VMware SD-WAN Connects Users to Workloads on Azure VMware Solution

vmware®

SD-WAN™

Azure VMware Solution enables enterprises to set up private clouds in Microsoft Azure. The private cloud contains VMware's software-defined data center (SDDC) clusters, built on dedicated bare-metal infrastructure from Azure. All private clouds are provisioned with VMware vCenter Server, VMware vSphere, VMware vSAN, and VMware NSX-T. Organizations can migrate workloads from on-premises environments, create or deploy new virtual machines, and consume Azure services from private clouds using familiar VMware tools.

Challenges of legacy architectures and the distributed workforce

A major concern for enterprise IT is undertaking a smooth migration of workloads from on-premises data centers to the Azure cloud and ensuring a consistent user experience to access applications after workload migration. Users accessing these workloads must contend with the underlying network conditions while accessing applications in the Azure cloud and in the data center. Many organizations rely on legacy WAN architectures for connectivity between users, data center, and Azure VMware Solution.

Numerous organizations are also embracing the new reality of a distributed enterprise that extends from branch or campus to the home office. Many employees rely on best effort broadband connectivity to access applications, and productivity suffers when users can't reach their applications. The underlying network issues can lead to challenges for migrating workloads and adopting Azure VMware Solution. Also, many enterprises using higher cost solutions to connect their on-premises data centers to workloads on Azure are looking for reliable and secure lower cost options using broadband Internet connectivity.

Improved access with VMware SD-WAN

VMware SD-WAN™ delivers secure, reliable, efficient, and agile access to users when they connect to Azure VMware Solution. This helps enterprise IT accelerate migration of workloads from data centers to Azure VMware Solution

and offers a seamless experience to users, no matter their location. Also, the solution offers multiple choices for connecting end users and data centers to their Azure VMware Solution instance. These choices include broadband connectivity options such as cable and DSL, in addition to MPLS and LTE.

VMware SD-WAN delivers operational simplicity and dynamic remediation capabilities when the network suffers from packet loss, latency, and jitter. The solution prioritizes real-time voice, video, VDI and IoT application traffic, providing a rich user experience. VMware SD-WAN provides connectivity to the nearest point of presence to the Azure VMware Solution instance by leveraging the Azure Virtual WAN hub location. This provides a low-latency optimal path between end users and Azure VMware Solution, avoiding unwarranted traffic hairpinning.

Azure VMware Solution and Azure Virtual WAN

Organizations have multiple options when using VMware SD-WAN to connect to Azure VMware Solution. These choices help enterprise IT take advantage of the flexibility offered by Azure. One option leverages the VMware SD-WAN integration with the Azure Virtual WAN Hub to connect branch sites and on-premises data centers to Azure VMware Solution. Enterprises benefit from bringing VMware SD-WAN into the Virtual WAN Hub by extending VMware SD-WAN Dynamic Multipath Optimization™ (DMPO) capability end-to-end and optimizing last-mile connectivity.

Azure VMware Solution and Azure Route Server

Another choice includes the use of Azure Route Server. Azure Route Server simplifies dynamic routing between the enterprise network virtual appliance (NVA) and the virtual network. The NVA in the VMware SD-WAN solution is the VMware SD-WAN Virtual Edge. It removes the need to manually configure or maintain route tables by using Border Gateway Protocol (BGP) to exchange routing between the route servers and the VMware SD-WAN Virtual Edge deployed in the Azure Virtual Network (VNET). Azure Route Server is a fully managed service and is configured with high availability. Azure Route Server simplifies configuration, management, and deployment of VMware SD-WAN Edge in the virtual network.

VMware SD-WAN solution components

Each component of VMware SD-WAN works toward implementing the best overlay for connectivity to Azure VMware Solution.

- A **VMware SD-WAN Edge** automatically joins the SD-WAN fabric once powered on and connected to the Internet. These devices are auto configured, so they are quick and easy to install. VMware SD-WAN Edge devices differentiate traffic (inbound and outbound) and apply customizable business policy to prioritize voice, video, VDI, and IoT applications, providing

the right treatment to applications during packet loss, latency, and jitter. VMware SD-WAN Edge devices and VMware edge points of presence (VMware Edge PoP™) communicate with each other, delivering optimized connectivity to Azure. VMware SD-WAN Edge expands the WAN bandwidth at sites that have multiple WAN links by logically combining WAN links to offer capacity that individual applications need.

- Cloud-hosted or on-premises, **VMware Edge Cloud Orchestrator™** is a secure and scalable web-based central management tool that provides simplified configuration, provisioning, monitoring, fault management, logging, and reporting. The Orchestrator pushes business policies to the network Edges as soon as they connect to the fabric and seamlessly updates these policies to thousands of VMware SD-WAN Edges with a single click. The Orchestrator also offers a single pane of glass for real-time insights into network and application performance.
- Unique to the VMware SD-WAN cloud infrastructure, **VMware Edge PoPs** are highly available platforms that are deployed in strategic geographical locations. They steer traffic on a per-packet basis across the best optimal path that utilizes the underlying WAN links. These onramp cloud devices offer the added benefit of DMPO technology for real-time monitoring, dynamic steering of traffic, and link remediation on the underlying single or multiple public WAN connections—without adding inefficiency of the network hairpin effect.

Accelerating cloud migration and connecting the distributed workforce

VMware SD-WAN has been integrated with the Native Azure Virtual WAN Hub (vWAN Hub) to provide a secure, optimal, and reliable connection for organizations to migrate their workloads and access applications that now reside in Azure VMware Solution. When using the VMware SD-WAN Virtual Edge that can be deployed from the Azure Marketplace, customers benefit from end-to-end SD-WAN, simplified network design, and reduced complexity.

Enterprises can use the VMware SD-WAN solution to carry HCX overlay traffic between on-premises data centers and Azure Cloud.

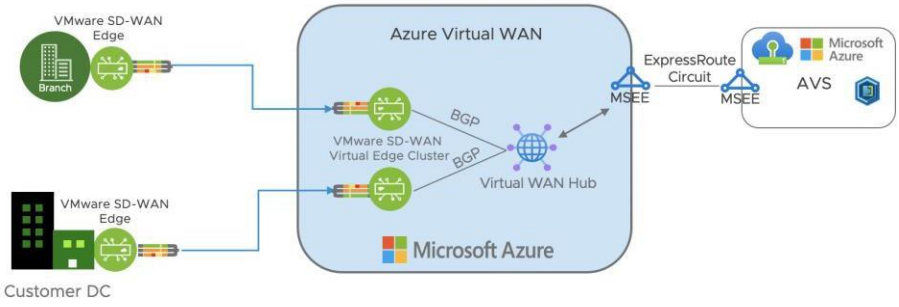

Figure 1: Remote workers and branch sites connecting to Azure VMware Solution, using Azure Virtual WAN Hub

A similar approach using Azure Route Server helps organizations benefit from dynamic reachability established between workloads in Azure VMware Solution, on-premises data centers, and users in branch or remote sites.

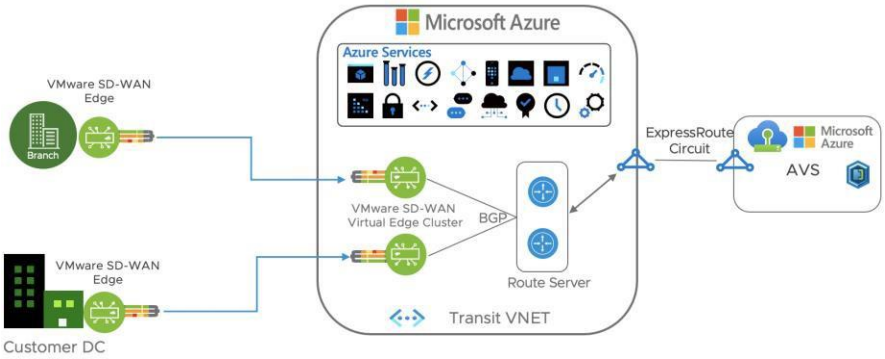

Figure 2: Connecting users and data center workloads to Azure VMware Solution using Azure Route Server with VMware SD-WAN

Connectivity to Microsoft Azure over the last mile can be enhanced to enrich user experience by using VMware SD-WAN to provide better control and visibility into network connections and link remediation. This ensures reliable, secure, and efficient access to Microsoft Azure.

Other options, including IPSec, VPN tunnels, and ExpressRoute to connect on-premises data centers to Azure VMware Solution are shown in Figure 3.

How to get started

- Learn more and test drive the VMware SD-WAN solution at *sase.vmware.com*
- Find out more about Azure VMware Solution at *vmware.com/cloud-solutions/azure.html*
- Learn more about the VMware-Microsoft partnership at *sase.vmware.com/partners/microsoft*

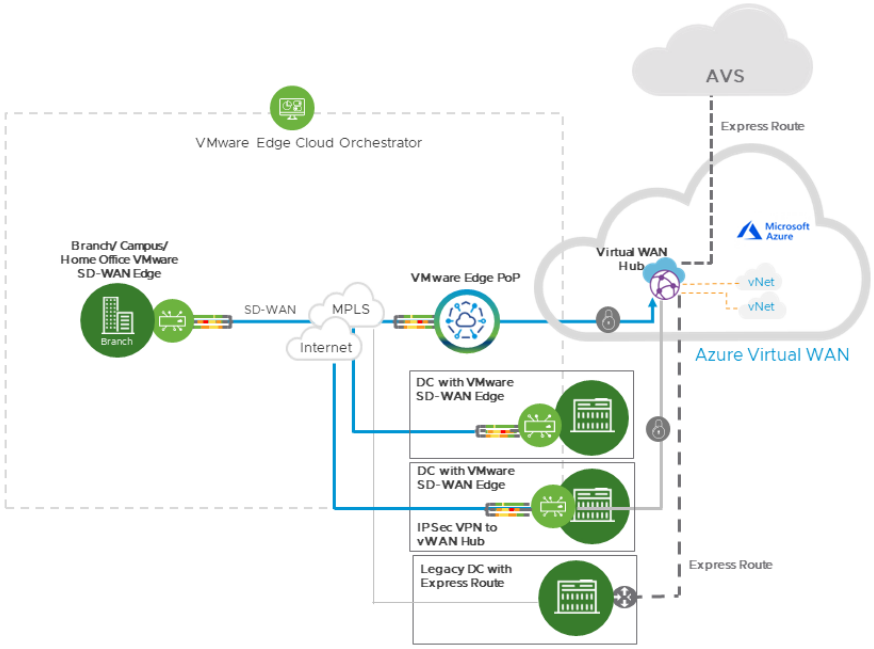

Figure 3: Data center to Azure VMware Solution connectivity options with VMware SD-WAN

Summary

VMware and Microsoft's combined solution enables organizations—across all industries and around the globe—to gain easily deployable, secure, high-performance connectivity from branch office locations to Azure VMware Solution SDDCs as an overlay, without having to redesign their networks. The simple, automated deployment method empowers customers to scale across thousands of branches effortlessly and reach their goals of migrating to the Azure cloud. VMware SD-WAN enables enterprises to migrate to Microsoft SaaS offerings, including Bing, Dynamics 365, Office 365, and Xbox, and to use Azure VMware Solution to host their own applications with high performance and reliability.

The cloud-hosted VMware Edge Cloud Orchestrator allows for ease of configuration to connect branch, remote locations, and data centers to Azure Virtual WAN. It provides the capability to apply business policy-based application prioritization for traffic as well as the ability to directly break traffic out from the branch to Azure without backhauling and using costly links through the enterprise data center. Customers can also take advantage of the globally distributed network of VMware Edge PoPs.