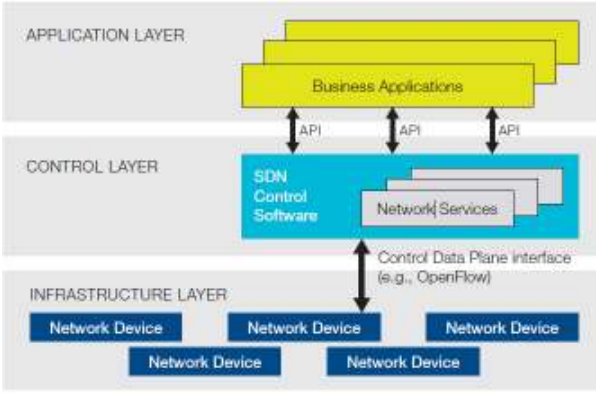
Datavision Consulting Services:
Software Defined Data Center

Datavision's approach to the SDN-centric data center takes into account the issues associated with increased scalability, functionality, ease of provisioning, with lowered CapEx and OpEx, providing a standards-based network-as-a-service where:

- Each element has same configuration, management and control interface
- Automated configuration, management and control of the network
- One touch point (SDN Controller) versus thousands of touch points (Network Elements)
- Easier to scale and manage
- The network and computing infrastructure is programmable to meet application needs in real time
- There are open standards based programmable network elements

Background

Networks contain an increasing variety of proprietary hardware appliances. Launching a new network service often requires yet another appliance. Finding the space and power to accommodate these boxes is becoming increasingly expensive, in addition to the complexity of integrating and deploying these appliances in a network. Further, hardware-based appliances rapidly reach end of life with lifecycles decreasing as innovation accelerates, reducing the return on investment of deploying new services.



Network Functions Virtualization (NFV) aims to address these problems by evolving standard IT virtualization technology onto industry standard high volume servers, switches and storage. It involves implementing network functions in software that can run on a range of industry standard server hardware, and that can be moved to, or instantiated in, various locations in the network as required, without the need to install new equipment. This technology provides significant benefits for network operations groups and the users of these network services:

- Reduced operator CAPEX and OPEX through reduced equipment costs and reduced power consumption
- Reduced time-to-market to deploy new network services
- Improved return on investment with newly launched services
- Greater flexibility to scale up, scale down or evolve services

SDN in the Data Center

In the data center environment, there are a number of issues both enterprises and telecom operators have encountered, such as:

- Too many manual processes
- Difficulties/delays associated w change/configuration management
- Integration and cooperation between network ops and other IT domains
- Inability to implement new technology due to lack of or too short maintenance windows
- Difficulty and/or delays in provisioning new switches/routers, security devices, servers

The most obvious benefits of migrating to an automated, SDN-centric approach are that corporations can greatly reduce the operational cost of the network, reduce the complexity of managing large data centers and networks, and can help to reduce network downtime.

Software Defined Data Center (cont.)

OpenFlow & Virtualization

Virtualization has largely transformed the data center with flexible and automated server provisioning. But networking and storage infrastructure have not kept pace. In fact, they often serve as the bottleneck. Software-defined data center (SDDC) strategies are key to moving this infrastructure to a more flexible, agile and reliable state, to bring every aspect of an IT environment to match the same ease of provisioning as virtual computing, resulting with all infrastructure delivered as a service and automated by software. Some OpenFlow SDN Advantages for Large-Scale Data Centers are:

- Multi-tenancy: Efficient use of network resources: Better utilization drives CAPEX and OPEX savings
- Self Provisioning: Support large and diverse customer base
- Programmable Network: Meet customer SLAs with confidence
- Complete Network Control: Provide network services to meet application needs with faster service activation times.
- Uniform Network Management: High network availability
- Uniform Cloud API: Uninterrupted, seamless service between private and public cloud

From simple cutovers to major network migrations, conversions, and implementations, we can plan and execute an entire deployment strategy from start to finish: identify the goals, define the migration process, develop schedules and checklists, and manage the implementation. ur experts also utilize state-of-the-art tools to assist you in translating existing software configurations and routing policies to software configurations, all while educating your technical staff.

SDDC Use Cases: Faster time to revenue, increased flexibility and performance:

Network Virtualization: **Multi-tenancy**: Dynamically create segregated topologically-equivalent networks across a datacenter, scaling beyond typical limits of VLANs. Better utilization of datacenter resources. Faster turnaround times in creating segregated network(s), from weeks to minutes via automation APIs.

Network Virtualization: To create location-agnostic networks, across racks or across datacenters, with VM mobility and dynamic reallocation of resources. Simplified applications that can be made more resilient without complicated coding, better use of resources as VMs are transparently moved to consolidate workloads. Also can help improve recovery times in disasters.

Service Chaining: To create dynamic chains of L4-7 services on a per-tenant basis to accommodate self-service L4-7 service selection or policy-based L4-7 (e.g. turning on DDoS protection in response to attacks, self-service firewall, IPS services in hosting environments, DPI in mobile WAN environments). Drastically reduced provisioning times, improved agility and self-service allows for new revenue and service opportunities with substantially lower costs to service.

Tap Aggregation: Provide visibility and troubleshooting capabilities on any port in a multi-switch deployment without use of numerous expensive network packet brokers (NPB). Dramatic savings and cost reduction, of switches in the infrastructure. Less overhead in initial deployment, reducing need to run extra cables from NPBs to every switch.

Dynamic WAN reroute/Dynamic WAN interconnects: move large amounts of trusted data bypassing expensive inspection devices. Provide dynamic yet authenticated programmable access to flow-level bypass using APIs to network switches and routers, yielding massive dollar savings of unnecessary investment in 10Gbps or 100Gbps L4-7 firewalls, load-balancers, IPS/IDS that process unnecessary traffic.

Bandwidth on Demand: Enable programmatic controls on carrier links to request extra bandwidth when needed (e.g. DR, backups) Reduced operational expense allowing self-service by customers and increased agility saving weeks of manual provisioning.

Datavision's Service Engagement Model:

1. Project Definition Phase

- Use-Case validation and adjustment
- Identify dependencies for use-case implementation and off-the shelf product recommendation for implementation
- TCO Analysis of Public/Private Cloud best-fit topology
- Customized Project Plan

2. Project Implementation and Deployment:

- Project Management: Timelines of implementation
- Architecture Design, Capacity Planning
- Hardware selection, dependency management
- Integration of networking elements with SDN Controller(s)
- Optimized use of virtualized appliances.
- Detailed Implementation Plan
- Software Application development/configuration/tuning
- Operational Handoff processes/training
- Ongoing maintenance and operations