Hyperscalers' Telecom Strategy: AWS, Microsoft, Google

Published 21 June 2021 - ID G00739662 - 15 min read

By Analyst(s): Peter Liu, To Chee Eng, Amresh Nandan, Jouni Forsman

Initiatives: Communications Product Planning and Strategy; Technology Market Essentials

Hyperscalers have rapidly increased their investments and presence in the telecom industry by launching dedicated products and establishing partnerships. Technology and service providers must understand the trends impacting the telecom industry and develop a synergistic partnership with hyperscalers.

Overview

Market Opportunities and Challenges

Key challenges:

- Hyperscalers have increased their investments and presence in the telecom industry by launching dedicated products, establishing partnerships and increasingly introducing their technologies into communications service provider' (CSPs') infrastructure.
- CSPs have interest in partnership opportunities with hyperscalers, but with caution. CSPs are yet to develop a clear strategy on how to utilize these partnerships to establish a stronger value proposition. Many of the existing collaborations are simply opportunistic in nature.
- As CSPs' infrastructure increasingly evolves to adopt cloud architecture, hyperscalers are poised to become technology service providers (TSPs) in the telecom industry — and potential threats — for telecom vendors. It also changes the competitive dynamics between CSPs and hyperscalers.

Key opportunities:

- Conduct an in-depth evaluation of hyperscalers' architectures, features sets, integrations, pricing models and partnership options by working with the business to build a partnering capability. Seek a balance in working with hyperscalers by establishing a workstream to capture and implement lessons about how they operate.
- Develop and implement cloud-native capabilities that enable open collaboration with various hyperscalers by adopting DevOps and agile principles, as well as open API principles, to increase reusability across various use cases.
- Introduce competitive and differentiated capabilities offered in 5G and edge computing that are able to solve complex industry use cases through co-developing with hyperscalers. These industries include smart manufacturing, gaming, media and entertainment and smart cities, etc.

Strategic Planning Assumption

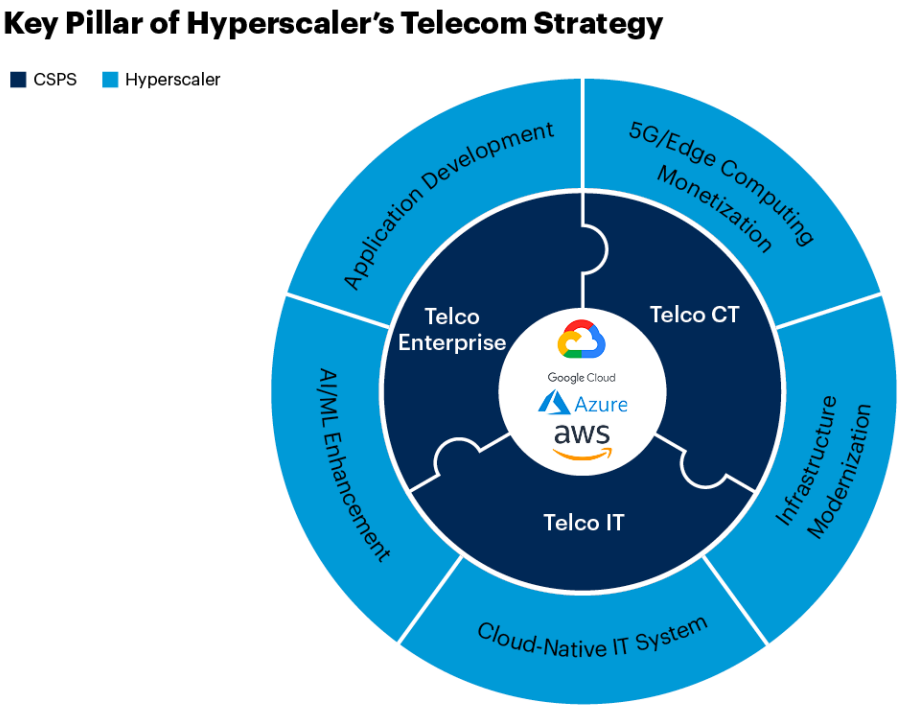
By 2025, at least 30% of Tier 1 CSPs will be using hyperscale cloud providers for both their public and private cloud requirements.

Introduction

During the past few years, we have seen a rising trend in the telecom industry related to hyperscalers. Recent announcements from hyperscalers targeting the telecom industry include Microsoft, Google and Amazon Web Services (AWS). Initially, hyperscalers looked at operator workloads as standard workloads. However, they soon realized that they needed to deliver real networking workloads, driving the hyperscalers and CSPs to collaborate further.

Hyperscalers' strategic priorities in the telecom industry include multi access edge computing (MEC), CSP core network modernization, IT applications as well as artificial intelligence (AI) data analytics integration. They try to address three audiences in CSP organization (telco enterprise, telco IT and telco communication technology [CT]) (see Figure 1).

Figure 1: Key Pillar of Hyperscalers' Telecom Strategy



Source: Gartner
739662_C

Gartner

CSPs are transforming into digital service providers interested in hyperscalers initiatives. They hope through combining the best of CSPs' efficiencies in networking and providing carrier-grade services with hyperscalers' expertise in managing cloud-native technologies at scale, to unlock true potential of the cloud and provide value to customers.

However, "seeing potential" and "practically embracing" are different things. We must realize that hyperscalers' offerings do not by default adhere to traditional telco processes practices and standards, which means the partnership can be more complex, costly and risky. For example: Mobile industry standards bodies are developing common approaches to some of the interfaces and components of edge computing, but the hyperscale cloud providers' proprietary solutions are unlikely to embrace common frameworks.

While the hyperscalers' offering is still evolving, there are a lot of challenges and uncertainties that need to be overcome, like security, performance, cost of operations, interoperability and ownership/control of data, etc. CSPs need to take a strategic view when partnering with the hyperscale players (see Key Issues CSPs Need to Consider When Partnering With Hyperscale Cloud Providers). Key considerations regarding the partnership include:

- How to retain control over their future direction and strategy — instead of being led by cloud providers.
- How to avoid getting locked-in by specific cloud providers — and lose market and negotiating power.
- How to cooperate and compete with cloud providers — and benefit from such relationships.
- How to utilize these partnerships to establish a stronger proposition in the telecom market and achieve the economics that are favorable to them — go beyond the technical integration but focus on business success.

This research aims to analyze three leading hyperscalers' telecom strategies and key initiatives. It also looks at CSPs' and TSPs' strategy to move IT, operations and business support systems (OSSs/BSSs) and network applicants to the cloud. This will guide product leaders in the telecom industry by identifying the right partnership strategy.

Market Trend

The Strategies of Leading Cloud Service Providers/Hyperscalers

All three hyperscalers have similar strategies and key focus areas (see Figure 1). However, they have different approach and engagement models, and their respective services will underline those differences. In response, CSPs need to take a strategic view on how to experiment and utilize the public cloud and cooperate with hyperscalers to achieve real business success.

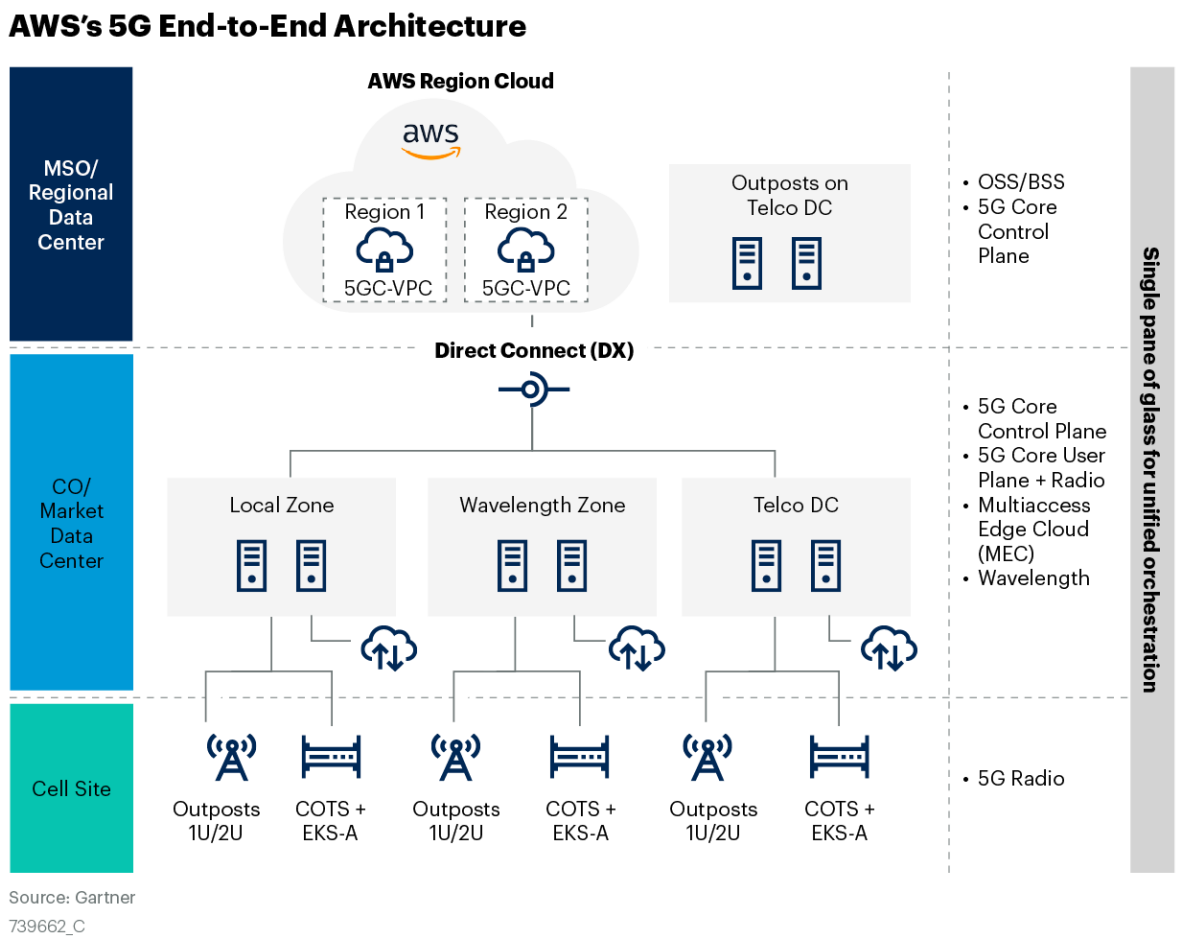
AWS's Telecom Strategy

AWS's telecom strategy is focused on providing an environment for CSPs and Telco independent software vendor (ISV)/network equipment providers to build, run and manage multiple workloads on top of AWS's public cloud. These workloads include various CSPs use cases that include, but are not limited to, software-defined network (SDN)/network function virtualization (NFV), private mobile networks, 5G, AI/machine learning (ML), OSS/BSS and network workloads focusing on the following key business outcomes:

- Digital transformation and data center (DC) modernization.
- Network evolution and business automation.
- Applied AI/ML.
- 5G, edge and Internet of Things (IoT) monetization.

AWS's end-to-end architecture for future telecom (5G) infrastructure is illustrated as below (see Figure 2).

Figure 2: AWS's 5G End-to-End Architecture



AWS built its 5G edge strategy to extend its public cloud service to the edge; its portfolio includes:

- **AWS Wavelength Zones for public edge:** AWS Wavelength extends mobile edge computing applications to telecom providers' data centers at the 5G network's edge. To optimize latency and bandwidth in Wavelength, 5G devices' application traffic can reach application servers in Wavelength Zones without leaving the telecom network. AWS Wavelength got its start on Verizon Communications' 5G network, and AWS has similar deployments with KDDI, SK Telecom and Vodafone.

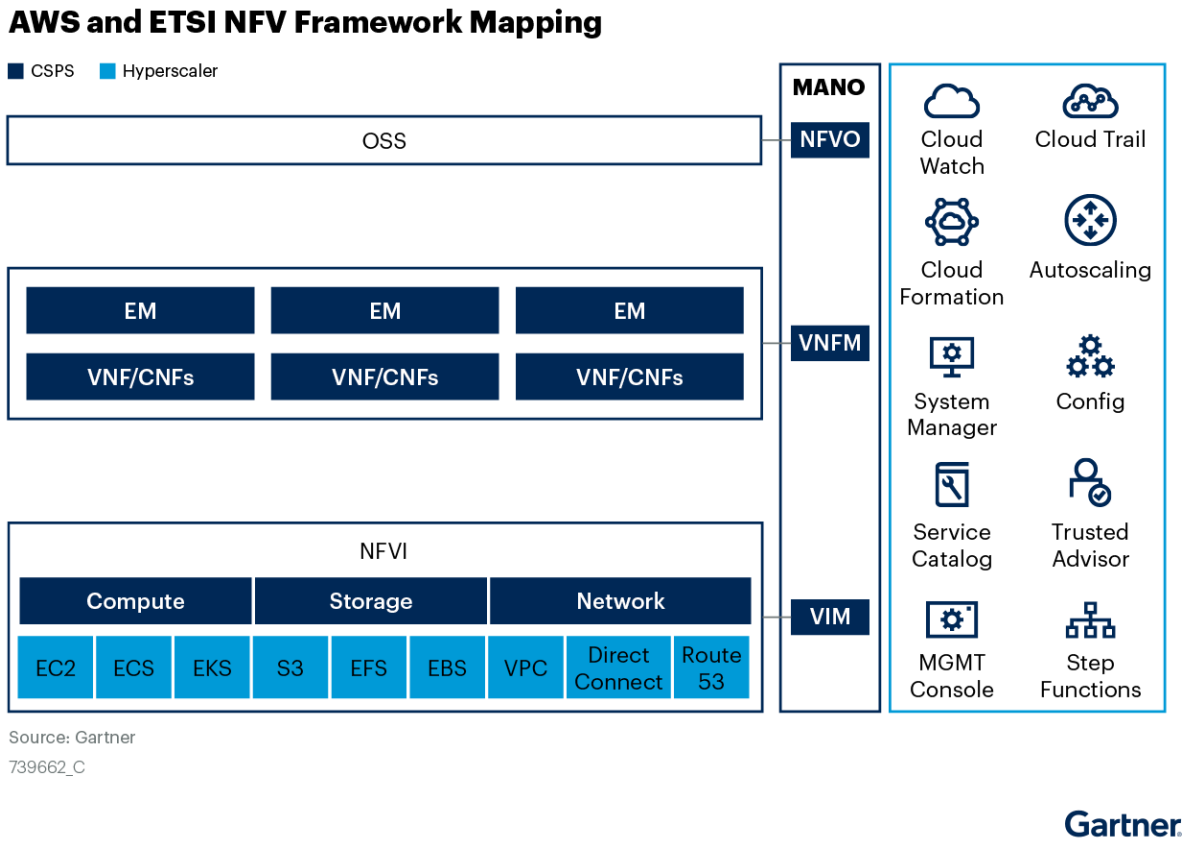
- **AWS Outposts for on-premises edge:** AWS Outposts are fully managed and configurable compute and storage racks built with AWS-designed hardware that allows customers to run compute and storage on-premises while seamlessly connecting to AWS's broad array of services in the cloud. For on-premises management, AWS Outposts have the same APIs, tools, infrastructure and services available for most on-premises sites, colocation spaces and data centers.
- **AWS Local Zones for public edge:** AWS Local Zones are a type of AWS infrastructure deployment that places AWS compute, storage, database and other select services close to large population, industry, and IT centers. With AWS Local Zones, customers can easily run applications that need single-digit millisecond latency closer to end users in a specific geography. For example, DISH is using Local Zones to deploy 5G user-plane functions and other open radio access network (RAN) functions on this infrastructure.

AWS supports the shift to CSPs' 5G packet core networks running in the AWS cloud through partnerships with traditional vendors, such as Ericsson, Nokia, Mavenir, etc. Additionally, leading players in operations and business support systems, such as Amdocs, run on AWS, enabling operators to bring more automation to the back office and innovation to front-office billing systems.

In terms of AI, AWS's artificial intelligence platform, Amazon SageMaker, and solutions such as Amazon Connect, Fraud Detector and Personalize, are helping operators in several areas, including transforming contact centers, reducing fraud and churn, network automation and preventative maintenance.

AWS is mapping its offerings with telco standards, which helps telco customers to have a better understanding of the migration. For example, the diagram below illustrates the AWS map and European Telecommunications Standards Institute (ETSI) NFV framework (see Figure 3).

Figure 3: AWS and ETSI NFV Framework Mapping



How AWS Competes

AWS believes its ability to deliver centralized control for decentralized execution is a key competitive advantage. AWS has the mindset of a developer ecosystem and enterprise customer, which can be leveraged by CSPs for easy deployment and monetization. AWS's new deployment options, Amazon Elastic Kubernetes Service (Amazon EKS Anywhere) and EKS Distro, allow CSPs to create and operate Kubernetes clusters on-premises, including on CSPs' own virtual machines (VMs) and bare-metal servers. However, AWS cost structure sometimes can be confusing, and it will be a concern for CSPs who are looking for more cost optimization.

Google Cloud's Telecom Strategy

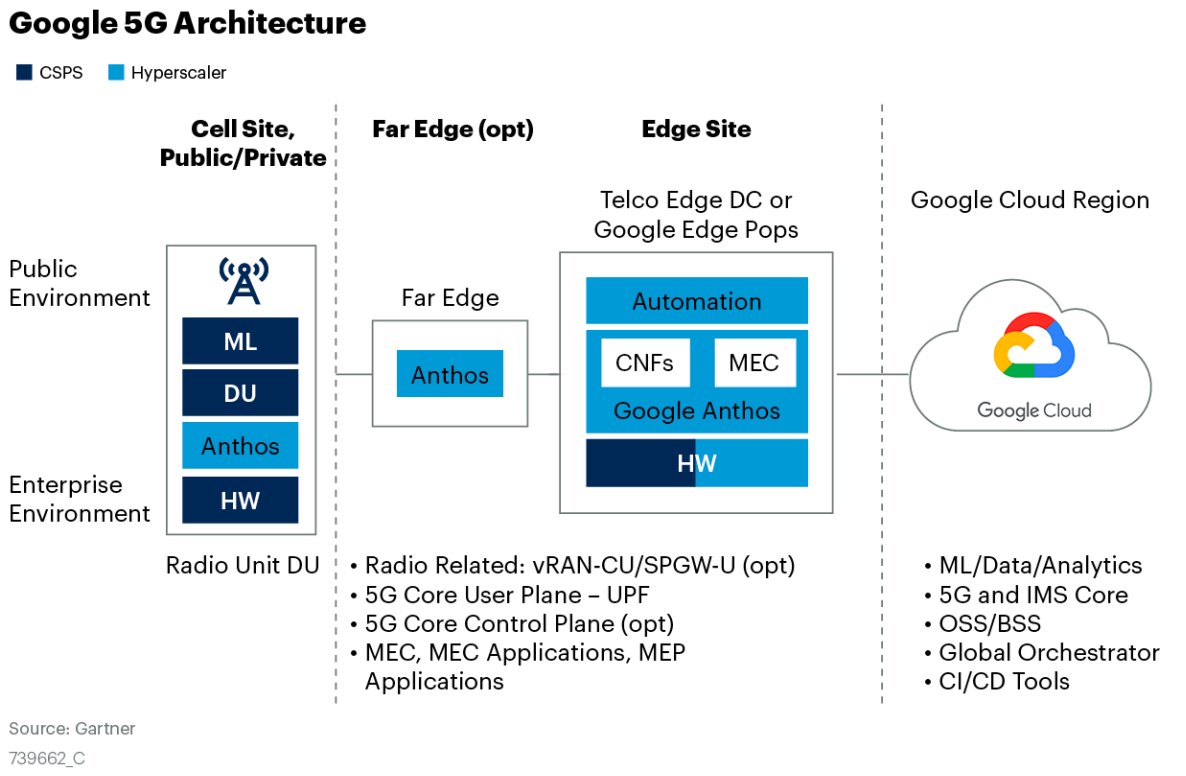
Google Cloud's strategy is centered with its leadership in Kubernetes and AI/ML focuses on three strategic areas:

- Monetize 5G as a business services platform.
- Empowering CSPs to better engage their customers through data-driven experiences.

- Assisting CSPs in improving operational efficiencies across core telecom systems.

Google's end-to-end architecture for future telecom (5G) infrastructure is illustrated as below (see Figure 4).

Figure 4: Google's 5G Architecture



Google's Global Mobile Edge Cloud (GMEC) strategy and offerings include:

- A portfolio of 5G/Long Term Evolution (LTE)/edge solutions built together with CSPs and TSPs.
- A common open cloud-native platform, which integrated Anthos (tuned for telecom workloads), managed OEM hardware (H/W) and Google Fleet Management to help telcos build, deploy and securely manage these new network-centric 5G/LTE/edge applications anywhere.
- A global distributed edge infrastructure, leveraging CSP networks, Google's network and customer locations.

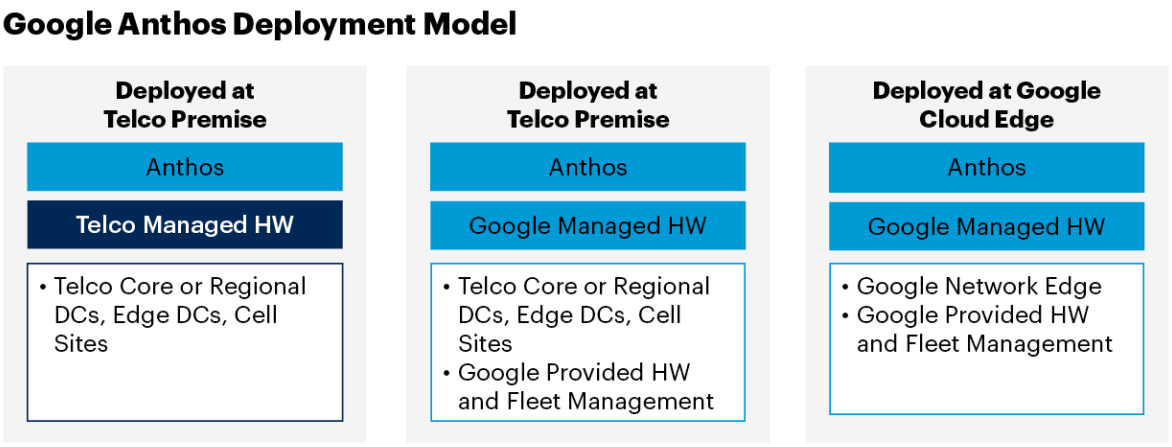
Google Cloud intends to leverage and integrate its expertise in AI, ML, data and analytics into telecom. This helps CSPs to transform experience for customers, including omnichannel marketing, sales and service, personalization and recommendations, and virtual agent presence.

Google Cloud explores the possibilities of migrating the telecom core applications (including OSS/BSS, orchestration stack and mobile core) to Google public cloud through working closely with traditional vendors (Amdocs, Netcracker, Ericsson and Nokia, etc.).

How Google Competes

Google offers multiple deployment options for telecom networks, including deployment at the telecom premise, on Google points of presence (POPs) and Google Regions, leveraging Anthos as a way to consistently deploy and manage container-based workloads. Google Anthos is a software-only solution. It uses the public-cloud-based Google Cloud Platform (GCP) Console as a central point to deploy and manage Kubernetes-based clusters across both on-premises infrastructure (VMware and bare metal) and public cloud infrastructure (currently GCP and AWS, with Microsoft Azure in preview). Google's edge strategy includes offering a fully managed platform, including software (Anthos, Fleet Management) and opinionated H/W (through partner OEMs). These offerings are enabling "true multicloud" in an automated and orchestrated fashion and it can be deployed in different ways (see Figure 5).

Figure 5: Google Anthos Deployment Model



Source: Gartner
739662_C

In Anthos, Kubernetes is a core part. It also provides additional tools for converting virtual and bare-metal workloads to containers. Therefore, customers can take advantage of their existing on-premises or public cloud investments by allowing them to modernize their applications and run them anywhere. Anthos uses the GKE and other existing GCP services to provide an easy hybrid pathway and familiar development experience for engineering teams already using Google Cloud.

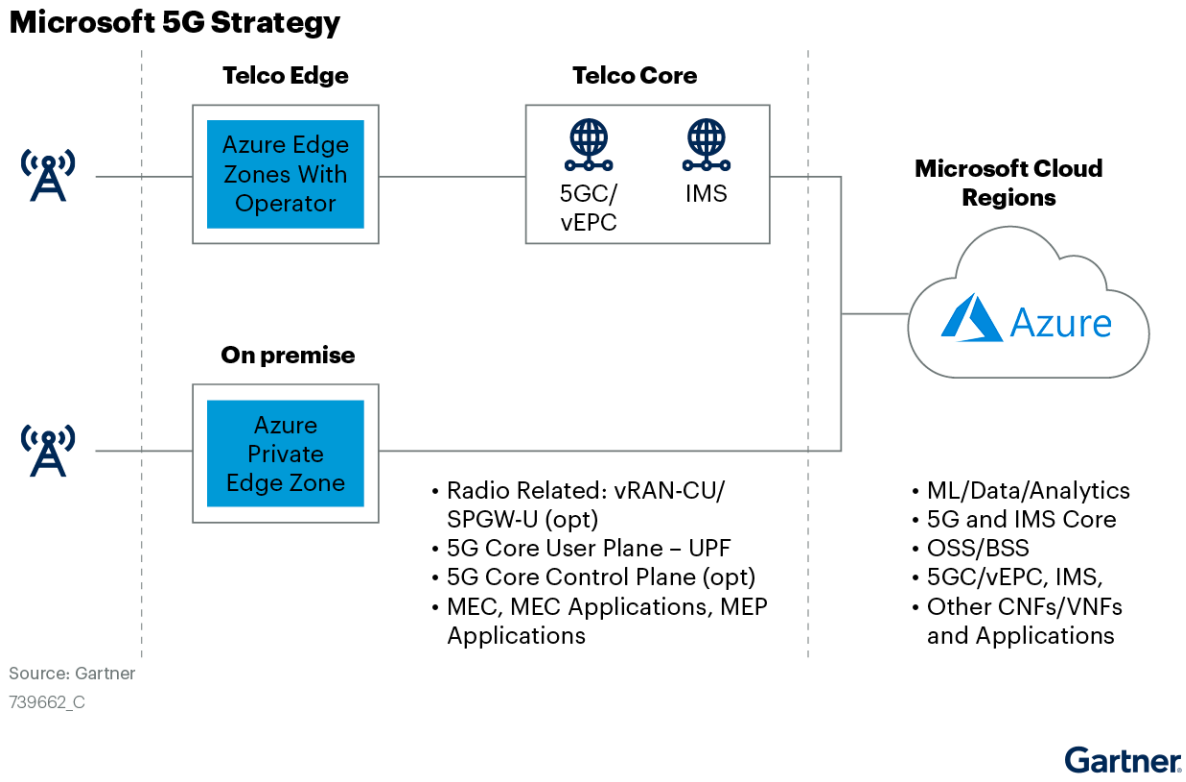
Microsoft Azure Telecom Strategy

Microsoft intends to provide a dedicated suite of cloud services, Azure for Operators, which is an umbrella for various layers of infrastructure as a service (IaaS), platform as a service (PaaS) and SaaS, along with orchestration within its sphere. The strategy aims to provide a carrier-grade, hybrid and full-service cloud stack to CSPs with a focus on:

- Deploying and optimizing next-gen networks through a carrier-grade cloud to host CSPs workloads.
- Monetizing the capabilities of 5G and maximizing the value of the edge.
- Remaining a platform business — our focus is on moving workloads to a carrier-grade cloud.
- Working closely with providers of RAN, core, cloud-native functions (CNFs) and OSS or BSS to integrate and innovate.

Microsoft's end-to-end architecture for future telecom (5G) infrastructure is illustrated below (see Figure 6).

Figure 6: Microsoft's 5G Strategy



Microsoft builds a 5G edge strategy to extend its public cloud service to the edge, and its portfolio included:

- **Azure Edge Zones with Carrier** is an extension of Azure that is placed in CSPs' data centers in population centers. Azure Edge Zones with Carrier infrastructure is placed one hop away from the CSPs' 5G network. This placement offers low latency to applications from mobile devices. Azure Edge Zones with Carrier got its start on the AT&T network.

- **Azure Private Edge Zone** is an extension of Azure that is placed on-premises. Azure Private Edge Zone is based on the Azure Stack Edge platform. It enables low-latency access to computing and storage services deployed on-premises. Private Edge Zone also lets you deploy applications from independent software vendors (ISVs) and virtualized network functions (VNFs) as Azure managed applications along with virtual machines and containers on-premises. These VNFs can include 5G core, routers, firewalls and software-defined wide-area network (SD-WAN) appliances.

Microsoft partners with existing CSPs' suppliers, developer and network equipment partners in the areas of RAN, next-generation core, virtualized services, orchestration and OSS/BSS modernization.

How Microsoft Competes

There are two key elements around Microsoft's Azure for Operators strategy. First, it is trying to develop an Azure-based hybrid cloud platform to host mission-critical network operations and functions. And second, Microsoft Azure Edge Zone with operators/Azure Private Edge Zones, which CSPs can integrate with or take to market in various guises.

What really distinguishes Microsoft from its two rivals is its keen interest in network functions, such as offering transport/SDN, network APIs and a series of first-party network capabilities, such as products from Affirmed and metaswitch. CSPs can interact with Microsoft Azure in different ways:

- **Software-enabled service:** Microsoft's focus on Azure Edge Zones with Carrier and as a virtualized packet and voice core provider.
- **Cloud-based functions:** In addition to Azure Edge Zone, Microsoft also works with partners focused on 5G core and other IT stack on the public cloud.
- **Cloud-enabled service**: Microsoft's focus on a hybrid control plan, network slicing and next-generation edge computing.

Microsoft is still crafting its strategy on how to modernize existing telco core infrastructure and a new strategy will be delivered in 3Q21; therefore, we are not able to address the new strategy at this moment.

The capability of offering end-to-end infrastructure and enriched services trigger a lot of concern from CSPs and traditional vendors, who are worried about being disintermediated and commoditized. We didn't foresee that replacing CSPs infrastructure is the intention of Microsoft. But the first-party products will allow Microsoft to build the synergy among its portfolios and gain a competitive advantage, especially in the enterprise private 5G and edge computing market.

Ecosystem of Hyperscalers, CSPs, NEPs and Application Developers

While the telecom industry is on a journey to shift to the cloud, it is clear that the hyperscalers want to be part of this journey. CSPs, vendors and hyperscalers need to take a strategic view and develop a clear strategy on how to utilize these partnership options to establish a stronger proposition in the telecom market and achieve the economics that are favorable to them.

Partnerships between CSPs and hyperscalers are starting to take place and shape the market. The hyperscale-telecom operator partnerships in Table 1 attempts to outline some of the key announced partnerships.

Key findings from the announcement and recent market trends:

- A large section of the CSPs already run some of their customer-facing workloads in the public cloud. They are now looking at migrating their back-office BSS to the public cloud. Despite the data privacy and regulatory concern, these “systems of engagement” workloads are well-suited to the public cloud, making this a compelling move.
- Despite the hype, existing collaborations are simply opportunistic in nature. Most of current partnerships are in a pilot and experimental stage, with very unclear business models and very little revenue. We believe for the next two to three years, leveraging the traditional on-premises private cloud will remain as the mainstream solution for network-related and mission-critical workloads.
- There is more synergy around 5G edge cloud and applications when talking about partnership with hyperscalers, and this trend will continue. 5G mobile edge computing needs to handle a combination of IT and networking technologies in a highly cost-effective and efficient manner. The partnerships between two of the biggest forces in the market will provide the necessary push for the use cases to be developed and enterprise adoption to be accelerated.
- Most CSPs are evaluating all the potential cloud providers, and are likely to adopt a multicloud approach to deploy their applications in order to avoid vendor lock-in, exploit best-of-breed solutions and improve resiliency. However, without the right skills, managing service or application across three separate clouds could also be complex, costly and inefficient.

- Enabling a CSP with DevOps and continuous integration (CI)/continuous delivery (CD)-based transformation and evolution is much more than software on a public cloud. It requires different project management, governance and change management maturity that existing network equipment and solution vendors are yet to acquire adequately. A truly cloud-native architecture should be adopted and used.
- Developing an effective relationship is not all on CSPs. Hyperscalers must recognize that they are working with partners who have invested considerably in network functions virtualization — investments that telcos are unlikely to abandon. Just as CSPs need to adapt to cloud environments, hyperscalers must work closely with CSPs and vendors, and continuously evolve their strategy to create a win-win situation.

Table 1: Details of Some Recent Announcements Between CSP/TSP and Edge Cloud Providers

(Enlarged table in Appendix)

Hyperscaler Name	CSP/Vendor Name	Domain	Nature of Development
AWS	Athonet	5G	Initiative
AWS	KDDI	5G	Initiative
AWS	Telefonica Germany/O2	5G and edge computing	Initiative
AWS	Vodafone	Edge computing	Partnership
AWS	SK Telecom	5G and edge computing	Partnership
AWS	Verizon Communications	5G and edge computing	Initiative
AWS	DISH	5G and edge computing	Strategic collaboration
AWS	Nokia	5G RAN	Strategic collaboration
Google Cloud	Orange	Data, AI and edge computing	Partnership
Google Cloud	Nokia	5G, RAN and edge computing	Partnership
Google Cloud	Verizon Communications	Cloud	Initiative
Google Cloud	Telefonica	5G and edge computing	Partnership
Google Cloud	XL Axiata	Cloud	Partnership
Google Cloud	AT&T	5G and edge computing	Partnership
Google Cloud	T-System	Cloud	Partnership
Google Cloud	Telecom Italia (TIM)	5G and edge computing	Partnership
Microsoft Azure	Deutsche Telekom	Cloud	Partnership
Microsoft Azure	Fujitsu	5G	Partnership
Microsoft Azure	Verizon	5G and edge computing	Partnership
Microsoft Azure	Telstra	Cloud, IoT and digital twin	Partnership
Microsoft Azure	AT&T	Edge computing/IoT	Initiative
Microsoft Azure	Rogers	Edge computing	Partnership
Microsoft Azure	Singtel	Edge	Partnership
Microsoft Azure	Nokia	5G, edge computing and private network	Partnership

Source: Gartner (June 2021)

Recommended by the Authors

Some documents may not be available as part of your current Gartner subscription.

Cloud and Edge Infrastructure Primer for 2021

Differences Between AWS Outposts, Google Anthos, Microsoft Azure Stack and Azure Arc for Hybrid Cloud

Market Trends: How TSPs Are Preparing 5G Solutions With Cloud Edge Providers

Predicts 2021: CSP Technology and Operations Strategy

2021 Priority for Telecom BSS Suppliers: Competitive Ground

Predicts 2021: A Paradigm Shift for Technology Service Providers in the Telecom Industry

Market Guide for 5G Network Ecosystem Platform Providers

Hype Cycle for the Future of CSP Networks Infrastructure, 2020

Tech Providers 2025: Future of Telecommunications Infrastructure Vendors Ecosystem Landscape

---

Table 1: Details of Some Recent Announcements Between CSP/TSP and Edge Cloud Providers

Hyperscaler Name	*CSP/Vendor Name*	*Domain*	*Nature of Development*
AWS	Athonet	5G	Initiative
AWS	KDDI	5G	Initiative
AWS	Telefonica Germany/O2	5G and edge computing	Initiative
AWS	Vodafone	Edge computing	Partnership
AWS	SK Telecom	5G and edge computing	Partnership
AWS	Verizon Communications	5G and edge computing	Initiative
AWS	DISH	5G and edge computing	Strategic collaboration
AWS	Nokia	5G RAN	Strategic collaboration
Google Cloud	Orange	Data, AI and edge computing	Partnership
Google Cloud	Nokia	5G, RAN and edge computing	Partnership
Google Cloud	Verizon Communications	Cloud	Initiative
Google Cloud	Telefonica	5G and edge computing	Partnership
Google Cloud	XL Axiata	Cloud	Partnership
Google Cloud	AT&T	5G and edge computing	Partnership
Google Cloud	T-System	Cloud	Partnership

Hyperscaler Name	*CSP/Vendor Name*	*Domain*	*Nature of Development*
Google Cloud	Telecom Italia (TIM)	5G and edge computing	Partnership
Microsoft Azure	Deutsche Telekom	Cloud	Partnership
Microsoft Azure	Fujitsu	5G	Partnership
Microsoft Azure	Verizon	5G and edge computing	Partnership
Microsoft Azure	Telstra	Cloud, IoT and digital twin	Partnership
Microsoft Azure	AT&T	Edge computing/IoT	Initiative
Microsoft Azure	Rogers	Edge computing	Partnership
Microsoft Azure	Singtel	Edge	Partnership
Microsoft Azure	Nokia	5G, edge computing and private network	Partnership

Source: Gartner (June 2021)