

The Rise of Network Functions Virtualization:

A STRATEGIC APPROACH TO LONG-TERM NETWORKING GOALS

As the ability to adapt quickly to constantly changing market conditions becomes central to establishing and maintaining a business advantage, organizations are exploring innovative ways to improve networking agility and usage of services delivered from the cloud. A recent survey conducted by IDG Research shows that one increasingly popular approach is Network Functions Virtualization (NFV), which improves flexibility and speeds provisioning by shifting legacy network functions from hardware appliances to software. This white paper explores what NFV is and is not, its potential benefits, whether current enterprise infrastructures are ready to capitalize on it, and what challenges organizations must overcome to implement it.

The What and Why of NFV

NFV decouples legacy network functions such as routing, load balancing, and firewall security from the hardware on which they traditionally run, virtualizing them so they can run on any server, scale dynamically and provide consistent delivery to all locations. NFV is related to, but distinct from, software-defined networking (SDN).

“SDN is a highly scalable and flexible solution that automates resource provisioning, configuration, service chaining, and operation of compute, storage, and network services by taking advantage of centralized software controllers,” explains Boladji Agueh, Director at Copper River IT. “NFV, on the other hand, enables the discrete virtualization of network services that were, until now, appliance-based. The combination of NFV and SDN allows service providers and enterprises to build highly automated and scalable solutions at a lower cost while increasing the flexibility and elasticity of their service offerings.”

While the benefits of NFV include cost savings, its true power is in the flexibility it brings to network functions, giving both users and networking providers greater power to scale and integrate them. NFV makes it easy to add, remove, or scale services dynamically

while bringing up new sites, adding a new firewall or router, or onboarding a new customer, all without purchasing and installing any physical appliances. Services that are virtualized are customizable and can be delivered repeatably to all customers. Providers can even tie NFV into their billing services and give customers the ability to scale themselves.

Respondents to the IDG survey cite this flexibility as by far the most important benefit of NFV and the one most likely to drive aggressive adoption. The ability to provide tailored services and connectivity for multiple applications on the same hardware, a benefit that combines agility and cost savings, is a distant second.

Given these benefits, it's no surprise that two-thirds of survey respondents plan to implement NFV or have already done so for at least one network function. In fact, even more respondents — three out of four — plan to expand their use of NFV in the next year to increase their leverage over networking vendors and technologies by commoditizing as much of the network as they can. Clearly, these users see NFV not as a short-term fix for immediate, individual problems, but as an integral part of a larger long-term networking strategy.

Barriers to NFV Adoption

Although NFV promises increased network agility, organizations worry about the challenges of achieving it. Nearly two-thirds of the IDG survey respondents say their top barrier to adoption is the perception that integrating NFV with other services will be difficult.

This is an understandable concern, as not all NFV vendor solutions are mature and comfortable considering network functions as software rather than hardware, says Gary Hauser, Chief Architect for sales at Copper River IT. “A knowledgeable consultant will help them avoid mistakes, though,” he says. “And once NFV is working, maintaining it is easy.”

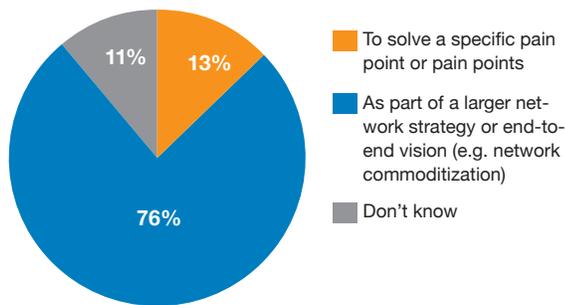
Budget is the second most-cited perceived barrier



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Planned Use of NFV over the next 12 months



SOURCE: IDG Research Services, June 2015

to adoption, but it's a much greater concern for those survey respondents currently in the investigation and planning stage than those who have already implemented NFV. This suggests that implementation costs may be lower than anticipated, and/or that ROI for NFV is higher than expected.

Are Organizations Ready for NFV?

Beyond the perceived challenges of integration and expense, many survey respondents simply aren't sure their infrastructure and/or network vendors are ready to support NFV and help them reap its benefits. Only about one in three describe themselves as "highly confident," while one in four call themselves "somewhat confident." This may be why one in three survey respondents is not currently considering implementing NFV. However, these low confidence levels are not necessarily justified.

It's true that startups and smaller vendors trying to expand into the NFV space may make the path to NFV seem complex and incomplete. IT teams are also so busy that they may prefer not to take on yet another project, even one that will eventually free up time for strategic planning. However, not every function needs to be virtualized. Nor should x86 compute platforms replace all hardware in the network, even though placing virtual machines on readily available x86 servers is not particularly difficult. An experienced IT advisor can help companies understand how best to combine NFV with existing purpose-built hardware for the optimal balance of performance and cost-effectiveness.

Survey respondents say the top three network services they expect to support with NFV in the next 12

months are load balancing, firewalling, and intrusion detection. These are ideal functions to virtualize, as current appliances are already based on server CPUs and x86 architecture. Indeed, a significant number of vendors already offer fully virtualized solutions for VMWare or KVM environments. Since NFV requires networking skills in areas traditionally handled by a server team, the true challenge may simply be to break down the decade-old distinction between network engineers and server engineers in favor of reviving the concept of the systems engineer who handles it all.

Conclusion

NFV is an innovative but still accessible and affordable solution for organizations seeking to increase networking agility while decreasing network costs. The following tips will help your organization take advantage of the trend:

First and most importantly, work with an experienced SDN/NFV solutions provider to assess your needs and design a workable strategy. The right provider will help you develop a multi-stage implementation plan that leverages best practices, technical know-how, and current best-of-breed technologies from a wide range of vendors.

Next, start your implementation plan by contacting appliance vendors to ask if they support virtualized versions of the offerings you currently use. Identify a platform for managing and orchestrating these virtualized network functions. Finally, launch a pilot to redirect non-critical traffic through those NFV applications to create performance baselines. Avoid mixing different NFV applications on the same compute platform to protect against intrusion. Virtualize other network functions only when your results are satisfactory. ■

Juniper Networks and Copper River IT understand the need to create scalable, reliable and automated network infrastructures that enable innovative solutions such as NFV. That is why we have joined forces to provide best-in-class network virtualization products with highly certified solution architects that design, build, and implement customized virtual environments. To learn more about how Juniper Networks and Copper River IT can help your organization implement the right NFV solution for you, visit us at www.copperriverit.com/home/partners/juniper/