Enable Enterprise-Grade Unified Communications with Cloud-Delivered SD-WAN

Growth of Unified Communications in the Enterprise

With today’s distributed workforces, enterprises are increasing their reliance on unified communications (UC) solutions to enable collaboration among employees and reduce travel costs. However, delivering a combination of real-time voice, video, and data is bandwidth-intensive and requires a complex network configuration to ensure the delivery of these time-sensitive applications. Enterprises often find themselves in situations where the branch bandwidth is insufficient, or the aging infrastructure cannot support the UC rollout.

Expensive WAN upgrades can delay the rollout or make the business case of deploying UC unattainable. Unified communications is a mission-critical function for companies of all sizes in this global economy. Enabling employees from offices around the world to collaborate with advanced communication tools is essential to maintain high productivity and efficiency and reduce costs.

MPLS services, offered by telecommunications companies, are secure and reliable, but also very expensive to operate. It can also take weeks or months to provision or reconfigure new services. By switching from MPLS to VMware SD-WAN™ by VeloCloud®, organizations can augment unified voice and video communications over the commodity Internet with outstanding performance — and with costs lowered by an order of magnitude.

The Bandwidth Challenge and the Broadband Alternative

Ease of access to broadband Internet such as cable, DSL, or 4G provides options to enterprises to augment limited WAN bandwidth when delivering UC services. However, broadband Internet may experience congestion at times, which results in increased latency, packet loss, and jitter. These conditions can cause interruption to time-sensitive applications such as voice and video and degrade the quality of experience (QoE) demanded by the end users.

Challenges with Delivering Unified Communications

Enabling companies with an enterprise-grade communication system poses several challenges:

- Lack of sufficient bandwidth inhibits deployment of UC
- Lack of WAN control and visibility leads to performance problems at remote locations
- Lack of flexibility in the WAN leads to suboptimal reliability
VMware SD-WAN Enables Enterprise-Grade UC

VMware SD-WAN provides a complete Cloud-delivered WAN solution to deliver reliable UC over any WAN network with assured performance, visibility, and remote monitoring.

The VMware SD-WAN solution is deployed into environments which contain multiple links—any combination of broadband, cellular, and private WAN. The solution consists of:

- **VMware SD-WAN Edge** - A compact, thin edge device placed at the remote site that is zero touch provisioned from the Cloud and that terminates multiple WAN links, private or public.
- **VMware SD-WAN Gateways** - Clusters of service gateways are deployed globally and communicate with the SD-WAN Edge to deliver a reliable connection.
- **VMware SD-WAN Orchestrator** - Provides management, real-time monitoring and deep network and application visibility.

VMware SD-WAN simplifies the rollout of UC by providing simple network configuration to support UC applications and monitoring of key network characteristics that affect UC performance. The VMware SD-WAN solution also uses dynamic multipath optimization™ (DMPO) to provide dynamic application steering and on-demand link conditioning to deliver a high quality UC experience over any type of connectivity — broadband or hybrid WAN.

**VMware SD-WAN Benefits**

**Flexible Transport Options**
- UC delivered over economical Internet links to leverage cost, speed and flexibility. Fallback on private WAN links when needed
- Enterprise-grade WAN with dynamic multipath steering and on-demand link remediation for redundancy and performance protection
- Assured UC performance over any WAN link with SD-WAN sub-second packet steering and protect from Internet link blackout and brownout conditions

**Simplified Deployment**
- Rapidly deploy UC-ready branches in minutes with zero touch provisioning with cloud activation and management
- Automatic selection of cloud gateways for best direct path eliminates all performance issues between geographically separated UC endpoints
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UC Performance Management and Monitoring
- Deep visibility into the off-net remote location network links, devices and applications in real-time and historically
- Business policies based on application priorities, usage, devices and location
- Reduce triage time with remote troubleshooting tools

VMware SD-WAN Features
VMware SD-WAN incorporates several features that enable enterprise-grade UC:

Automatic Recognition and Prioritization of Real Time Voice and Video
Built-in deep packet inspection (DPI) identifies business voice and video media traffic and signaling using application signatures. The classification information is used to determine how to handle the application traffic flows including QoS, application steering and link conditioning policy. In addition, business policy with smart defaults provides necessary bandwidth management, traffic steering, and link conditioning without any complex configuration typically required by traditional WAN.

Figure 2: Device and application identification

Smart default provides out-of-the-box, differentiated treatment between business and recreational voice and video applications. Business RTP, RTCP, and signaling traffic are given high priority treatment. Skype audio and video traffic are considered recreational applications and are given low priority treatment.

Figure 3: Business policy with smart defaults
Dynamic Application Steering
By constantly monitoring all available link conditions and bandwidth, VMware SD-WAN can steer latency and loss-sensitive voice and video media traffic during sessions on a packet-by-packet basis around links having high latency and/or packet loss.

On Demand Link Conditioning
When necessary, VMware SD-WAN applies link conditioning techniques which include enabling forward error correction (FEC) that provides up to full packet replication to mitigate loss and jitter buffer in order to reduce jitter introduced by broadband and hybrid networks.

High Quality Voice and Video using DMPO
VMware DMPO corrects packet loss on demand and reduces the effect of jitter typically seen on broadband links and hybrid WAN. The result is a much improved voice and video experience over broadband links and hybrid WAN.

Network Segmentation
Using network segmentation, the bandwidth-intensive, performance-sensitive UC system runs independently of the data network, to avoid impacting application throughput and employee productivity.

Direct Branch to Branch Connections
Traffic that is destined for another branch on the system is connected directly to that branch and does not have to go through the corporate data center, avoiding delays that can impact quality.
Simplified Monitoring and Troubleshooting with Cloud-based Management

The VMware SD-WAN Orchestrator provides a single pane of glass for provisioning, managing, and monitoring the solution. It provides historical and real-time link performance and reports actions applied and results achieved.

Figure 6: Real-time and historical performance information and actions applied to the application

VMware SD-WAN Empowers UC

VMware SD-WAN provides a Cloud-delivered WAN solution that enables enterprises to roll out and support UC without the cost and complexity of a traditional WAN. Enterprises can enjoy the benefit of a simple, yet powerful management platform that provides insights into the underlying WAN conditions and application usage. VMware SD-WAN can dynamically react and provide the best possible experience for UC applications and users.