What is NFV?

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Overview

Network functions virtualization (NFV) is a way to virtualize network services, such as routers, firewalls, and load balancers, that have traditionally been run on proprietary hardware. These services are packaged as virtual machines (VMs) on commodity hardware, which allows service providers to run their network on standard servers instead of proprietary ones. It is one of the primary components of a telco cloud, which is reshaping the telecommunications industry.

With NFV, you don't need to have dedicated hardware for each network function. NFV improves scalability and agility by allowing service providers to deliver new network services and applications on demand, without requiring additional hardware resources.

Get ready to virtualize your network

Software-defined networking (SDN) and NFV

NFV and SDN are not dependent on each other, but they do have similarities. Both rely on virtualization and use network abstraction, but how they separate functions and abstract resources is different.

SDN separates network forwarding functions from network control functions with the goal of creating a network that is centrally manageable and programmable. NFV abstracts network functions from hardware. NFV supports SDN by providing the infrastructure on which SDN software can run.

NFV and SDN can be used together, depending on what you want to accomplish, and both use commodity hardware. With NFV and SDN, you can create a network architecture that is more flexible, programmable, and uses resources efficiently.

The benefits of using NFV

With NFV, service providers can run network functions on standard hardware instead of dedicated hardware. Also, because network functions are virtualized, multiple functions can be run on a single server. This means that less physical hardware is needed, which allows for resource consolidation that results in physical space, power, and overall cost reductions.

NFV gives providers the flexibility to run VNFs across different servers or move them around as needed when demand changes. This flexibility lets service providers deliver services and apps faster.

For example, if a customer requests a new network function, they can spin up a new VM to handle that request. If the function is no longer needed, the VM can be decommissioned. This can also be a low-risk way to test the value of a potential new service.

See how NFV is helping telcos adapt to edge computing →

Why Red Hat for NFV?

As service providers modernize their networks, they are moving workloads and services out of the core network (in data centers) towards the network's edge: around points of presence and central offices. From here, services can be delivered to subscribers more efficiently with lower latency and higher bandwidth.

Red Hat's NFV solution is the result of our leading contributions to the OpenStack, KVM, and DPDK projects. And it's further strengthened by our vast ecosystem of certified partners.

Our NFV solution is open source and standards-based, giving you a stable, interoperable foundation to build on.

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