

Software-defined WAN (SD-WAN) remains an important and fast-growing market. But as deployments scale from proof of concept to full-scale rollouts, organizations are homing in on the capabilities of SD-WAN solutions that make this technology truly enterprise grade.

Crossing the Chasm: What Makes SD-WAN Enterprise Grade

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Introduction

The rise of software-defined WANs (SD-WANs) has been arguably the most significant advancement in the networking industry in recent years. Organizations around the globe are looking to digitally transform themselves and take advantage of important new technologies such as relying on cloud computing for increasingly mission-critical tasks and providing ubiquitous connectivity for employees, partners, and customers around the globe. The network continues to increase in importance as a critical enabler of these technologies for enterprises.

The network has also never been under so much pressure. The scope of the enterprise network is continually evolving. Organizations used to have simple WAN architectures where branch offices connected to a centralized datacenter. Now, enterprises rely on a variety of cloud services, including infrastructure as a service (IaaS) and software as a service (SaaS); critical applications have dynamic connection needs while demanding higher bandwidths and lower latencies. As the network increases in scale, securing it becomes a harder and harder challenge.

Traditional WANs typically do not provide the level of agility, speed, and capacity that enterprises need today. MPLS connections that enterprises have historically relied on are secure and effective, but costly. However, simply adding a new connection type (e.g., broadband or LTE) doesn't solve the problem. In fact, managing hybrid WANs with conventional routers can amplify the operational challenges associated with device-centric and CLI-based management paradigms. What's required is a centralized and policy-based platform for dynamically managing application traffic across links to provide the agility and cost effectiveness that organizations desire. This has led to the advent of SD-WANs, a technology that disaggregates the WAN control plane from the underlying connections. By doing so, SD-WANs offer companies a variety of benefits:

- » The ability to integrate multiple connection types (including MPLS, broadband, and LTE)
- » A centralized application policy controller that manages how traffic traverses links based on predefined performance, cost, or security policies
- » A controller that conducts dynamic path selection to automatically reroute traffic to maintain application service levels

AT A GLANCE

KEY STATS

IDC data shows that in 2018, the SD-WAN infrastructure market grew an impressive 64.9% to be worth nearly \$1.4 billion, and IDC expects the market to expand another 45.8% in 2019 when its value will reach more than \$2 billion.

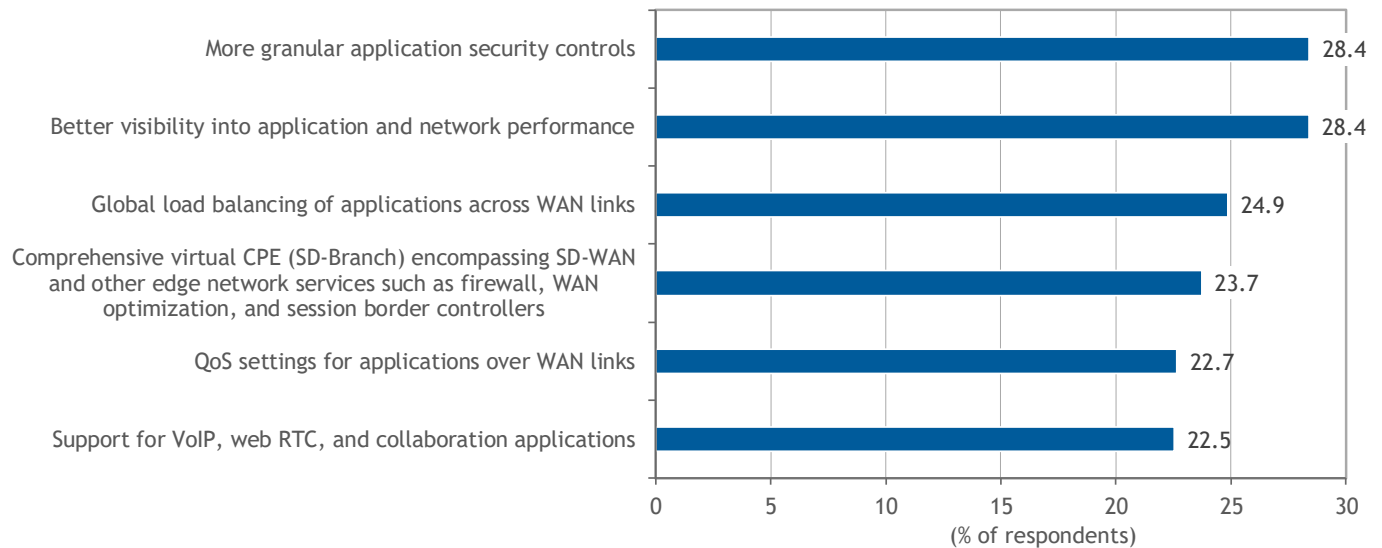
Despite these benefits, SD-WAN adoption is still in its early days, but growing fast. An IDC worldwide survey found that in 2018, 40% of WAN decision makers had already deployed SD-WAN in some form, an increase from just 10% a year earlier. Another 55% said they planned to do so within the next two years. Only 5% of respondents said they would not deploy SD-WAN. A more nuanced view of the data shows a compelling dynamic: Organizations with between 1,000 and 4,999 employees have a lower SD-WAN adoption rate of 35% (compared with 40% for the entire sample size). It begs the question: What factors will drive the next wave of enterprise-grade SD-WAN adoption?

SD-WAN for Enterprises: Beyond Connectivity

Many enterprises have explored initial proofs of concept or small-scale SD-WAN deployments. But the majority of the market has not yet transitioned to this technology in a full-scale way. For that to happen, SD-WAN must continue to advance and add enterprise-grade features. In IDC's 2018 *Software-Defined WAN (SD-WAN) Survey*, security and visibility into application and network performance topped the list of WAN network services that must be addressed in an enterprise-grade SD-WAN solution (see Figure 1).

FIGURE 1: **Top WAN Network Services That Must Be Addressed**

Q Which of the following WAN network services needs to be addressed before your company would be ready to make a purchase commitment for SD-WAN solutions?



n = 1,202

Source: IDC's *Software-Defined WAN (SD-WAN) Survey*, October 2018

Initial SD-WAN platforms have addressed some of these issues. Many have a basic policy controller that allows for management of hybrid WAN connections. Direct connection to IaaS and SaaS applications from the branches increases the attack surface. Often, organizations must bolt-on third-party security, visibility, and analytics services such as a firewall or intrusion detection systems and intrusion prevention systems (IDS/IPS). Some advancements that would make SD-WAN solutions more appealing to a broader swath of large enterprises are as follows:

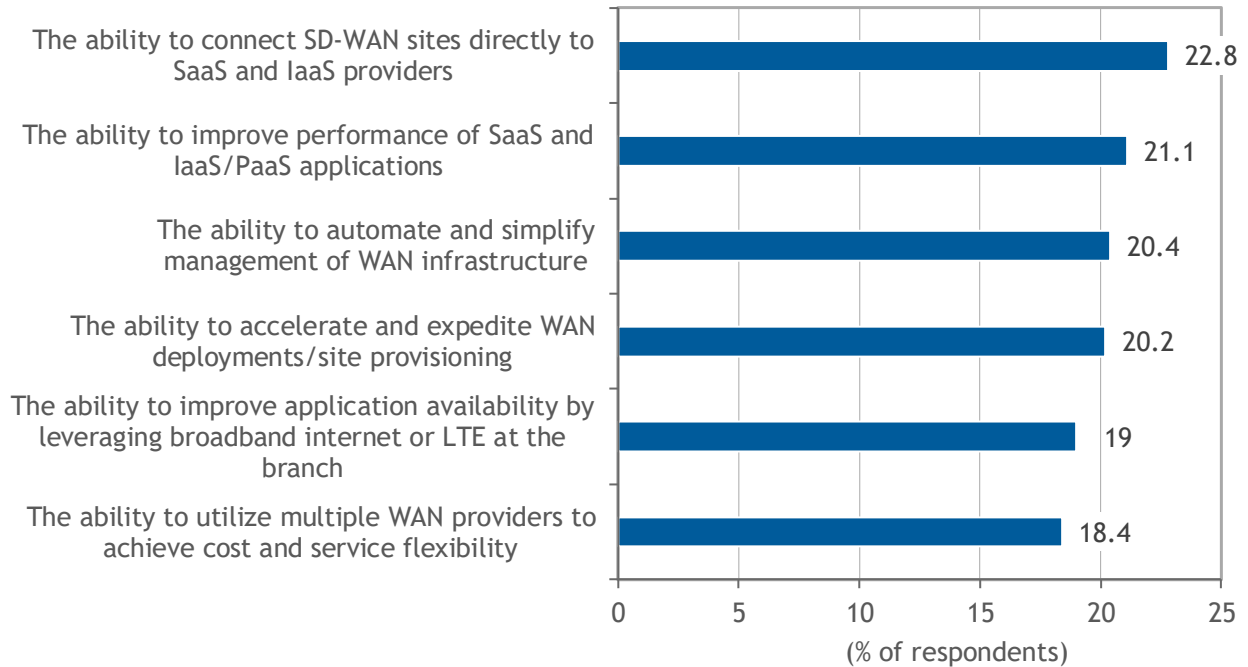
- » Core network services, such as enterprise-class routing, quality of service (QoS), dual stack IPv4/IPv6, and segmentation, that seamlessly integrate with existing networks (Such services are critical during brownfield phases of SD-WAN deployment.)
- » Advanced SD-WAN functionality such as IPSec/VXLAN overlays, packet racing, flow and packet load balancing, and zero-touch provisioning
- » Native integration of security features, such as a next-generation firewall, IDS/IPS, URL filtering, malware protection, and antivirus
- » Application optimization and acceleration (deduplication, compression, and SSL/HTTPS connections to IaaS and SaaS providers)
- » Advanced orchestration and management features (templates, configuration APIs, and detailed visibility and analytics)

The Importance of Cloud-Based Application Acceleration

Enterprises continue to increase their reliance on cloud-based services for mission-critical tasks across SaaS and IaaS providers. This makes ensuring optimal performance of WAN traffic to cloud-based destinations a critical function for enterprises. IDC survey respondents ranked the ability to connect to SaaS and IaaS providers and the ability to improve the performance of those connections as the top 2 use case criteria for adopting SD-WAN solutions (see Figure 2).

FIGURE 2: **Top SD-WAN Use Cases: Connectivity to and Performance of SaaS and IaaS**

Q Which of the following are the top 2 use case criteria for adopting an SD-WAN technology solution?



n = 1,202

Source: IDC's Software-Defined WAN (SD-WAN) Survey, October 2018

The Value of Network Visibility and Analytics

It's one thing to have optimized connections across the network; it's another thing to have the tools in place to monitor those connections and ensure they're operating the way they've been programmed to. That, in essence, is the value enterprises gain from having detailed levels of network performance visibility and analytics. Fundamentally, this performance data can be used to ensure high levels of quality of service, reduce the time to identify performance issues, and resolve performance issues before they impact users.

Some keys to enterprise-grade SD-WAN are natively integrated network and security functions such as application acceleration and security services.

SD-WAN solutions that have integrated performance visibility and analytics not only can help ensure performance but also can be a security benefit. Spikes or dips in traffic can be the sign of potentially nefarious activity on the network. This traffic can be flagged, making visibility and analytics solutions an important line of defense against unwanted traffic on the network. Solutions that retain a rich history of packet-, flow-, and device-centric telemetry can help identify the root cause of such attacks.

Considering Riverbed SteelConnect EX SD-WAN

Riverbed's SteelConnect EX is a flexible, full-stack enterprise-grade SD-WAN offering that combines enterprise-class routing capabilities, advanced SD-WAN, application acceleration, and security features natively within the platform. SteelConnect EX's advanced security features include a next-generation firewall, IDS/IPS, distributed denial-of-service (DDoS) prevention, URL filtering, malware protection, and antivirus, and also provides the ability to "service chain" packet flows with third-party security services resident on-premises or in the cloud.

Within the Riverbed family, SteelConnect EX runs in conjunction with SteelConnect Director, allowing for centralized policy-based management, including API-enabled configuration templates. SteelConnect Analytics can provide deep levels of visibility into network performance and security.

SteelConnect EX can be run on a dedicated physical appliance, run as a virtual instance in the branch or datacenter, or hosted in the cloud. Riverbed offers a variety of appliances, including options for small branch offices, large branch offices, and datacenter hubs. SteelConnect EX complements SteelConnect CX, which is a cloud-managed SD-WAN platform for more simple deployments.

Challenges

Riverbed is one of many enterprise networking vendors with an offering in the competitive SD-WAN market. Riverbed must look to differentiate its SD-WAN offering, which it is doing through integration with its application acceleration to boost the performance of SaaS, cloud, and on-premises applications and through integration with its network performance management (NPM) offerings, creating a unified platform for managing application and network performance.

Conclusion

The SD-WAN market is at an inflection point as deployments of this important technology continue to ramp. As organizations adopt SD-WAN, they are also thinking about how the edge of their enterprise networks will continue to evolve. One important change will be the rise in the use of virtual network functions (VNFs) in branch offices. These VNFs could include virtual routing to enable SD-WAN, network performance monitoring, and security services such as firewalls and IDS/IPS. IDC calls this next evolution of the market software-defined branch (SD-Branch). Having an SD-WAN platform that can natively integrate network and security functions will ensure organizations that their enterprise network is prepared to meet the needs of their business not just today but also in the future.

About the Analyst



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Brandon's work in IDC's Network Infrastructure group includes monitoring market and technology trends, building forecasts, and providing competitive analysis in Network Management, Ethernet switching, routing, wireless LAN, SDN, and SD-WAN.



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