



Networking for the unforeseeable future

How SD-WAN, powered by big data, supports business agility in unpredictable times

Executive takeaways

Here's what you'll learn from this whitepaper:

The need to provide robust network access to support remote workers and new, cloud-based applications and processes has put the IT departments of distributed organizations in the innovation driver's seat.

IT leaders realize that an agile, open networking platform is crucial to offering the flexibility and performance the organization needs to enable new business models. For an optimized solution that scales to support all users and applications, SD-WAN combined with the power of big data, artificial intelligence for IT operations (AIOps) and actionable insights offers IT the deepest visibility and most granular control of their infrastructure to deliver excellent application experiences.

- 1 The implications of accelerated cloud adoption to large, distributed organizations and their networks.
- 2 How the overnight shift to remote working and touchless consumerism poses new challenges for IT.
- 3 Why network agility is key to delivering an experience that boosts employee retention and customer satisfaction.
- 4 The ways SD-WAN powered by big data offers organizations the most secure, flexible and scalable option going forward.

The business network as we know it, is gone

When it was introduced, MPLS was an ideal option for organizations that ran multiple business-critical applications at multiple locations. Operated and managed by a single carrier, MPLS converges voice and data traffic over connections that are isolated from the public Internet, while offering rudimentary control over applications.

As organizations across all industries have evolved new ways of doing business, their ‘network edges’ have become more dispersed and, in some cases, have evaporated completely. Applications and servers are moving to cloud, multi-cloud and SaaS providers, often traversing public broadband. Now there is no longer a “safe corporate network” and “Wild West Internet”—there is only “the network.”

Consequently, the need for resilient, secure access to support business-building applications and processes—including SaaS and hypercompute—is more important than ever.

The great acceleration

By fueling the boom in remote working and touchless consumerism, the global pandemic has forced organizations to accelerate their cloud migration timelines. Businesses and their networks must be agile to support these shifting demands. Now organizations across all industries are compelled to offer employees multiple work options—from permanent work-from-home to hybrid models, all ready to flex and scale as physical distancing measures change. It’s estimated that 25-30% of the workforce will be working from home multiple days a week by the end of 2021.²

Organizations are also challenged to either maintain their current business capabilities while extending them securely beyond the traditional network edge or—in the case of workforces that are predominantly work-from-home—scale down operations internally.

What’s more, virtually every industry has been forced to reimagine how they operate and serve their customers. The technologies that now enable commerce under physical distancing will become the consumer’s default mode of shopping. According to Forrester, 30% of consumers plan to shop more online in the future.³

47%

of survey respondents have transitioned 50% of their workforce to the home.¹

48%

anticipate a permanently higher rate of full-time remote employees.¹

25-30%

of the workforce will be working from home multiple days a week by the end of 2021.²

30%

of consumers plan to shop more online in the future.³

IT now drives the business

With pressure on the organization to digitally transform and adopt new business models, the IT department is in the driver's seat for innovation. Since connectivity is now the backbone of the organization, IT needs to focus on the value they're delivering to an organization's employees and customers by delivering the applications and the experience that ride over the network—flexibly, continuously and securely.

75%

of global IT decision makers agree with the statement "the cloud is the most integral part of our digital transformation strategy."⁴

Rising demand, flat budgets

Even though the explosion in bandwidth demand has pushed traditional MPLS networks to their limits, technology budgets have stagnated. IT managers need to ensure network performance and uptime that supports new applications, closer workplace collaboration and outstanding customer service—while controlling costs.

37%

of respondents indicated they currently use a hybrid cloud, with another 35% indicating they plan to use a hybrid cloud in the next 2 years."⁴

Many IT organizations are re-architecting their networks to be Internet-based to reduce costs and increase capacity for business-critical, cloud-based applications. By incorporating broadband connectivity, IT can provide the best available access options to satisfy unique location requirements while paying only for the access and capacity needed to keep costs down.

A new generation of apps is driving bandwidth demand



Virtualization



Virtual Reality



Augmented Reality



Streaming Media



Cloud Adoption ERP



Telemedicine



Kiosks/Touch Screens



Internet of Things



Omni-Channel



Real-time Personalization



Robotics



Electronic Medical Records

Scaling up (or down) with software-defined networks

SD-WAN offers IT departments the most agile, cost-effective way to ensure flexible, secure and cost-effective bandwidth for the organization. It also enables the continual performance tuning and uptime IT needs to effectively onboard new applications and processes as they become available. It’s no surprise, then, that SD-WAN deployments have skyrocketed—either to accelerate existing IT plans or scale back IT to something more flexible and manageable.

A report by Futuriom expects the SD-WAN tools and software market to accelerate to a growth rate of 34% CAGR to reach \$2.0 billion in 2020, \$2.85 billion in 2021 and \$4.6 billion by 2023.⁵ Further, awareness of SD-WAN is growing, with 92% of respondents evaluating SD-WAN services and software.⁵

34%

CAGR growth will be seen in the SD-WAN tools and software market, reaching \$2.0 B in 2020, \$2.85 B in 2021 and \$4.6 B by 2023.⁵

92%

of respondents surveyed said they are evaluating SD-WAN services and software.⁵

Maximizing SD-WAN with Big Data

While still relatively new to networking, big data plays a crucial role in maximizing SD-WAN’s potential for responsive provisioning, effective bandwidth utilization and precise performance tuning. To go beyond basic network monitoring, IT requires multi-layered visibility into network health, status and performance.

SD-WAN provides a tremendous amount of data—the sheer volume can be daunting. It can obscure key performance insights that the IT department or managed service provider should address. Importantly, this information is further enhanced as additional data is incorporated into the analysis. Harnessing all that data for actionable insights requires gathering and aggregating datasets from various data sources in the network and inputs (see *Possible data inputs*) into a data lake. Algorithms process and surface the results as actionable insights via an intuitive, adaptive graphical interface and mobile app notifications.

Going further, machine learning and process automation can be incorporated to automate traditional, manual tasks—even across network services. Finally, layering-in artificial intelligence enables the network to self-correct by proactively avoiding potential network issues.

To achieve this deep level of visibility, automation and control, IT departments require an SD-WAN edge platform—one that delivers highly reliable, secure and automated access to IaaS, SaaS, security, mid-mile and analytics clouds—combined with a managed services vendor that offers deep analytics capabilities and a centralized interface that provides access to all the network services in one place.

WHAT IS SD-WAN?

Software-defined WAN (SD-WAN) is an application-aware service that intelligently routes traffic in real time based on established business policies, along with network quality and availability. As a software-defined overlay network, SD-WAN works on top of the other types of networks, connecting multiple locations in a network to each other, to a data center, to applications and data in the cloud, or to SaaS platforms. SD-WAN can work over a wide variety of access types, including broadband.

For a detailed primer on SD-WAN, download a free copy of VMware’s [Software-Defined WAN for Dummies](#).

Possible data inputs



SD-WAN



Voice



LAN services



Core network



Ticketing



Quoting



Security



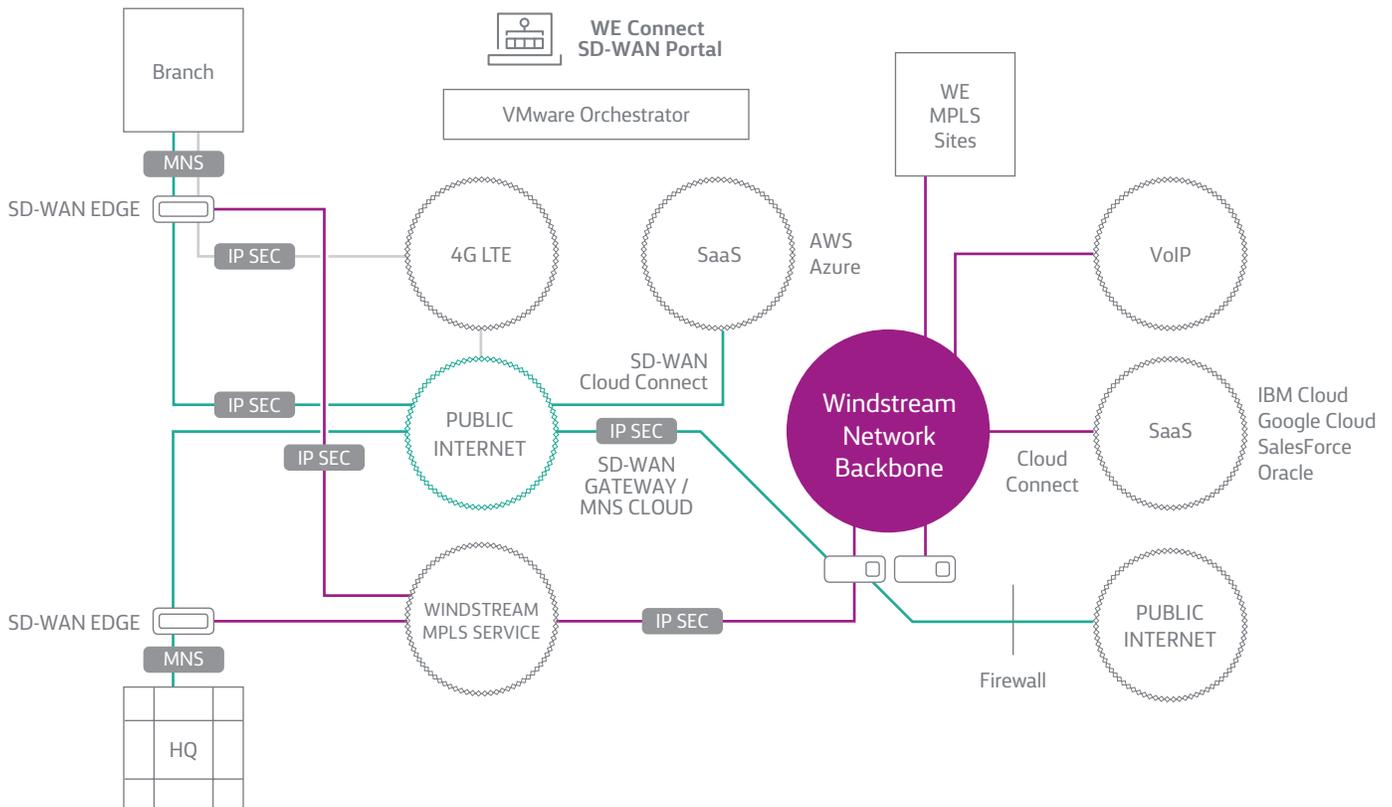
SaaS cloud providers

Re-defining software-defined networks

To maximize the performance, agility and cost-effectiveness of SD-WAN, Windstream Enterprise and VMware have partnered to create a unique cloud networking solution that offers unparalleled visibility, uptime and control with a rich customer experience. SD-WAN Concierge™ from Windstream Enterprise combines the VMware SD-WAN™—named a Leader in Gartner

2020 Magic Quadrant for WAN Edge Infrastructure—with the high-performance network, diverse managed access options, 100% service level agreement (SLA), integrated security, single-pane-of-glass management portal, and service delivery and management expertise of Windstream Enterprise.

SD-WAN with VMware—reference architecture



How it works

On-premises VMware SD-WAN Edge devices connect to VMware SD-WAN Gateways at the edge of the cloud network, providing the first hop for all traffic into the cloud services network as well as leading application, security and analytics

service clouds. The gateways provide optimized performance in a redundant and scalable architecture to eliminate downtime and enhanced security via encryption, to secure all connections including broadband Internet.

From there, Windstream Enterprise brings the following capabilities:



WE Connect, a true “single pane of glass” for all services and interactions with Windstream Enterprise, provides network visibility and management that leverages and incorporates big data to offer actionable insights.



The award-winning WE Connect Insight Engine gathers and evaluates data across all network locations (or a set of sites defined by the user) and aggregates it to deliver enhanced visibility and reporting—quickly identifying noteworthy areas in the network, applications or devices.



Next-gen UTM firewall security that can be deployed as a cloud-based, on-premises CPE or virtual network function integrated into a single CPE. Secure Remote Access (SRA) to the PCI DSS compliant SD-WAN can be managed via WE Connect.



A nationwide Cloud Core™ SASE architecture delivers rapid deployment, seamless integration, greater extensibility and higher uptime. It integrates SD-WAN with MPLS, UCaaS, cloud firewalls, remote access VPN and private hyperscale compute connections.



Our Concierge service model offers network assessment and design for low-touch provisioning and deployment, proactive management of access service providers and ongoing guidance and support to help optimize the network.



Flexible, fully managed access options help achieve the highest bandwidth for the lowest possible cost. We support any combination of WE-provided fiber Ethernet, broadband, cellular broadband or bring-your-own bandwidth utilizing public or MPLS underlay networks.

Conclusion

For an organization navigating the realities of remote work and touchless consumerism, IT agility is key to delivering a network experience that boosts employee retention and customer satisfaction. If data is the lifeblood of an organization, the network that carries the data requires a deep level of automated and intelligent data-based decision-making capability. That's why an intelligent SD-WAN network, powered by proactive insights from a powerful analytics engine and served up in a single pane of glass, offers the most secure, flexible and scalable option. SD-WAN Concierge from Windstream Enterprise, featuring VMware SD-WAN, delivers on that vision.

Cloud-enabled
connectivity,
communications and
security—guaranteed.

Windstream Enterprise drives business transformation through the convergence of our proprietary software solutions and cloud-optimized network to unlock our clients' revenue and profitability potential. Our managed services streamline operations, enhance productivity and elevate the experience of our clients and their end users while securing their critical data and brand reputation. Analysts certify Windstream Enterprise as a market leader for our product innovation, and clients rely on our unrivaled service guarantees and best-in-class management portal. Businesses trust Windstream Enterprise as their single-source for a high-performance network and award-winning suite of connectivity, collaboration and security solutions—delivered by a team of technology experts whose success is directly tied to our clients' complete satisfaction.

1. Hewitt, Andrew. "The State Of Remote Work, 2020." Forrester, July 6, 2020.
2. Lister, Kate. "Work-At-Home After Covid-19—Our Forecast." Global Workplace Analytics, Mar 2020. Accessed 8 Jun 2020.
3. Lai, Anjali. "A Snapshot Of US Consumers' Attitudes And Behavior During COVID-19." Forrester, Mar 2020. Accessed 8 Jun 2020.
4. "2019 Cloud Survey." Frost & Sullivan, 2019. Accessed 12 Nov 2020.
5. Raynovich, R. Scott. "2020 SD-WAN Growth Report: Market Poised To Accelerate." Futurium. June 23, 2020. Accessed 15 Oct 2020.

To learn more about network solutions, visit windstreamenterprise.com

