

[Home](#) [Virtualization](#) [CTR Exclusives](#)

The Five Tenets of Network Virtualization

THURSDAY, 13 SEPTEMBER 2012 14:09

[SHARE](#) [f](#) [t](#) [in](#) [...](#)



by Eric Johnson

Network virtualization is more than just a technology – it's becoming essential for anyone that manages large servers or data centers. Virtualization technologies have been around for quite some time, traditionally providing faster and more efficient processes for storage, servers and the desktop. However when it comes to complete network virtualization, the process and technology is a bit more complex. In fact, elements of the public sector have actually led innovative thinking around network virtualization for several years. It is only now that the private and commercial markets are starting to also show strategic interest and invest in the technologies.

During this adoption cycle, it is important to focus on providing guidance to those most impacted by these developments in networking technology – the IT department. Network virtualization along with methods such as software-defined networking (SDN) and protocols like OpenFlow are still misunderstood by most. By considering the basic tenets of network virtualization, it can be easy to sort out the realities of the technology versus the hype.

Tenet 1 – What is Software-Defined Networking, Really?

Software-defined networking (SDN) is a method of controlling and managing a network through software on a control plane remote to the data plane, enabling any policies or logic to penetrate various levels of the network. SDN can provide any capability desired; a deeper look and understanding into the inter-workings of a network, more granular flexible management of networks, real-time visibility into traffic flows, these are just some examples. From a technical standpoint, SDN provides for the re-location of control plane logic implemented on a switch, to a control plane managed remotely, using a customer's implementation of control plane logic. When vendors open their platforms, they enable vendors and end-users to work together to set the appropriate controls, which can be modified for the network's need.

Having software that provides network transparency and can pool several resources into a single view is very valuable. However, it's equally important to virtualize switches and routers, so that unused network resources into which SDN provides insight, can be more appropriately controlled and leveraged across all seven layers of the OSI Standards Model.

Tenet 2 – Utilizing OpenFlow

Conventional software-defined networking utilizes APIs, and one of the most discussed examples is OpenFlow; an open source standard that enables switches, routers and wireless access points to be managed through customer implemented logic and policies through the OpenFlow API on OpenFlow capable network platforms and hardware. The standard is a commonly utilized element within SDN but it is not synonymous with SDN. When it comes to OpenFlow, the existence of the standard illustrates the defined goal of SDN; programmability of the network. Networking can be enhanced to intelligently manage the increasing volume of traffic, which the use of OpenFlow predicts.

It's important to understand that OpenFlow provides a tool when implementing network virtualization technologies. In fact, it's a cornerstone among many innovations that make the technology a reality. It is not, however, the entire make-up of software-defined networking.

Tenet 3 – Open Source

As with the OpenFlow standard mentioned above, additional open source and open standards advances are key components to full network virtualization. The ability to adjust or potentially eliminate protocols and configurations set for various networks and loads is incredibly important to the advancement of network virtualization technology across silos. It is also essential that when organizations adjust configurations utilized to handle various kinds of traffic across the network, such re-configurations be implemented dynamically to optimally and seamlessly control unused resources while assuring that service is guaranteed.

Tenet 4 – It's Not Just About Switches

A significant part of network virtualization relates back to the virtualization of network switches and routers. It's

Make the most of your IT space!

Download our Top 3 solution design guides today and enter to win an iPad® 2!



Enter now!

APC
by Schneider Electric

Your Business. Connected. Protected.



Enterprise - Class
Networked Storage Server

Find out more
Call 818-993-4801

JMR

Sign Up for Breaking News and Top Stories in the CTR+ Newsletter

Sign up →

CTR Job Board

Job Search

Sr. Data Storage and Recovery Administrator
NAVAIR

Patuxent River, MD - Northrop Grumman

Data Storage and Recovery Administrator 3 NAVAIR

Patuxent River, MD - Northrop Grumman

[See All Jobs](#)

[Post a job for \\$10](#)

Jobs by [SimplyHired](#)

[+ Get Widget](#)

similar to the ability to virtualize an entire network – creating multiple network resources into a single controllable resource is incredibly useful. When only the switches and routers are virtualized, the network will still face fundamental problems and challenges. Additionally, virtualization of the switches and routers can leave an organization dependent upon a single hardware vendor. One of the benefits to SDN is that it should allow an organization to optimize any current hardware, and be vendor agnostic, so IT doesn't need to rip and replace existing equipment.

Tenet 5 – Breaking Out of the Silo

Network virtualization, among the many other tenets discussed above, should provide a way for the traditional IT or network silos to be broken down. In addition, interoperability should be a vital part of any software-defined networking implementation. What use is virtualizing the network and dynamically controlling it, if there are elements that cannot be accessed or legacy equipment is not connected? IT technology silos underscore a major issue within networking in its current form. When silos are broken down, the network becomes interconnected and is able to scale up or down to the needs of an organization.

Ultimately, what's important to remember is that network virtualization is only going to become a more essential technology within the data center and overall network. It's incredibly important that IT managers and employees understand what makes up network virtualization, and the benefits or challenges it provides for each organization. The network is undergoing a transformation, and the innovation will only continue to provide tools to empower IT. Total network virtualization is one element of a larger world of innovations still yet to come.

Eric Johnson is the Chairman and CEO of [ADARA Networks](#) (San Jose, CA).

TRIPP-LITE
DATA CENTER SOLUTIONS

**NOBODY
MAKES
BETTER
DATA
CENTER
EQUIPMENT.
THEY JUST
MAKE IT MORE
EXPENSIVE.**

CLICK HERE FOR
FREE POWER AUDIT >>

theexecevent.com

01011010001
10010101010
110001

ExecEvent

**Networking
Events for
Tech Execs**

We bring together
data storage executives
from across multiple
disciplines to learn,
network, create long-lasting
relationships and most of
all, to conduct business.

If you are a senior executive in
data storage, virtualization,
cloud, security, video or data
center management, then this
event is for you.

Linking Peers, Partners,
and Profits.