SOLUTION OVERVIEW

vmware | zoom Software Partner

VMware SD-WAN and VMware Edge Network Intelligence for Zoom

Enhancing user experience at the speed of communication

vmware SD-WAN™

"VMware SD-WAN helps our customers enjoy mission critical video optimized on any type of WAN link while working from the home or office. In heavy packet loss scenarios, VMware SD-WAN provided an improvement mitigating up to 20% packet loss that might occur over the last mile and doubled overall received video quality up to 720p HD."

PAT JENSEN
DISTINGUISED ARCHITECT, ZOOM

With VMware SD-WAN deployed, **85%** loss mitigation and better resolution achieved for Zoom Video Communications even with **20%** WAN loss.

SOURCE: Joint testing performed by VMware and Zoom teams

Zoom Video Communications, a leading provider of modern enterprise communications, offers a platform to serve organizations as they strive to enrich healthcare, learning, customer engagement, and professional development through real-time communications.

Zoom brings teams together to get more done in a frictionless and secure video environment. The easy, reliable, and innovative video-first unified communications platform provides video meetings, voice, webinars, and chat across all devices and spaces. Cloud application providers such as Zoom generally optimize the localization and delivery of their services for desired performance by distributing service tenants scaled out across locations worldwide. However, the application performance and quality of user experience largely depends on the efficiency of the network connecting users to these cloud-based applications. The Internet, which is often the medium of choice for these self-service applications, comes with its own set of challenges compared to legacy WAN infrastructure.

Internet broadband is agile, accessible, and cost effective. However, it introduces more packet loss, jitter, and latency compared to traditional network architectures. The result is slower uploads/downloads, missing frames in real-time voice and video calls, along with a poor user experience. Multiple applications vying for access and bandwidth across the same network can further degrade the performance and experience for mission-critical applications.

VMware SD-WAN™ is a software-defined WAN overlay to ensure high-quality application performance and availability for end users while lowering networking costs. It is a cloud-delivered, transport-agnostic architecture supporting and optimizing any WAN link or combination of links. VMware SD-WAN includes a distributed network of Cloud VMware SD-WAN Gateways, a cloud-based VMware SD-WAN Orchestrator, and a branch platform, the VMware SD-WAN Edge.

To help IT manage end-user experience with applications like Zoom, VMware Edge Network Intelligence™ provides deep visibility, actionable insights and proactive remediation capabilities. Using machine learning algorithms and big data analytics, VMware Edge Network Intelligence automatically discovers and establishes performance baselines for end-user application performance, monitors baselines for deviations, isolates faults for proactive remediation, and generates alerts and reports. The solution also gives quantifiable data on the benefits of using VMware SD-WAN.

EXAMPLE USE CASES FOR VMWARE SD-WAN AND ZOOM

Healthcare

- Telehealth consultations to connect physicians, patients, and specialists for regular or urgent care
- Telesurgery to conduct live surgeries, seek medical expertise, and train surgeons
- Connecting pathology labs and surgical suites to enable surgeons to converse real time with pathologists
- Hospital administrators and staff interaction from remote sites

Education

- Synchronous online classes
- Student-to-teacher office hours
- Group projects
- Faculty workgroups and staff meetings

Finance

- Consumer digitization and personalization
- Collaboration with partners and external advisors
- Executive updates and investor meetings

Government

- Collaboration across agencies
- Community outreach and education

Optimizing connectivity and performance for Zoom

VMware SD-WAN employs a three-pronged approach to deliver the best performance for latency sensitive Zoom traffic:

- Identifies and prioritizes Zoom applications
- Optimized and secure on-ramp access to Zoom data center locations
- Provides actionable insights and proactive remediation

VMware SD-WAN can identify each Zoom Meeting, Phone call, Chat session and Zoom Room or Conference Room Connector among the 3000+ different workloads egressing off of a user's network. It can separate them from generic Internet traffic and route these packets to the closest network of cloud gateways, which then hands them off to the best peering Zoom data center location. VMware SD-WAN minimizes the distance/latency between the user and the application, delivering consistent quality of experience without compromising the security of the payload.

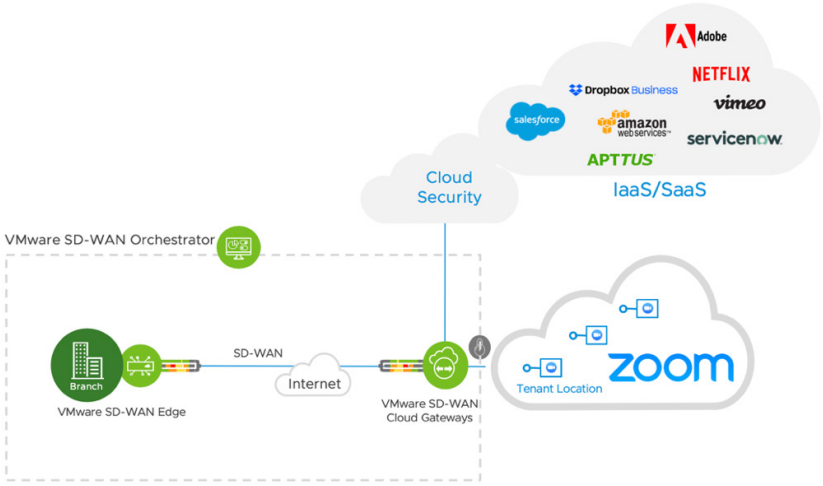

FIGURE 1: VMware SD-WAN for Zoom, the video-first unified communications platform

Each component of the VMware solution works towards implementing the best overlay for real-time Zoom voice and video traffic.

VMware SD-WAN Edge

Virtual or physical, VMware SD-WAN Edges expand WAN bandwidth by logically combining WAN links to offer the capacity that individual applications need. These edge devices differentiate traffic and apply customizable business policy to prioritize Zoom's real-time voice and video traffic. The VMware SD-WAN Edge devices and the VMware SD-WAN Gateways communicate with each other to deliver optimized connectivity between them. A VMware SD-WAN Edge automatically joins the SD-WAN fabric once powered on and connected to the Internet.

VMware SD-WAN Orchestrator

Cloud-hosted or on-premises, the VMware SD-WAN Orchestrator pushes the business policies to the network Edges as soon as they connect to the fabric. It can seamlessly update the application recognition engine on thousands of VMware SD-WAN Edges with a single click. The Orchestrator is a cloud-hosted or on-premises, secure and scalable web-based central management tool that provides simplified configuration, provisioning, monitoring, fault management, logging, and reporting. It also offers a single pane of glass for real time insights into network and application performance.

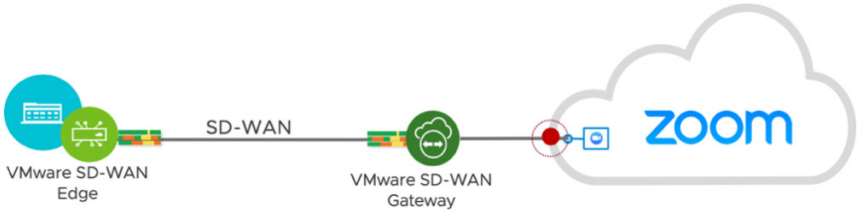

FIGURE 2: Delivering closest connectivity to Zoom

VMware SD-WAN Gateways

Unique to the VMware SD-WAN cloud infrastructure, VMware SD-WAN Gateways are strategically deployed and highly available. 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 inefficiency of the network hairpin effect. For Zoom traffic, these horizontally scalable gateways are peered with the closest Zoom data center locations for handoff. VMware SD-WAN improves the resolution of a Zoom call, while mitigating underlying WAN loss for the highest quality user experience.

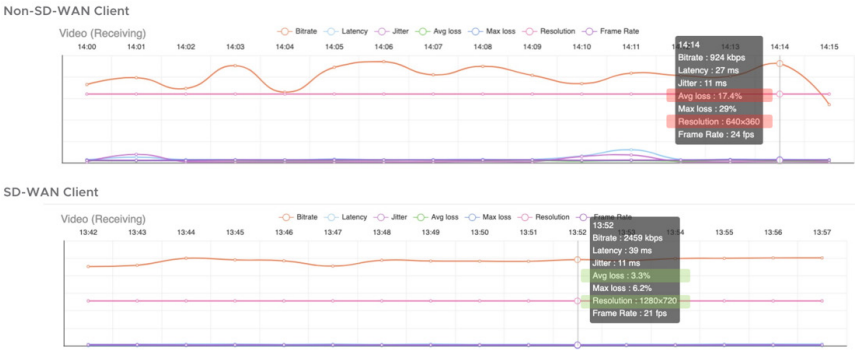

FIGURE 3: VMware SD-WAN: loss mitigation for better resolution for Zoom video communications

Figure 3 shows that in joint testing with Zoom, VMware SD-WAN continued to provide high-quality user experience by remediating loss significantly and delivering 720p HD video with a steady bit rate to the client machine. The client without SD-WAN couldn't cope with the packet loss and had to drop its resolution to 360p video with an unstable bit rate, leading to degraded user experience. By leveraging cloud-ready architecture and DMPO technology, customers can continue to experience HD quality Zoom sessions even on degraded WAN links.

VMware Edge Network Intelligence

With many employees working from home or anywhere, it can be difficult for enterprise IT staff to fix or even to see problems that occur on networks that they don't control. The VMware Edge Network Intelligence AIOps platform gathers data from multiple sources about every single client transaction from the time it accesses the wireless or wired LAN and travels over the WAN or broadband internet to reach a SaaS or Internet destination. The data covers wireless access points, their location, signal quality, and any rogue access points interfering with the signal. It also analyzes data from multiple vantage points in the VMware SD-WAN solution. This allows the same application flow to be viewed from the perspective of the VMware SD-WAN Edge and/or the SD-WAN hub.

With Zoom call quality API integration, VMware Edge Network Intelligence gets application data that describes the user experience for every single client device – for example, data from Zoom on voice, video and screenshare quality, resolution and frame rate. To enable Zoom QoS data to be sent to VMware Edge Network Intelligence organizations can download the ENI Connector App available in *Zoom marketplace*.

Analyzing the data using machine learning helps:

- Establish baselines for "normal" Zoom user experiences across the enterprise, monitor the baseline for deviations, and compare Zoom performance across different locations within the enterprise, and with industry peers.
- Determine the worst-performing Zoom client devices and worst-performing sites, or identify the worst-performing service providers, so that IT can prioritize and focus on improving user productivity for those clients.
- Provide quantifiable data on whether changes made to the network helped improve Zoom experience—for example, transforming a home office or branch location to SD-WAN, adding an access point, or measuring the effects of VMware SD-WAN's dynamic remediation.
- Analyze and isolate the root cause of bad Zoom performance to the local Wi-Fi, client device, WAN, service provider, or the application.
- Get actionable insights into client experience for remote users by using an additional data source, the Client App, which can be installed on end-user devices. This helps IT understand if a user issue is related to home Wi-Fi, internet access, VPN issues, or is in fact the application. End users can leverage this visibility to troubleshoot issues within their control. (*Click here* to watch a video about how to set up the Client App.)

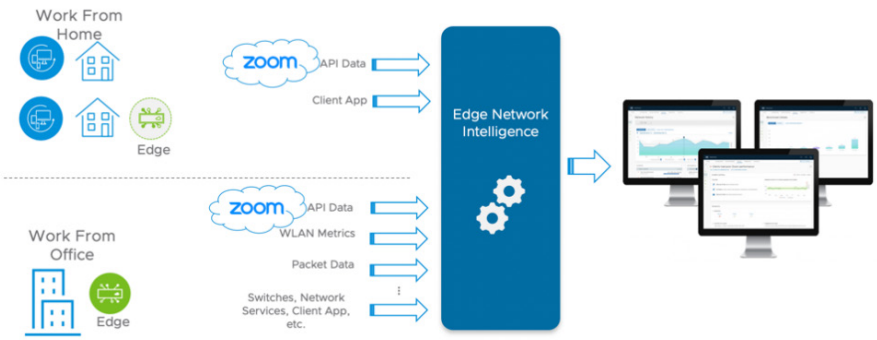

FIGURE 4: Data collection from multiple sources across a distributed enterprise

With the dynamic remediation capabilities of VMware SD-WAN and actionable insights from VMware Edge Network Intelligence, IT can proactively resolve end-user Zoom issues. Figure 5 below shows how VMware Edge Network Intelligence detects baseline deviation for Zoom client performance, raises the incident, performs root cause analysis, and determines that clients are having issues with the wireless LAN network.

ABOUT ZOOM VIDEO COMMUNICATIONS

Zoom Video Communications, Inc. (NASDAQ: ZM) brings teams together to get more done in a frictionless video environment. The easy, reliable, and innovative video-first unified communications platform provides video meetings, voice, webinars, and chat across desktops, phones, mobile devices, and conference room systems. Zoom helps enterprises create elevated experiences with leading business app integrations and developer tools to create customized workflows. Founded in 2011, Zoom is headquartered in San Jose, California, with offices around the world. For more information, visit *www.zoom.us*

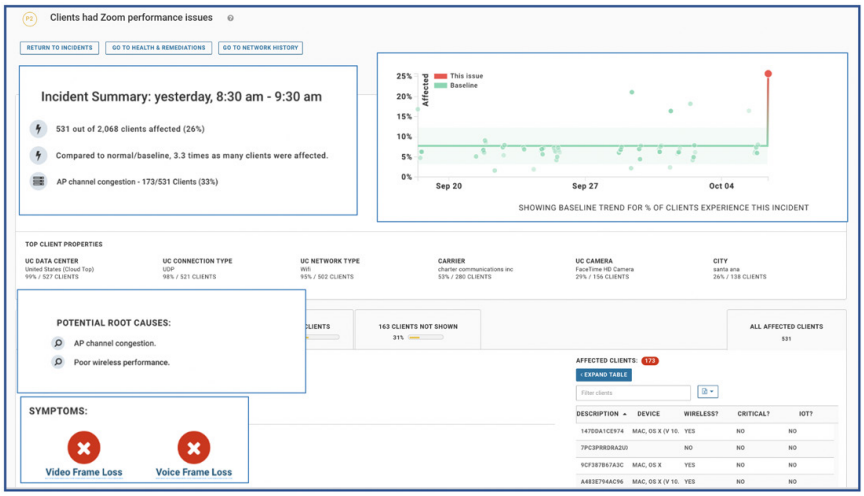

FIGURE 5: Example Client Zoom performance incident summary report from VMware Edge Network Intelligence

As remote work becomes the new normal, it's important to provide the best possible user experience for communication and collaboration applications such as Zoom. VMware SD-WAN enables cloud-delivered, transport-independent, and easy-to-use connectivity to Zoom. VMware Edge Network Intelligence provides true insight into the network problems of remote workers that IT departments could not previously see or correct. VMware solutions are improving daily experiences for end users and the enterprise IT staff who help them.