The Current State of NFV Deployment and How It's Predicted to Change

Where does NFV
deployment stand
today?

In this E-Guide:

Network functions virtualization (NFV) deployments are often complex and time-consuming, but they're expected to accelerate as more organizations implement IoT and wireless 5G. Read this expert guide to learn about the current status of NFV deployments, and hear from network expert Lee Doyle about how open source, 5G and IoT can drive future changes.

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Where does NFV deployment stand today?

Lee Doyle, Principal Analyst

Network functions virtualization continues to mature among service providers, with many examples of successful NFV deployments in 2017. Service providers will continue to invest in NFV in 2018 by extending deployments to new applications and parts of the network, scaling existing systems and implementing more complex, multivendor virtual network functions, or VNFs.

Service providers have deployed NFV technologies for a range of applications, including virtual customer premises equipment (vCPE), IP Multimedia System (IMS), Evolved Packet Core (EPC), security, video and management. And NFV deployment is proving to be reliable, offers high performance and has the ability to operate at scale, according to service providers.

Despite the many benefits of NFV in terms of scalability, flexibility and cost, most service providers indicated that NFV remains challenging to deploy widely in their networks. NFV deployments are complex and time-consuming, and significant management and orchestration (MANO) challenges remain. Buyers are unsure of their long-term NFV architecture due to the wealth of incompatible standards and vendor-specific options.

Available NFV platforms

Where does NFV deployment stand today?

Hardware, such as server platforms, and related infrastructure software are critical components of a successful NFV deployment. Intel-based servers from Hewlett Packard Enterprise (HPE) and Dell currently lead as NFV platform options, but expect ARM suppliers to increase their platform options in 2018.

Picking the right NFV infrastructure software is critical to long-term NFV success. For platform software, OpenStack and VMware continue to battle for position as the top NFV infrastructure choice.

Hypervisors remain popular NFV platform options. Containers running NFV also offer significant performance benefits for NFV applications compared to hypervisors, although they are only just starting to move out of labs for early proof-of-concept trials. Containers will see increased popularity over time -- think 2019 to 2021 -- and more support from VNF suppliers in 2018.

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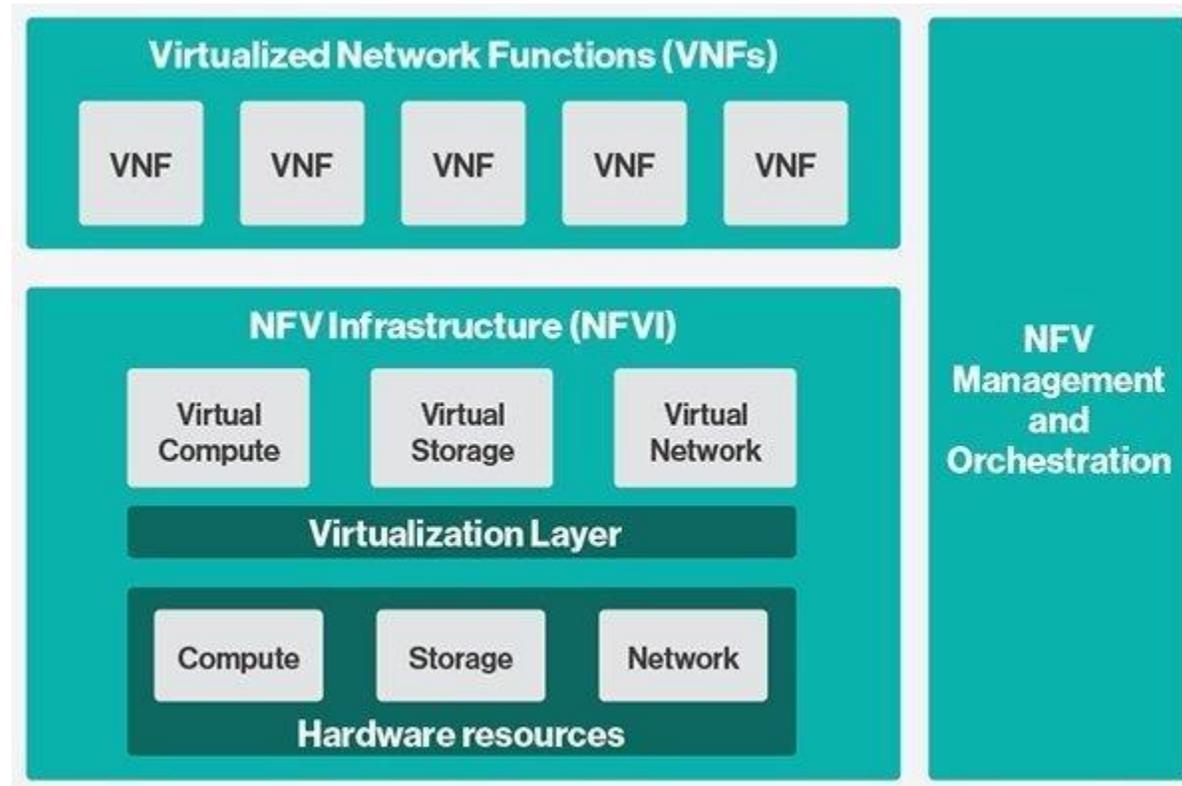
NFV management and orchestration challenges

The immaturity of MANO standards continues to hinder wide-scale NFV implementation, and the complexity of integrating NFV components and effectively deploying MANO will continue to challenge most service providers.

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The MANO standards community made significant developments in 2017, however. ONAP gained momentum following AT&T's contribution of its Enhanced Control, Orchestration, Management and Policy code. AT&T, Orange, China Mobile, Bell Canada and many other service providers support ONAP.

Like other standards-based MANO options, ONAP is a broad platform with many options. It can be combined with OpenDaylight, OpenStack and Open Platform for NFV to implement open source NFV.

IoT and 5G could help drive NFV deployment

NFV deployments are expected to accelerate with the advent of wireless 5G and the internet of things, as 5G deployments grow and IoT devices increasingly connect to the wireless network. New 5G network deployments will require a radically different network architecture, which will benefit from NFV and container technologies. For example, 5G relies on NFV to provide intelligence at the wireless edge to handle network slicing, traffic handling and routing.

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Connecting millions of IoT devices requires service providers to adapt their core and edge networks. NFV enables this adaptation by

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facilitating the required improvements for mobile edge computing, analytics and performance monitoring.

Rise of open source NFV

Service providers are promoting the use of open source software for NFV deployments. Open source software is available for NFV infrastructure, MANO and for select applications as open source VNFs.

The goals of open source NFV are to accelerate NFV innovation and to pursue cost reductions by running low-cost software on commodity hardware. Open source NFV implementation in production networks will require significant resources, however. The use of open source for NFV will increase during 2018, but it will still be a minority of overall deployments.

NFV strategy recommendations for service providers

NFV is delivering proven benefits, like lower costs, increased agility and platform independence. In 2018, service providers will continue to deploy NFV across a variety of applications, focusing on vCPE, the mobile core, video, security and management.

Supplier selection remains critical for NFV deployment due to overall complexity, integration requirements and support for a long-term architecture. So, service providers should carefully select suppliers to implement NFV across platforms, applications and MANO.

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Below are some examples of vendors that service providers can choose from when deploying NFV:

- Large network equipment providers, like Ericsson, Huawei, Cisco and Nokia;
- IT suppliers, like Intel, HPE, Red Hat, Dell EMC and VMware;
- VNF suppliers with products in specific areas, like software-defined WAN, vCPE, IMS, security and EPC.

How NFV deployments have changed

The NFV initiative has largely been driven by service providers to increase the use of virtualization and commercial servers. NFV combines these technologies, along with open software, to fundamentally change the construction and operation of networks.

Originally, service providers deployed NFV for discrete point applications in their networks. Because service providers have large operational networks driving millions in monthly revenue, an initial NFV deployment generally focused on greenfield applications, for new services, or applications that aren't directly involved in transmitting live data, like voice and video.

To ease migration challenges and maintain service reliability, most service providers started implementing NFV in a phased approach. While NFV deployments continue to be challenging and complex, service providers are now looking to incorporate more multivendor VNFs and to extend NFV to new applications.

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