

REPORT REPRINT

# VMworld 2020: Telco cloudification and 5G highlights

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By **Brian Partridge, Raymond Huo**

451 Research recently attended the VMworld 2020 virtual event, where the vendor dedicated more than 30 sessions to its efforts driving telecom industry cloudification, including 5G and edge cloud enablement. At the center of VMware's portfolio targeting global telecom operators is the Telco Cloud portfolio, which includes several products in the infrastructure, automation and operations layers.

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### Introduction

451 Research analysts recently attended the VMworld 2020 virtual event, where it discussed its overall company-wide vision and strategy to connect any device, on any application, on any cloud. The company would argue that this worldview syncs well with the digital transformation efforts under way across the telecom industry. At the center of VMware's portfolio targeting global telecom operators is the Telco Cloud portfolio, which includes several products in the infrastructure, automation and operations layers.

VMware's value proposition in this space is well aligned with the modern telecom executive's agenda, namely de-risking the move toward disaggregated and cloudified networks, managing the orchestration and automation of workloads across a huge swath of new compute 'edge cloud' locations near and far, providing holistic monitoring and performance management across the telco stack and, most importantly, monetization. On the latter point, VMware brings interesting value-adding capabilities and platforms such as SD-WAN (VeloCloud), security services (Carbon Black) and unified endpoint management services, which it can offer as a path to network monetization.

VMware would appear to already be on its way to becoming a/the premier catalyst of telco cloudification and 5G/edge monetization, and a contributor to its telecom clients' operational efficiency along with partners like Ericsson and Dell. VMware, like many other traditional IT suppliers, is taking advantage of the changes afoot in telecom network architecture design to create new revenue pools.

### 451 TAKE

VMware has accelerated its market activities in the telecom segment in conjunction with the transition to 5G and edge computing. This journey started in earnest back in 2015 with the release of its vCloud NFV offering (now rebranded to Telco Cloud Infrastructure), but has really picked up steam in the last two years or so, with deployments in over 100 telecom operators worldwide. The progress at VMware coincided with some operators discovering that their initial NFV forays with OpenStack were producing underwhelming results.

VMware has evolved and executed its way to a leadership role in network cloudification through smart partnering, offering infrastructure SLAs, and taking a more effective approach to meeting telcos 'where they are' relative to their custom cloudification journeys, including supporting both VNFs (supporting OpenStack and VMware's own virtual infrastructure management product called Cloud Director) and CNFs (Kubernetes) from a single platform. Another area where VMware is getting things right is its overt focus on figuring out ways to package VMware applications with partner networks and distributed computing functionality. Monetization is job number one in justifying new 5G and edge computing builds, so operators will readily accept this help. Telecom customer advocates were ubiquitous during the telecom sessions, and included lighthouse customer Vodafone, DT, Rogers, Singtel and cloud-native upstarts like Dish.

### Context

VMware was founded in 1998 and is headquartered in Palo Alto, California. The company offers a broad portfolio of virtualization, networking, storage, cloud and workforce productivity products and services. Although VMware has traded publicly since 2007, Dell Technologies owns the majority stake in the company.

In FY 2020, the company reported revenue of \$10.8bn, up 12.5% YoY. VMware's business segments are split by license, subscription and SaaS, and services, of which services encompasses the largest segment of revenue at \$5.8bn, followed by license (\$3.2bn) and subscription and SaaS (\$1.9bn).

### Strategy

VMware is positioning itself as the premiere partner for telecom operators pursuing network modernization as we enter the 5G era of connectivity. It rightly points out that the architectural shifts pursued by operators in 2020 – including 5G, containerized network functions, multi-cloud and edge deployments, and the gradual move to disaggregated and open multi-vendor systems – opens the door to new network partners with platforms and expertise born in the cloud/virtualized world.

VMware is one of the industry leaders in hybrid IT and virtualization, and it is packaging those platforms, and its know-how and expertise, into products that telcos can use to de-risk the complex transition to operating a more cloud-like platform.

### VMware 5G Telco Cloud Platform

The VMware 5G Telco Cloud Platform counts 182 NFV certifications and 35+ partners through VMware's Ready for Telco Cloud certification program. It was announced in September, and consists of three main layers, described below.

- **VMware Telco Cloud Infrastructure.** This is the infrastructure layer that delivers hardened and optimized platforms to run both virtual network functions (VNFs) and containerized network functions (CNFs) from the core to the distributed edges. VMware offers a consistent horizontal infrastructure offering that aims to deliver consistent operations for both VNFs and CNFs – an important differentiator.
- **VMware Telco Cloud Automation.** This is the orchestration and automation layer, service blueprinting and application lifecycle management across all sites. Telco Cloud Automation is the central automation, orchestration, and management of infrastructure, Kubernetes clusters (containers as a service), network functions, and network services, streamlining workload placement and delivering optimal infrastructure resource allocation. It also significantly simplifies the 5G and telco edge network expansions through zero-touch provisioning whenever capacity is required.
- **VMware Telco Cloud Operations.** This is a multi-protocol FCAP offering real-time assurance for simplified network operations with monitoring and root-cause analysis. It integrates machine-learning-based performance analytics and vivid reporting dashboards for proactive assurance. This layer draws on functionality from VMware Uhana, offering AI-based analytics to support RAN automation.

### Private 5G

The 5G ecosystem largely agrees that private network setups will be important to support telcos in the B2B segment, especially for industrial enterprise locations. VMware's pitch is that the key will be to deploy a consistent infrastructure approach across enterprise and telco edge clouds, and have a modern application platform for a consistent developer experience, with security baked in end-to-end.

VMware's approach in private 5G is to support telco private deployments that would see control plane functions running in nearby telco edge sites, and private deployments that would see control plane functions located directly within an enterprise location. VMware also believes in full virtualization and containerization of the radio access network; in this area, it has been aggressive in building its multivendor ecosystem partners. It is also contributing to organizations like the O-RAN Alliance, as Open RAN takes virtualization to its logical conclusion.

### Customers and partners

In the telecom sector, VMware's customer roster has grown to where it now counts more than 100 telco IaaS, SD-WAN, and NFV/service assurance customers. The company claims to have over three million total VMs deployed in support of its telco client base, supporting over 950 million mobile subscribers. The total number of VNFs certified for use on VMware infrastructure is over 180.

VMware recently collaborated with Vodafone to deploy its NFV infrastructure across more than 80 of Vodafone's sites in Europe, Africa, Asia and Oceania. The partnership is credited with reducing Vodafone's operational costs by 50%, while making deployment times 40% faster. VMware and Vodafone have been strategic partners since 2017, and almost 50% of Vodafone's voice and data services currently run on VMware's NFV architecture.

In addition, VMware partnered with Intel to help Deutsche Telekom demo a virtual radio access network (vRAN) platform at its headquarters in Bonn, Germany. vRAN breaks the tight integration of hardware and software in the RAN, which cuts costs and offers added flexibility needed to handle the massive data requirements of 5G. The vRAN platform leverages Intel compute and its FlexRAN software while running on top of VMware's Telco Cloud Platform.

Finally, VMware was recently selected to help Dish Network build out its greenfield 5G SA network. More specifically, VMware will supply its Telco Cloud Platform to help Dish scale cloud-native workloads with multilayer automation powered by VMware's Telco Cloud Automation, to rapidly deliver edge computing capabilities for its network. VMware joins Altiostar, Fujitsu and Mavenir as notable partners working on the project.

### Competition

In the telco cloud platform segment, VMware will most directly compete with Red Hat/IBM. Red Hat jumped to an early lead in telco NFV based on the popularity of OpenStack for private clouds built by telecom operators. But some of those projects failed to meet expectations, which created a window of opportunity for alternatives. Cisco also competes for business in telco cloud infrastructure and edge orchestration, while Hewlett Packard Enterprise is targeting the 5G transition for telco cloud transformation and its own cloud-native core apps.

On the telecom equipment manufacturer (TEM) side, VMware competes in some areas, but is also working closely or alongside TEM leaders Ericsson, Huawei and Nokia. A common setup is TEM virtual network functions certified for running on the VMware Telco Cloud Platform through its Ready for Telco Cloud certification program. Taking virtualization out of the equation, Ericsson has also developed its own CNCF-certified CaaS Cloud Container Distribution to help manage containerized applications on bare metal.

Hyperscale cloud providers create another front of competition. AWS, Google Cloud Platform and Microsoft Azure are lining up to assist with telecom cloud transformation through new software and infrastructure services, and, like VMware, hold out tantalizing carrots around joint offerings and revenue sharing, based on their developer and IT incumbency. Upstarts like Robin.io compete in the container orchestration and automation market, and it surprised many by winning business at Rakuten Mobile.

### SWOT Analysis

#### STRENGTHS

VMware's core cloudification and go-to-market assets line up well with the complex market forces facing telecom operators as they move to disaggregated networks, edge computing and 5G. The company has parlayed incumbency in IT to penetrate core networks in many accounts.

#### WEAKNESSES

VMware still has work to do building mindshare among network planning and engineering stakeholders in telcos that are conservative and must address skills gaps, cultural inertia and changing business dynamics. A dedicated army of SI partners with telecom sector incumbency should remain a core focus.

#### OPPORTUNITIES

VMware is smart to introduce the idea of packaging its core SD-WAN and security assets into its telco cloud proposition. Monetization is perhaps the most important challenge that must be overcome for ROI of 5G/edge platforms in B2B.

#### THREATS

VMware is clearly not alone in targeting a prime role in telecom network cloudification. It faces a combination of frenemies including hyperscalers, TEMs, hybrid IT giants, and specialists that are well-resourced and bring compelling monetization assets to the table.