

The Next Frontier: Network Virtualization - IO



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It looms as the data center's next great frontier, yet network virtualization is still sometimes confused with cloud computing and several other leading edge technologies. That's unfortunate, because network virtualization, when understood and recognized for its unique benefits, can help almost any **data center** reach new levels of efficiency and cost savings.

What is network virtualization? Network virtualization offers a powerful way of having multiple networks, each customized to a specific purpose, running simultaneously over a single entity. Cisco describes network virtualization as "the efficient utilization of network resources through logical segmentation of a single physical network." An example of multiple logical networks over a common infrastructure could be different organizational units or departments on a single enterprise-wide network. "Alternatively," notes Cisco, "it could be an enterprise customer wanting to differentiate between an employee and vendor and to which resources each has access in the network."

Yet another way of approaching network virtualization is by viewing it as a way of combining available network resources by dividing available bandwidth into independent channels, each of which can be assigned at will to a particular server or device in real time. Each channel is also independently secured.

How can network virtualization be used? Businesses may decide to use network virtualization for a variety of reasons, but the approach's major draws are its ease of use and the fact that it allows for full network customization as well as streamlined, simplified network management. Virtualization enables administrators, for example, to almost effortlessly allocate critical network services, such as quality of service (QoS) and specific bandwidth settings. Not surprisingly, virtualization also makes network automation a simpler and more practical proposition.

What does network virtualization mean for desktop management? Network

virtualization unleashes operating systems and applications from the physical layer, allowing operating systems to run on a single server and for desktops to run as virtual machines within secure data centers.

What are the benefits for data centers supplying multiple network services? Prior to network virtualization, data centers feeding multiple network services were generally forced to deploy a set of switches, servers, storage systems and other types of network equipment for telephony offerings, another set for on-demand video, another for IPTV services and so on. This capsulized approach required data centers to use and maintain a great deal redundant hardware, which drove up costs and put a tight lid on network services flexibility and innovation. With virtualization, instead of installing all new network components a business could just create virtual ones without having to invest time and money in new equipment and installation.

What are the adoption barriers? As with any new technology, network virtualization presents several challenges that new adopters must overcome before they can begin reaping any potential benefits. With network virtualization, one of the big barriers is acquiring the knowledge necessary to create and use the technology. One way of acquiring this knowledge is by partnering with a network services provider that already knows how, when and where to deploy virtualized networks and resources.

What's the next step? Successful network virtualization requires careful and insightful planning. This work can be more difficult and complex than developing a virtualized server strategy, mostly because network virtualization a much newer technology with fewer models and benchmarks for prospective adopters to follow. To cut unnecessary stress and risk, many business opt to plan and implement the technology in phases, often deciding to begin with the non-essential projects. Such a strategy also helps minimize disruptions and enables you to determine virtualization's before deploying it across the entire network.

Final point: Virtualization has already brought an amazing number of efficiencies to data centers of all types and sizes. Network virtualization now promises to extend these benefits to data transport, opening the door to yet additional efficiencies as well as to a world of new and innovative data services.

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