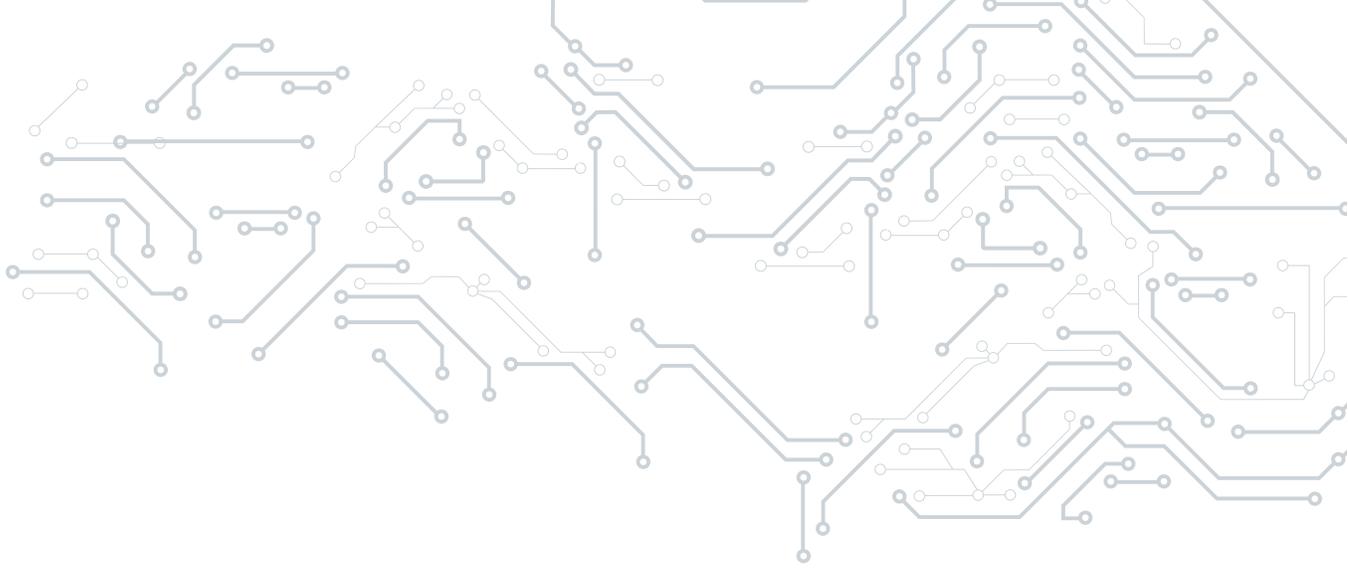**451** Research® | Advisory

Service Providers Embracing OpenStack NFV

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PREPARED FOR

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About 451 Research

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The rapid rise in interest and deployment of OpenStack solutions is a vivid testimonial to the mounting support for this cloud platform. Data from our studies at 451 Research show the OpenStack market growing at a compound annual growth rate of 35% through 2020. Meanwhile, the OpenStack community has doubled in the past year to more than 60,000 members, including as founding members nearly every major IT vendor in the world.

Paralleling this growth has been the increase of prominent OpenStack use cases. These include improving DevOps functions, building more efficient on-premises private clouds and running business-critical applications in private IaaS environments. However, it might be that the emerging 'killer app' for OpenStack is the network function virtualization (NFV) use case. Our research with global tier one operators shows that OpenStack NFV is on the planning agendas of virtually every communications services provider (CSP).

It is understandable that CSPs in general would be interested in NFV because the CSP community created NFV a few years ago. Their aim in doing so was to fill a pressing need for a more flexible communications services infrastructure, one that would allow CSPs to spin up customer applications and services more quickly. Also, these carriers ranked among the biggest spenders on specialized network hardware, including firewalls, load balancers, application controllers and DNS servers.

The NFV value proposition

The NFV initiative sought to virtualize the network services carried out by these specialized hardware devices, which are often proprietary. One goal was to reduce the volume of hardware needed to deploy and operate various network services. NFV does this by decoupling the network functions from the specialized devices, hosting these services on virtual machines instead of on routers, load balancers and other hardware.

For CSPs, these virtualization capabilities obviate the need to buy as much dedicated hardware when deploying new services. Not only that, network managers at CSPs can avoid over-provisioning datacenters because they can scale up with additional server capacity through software. So, for example, if an application prone to usage spikes and running on a virtual machine needs more bandwidth capacity, the virtual machine can be moved to another server with excess capacity. The result for the CSP is a far more agile response to shifting business requirements and application demands for different network services.

OpenStack NFV

OpenStack adds yet another dimension to the appeal of NFV for communications providers. Our discussions with communications providers revealed that lower cost is one major attraction of OpenStack NFV, compared with a VMware offering. Further, most carriers have told us that they are getting their OpenStack implementations from a third-party distributor, eschewing a do-it-yourself implementation. Even then, they said they save one-half to one-third of what they would spend on a VMware offering. Nevertheless, most providers, at least for now, are eyeing a dual VMware-OpenStack NFV strategy as they await OpenStack NFV developments to address questions regarding resiliency and recoverability, and the ability to undertake tasks such as updating software in 'hot' mode.

Also, we believe most providers are accustomed to and would prefer that a major new release of a cloud platform happen no more often than once every two years. Carriers also want assurances that the OpenStack NFV implementation they choose is not only scalable but also 'hardened' to make upgrades relatively seamless.

Case study: CSP looks to OpenStack NFV for agility

Like its competitors in the hotly contested telecommunications services market, this major US-based provider sought to speed up service delivery, enable greater self-service and scale more effortlessly to meet ever-shifting business requirements. It was also mindful of cost pressures in this highly competitive field.

Thus, in 2016, the company deployed the first elements of its OpenStack NFV initiative. It said the move was driven by the search for 'speed, agility and best-of-breed technology.' The primary mandate for OpenStack came from the upper echelons of the company, which had earlier adopted a cloud-first strategy for new technology rollouts.

Another motivator for the OpenStack piece of the initiative was to avoid vendor lock-in, which is often associated with non-open-source platforms. The provider said it considered several important factors in selecting its Open-Stack platform. These included an existing relationship with the vendor providing the OpenStack implementation, vendor brand preference and the vendor's reputation in the OpenStack community.

The provider has already deployed some key use cases and workloads such as network functions deployed directly on hardware, and network functions virtualized and deployed on OpenStack. As with any new technology deployment, the company faced some common challenges with its OpenStack NFV initiative, such as the general dearth of people with OpenStack skillsets, as well as initial concerns about the value perception and return on investment. However, after just six months, the provider had deployed 50 OpenStack virtual CPUs or cores at its two datacenters with just four dedicated employees handling this new workload.

The company is also using additional platforms and tools in conjunction with the OpenStack services. These include management and operations tools, the Linux platform and a software-defined storage platform. It has both unified and file storage in place.

Some challenges ahead

The great value proposition of NFV (and OpenStack NFV) notwithstanding, there are challenges with this nascent technology that can slow implementations to some degree. In our primary research conducted in 2016, we found that CSPs foresee the following three main challenges:

- Overcoming resistance, conflict, fear and confusion within the networking and IT organizations with respect to leading-edge initiatives, such as OpenStack NFV.
- Integrating multiple virtual network functions in an OpenStack or proprietary environment with high performance and interoperability.
- Concerns about orchestration and management, including the ability to manage across virtual and physical environments and integrating with existing operational support systems for optimal virtual environment performance.

Despite these challenges, we believe the momentum behind OpenStack initiatives is strong, as evidenced by its use in existing NFV production implementations among the operators and its presence in the plans and RFPs of NFV implementations still under development – nearly all CSPs have said they intend to implement OpenStack as part of their NFV architecture. Providers should continue to demand virtualized network functions that smoothly interoperate with the underlying infrastructure, thereby creating a solid foundation for application and service deployments.