SOLUTION BRIEF
Extending VMware NSX® SD-WAN by VeloCloud™ to Amazon Web Services (AWS)

NSX SD-WAN
NSX SD-WAN aggregates available branch Wide Area Network (WAN) connections such as Internet Broadband, MPLS private lines, and wireless LTE, and performs dynamic application aware per-packet link steering and path conditioning to deliver enterprise class quality for some of the most demanding applications. In addition, NSX has a unique globally distributed system of cloud gateways, that brings NSX SD-WAN to the doorstep of major cloud services, applications, and providers, such as AWS. The single pane of glass management orchestrator portal simplifies the deployment and monitoring efforts from hundreds of lines of CLI box by box to a couple of clicks on the user interface from one source and distributes to all branch sites.

Extending NSX SD-WAN to AWS
NSX SD-WAN on Amazon Web Services (AWS) enables enterprises to rapidly and cost-effectively leverage world-class NSX SD-WAN capabilities within their AWS deployments. NSX SD-WAN on AWS combines the elasticity and flexibility of the AWS Cloud with the same optimization, security, simplified operations, and uncompromised user experience NSX SD-WAN provides for the most demanding networks and applications in the world.

This solution brief examines the various use cases for NSX SD-WAN on AWS, including the role of the VMware NSX® SD-WAN Orchestrator by VeloCloud™ on AWS. Integration between NSX SD-WAN and AWS has resulted in several compelling use cases that not only support the immediate needs of today’s enterprises and service providers, but also the ongoing evolution from legacy computing infrastructures to enterprise cloud datacenters.
Over-the-Top Deployment: Hubless Design

This design option does not require a hub device on AWS, and works very well with customers existing networks, and for those who have a large number of sites. VMware NSX® SD-WAN Gateway by VeloCloud™ connect to AWS, greatly eliminating tunnel complexity. Customers enjoy all the benefits of NSX SD-WAN with minimal change to their datacenter setup.

Gateways are automatically selected by NSX SD-WAN Orchestrator based on the region and location, closest to AWS regions. Legacy VPN requires N*M VPN tunnels for N branches and M AWS VPC instances, this design reduces VPN complexity from NxM tunnels to Nx1 tunnels, since only one tunnel is needed between AWS VPC and Gateways. This simplifies the design while at the same time achieving scale.

Redundancy can be achieved by provisioning dual Internet links with IPSec connections for WAN. Different NSX SD-WAN Gateways will be selected for each IPSec connection. For data center locations, it is recommended to provision redundant data centers with dual Internet links to achieve full redundancy.

Figure 1: Over-the-Top Hubless Design with AWS

Hybrid WAN

This option supports Hybrid WAN and dual links. This scenario is ideal for sites with both private and public links that directly connect into the AWS datacenter. Customers benefit from integrated PKI design with the NSX SD-WAN Orchestrator and can keep policies consistent across NSX SD-WAN Edges. NSX SD-WAN Virtual Edge instances can be spun up from AWS Marketplace. Policies are consistent across NSX SD-WAN Edges as well as hub devices. For customers who have high multi-gig throughput needs, NSX SD-WAN Edges at the AWS VPC can be clustered, with unique resource-aware clustering technology offered by NSX SD-WAN.
Solutions for Service Providers with AWS Direct Connect

Service providers and the AWS partner community have a unique advantage of working with NSX SD-WAN solutions — they can truly offer differentiated solutions to their end-customers by leveraging NSX SD-WAN Gateways in their private networks and offer guaranteed SLAs, and even provide last and mid-mile optimization.

Direct Connect provides an easy entryway to AWS for applications in the datacenter, and acts as an express connection from the Service Provider or partner gateway to AWS. Service Providers and partners can offer NSX SD-WAN service with optimized paths to AWS.

NSX SD-WAN Gateways for Partner Managed Cloud Access

Another reason why the NSX SD-WAN solution works well with AWS compared to most other solutions is the ability to provide a consistent user experience regardless of where the application is located. Service Providers and AWS partners can use their gateways for access to partner hosted apps in private clouds and AWS datacenter. NSX SD-WAN distributed Gateways are available to them for cloud apps in the public cloud. Alternative solutions would require manual tunnels to be configured.
Figure 4: NSX SD-WAN Gateways for Improved User Experience
Service Provider/AIDS Partner Off-Network Expansion with AWS

Regional Service Providers and Partners can now federate Gateways with other regional Service Providers via AWS. Regional providers offer a managed, network integrated NSX SD-WAN service with Gateways present in their backbone to a specific region to their enterprise customers. For global enterprises that span multiple regions, providing access can be challenging. With off-network expansion, provider can now connect their customer datacenters to AWS and leverage a set of partner Gateways to support enterprise customers. Gateways connect via NNIs. Multiple partners can benefit each other in a cost-effective manner.

Figure 5: Off-Network Expansion via AWS for Partners

NSX SD-WAN Orchestrators and NSX SD-WAN Edges

For each of the scenarios mentioned above, orchestration, management, and monitoring are critical aspects. NSX SD-WAN Orchestrators are hosted on AWS, providing users with the same level of reliability and security as they have enjoyed with AWS. Over a third of NSX SD-WAN Gateways on AWS belong to partners or Service Providers, ensuring a consistent experience across the board.

NSX SD-WAN mitigates major WAN challenges today with unique application-aware dynamic multi-path optimization technologies and advanced cloud infrastructure. It can also be extended to the public cloud with Edge presence on AWS with a range of use cases to ensure consistent and outstanding user experience.

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Footnote 3: Source: VMware