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## Real-world applications for a VMware NSX SDN platform

By Paul Korzeniowski

There's a question that typically arises among tech professionals whenever a new technology, such as software-defined networks, starts to take shape.

Is it all hype or will it actually be a hit?

Early reviews from organizations using VMware's NSX SDN indicate that the [new networking approach](#) delivers on many of its promises and, as a result, will likely play at least a minor role -- and, in many cases, a major one -- in future enterprise data centers.

Server virtualization became popular because it automates manual processes, which reduces IT administration costs and speeds up new service deployment. That approach has been making its way into other market segments, with network virtualization moving from the development lab into customer data centers during the past few years.

### A founding father of SDN

Université Laval in Quebec City is one of the early users of VMware NSX SDN. Guillaume Moutier, the director of IT architecture office at the school, has been on the ground floor of NSX development. The university network supports 40,000 connections, 1,000 switches and routers and 2,000 Wi-Fi access points. There are 1 Gbps connections to the end points and a mix of 10 Gbps and 40 Gbps in the core. Roughly 20,000 individuals use the network daily.

"The product did not even have a stockkeeping unit when we began working with it a few years ago," he said.

Université Laval has been a networking leader and its [software-defined network \(SDN\)](#) deployment piggybacks on a few previous initiatives. At the turn of the millennium, as they deployed network connections for their hospital, the academic institution installed dark fiber among its sites. In 2011, the university revamped its computer infrastructure, building two new large centers.

Moving to an SDN was the best option for these plans because the university wanted to flatten out its network topology and automate mundane configuration and maintenance tasks. In 2014, the school [looked at a few potential SDN vendors](#), including Cisco, Juniper Networks and VMware. The school predominantly uses VMware, so NSX made for a good fit.

The move to SDN reduced maintenance and also supported a new push into the infrastructure as a service market. Université Laval developed municipal cloud services and has been marketing them to local municipalities, public sector entities, school boards and government agencies; Quebec City and the Ministry of Tourism are two customers.

### Monitoring your network health

Healthcare organizations are under pressure to lower costs as they expand their services. Michael Feld, interim CTO at Baystate Health, is a big believer in virtualization and software-defined data centers.

"Virtualization is key as organizations move from traditional, siloed system to modern integrated solutions," Feld said.

Founded in 1873 and based in Springfield, Massachusetts, Baystate Health employs 12,000 people and operates an academic medical center, four community hospitals, a children's hospital, numerous outpatient and primary care facilities, a hospice, a health insurance company and a level-one trauma center.

In 2014, the healthcare provider began looking to merge three physical data centers into one single, three-site data center. To make the change, they needed an SDN. The healthcare provider relies heavily on VMware and opted for NSX SDN, which [fit snugly with Baystate's VMware cloud stack](#).

Improved security -- always an important consideration due to the Health Information Portability and Accountability Act requirements -- was one benefit of the move. The network virtualization platform now sits between applications and the infrastructure layers. Rather than a network digital perimeter, security controls are built into the data center fabric.

## Security drives SDN adoption

Serving a city with a population of about 120,000, the Vallejo Sanitation & Flood Control District was created by the state of California in 1952 to collect and treat wastewater and protect the community from flooding. The agency has more 80 employees, including a two-person IT staff.

In 2013, the agency began to search for an SDN offering with [security being a key consideration](#). To adhere to the Department of Homeland Security guidelines, the agency needed to ensure that its assets were protected, but safeguarding information was tedious and manually intensive.

"We wanted to lower the amount of manual work needed when setting up items, like VLANs," explained Jason Kaduk, information systems specialist, Vallejo Sanitation & Flood Control District. In addition, the agency wanted to gain packet-level insights into its transmissions.

The organization had Cisco network equipment and considered a few SDN offerings before ultimately choosing NSX SDN because of [its fit with the VMware server virtualization](#) offering that the agency has used since 2009. In addition to reducing the network administration workload, the change improved Vallejo Sanitation & Flood Control District's network redundancy.

## Clearing new operational hurdles

While SDNs deliver benefits, [they also pose challenges](#), some technical and others managerial. Many businesses rely on their directory services to act as traffic cops, authorizing and protecting connections. Integrating an SDN with directory services is difficult because the task involves working with low level APIs, which are difficult to program, Moutier said.

The dynamic nature of SDNs creates visibility and management problems. With virtualized systems, workloads move dynamically from device to device. The ever-changing nature of the connections makes tracking usage and pinpointing bottlenecks challenging.

Traditionally, companies had autonomous server, storage and network groups. With SDNs, IT staffs need to look at these items more cohesively and less individually, so a change in mindset and development of new skills are needed, Feld said.

Recently, SDNs have been gaining a lot of attention because vendors promised that their products would [lower costs and simplify operations](#). Early use customers report that the promises have largely been met, so dramatic growth appears to be in the future for the new networking approach.

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