

# Hybrid WAN Operations: Extend Network Monitoring Across SD-WAN and Legacy WAN Infrastructure

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# Hybrid WAN Operations: Extend Network Monitoring Across SD-WAN and Legacy WAN Infrastructure

## Executive Summary

Enterprise requirements for connecting branch offices to the wide-area network (WAN) are evolving significantly, and software-defined WAN (SD-WAN) solutions can facilitate this evolution. However, most enterprises will not move completely to SD-WAN and will instead maintain a hybrid network of legacy WAN and SD-WAN technology. Given this reality, network managers need an end-to-end approach to WAN monitoring and management, with tools and processes that help them unify legacy WAN and SD-WAN operations.

## SD-WAN Allows Enterprises to Transform Branch Connectivity

Today's network engineer must be willing to embrace change, especially when tasked with delivering WAN connectivity to branch offices. WAN requirements are evolving, which drives change in architecture and technology selection. For instance, the focus is no longer on building a network that connects branch offices to a central data center via an MPLS network. Now remote sites need direct access to cloud applications, and MPLS isn't going to facilitate that access.

Whether or not IT organizations are ready for this fundamental shift, the fact remains that fewer enterprise applications live in the corporate data center today. In the early days of cloud adoption, enterprises leveraged their expensive, static MPLS connections to hairpin traffic through a data center to apply security and access controls to cloud services. But the latency penalty on this approach is too high for critical applications. As more applications migrate to the cloud, enterprises have realized they need to simplify the network. According to EMA research, 55% of enterprises today allow their branch offices and other remote sites to connect directly to the cloud.<sup>1</sup> In most cases, the one and only way to provide direct cloud access is via the public internet.

Moreover, the internet is becoming a strategic option for branch office connectivity. Among enterprises that are adding internet connections to their remote sites, 74% will use them to replace MPLS as the primary network connection. And indeed, direct cloud access is one of the main reasons for this shift, with 38% of network professionals surveyed pointing to direct cloud access as a top driver for replacing MPLS with the internet in these sites. However, network engineers also cited superior performance (37%) and higher-bandwidth options (31%) as major drivers. Of course, the internet is also cheaper and typically faster to provision.<sup>2</sup>

SD-WAN is a new class of networking solutions that facilitates this transformation of branch office connectivity. SD-WAN typically offers centralized control and management of branch network infrastructure. It is usually an overlay solution that enables secure and optimized direct connectivity to the cloud. And it supports hybrid WAN connectivity with policy-based traffic steering across multiple internet and MPLS links. For instance, a network engineer can configure SD-WAN to forward traffic bound for applications in a data center over MPLS, reserving the internet as a backup connection. But SD-WAN can also use the internet as the primary network connection for traffic bound for the cloud.

SD-WAN is about much more than facilitating the cloud and leveraging the internet, however. Yes, direct and optimized access to the external cloud (37%) was reported as the second most common driver for SD-WAN adoption today, but enterprises are more interested in improving application performance (42%) with SD-WAN. Improved network security (34%) was also a major driver for using the technology.<sup>3</sup> While SD-WAN can meet all of these requirements, network managers will need monitoring tools to assure the ongoing effectiveness of these new technologies.

<sup>1</sup> EMA, "Next-Generation Wide-Area Networking," July 2016.

<sup>2</sup> Ibid.

<sup>3</sup> Ibid.

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## SD-WAN Will Coexist With Legacy Networks

SD-WAN enables enterprises to transform branch-office WAN connectivity, but this transformation isn't universal. Legacy technologies will persist in most networks, and network teams will need to mitigate the complexity that comes with managing a mix of legacy and SD-WAN environments.

For instance, many enterprises are replacing MPLS with internet for primary internet connectivity, but not at every branch. EMA research found that the average enterprise switching from MPLS to internet is doing so at only 45% of its remote sites.<sup>4</sup> The majority of sites will continue to use MPLS for primary network access.

Enterprises are also limiting the scope of their SD-WAN implementations. Very few will deploy the technology across the entire network. Instead, 35% of SD-WAN adopters said they are deploying the technology at 41% to 60% of their sites. Another 26% were deploying SD-WAN at only 21% to 40% of sites. At least for now, most networks will contain a mix of legacy WAN and SD-WAN technologies.<sup>5</sup>

Tasked with managing both legacy WAN and SD-WAN solutions, network teams might fall into the trap of maintaining two sets of tools and processes for monitoring and troubleshooting the WAN. The separation of SD-WAN monitoring and legacy WAN monitoring is already recognized as a leading challenge, with 32% of SD-WAN adopters saying they are worried about their ability to integrate SD-WAN management with legacy WAN management.<sup>6</sup> Enterprises can ill afford to increase management complexity because they are already struggling to fill a gap in networking talent: The top challenge to WAN success today is a lack of networking skills and knowledge (reported as a challenge by 32% of network professionals).<sup>7</sup> Network teams must focus on increasing the effectiveness of their people by streamlining operations in these mixed networks.

## Network Operations Must Extend Visibility Across SD-WAN and Legacy WAN

There is a better way to manage a hybrid network of legacy WAN and SD-WAN technology. Network operations should look for opportunities to extend end-to-end network visibility across the entire WAN. While many SD-WAN solutions offer excellent visibility into their own solutions, this visibility rarely extends beyond the scope of the SD-WAN deployment.

Network managers should adopt tools that provide visibility into—and management of—both environments. With end-to-end visibility, a network team can use a single set of tools to monitor and troubleshoot the WAN. They can reduce complexity by streamlining management and monitoring workflows, reducing the time they spend on correlating data across the two management environments, reducing visibility gaps, and eliminating the overhead associated with maintaining multiple sets of tools.

Integrated WAN operations is within reach for most enterprises, thanks in part to the fact that many SD-WAN vendors offer application programming interfaces (APIs) that allow third parties to extract telemetry and data from their solutions. An extensible network monitoring tool that integrates with SD-WAN APIs can enable a unified approach to legacy and SD-WAN operations.

Either on their own or in partnership with their monitoring vendors, network teams can integrate their network monitoring tools with an SD-WAN solution's APIs to collect, correlate, and analyze network telemetry and provide a dashboard view of all SD-WAN and legacy WAN infrastructure for end-to-end network operations. Ideally, a monitoring vendor will partner with SD-WAN vendors to validate this integration so that an enterprise can mitigate any risks associated with a custom integration.

<sup>4</sup> EMA, "Next-Generation Wide-Area Networking," July 2016.

<sup>5</sup> Ibid.

<sup>6</sup> EMA, "Managing Tomorrow's Networks: The Impact of SDN and Network Virtualization on Network Management," December 2015.

<sup>7</sup> Ibid.

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## EMA Perspective

This paper has established that branch-office WAN connectivity requirements are changing substantially. Enterprises are connecting their branches directly to the cloud, and they are leveraging the internet for primary network access in place of MPLS networks. SD-WAN facilitates this new approach to the WAN, but enterprises are not deploying SD-WAN everywhere. Instead, many sites continue to use legacy WAN technologies. This persistence of legacy WAN solutions alongside SD-WAN solutions adds to management complexity.

To avoid this complexity, network managers should avoid maintaining two separate management environments. They need to unify management and monitoring across SD-WAN and legacy WAN sites. Fortunately, most SD-WAN vendors offer APIs that network monitoring vendors can use for integrations. With the right monitoring tool vendor, early adopters of SD-WAN can integrate legacy WAN and SD-WAN monitoring. Many network monitoring vendors are partnering with SD-WAN vendors to validate this integration for their customers. Before embarking on an SD-WAN project, network teams should evaluate these partnerships and determine which ones offer the best combination of SD-WAN innovation and monitoring visibility.

## About SevOne

SevOne provides the world's largest CSPs, MSPs and Enterprises with the most comprehensive technology portfolio to acquire, analyze and automate network & infrastructure performance data to deliver actionable insights to compete and win in a connected world. SevOne serves organizations that are looking to monitor complex, dynamic next-generation infrastructure such as software defined networks, orchestrated containers and cloud technologies to support their business goals. SevOne is a privately held company headquartered in Boston, MA. For more information, visit [www.sevone.com](http://www.sevone.com).

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