



TECH BRIEF

SD-WAN for Unified Communications: Enhance Quality of Service (QoS) for Cloud-Based Collaboration Applications

INTRODUCTION

For years, Unified Communications (UC) has taken the office environment by storm. The cloud-based solution not only centralizes multiple-location phone systems into a single, unified solution, but it also brings a wide range of collaboration features that improve productivity, efficiency and camaraderie throughout organizations.

However, enterprise-class voice and collaboration workloads in the cloud can pose several degradation challenges on the network, including brownouts and jitter.

Traditionally, organizations had to make large investments in private networks to overcome this challenge. The advancement of network technology, including the introduction of SD-WAN technology, have provided better, smarter and more efficient network services to support real-time, cloud-based communications.

In this tech brief, we will evaluate the evolution of SD-WAN with Unified Communications and how organizations are utilizing it today to ensure quality of service for their employees.

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CHAPTER 1:

THE EVOLUTION OF SD-WAN AND UNIFIED COMMUNICATIONS

The cloud has been a huge influence in transforming the way businesses handle mission-critical functions. Its unique characteristics in providing unlimited computing resources that are flexible and scalable on demand created new frontiers for rapid business growth and speed to market. It also introduced the highly popular OpEx pay-as-you-go model that makes the cloud an affordable option in modernizing organizational IT environments without high upfront costs.

As cloud adoption advanced, simultaneously came the birth of SD-WAN and Unified Communications.

TODAY'S NETWORK CHALLENGES



Expensive Bandwidth

Increasing bandwidth in multiple offices to support application needs is expensive and time consuming.



Branch Complexity

Multiple location offices create siloed solutions that require the same speeds, uptimes and management as headquarters.



Rigid Architecture

Branch WAN traffic traveling to and from the data center degrades cloud application performance, like UC.

SD-WAN

VPN and MPLS technology are a commonality in almost all organizational connectivity planning. However, they don't always provide uniform support across locations globally. In some geographic areas, MPLS simply isn't available; in others, significant circuit costs limit bandwidth needs. SD-WAN offers businesses a virtual network overlay to supplement or replace MPLS that enables high-availability connections to multiple locations, as well as use the internet to back up MPLS VPN connections. As a result, organizations can now handle network demands over the internet to escape costly traditional WAN barriers, including bandwidth needs, complex data centers and IT structures that were time-consuming and resource heavy to manage.

Unified Communications

The cloud gave businesses a more cost-effective way to implement communication tools like soft phones, video conferencing and instant messaging over the network. Employees had more collaborative functionality that connected them to other offices around the world. However, pushing real-time communications data via the cloud can cause call and video quality issues if your network cannot support the bandwidth-intensive needs of Unified Communications, in addition to other cloud applications being utilized that frequently overextends bandwidth over the network.

Enhancing Quality of Service (QoS) by Combining SD-WAN and UC

Once employees could collaborate with other coworkers in other branch locations, they came to expect a quality experience – no matter their location or the device they are using. It can be challenging to ensure users don't experience dropped calls, unbearable fuzzy video conferences or undelivered instant messages.

Unified Communications systems are notoriously sensitive to jitter and packet loss because they are impacted by the reliability of the underlying network communication layer. This can hinder the user's experience, especially if they are dispersed among branches and remote locations, where bandwidth is usually scarcer than at headquarters.

By combining Unified Communications with the capabilities of SD-WAN, IT departments can ensure that employees are experiencing reliable communications with quality of service. SD-WAN applies policy parameters for traffic steering and application recognition that allow priority traffic to get from point A to point B without interruption or degradation. It also provides seamless failover for redundant connections to protect your network resiliency.

Traffic Steering and Application Recognition

Through application recognition, SD-WAN provides full visibility into traffic characteristics and recognizes UC flows. It provides error-correcting treatment, including bandwidth management, traffic steering and link conditioning to eliminate characteristics that may impact UC applications.

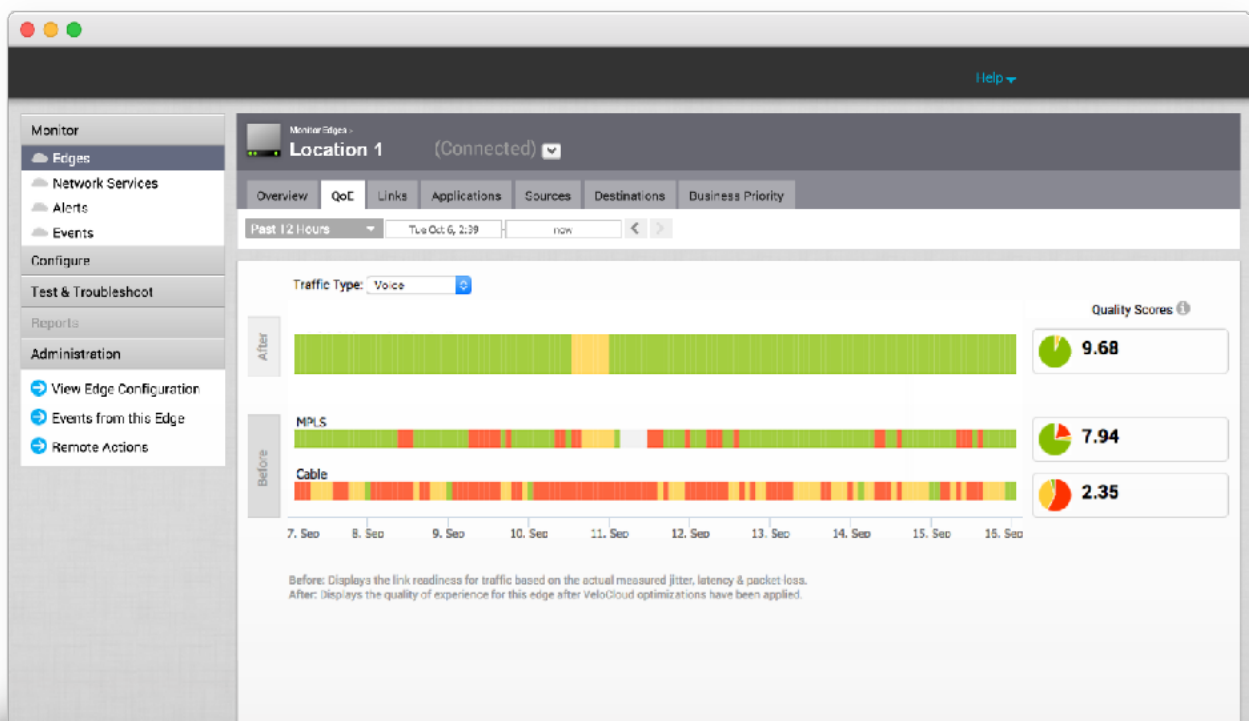
SD-WAN continuously monitors all available links that will impact UC performance and makes sub-second routing decisions to steer traffic on a packet-by-packet basis. This means an employee making a sales call will get better quality of service than the employee streaming music. UC performance will be consistent over any type of connectivity – ordinary broadband or hybrid WAN.

Seamless Failover

When employees experience problems with their traditional WAN connection, they can manually switch to a broadband line that is used for other activities, then switch back when things are back up and running. However, they can sometimes experience hard drops in calls using this process.

With SD-WAN, edge devices with virtual services are placed at each location to enable high-performance Unified Communications Over the Top (OTT) of any type of WAN transport. Each edge device is connected to cloud gateways to perform seamless failover that delivers more resiliency and network capabilities. If the edge device has two or more connections, active/active failover can be enabled. Both connections will work together to carry traffic and provide high-performing availability in case of a connection failure.

If high-availability is built into the edge device, failover can be deployed in an active/passive cluster failover design. One or more passive or “standby” connections are available to take over for the failed connection. SD-WAN will automatically recognize the problem and seamlessly failover voice traffic to another active circuit, like an LTE connection, without any call degradation. Employees will never know there was an issue in connection and productivity can continue as usual.



Bandwidth Optimization

Implementing productivity-enhancing tools through the cloud means a substantial increase in bandwidth requirements. On top of the other cloud solutions organizations are utilizing, layering in the needs of Unified Communications can run bandwidth thin. Companies require reliable and scalable network connectivity to support these initiatives. MPLS is reliable, but often not very scalable due to a combination of cost, multiyear contracts, geographic availability and time-consuming installation and management.

Omnipresent internet bandwidth is quick to deploy, flexible and significantly less costly. Unfortunately, these links have a reputation of being insecure and inconsistent in quality.

SD-WAN helps companies access more bandwidth from their low-cost internet connections by aggregating circuits of any type, from any provider, to relieve congestion or provide faster response for application flows. Real-time voice and video application performance is guaranteed through application-aware, per-packet link steering and on-demand remediation capabilities.

Additionally, SD-WAN can enable secure communications over any broadband connection from its robust architecture that is uniquely flexible to secure both traffic and data. It is deployed as a secure overlay to a transport/provider-independent infrastructure. Security policies are defined in the management console to establish VPNs where and when needed, over any transport link.

Conclusion

SD-WAN's ability to offload Unified Communications traffic from MPLS to more cost-effective internet at the edge can mean cost-savings, efficiency and a better end-user experience. SD-WAN can also prioritize bandwidth for critical UC applications, reduce unnecessary bandwidth usage from less priority applications and boost reliability in application accessibility. Organizations can finally experience the full potential of UC with SD-WAN.

CHAPTER 2:

SITUATIONAL USES FOR SD-WAN WITH UNIFIED COMMUNICATIONS

In most cases, the number one reason organizations deploy SD-WAN for Unified Communications is to increase their quality of service. Improving communication quality is the main benefit and core competency of SD-WAN in this case. The game changer is smart technology that optimizes and shapes traffic flows to ensure your traffic is getting from point A to point B without hard drops, brownouts and jitter. Extra bandwidth isn't just getting thrown at cloud-based communications. SD-WAN is managing your existing connections to more efficiently utilize available links to meet the demands of real-time data.

However, SD-WAN is built to support a wide range of cloud adopting organizations. Whether you are experiencing signs of poor bandwidth prioritization or feel like you can benefit from SD-WAN, here are a few reasons why organizations are implementing SD-WAN.

30-50%

Of enterprise traffic is shifting to the cloud, changing traffic flows and making traditional WAN suboptimal.
- Gartner

248M

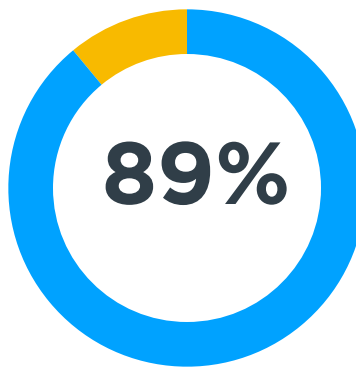
Desktop and conferencing users and 79% of global internet traffic will be video by 2020.
- VNI Index

80%

Of new applications will be deployed in the cloud by 2030.
- IDC

20%

Increase in enterprise WAN bandwidth at the branch per year with network traffic doubling every 3 years.
- IDC



Of enterprises list bandwidth and OpEx costs as the biggest branch office challenge.
- IDC

SITUATION 1:

Connections are Creating Barriers of Entry for Technology Implementations

With the huge influx of cloud-based solutions being implemented, slow connections can be a killer, especially with UC. Some organizations don't have access to better connections because of physical barriers, others just can't swing an expensive MPLS deployment. Your available connections should never restrict your innovation possibilities with Unified Communications.

SD-WAN breaks down these barriers by getting the most out of low-cost connections. The shaping and prioritization naturally allow for more efficient bandwidth usage. Organizations can squeeze more performance from the links they currently use or save money by dropping to a better fitting package. SD-WAN will ensure that performance is up-to-par for your Unified Communications, while saving on your internet connections investment.

SITUATION 2:

Unified Communications Needs to Be a Top Priority

In a typical office, there are hundreds of activities happening simultaneously. One employee could be streaming TV while on break, another could be listening to music on YouTube, and someone else could be utilizing a cloud application to complete their work. All of these activities are hitting your bandwidth hard and slowing down voice traffic. This could potentially prevent Jim in sales from making a call to close a deal. SD-WAN makes voice traffic a priority before other traffic flows by setting prioritization policies. You can control how bandwidth is utilized to ensure mission-critical applications, like UC, are never compromised. Active monitoring allows organizations to get full visibility into traffic and network characteristics that may impact UC applications. When SD-WAN recognizes UC traffic flows, best quality links will be allocated on a packet-by-packet basis above lower priority activities, ensuring consistent UC quality.

SITUATION 3:

Creating Consistency Through the Dispersed Organization

Organizations that are dispersed across the country with multiple branch locations, remote workers and a mobile workforce often rely on multiple broadband connections and solutions. Every one of these connections could have different contract SLAs, including speed, uptime and quality. This can pose a challenge for organizations that are relying on cloud-based communications. Not only will quality be an issue, but the management of multiple networks can be a challenge for IT teams.

SD-WAN can create consistency for the dispersed organization by simplifying management and ensuring quality of service, no matter the type of connection. Since SD-WAN is cloud-based, management for all connections and locations are done through a centralized portal. Policies can be set to manage the variety of networks your organization utilizes across the board. Traffic prioritization, steering and shaping makes sure that communications data takes the best possible link from the pull of bandwidth at all times. If you opt for a fully managed solution, SD-WAN will be managed 24/7/365 by a group of experts. Your internal team can go back to focusing on revenue generating projects while you have full access to a group that works as an extension of your team.

CHAPTER 3:

WHAT TO EXPECT AFTER AN SD-WAN DEPLOYMENT

At SD-WAN's core, protecting quality of service and improving performance is what it's all about. SD-WAN reroutes traffic and prioritizes data over multiple types of networks, including private circuits, broadband, LTE, 4G and 5G to safeguard quality and minimize costly connectivity expenses. After an SD-WAN implementation with proper tuning and prioritization, an organization should experience less dropped calls over their UC, better quality video conferencing and swift application performance.

Further, SD-WAN can deliver connection security, real-time visibility into the network and data efficiency that results in cost-savings.

Secure Connections

Today's applications are more frequently delivered via the cloud, and the bring your own device (BYOD) phenomenon is widespread. These trends expand the attack surface of the network and make visibility even harder. How are organizations supposed to protect what you cannot see from threat actors? SD-WAN secures and encrypts both traffic and data as it is deployed as an overlay to a transport independent infrastructure through cloud gateways. Many advanced SD-WAN solutions have built-in security features and integrations to leading technology like Fortinet, Palo Alto and zScaler to expand security solutions that customers already have in place.

SD-WAN allows for full visibility into the use of data center and SaaS (Software-as-a-Service) applications through built-in firewall capabilities. It provides greater control over the protection of network activities by applying network-wide business and security policies, including authentication of internal users.

SD-WAN extends the WAN perimeter from the cloud to the branch securely through on-demand VPN technology. VPN tunnels are built where and when needed to cover branch-to-branch, branch-to-DC (data center) or branch-to-cloud. This ensures that your UC traffic and data is secure from point A to point B.

Cost-Savings and Data Efficiency

Voice and video communication through the cloud requires preferential prioritization and specialized treatment to operate effectively over the network. SD-WAN helps organizations address this issue by achieving data prioritization for their mission-critical applications. Prioritization is completed automatically from the policies set. Therefore, business-related UC traffic will be automatically steered to better performing, quality connections before the person watching YouTube.

If your voice and video communication traffic currently flows over a private network, we're sure you are aware of the impact it has on data usage. The increase in data usage has associated costs that can be exorbitant to many organizations. When deploying SD-WAN for Unified Communications, every location using UC can experience cost-savings from voice prioritization. Branch locations can realign their connection service levels to the more efficient usage from SD-WAN. Even if you don't change connections or service levels, organizations can improve data efficiency and reallocate bandwidth to other needs without additional data costs.

Better Scalability

Organizations often have to deal with branch growth and turnover due to shifting business patterns, mergers and acquisitions. Making sure everyone is on a unified phone system with these changes, as well as the proper amount of bandwidth to support it can be challenging for IT teams. Since SD-WAN operates as an overlay to the existing network, turning up a new site, or bringing down a site, is quick and painless without impact to the stability of the current infrastructure. Organizations can utilize whatever type of connectivity is available and deploy SD-WAN in minutes. Employees at the branch site can have stable and jitter-free connections to the UC system and collaborate with others like they were at headquarters.

Real-Time Visibility

SD-WAN allows organizations to increase their real-time visibility into their network and bandwidth usage with monitoring capabilities. Often, organizations have limited insight about their daily usage without investing in certain tools. With a better understanding of how bandwidth is used, organizations can make knowledgeable, analytics-based decisions on priority and security policies to improve network efficiency.



CHAPTER 4:

SD-WAN WITH MAGNA5

As businesses increase their use of cloud-based collaboration, voice and other mission-critical applications, the need arises for a solution that ensures efficient transmission of data to and from every location in your network. Achieving voice and application quality for Unified Communications is dependent on prioritizing traffic flows and redundant connections for failover. SD-WAN reallocates traffic prioritization for UC with the high-priority data it needs to run efficiently without jitter, latency or brownouts, as well as supply other low priority applications with traffic flow based on its importance.

SD-WAN with Magna5 is carrier agnostic and can enhance existing connections, whether MPLS, broadband or a combination of both, to shape traffic for maximum efficiency and failover options. If an outage occurs with one of your connections, SD-WAN will move communications traffic to the next best option to eliminate downtime. In some cases, the benefits from traffic optimization may allow organizations to move to less-expensive broadband packages to increase cost savings.

SD-WAN improves traffic and application performance, as well as provides full visibility into your entire WAN. 24/7/365 traffic monitoring will give organizations visibility in a single-pane-of-glass with control into network usage. Edge devices with virtual services are placed at each location to enable high-performance Unified Communications Over the Top (OTT) of any WAN transport to deliver performance, visibility and remote monitoring. Each edge device is connected to fully redundant cloud gateways for active/active failover capabilities to deliver more resiliency and network capabilities.

SD-WAN with Magna5 is fully managed by our U.S.-based 24/7/365 Operations Center. We build problem-solving SD-WAN solutions that are customized around the client's specific environment and budgetary requirements. From service design to implementation, deployment and continuous 24/7/365 US-based support, we have dedicated team members available to ensure your SD-WAN and UC success.



ENHANCE YOUR UC TODAY

Magna5 can help enhance the performance of your UC solution with managed SD-WAN. Gain a competitive advantage with traffic steering, bandwidth optimization and seamless failover for better UC performance. [Contact us](#) for a free demo and consultation.

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