Connecting Distributed Enterprises using VMware SD-WAN and Google Cloud Network Connectivity Center

Post-COVID 19, many organizations are embracing the new reality of a distributed enterprise that extends from branch or campus to the home office. Many remote 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 impair user experience accessing applications in the data center or in the cloud.

Google Cloud Network Connectivity Center enables you to connect your on-premises networks together by using Google’s network for data transfer. Using Network Connectivity Center enables instant access to the global reach and reliability of Google’s network. It helps your enterprise benefit from Google’s deep set of reliability and traffic engineering practices.

VMware SD-WAN™ is a cloud hosted networking service of VMware SASE™. It delivers secure, reliable, efficient, and agile access to users when they connect to Google Cloud VMware Engine, which allows enterprises to run native VMware SDDC environments without refactoring applications. This helps enterprise IT accelerate migration of workloads from data center to cloud and offer a seamless experience to users no matter their location. The solution also offers multiple choices when connecting end users and data centers to cloud destinations.

VMware SD-WAN delivers operational simplicity and dynamic remediation capabilities when the network suffers from packet loss, latency, and jitter. It prioritizes real-time voice, video, VDI and IoT application traffic, providing a rich user experience. VMware SD-WAN provides connectivity from the nearest point of presence to Google Cloud VMware Engine by leveraging Google Virtual Private Cloud (VPC). The objective is to provide an optimal low-latency path between end users and the cloud instance, eliminating unwarranted traffic hair-pinning.

**VMware SD-WAN solution components**

Each component of VMware SD-WAN works towards implementing the best overlay for connectivity to Google Cloud:

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’re quick and easy to install. The 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. The VMware SD-WAN Edge devices and the VMware SD-WAN Gateways communicate with each other to deliver optimized connectivity to Google Cloud. The Edge expands WAN bandwidth at sites that have multiple WAN links, by logically combining the WAN links to offer capacity that individual applications need.
The **VMware SD-WAN Orchestrator** is a cloud-hosted or on-premises, secure, 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, strategically deployed and highly available **VMware SD-WAN Gateways** steer traffic on a per-packet basis over the optimal path utilizing the underlying WAN links. These onramp cloud devices offer the added benefit of **Dynamic Multipath Optimization™ (DMPO)** technology for real-time monitoring, dynamic traffic steering, and link remediation on the underlying single or multiple public WAN connections without adding the inefficiency of the network hairpin effect.

DMPO tunnels are established between VMware SD-WAN Edges at branch, campus and home office locations to VMware SD-WAN Gateways, creating an overlay network that is easy to deploy and manage. The VMware SD-WAN overlay network is built on transport-independent infrastructure. Enterprise customers don’t have to rip and replace their WAN transport, whether it is MPLS, DSL, cable or LTE. The solution offers reliable, secure and efficient delivery of traffic between users, Google Cloud, and on-premises data centers.

**Connecting the distributed work force to GCP**
VMware SD-WAN offers a flexible, easy to deploy option for enterprises connecting branch locations, work from home employees, and data centers. The option shown in the figure below helps enterprises take advantage of Google's backbone by deploying **VMware SD-WAN Virtual Edge** in the cloud. This gives enterprises the advantage of DMPO tunnels all the way to Google Cloud.


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**FIGURE:** Branch connectivity leveraging VMware SD-WAN and Google Cloud Network Connectivity Center
Summary
This combined solution from VMware and Google enables organizations—across all industries and around the globe—to gain simple-to-deploy, secure, high-performance connectivity for branch office locations, data centers, cloud destinations and remote workers. The simple, automated deployment method allows customers to scale across thousands of branches easily with seamless connectivity using Google’s reliable high performance Network Connectivity Center as a data transfer network in the cloud. VMware SD-WAN breaks down any barriers to workload migration resulting from poor user experience pegged to the WAN conditions.

The cloud-hosted VMware SD-WAN Orchestrator allows for ease of configuration to connect branch, remote locations and data centers to Google’s Network Cloud Center. Customers can also take advantage of a globally distributed network of VMware SD-WAN Gateways. The VMware SD-WAN solution stays ahead of the competition with flexibility and choice options for how to connect to Google Cloud.

How to get started
Test drive the VMware SD-WAN solution at sdwan.vmware.com.
For more information on Google Cloud Network Connectivity Center, visit the Google Cloud Network Connectivity Center overview.