Software-Defined Networking

Software-Defined Networking (SDN) is shaping the future of networked communications. Through network management automation and software implementation of network functions, SDN expedites service ordering and provisioning while reducing labor hours and operator errors. Automation enables reduction from request to implementation from days or weeks to minutes. By eliminating manual configuration of network devices to create new services, SDN also minimizes misconfigurations, service degradations, and required troubleshooting and repair efforts.

OUR APPROACH

The Leidos Software Defined Network (SDN) solution enables organizations to simplify and automate their network communications and service implementation. Leidos SDN solution integrates with Operations Support Systems (OSS) components such as service portals and network configuration databases to deliver a complete end to end provisioning and management solution. By utilizing Network Function Virtualization (NFV) to move network functionality from hardware-based network appliances to software running on commodity hardware, either on-premise or in the cloud, the Leidos solution also enables reductions in new service implementation times and capital expenditures. Virtualization results in reductions in new service implementation times and capital expenditures.

In addition, Leidos SDN solution:

▶ Enables management automation and auto-configuration of network devices using standardized device management and control protocols

▶ Provides the mechanisms for user-controlled auto-provisioning of new network services and mitigation of network-detected anomalies

▶ Integrates with artificial intelligence and machine learning (AI/ML) to provide a complete solution for autonomous networking

▶ Provides flexibility for network operators to develop and deploy new network applications and services that can be integrated into the solution

▶ Eliminates the need to manually configure network devices, facilitates the use of standard configuration templates, and eliminates operator error

▶ Integrates with NFV and AI/ML to provide a complete solution for user-driven and network-driven automatic deployment, provisioning, and management of VNFs

OUR CAPABILITIES

Leidos experts work closely with customers on the various stages of SDN implementation, from discovery and deployment to service extensions and sustainment. When using a Leidos SDN solution, the customer directly interacts with a service ordering system using a menu-driven and partially pre-populated interface when requesting new services. These details are sent to the Provisioning Application, which provides the additional information needed, such as IP addresses of the network nodes where the service will be implemented, and constructs the service model and pass these to the SDN controller.

The SDN controller interfaces with the Operational Support System (OSS) components such as the Network Configuration Management Database (NCMDB), which stores information required by the SDN controller to make provisioning decisions. The SDN controller translates the service models into concrete configuration actions to be performed by the network devices and sends these to the devices. The SDN controller provides a safety mechanism that goes back to an earlier configuration in the event of a configuration failure.

The SDN auto-provisioning application is an ideal solution for activation and modification of services such as virtual private networks (VPNs) that may need to be performed frequently. The ability to dynamically activate a new service and the ability to add sites to or remove sites from an existing VPN are essential features of a network on-demand service. In addition to user or operator triggered automation, SDN also enables automated management functions in response to events detected by the network.

With Leidos SDN solution, the entire service ordering process from the time of service request until the service is up and running could take only several minutes depending on the number of network elements involved.

Features	Benefits
Automation of the service ordering and provisioning process.	Reduces service provisioning time from days to minutes.
Enables user-controlled automation. Customer directly interacts with service ordering system and interactively uses a partially pre-populated graphical user interface.	Simplifies service ordering and reduces human errors.
Enables network-controlled automation. Network autonomously detects events and anomalies, and SDN takes action to respond to these.	Automates detection and mitigation of network events, improving network performance and security at a lower cost.
Virtualizes network services.	Reduces capital expenditures (i.e., hardware cost) and the time to bring up a new network service.
Reductions in network operations and service provisioning workforce offset the addition of software developers and system administrators.	Results in a net staffing reduction.

PROVEN SUCCESS

Leidos actively funds research and development on how SDN improves efficiency, performance, and agility of its customers' networks. Through this effort, Leidos developed an SDN and NFV network integration testbed and uses this infrastructure to develop network automation applications, validate commercial off-the-shelf (COTS), and open-source SDN and NFV products, and integrates them into an end-to-end solution.

As a result, a U.S. Government Agency granted Leidos a contract to develop and deploy SDN-based service provisioning applications. Leidos continues to experiment with, develop, and test future-looking applications that can be further created and incorporated as customer solutions.

WHY PARTNER WITH LEIDOS?

Leidos SDN solution greatly enhances an enterprise's network capabilities. Through proven expertise, Leidos is able to work with customers to develop, integrate, and automate network communications and service implementation that save time, money, and resources. We partner with our customers to address their challenges and create roadmaps to ensure success from pilot programs through sustainment.

NEXT STEP

Leidos' Software Defined Networking solution securely increases automation and synchronization across networks and IT systems, saving time and reducing costs for our customers. Contact our SDN experts to discuss what's next for your enterprise.

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