

WHITE PAPER

Implementing Private Versa Cloud Gateways on Equinix Network Edge for UCaaS

Introduction

Secure Software-Defined Wide Area Networking (SD-WAN) dramatically transforms enterprise networking, digital transformation, and multi-cloud. One significant focus for Secure SD-WAN is application experience: application based policies, per user policies, SLA monitoring and performance based traffic engineering.

Secure SD-WAN operates at optimum performance when it is operating at both ends of a connection. This model enables the exchange of information to apply advanced algorithms which improve and guarantee application user experience.

UCaaS (Unified Communications as a Service) is a classic Software as a Service which delivers voice, video, and collaboration as a service from the cloud. The servers which serve the application are hosted in the public or private cloud of the UCaaS provider meaning end customers do not have the ability to deploy their own SD-WAN on-premises at the UCaaS provider. UCaaS normally operates over the Internet performing call control, services, and media connectivity which leaves it vulnerable to the typical impairments which exist on the Internet such as packet loss, delay, and jitter.

The white paper covers how private Versa Cloud Gateways deployed on Equinix Network Edge are used to extend the SD-WAN benefits for UCaaS applications.

UCaaS Background

Unified Communications is a framework for integrating various asynchronous and real-time communication applications, with the goal of enhancing business communication, collaboration and productivity. Unified communications features include, enterprise messaging, presence technology, online meetings, team collaboration, telephony and video conferencing.

In the past, telephony systems (the predecessor to Unified Communications) were delivered with appliances physically located on the Enterprise premises. These old world PBX (Private Branch Exchange) systems were on premises and terminated the traditional PSTN lines from the telco and required analog or digital lines to be run all the way to the office premise. The solution was complex to deploy and expensive to maintain straining the resources of many customers.

Unified Communications as a Service (UCaaS) simplifies the Unified Communications service delivery leveraging the cloud and IP connections. UCaaS relies on a managed cloud offering and Internet links to reduce the management and opex burden of the customer.

However, as UCaaS relies on Internet transport, the voice and video experience is limited by the best effort quality of service delivered by the Internet.

In this paper, we describe how Versa Secure SD-WAN delivers assured application experience for UCaaS service.

Application-Aware Networking

The primary goal of Secure SD-WAN is to securely improve the application experience via an access agnostic overlay network. Versa Secure SD-WAN measures the path performance, Mean Opinion Score (MOS) and Versa Link Score metrics to steer the packets for each application over the best path. Versa Secure SD-WAN also accelerates the applications and applies network impairment mitigations to improve the application experience when the underlay networks are experiencing issues.

On average, an enterprise uses between 5 to 15 applications in their network with many Enterprises using much more. Each application has a different requirement from the network. For example, a real time application such as video or voice may tolerate limited packet loss but is extremely sensitive to delay and jitter. Finance transactions need reliable, secure and low delay network. In order to provide the best application experience, Versa Secure SD-WAN deploys Deep Packet Inspection technology to detect the applications being used in the network. For each application, the network path is chosen which provides the optimal network experience as defined by the policy.

End to End SLA monitoring plays an important role in ensuring application traffic is routed over optimal path. The SLA monitoring measures the IP performance between two SD-WAN edges across multiple paths in real time. Round Trip Time (RTT), Delay Jitter and packet loss are important parameters which are measured in real time. These real time metrics are taken into consideration to determine application traffic path for each individual packets.

MOS score based traffic engineering makes use of codec specific intelligence to choose optimal route. For voice and video traffic, Mean Opinion Score (MOS score) uses quality information to estimate the user experience. MOS score is much better at estimating how the current network performance impacts the user experience. Versa Secure SD-WAN measures the MOS score for every individual voice and video session. Based on the MOS score experienced on a path, the steering decision for voice and video packets are made.

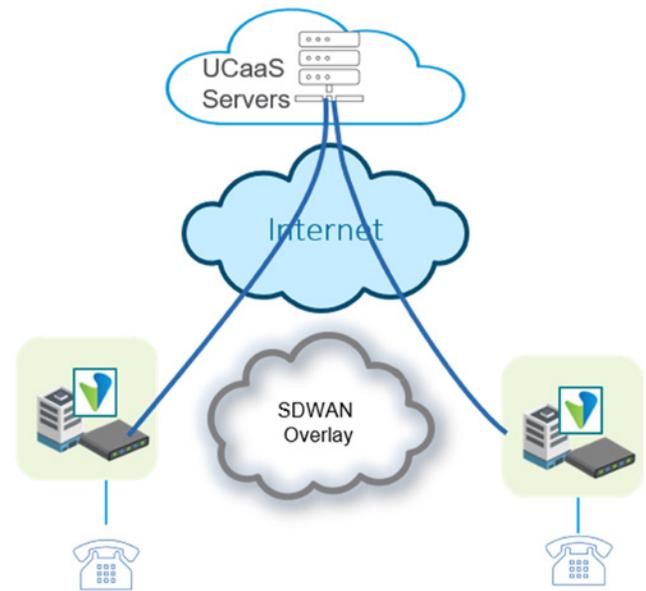
Versa Secure SD-WAN implements Forward Error Correction to improve the application performance by introducing redundancy into the flow. These additional packets allow regeneration of dropped packets thus reducing the

percentage of dropped/delayed packets and improving the voice and video quality. Packet cloning or replication has a similar effect by replicating the same packet on multiple access links.

UCaaS Architecture

Unified Communications is a business-critical application used in many enterprises. Unified Communication as a Service (UCaaS) is a cloud delivered SaaS application for delivering voice, conferencing, video calling, group messaging service to the enterprises. The applications are delivered using traditional voice phones, desktop and laptop applications, mobile apps and specialized equipment. The application is based on IP infrastructure and delivered using end to end packet switched infrastructure.

UCaaS is a cloud native service residing in the UCaaS provider Data Center. In reality many of the UCaaS providers leverage public cloud infrastructure (such as AWS, Azure, and GCP) or IaaS service providers residing in Equinix. The customer voice quality is directly related to the reachability and performance of the network connectivity from the branch into the UCaaS Cloud.



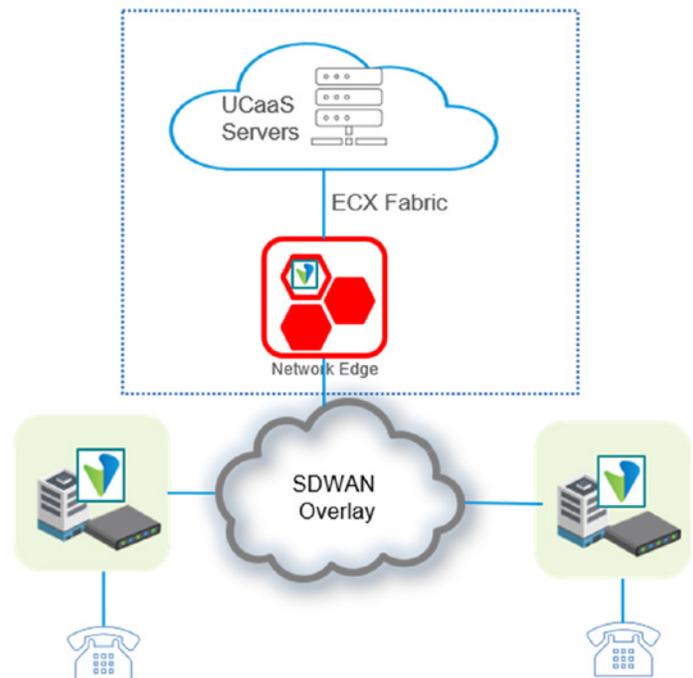
Private Versa Cloud Gateway with Equinix Network Edge

Equinix Network Edge is a platform for virtual network services optimized to provide instant access to interconnections. The Network Edge platform leverages the ECX Fabric to provide interconnect between the multi-cloud environment and Secure SD-WAN Overlay network. Versa has partnered with Equinix to offer private Versa Cloud Gateways as a network service over the Network Edge.

UCaaS providers provide private connectivity for Enterprises via Equinix Network Edge. Enterprises can instantiate the private Versa Cloud Gateway on the Equinix Network Edge to create a private UCaaS acceleration node. With the private connectivity from preferred UCaaS provider, the private Versa Cloud Gateway extends the Versa Secure SD-WAN network all the way to the edge of the UCaaS servers nearest to the customer to provide superior voice and video services.

Private Versa Cloud Gateways run the Versa Operating System (VOS™) which enables an end to end Versa Secure SD-WAN from the UCaaS provider to the branch office location running VOS. Voice traffic originating in the branch is transported over the Secure SD-WAN to the private Versa Cloud Gateway. Versa Secure SD-WAN application acceleration and performance improvement techniques such as SLA Monitoring, MOS based traffic steering, Forward Error Correction and Packet Cloning are applied between the branch to the private Versa Cloud Gateway. End users experience significant improvement in the voice, video, and collaboration quality.

Private Versa Cloud Gateways in Equinix Network Edge may be deployed in geo-redundant configuration to ensure failover in case of failure of one of the Equinix Network Edge appliances. Versa Secure SD-WAN supports direct routing to the internet thus ensuring application availability even in case of failure of the hub sites.



Conclusion

Voice, video, and collaboration applications are critical and have direct impact on the business. Providing a high quality user experience for these cloud hosted applications is considered an absolute requirement. Private Versa Cloud Gateways deployed in Equinix datacenters mitigate the quality impact which vagaries of the Internet have on the UCaaS applications. Private Versa Cloud Gateways hosted on Equinix Network Edge extend a Versa Secure SD-WAN all the way to UCaaS cloud locations. This deployment architecture enhances the application experience for the Voice and Video traffic.



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