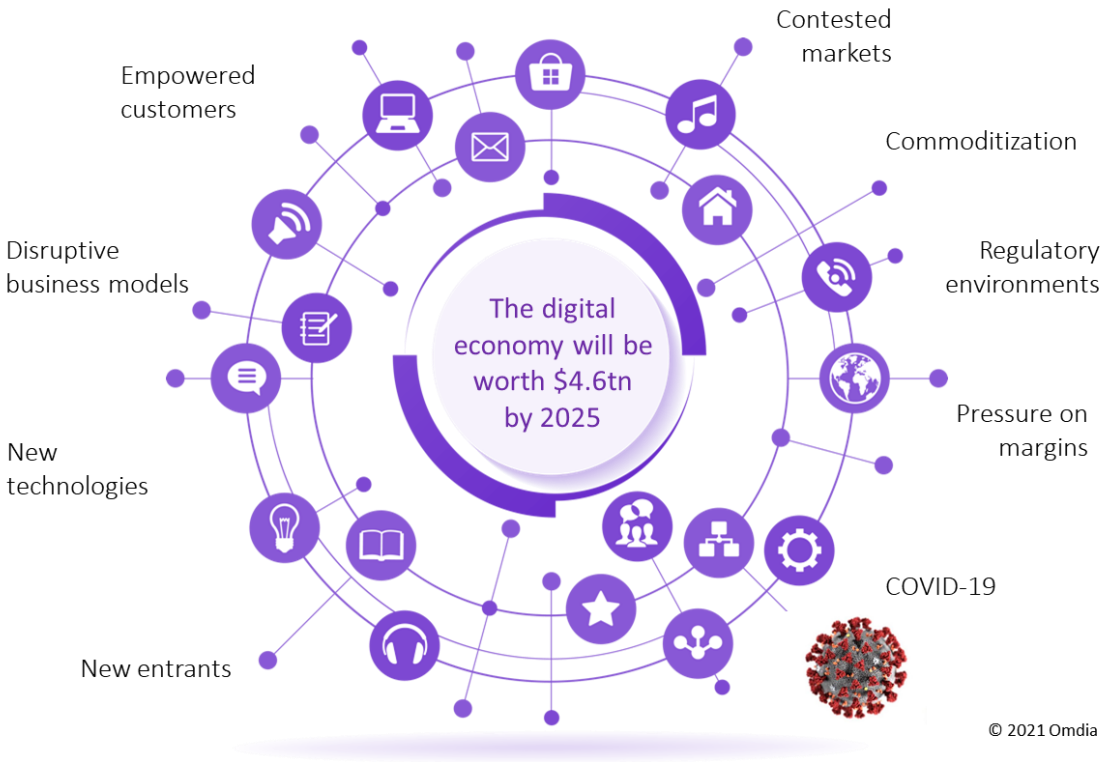
More than just an enhanced connectivity experience, 5G will be an intersection of major technology trends, including software-defined networking, edge compute, the Internet of Things (IoT), and artificial intelligence. These technologies will complement one another, and their convergence will enable new services, business models, and go-to-market strategies for operators. This technology convergence will also affect the way networks are built, managed, and monetized, and this will change how operators choose network transformation partners for 5G and beyond.

Figure 1: Technology convergence in 5G challenges the old ways of networking



Source: Omdia

The move to an open network

Operators are investing in digital transformation to drive down costs and increase revenue by improving network operations and delivering new 5G services to enterprises. As the major cloud providers take a growing piece of the 5G digital service pie, these benefits are more important than ever. Operators will continue to invest in cloud-native technologies to accelerate their evolution to digital service providers, and to achieve this role they will benefit from a comprehensive partner ecosystem that can enable open networking and disaggregation.

> *"How can I build the network once, then use disaggregation of the user plane and control plane? How can I open the network and use this same network for defining services for verticals like transportation?"*
> *Principal engineer, leading NEP, US*

The move to open networks will have an impact on the traditional relationship between vendors and operators. Primarily, it will challenge legacy cost models and change how operators expect to pay for vendor solutions. However, an important shift signaling the need for open networks is the way leading cloud providers are partnering with large operators, enabling both telcos and their partners to deliver services in both private and public cloud environments.

The takeaway is that vendors and operators must evolve with the openness of the network. They must expose more of the network through open APIs and integrate more automation to define applications and services based on specific enterprise demands. Only then will operators increase their value as perceived by enterprises in the 5G service value chain.

The telco partner ecosystem is evolving

Telco partner evolution in 5G

As the industry moves toward open and disaggregated networks, the telecoms partner ecosystem will also evolve to include sets of partners focused on specific features and capabilities, for example, operations support systems (OSS), business support systems (BSS), artificial intelligence (AI), machine learning (ML), real-time charging, autonomous networks, and many others.

One set of partners includes those companies that build and deliver cloud-native platforms. These companies work closely with the network equipment providers (NEPs) that build workloads and network services. This set provides a single platform that supports multiple vendors for operational simplicity and consistency, and the preintegration capability these partners provide is growing in demand as software adoption accelerates in the radio and core network domains.

While these partners focus on operations deployment, the next set of partners focuses on application, service, and network function development. They work with operators and other partners in the ecosystem to integrate software-based continuous integration / continuous delivery / continuous testing (CI/CD/CT) tools and DevOps practices into the platforms that are built.

The foundational component of all successful partner sets will be “openness.” Partners must help operators build the network once then use disaggregation of the user plane and control plane to open the network and define services based on specific use cases and industry verticals. Operators will continue to demand partners that work together in new ways to help operators build vertical-based services (e.g., private networks, IoT services) for enterprise customers, a primary goal for 5G networking.

What do telcos need from partners?

Deep network knowledge: Incumbent partners still have the advantage

Operators know they must move beyond the old ways of networking. They are no longer buying proprietary hardware from vendors; they have also asked for more “choice” among vendors to avoid lock-in. They want greater ease both in mixing vendors for best-of-breed features and in swapping out incumbent vendors. For these reasons, cloud-native platform vendors are gaining ground within the telco partner landscape. These companies offer capabilities such as automation, security, CI/CD tooling, and data analytics built into vendor-agnostic container platforms, which are essential for telco transformation.

However, it is challenging to integrate multi-vendor solutions into an operator’s network, which is still a relatively customized environment. This is where the operator still turns to its traditional

network equipment provider, which has a deep understanding of the operator's network. NEPs must collaborate with vendor-agnostic platform providers and software startups to integrate virtual network functions and services onto cloud-native infrastructures. The combined solution can then be tested and certified in operators' labs and networking environments.

> *"My current partners will win out . . . every time . . . for a POC or emerging technology trial. I trust they know my business, and I believe they will work to show me the technology readiness of a new technology or service when it's time."*
> *Tier 1 operator, EMEA*

While NEPs have the advantage of incumbency, those OEMs that work with these companies to deliver cloud-based operations and services will have an advantage, but they must share in an expanding ecosystem of telco partners.

Managing operational complexity: But knowledge transfer needs to improve

Operators will continue to rely on partners to bring fully tested and certified solutions to their 5G network environment. In fact, one of the key value propositions operators hear is that certain telecoms partners, for example, system integrators (SIs), will take full responsibility for managing the operational complexity of multidomain service orchestration. This "turnkey" solution resonates well with some operators but not with all. It often comes down to the operator's comfort level with cloud-native technology. Those operators with a strong understanding of telco cloud operations are often more willing to hand over complex network management to a telecoms partner. In fact, this willingness is seen more often in greenfield software-defined network deployments, where networks are built from the ground up using cloud-native architectures. However, in telecoms the reality is that most deployments are brownfield, and operators are typically slower to adopt new technologies. Those with a higher comfort level with telco cloud operations recognize that they do not need to be in control of every aspect of operations and can trust partners to help them manage operational complexity. Those operators with a more traditional approach to networking may have a more difficult time handing over control to partners. Regardless of operators' cloud maturity, knowledge transfer—in the form of residency services and ongoing training for multidomain orchestration—would demonstrate a telecoms partner's willingness to balance control with its operator customer.

> *"The big names can onboard different vendors and assure the telcos that 'if you partner with us, we will look at orchestration at the NFV layer, and if something is hidden from you, we will manage it.' But what happens to the control? Well, it's not with the telco."*
> *Tier 1 operator, EMEA*

More roadmap discussions and proven vertical knowledge

To compete in 5G, all industry players must move beyond their comfort zone. In this case, telecoms partners should not underestimate the power of roadmap discussions, especially for emerging 5G use cases such as telco edge and private networks. Operators need enablers of 5G platforms and services, and they want to hear more often from their partners about roadmap strategies. Vendors that can increase the cadence of roadmap discussion beyond twice a year will have an advantage with operators ready to accelerate the move to an open network.

To build on that point, operators (and vendors) are looking for partners to bring service-driven use cases to network environments for joint go-to-market opportunities to enterprises. Telcos often know how to design a service, but they need help defining service level agreements (SLAs) and meeting customized enterprise requirements. For this reason, partners that can leverage existing enterprise relationships and vertical-based knowledge are highly valued, and these partners will be operators' trusted advisors in helping them design new architectures and implement new technologies to define and meet these unique SLAs.

> *"Bring me a service-driven use case. I don't want to hear about how fast my network can be. I want to help my customers go on a service-by-service basis."*
> *Principal engineer, leading vendor, US*

Public cloud providers are changing the partner game

How do public cloud players fit in?

Operators believe compatibility with public cloud will accelerate enterprise service delivery

As operators undergo network transformation, they will shift traffic to 5G architectures while ensuring little to no disruption in current service. Telecoms partners must support this evolution for operators, because public cloud providers such as Google and Amazon are offering customized services to enterprises. Operators must continue to invest in carrier network software so they can offer new network capabilities such as network slicing and edge applications to complement cloud providers' services. Other drivers of public cloud include the following:

- **Scalability.** There is flexibility with the pay-as-you-go model. Resource is on demand, so changes in activity can be easily dealt with. There are also lower upfront costs than with private cloud deployments.
- **Decreased cost.** Public cloud reduces hardware cost and lowers barriers to launching new services. It reduces maintenance cost and delivers more affordable compute power. Generally, private cloud is more expensive than public, because private cloud requires both hardware and in-house administration and maintenance.
- **Cost-effectiveness.** The pooling of resources and savings stems from the large-scale operations of public cloud.
- **Increased reliability.** The greater scale of public cloud means greater reliability: the vast network of servers reduces the chances of failure. Additionally, there is greater security in servers being physically located in offsite data centers.
- **Security and privacy.** Historical security and/or privacy regulation concerns surround where data is stored and processed. But public cloud providers have security expertise, and operators can use hybrid cloud environments to address concerns.
- **Regional expansion.** Enterprises are a primary driver of the telco / cloud provider partnership momentum, and regional availability is a strong determining partner factor. When considering new strategic partners right now, operators must look at specific service requirements and then determine which partners have the required capabilities or service availability in that region.

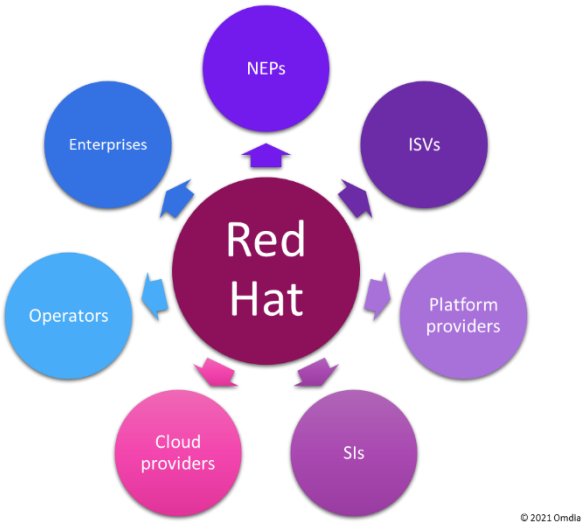
The flexibility and scale of public cloud deployments and faster time to market for new services are top drivers for the next phase of network transformation, and while the cloud-native journey has been relatively slow, operators are finally embracing the mix of public/private cloud resources for 5G service delivery. Telecoms partners should be committed to helping operators support a hybrid cloud network strategy, because there will be ideal scenarios for which private cloud is preferred and other workloads that are well suited to public cloud, particularly as the partnerships between large public cloud providers and operators accelerate.

How does Red Hat fit into your partner strategy?

Red Hat: Center of the modern telco ecosystem

Red Hat is at the center of the expanding partner ecosystem, primarily because its open source software and services are compliant across the expanding pool of telecoms vendors, independent software vendors (ISVs), software specialists, and cloud providers. Through offerings such as Red Hat OpenShift, Red Hat Ansible Automation Platform, Red Hat Integration, and its CI/CD residency program, Red Hat is helping its partners connect existing infrastructure and emerging cloud technologies so operators can transform operations and reposition as a strategic partner for enterprise service delivery.

Figure 2: Red Hat helps its partners connect current and emerging technologies



Source: Omdia

Red Hat offers an end-to-end container platform

Through collaboration with its partners, Red Hat offers a simplified framework to operators that incorporates technology readiness, automation tools and practices, and IT practices adapted for the telco vertical. Red Hat customers can benefit from its end-to-end container platform, which helps operators simplify complex hybrid cloud networking by integrating legacy infrastructure with emerging technologies.

Essential for operators is the ability to support a mix of physical network functions (PNFs), virtual network functions (VNFs), and cloud-native network functions (CNFs). Red Hat demonstrates technology readiness with Red Hat OpenStack Platform and Red Hat OpenShift, which can support all telco workloads based on operators' platform migration timelines.

"Readiness of tools and practices" refers to Red Hat's automation capabilities, which are critical for operators to deploy and run 5G networks and services more efficiently and securely at scale. Red Hat's Ansible Automation Platform solution provides consistent automation across relevant teams in the operator's business. This consistency is critical as operators continue to realign internal business units, (e.g., IT and network operations) to accelerate 5G strategy decision-making. In addition, Red Hat's Integration offering is a set of tools that link data and applications together with messaging and APIs to allow existing applications and new services to work together.

Integrating proven IT software practices into the telecoms environment is also an essential component of any operator's network transformation strategy, and it needs partners to help it adapt. Red Hat is an established platform player coming direct from the enterprise environment. In collaboration with an operator's chosen telco partners, Red Hat can leverage its success in IT to support and fine tune the orchestration of services across the operator's hybrid infrastructure. It can also leverage its entrenched enterprise relationships to help an operator define and deliver vertical-based services to customers.

Red Hat also has CI/CD DevOps experience, and the goal of its services and residency program is to help operators gain more efficiencies from a CI/CD pipeline so they can move to an automated service deployment model.

Closing thought

A dramatic shift in telco networks and operations is well underway. Operators must now win over enterprise customers with the ability to deliver customized services. This means operators no longer choose partners based on which can deliver the "fastest network." They need a comprehensive ecosystem of partners that work together to help them define, configure, provision, and deliver services based on unique requirements, specific not only to the industry but to the enterprise itself. Red Hat is positioned to align with all telecoms partner types to bring these service-driven use cases to operators and to help them redefine their value in 5G service delivery.

> *"Whoever has the best ecosystem will win. Vendors aren't going to differentiate on the core or the radio equipment any longer. Whoever has the best ecosystem to support the best service delivery model, that is who will win my business."*
> *5g networks lead, leading Tier 1 operator, EMEA*

Appendix

Methodology

Omdia used a combination of primary research and secondary sources to prepare this report. Primary research included relevant Omdia research supported by qualitative interviews with global operators that are involved in their organization's telecoms partner strategy for 5G and software-defined networking.

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Omdia consulting

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We create business advantage for our customers by providing actionable insight to support business planning, product development, and go-to-market initiatives.

Our unique combination of authoritative data, market analysis, and vertical industry expertise is designed to empower decision-making, helping our clients profit from new technologies and capitalize on evolving business models.

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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.

About Red Hat

Red Hat is a provider of enterprise open source solutions, using a community-powered approach to deliver high-performing Linux, cloud, container, and Kubernetes technologies. The company helps customers standardize across environments; develop cloud-native applications; and integrate, automate, secure, and manage complex environments with support, training, and consulting services.

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