### EBOOK

## 3 REASONS YOU NEED CONTINUOUS PERFORMANCE VALIDATION FOR SD-WAN





## 56% of network teams are supporting a multi-cloud environment.

Network Management Megatrends 2024 – EMA Research Report – May 2024



# Executive Summary

It's called the 'infinite edge'. In today's always-on world, enterprises must ensure customers, employees, and others can connect quickly and reliably to the network. And there's no edge to this network—it's infinite.

It could simply be thousands of users connecting to the corporate virtual private cloud. It might be a remote warehouse thousands of miles from headquarters requiring real-time inventory management. Or a hotel group needing to give guests Wi-Fi access in a remote island resort. Or a consumer electronics retailer needing to reliably demonstrate a store full of audio-visual devices in its stores.

Make no mistake, the enterprise network now spans everything and everywhere. At the same time, every user demands a consistent, high-quality experience.

Network operations teams lack options to monitor edge infrastructures efficiently. The popular software-defined wide area network (SD-WAN) technologies introduce more virtual components, making networks more complex to manage, troubleshoot, and triage. Moreover, a heavy reliance on hybrid networks creates additional blind spots that mean application performance and user experience are at risk of disruption.

This Broadcom eBook explores three reasons why native SD-WAN monitoring tools struggle to provide the visibility needed to deliver superior service levels to end-users. It also reveals how modern, multi-vendor SD-WAN monitoring provides end-to-end visibility into the WAN virtual and physical infrastructure, including third-party networks. This unified visibility enables network teams to better understand network traffic patterns, ultimately leading to improved economics and service assurance.

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# Enterprise Networks Are Shifting

There's no stopping the cloud. Study after study shows that adoption of cloud services is booming. More and more enterprises are turning to public cloud platforms to transform the organization and reach a future state faster, whether to increase agility, enhance the customer experience, or reduce the cost of building new applications. Many are also choosing to move their legacy applications to the cloud.

Traditional networks typically rely on multiprotocol label switching (MPLS) circuits to connect sites to data centers. MPLS is a classic telecommunication technique that routes traffic using the shortest path based on "labels" rather than network addresses. However, the rapid adoption of cloud-based applications creates an MPLS bottleneck as network traffic is increasingly Internet-bound rather than destined for the corporate data center.

To mitigate this problem, enterprises are now moving towards a hybrid WAN architecture, utilizing both MPLS and Internet-based connections, or sometimes Internet-only connections. Using this architecture, sites and users are directly connected to the Internet instead of being backhauled through data centers, regardless of their location.

Forward-thinking organizations are making the Internet their new enterprise network. This strategy lowers costs and reduces the strain on the MPLS backbone while delivering greater flexibility and scalability.

## 83%

of organizations have extended the cloud edge, moving applications closer to remote users to reduce latency and improve experience.

Modernizing Network Engineering and Operations in the Era of Hybrid and Remote Work - EMA Research Report - August 2023



## 99%

### of network teams within enterprises that use the cloud are monitoring and troubleshooting cloud networks.

Network Management Megatrends 2024 - EMA Research Report - May 2024



# Enterprise WAN Transformation is Real

SD-WAN has emerged as a breakthrough solution for transforming traffic management across MPLS and Internet links. Critical advantages of SD-WAN include:

- Reducing costs with carrier independence across MPLS, LTE, 5G, and other connection types
- Improving network reliability with dynamic path selection across multiple WAN connections based on network conditions.
- Simplifying operations and security with automation and cloud-based management.

SD-WAN technology is one of the fastest-growing segments of the technology market owing to its ability to deliver seamless connectivity to cloud applications and reduce the cost of communications.

There's a catch though. Most SD-WAN platforms can monitor some degree of application and network performance. However, the capabilities may differ between vendors' offerings, leading to a separate, fragmented view of network performance. The demand for experience metrics is increasing, all the way from the end-user to the actual application or cloud service.

So why are organizations re-imagining their network monitoring in search of a better understanding of the user experience? Here are three key reasons:

# Reason #1: SD-WAN Network Paths Can Change Unpredictably

Network professionals attempting to deliver a global network must confront the problem of unpredictable SD-WAN performance.

SD-WAN application policies and path remediation dynamically change routes to optimize performance and mitigate network issues. However, these changes, based on traffic priorities rather than user experience, can sometimes degrade application performance. Variance in performance creates a situation where business services can work optimally sometimes but perform poorly at other times. This inconsistency disrupts operations, diminishes productivity, and ultimately erodes trust in the network organization.

A modern SD-WAN monitoring capability allows network operations to validate new deployments or changes in existing ones, focusing on the end-user perspective. This comprehensive validation ensures that the SD-WAN effectively prioritizes and delivers critical applications, aligning with business objectives and enhancing user satisfaction.

Software-defined infrastructures create a fundamental challenge to traditional monitoring. When the network topology can change several times a day, validating network delivery requires different ways to measure performance.

## **57%**

of companies are updating their SD-WAN policies multiple times a year.

WAN Transformation with SD-WAN: Establishing a Mature Foundation for SASE Success – EMA Research Report – April 2023





## **68%**

### of organizations are trying to establish hybrid cloud connectivity between public and private infrastructure.

Network Management Megatrends 2024 – EMA Research Report – May 2024

# Reason #2: SD-WAN Does Not Control the Internet

Unlike MPLS links, the Internet is a diverse and unreliable transport mechanism. It comprises a vast, complex web of autonomous systems (AS) and service provider networks with continuously changing connections.

While native SD-WAN monitoring tools can determine whether a device connects to a remote network or if an application is successfully delivered across a tunnel, they often fail to identify all the handoffs between internet service providers (ISP) and cloud service providers (CSP). This limitation prevents network teams from pinpointing the responsible party for a degraded hop, making it difficult to quickly address and remediate issues.

Next-generation SD-WAN monitoring tools can test end-to-end network paths across the Internet. Once it is established that some third-party managed component must be at fault, network teams can determine where things went wrong and collaborate with service providers to fix the problem or find a workaround.

In a cloud-centric world, the emerging concept of meantime to innocence (MTTI) is important. MTTI measures how long it takes for the networking organization to prove that the portion of the network it manages is not causing degradation.

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# Reason #3: SD-WAN Does Not Measure End-User Experience

Today, any user should be able to access whichever service they need to complete their task on any device in any location. And the experience during that journey should be consistent.

SD-WAN solutions are specifically geared to address these challenges. However, too many SD-WAN solutions fail to deliver that universally consistent, omnichannel experience. This is because they only focus on edge-to-edge and device performance—not the entire end-to-end experience.

The right monitoring capabilities would allow synthetic transactions that show the performance trends of SaaS and web applications, emulating the paths and actions that end users take as they experience an application.

By running periodic tests, it is possible to detect performance degradation early. Without synthetic monitoring, the only way to identify issues is when they impact users. Synthetics provide actionable intelligence proactively, allowing problems to be addressed before they affect the user experience.

## 49%

of organizations are using a synthetic network monitoring tool today.

Network Management Megatrends 2024 - EMA Research Report - May 2024



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## Network professionals believe that better network management tools could prevent or eliminate nearly 53% of their network problems.

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# Transforming Network Operations with Continuous SD-WAN Monitoring

Consider the example of a large UK telecom company. It deployed multi-vendor network services, resulting in different monitoring solutions and fragmented portals. The network operations team faced challenges with integration, time-consuming data correlation, skilled resources tied up with tool operations, and limited end-to-end visibility and reporting.

The telco switched to a continuous, end-to-end SD-WAN monitoring solution that ensures site availability, application performance, and policy compliance from the end-user perspective. This move allows network operations to identify and understand route changes, validate application policies, and efficiently manage various WAN connectivity options. The organization can now confidently assure enterprise networks and managed network services.

Organizations that correlate network performance to the actual end-user experience are better equipped to operationalize SD-WAN and drive the success of WAN modernization initiatives.



# Drawing It All Together

SD-WAN technology is being widely adopted because it allows organizations to create higher-performance WANs using cost-effective and commercially available Internet access. However, as the Internet becomes the new backbone of enterprise networks, network teams now face the challenge of managing services with less control than ever before. This shift requires them to ensure reliability and performance across a network infrastructure that spans beyond their direct oversight, necessitating advanced monitoring tools.

Native SD-WAN monitoring tools cannot keep up with this pace of change. Here's why:

- SD-WAN Network Paths Can Change Unpredictably: When the network topology can change several times a day, assuring network delivery requires advanced ways to measure performance.
- **SD-WAN Does Not Control the Internet:** When things go wrong, identifying the fault domain and determining which provider is accountable for issues requires visibility into third-party-operated networks.
- SD-WAN Does Not Measure End-User Experience: When applications are delivered over cloud and SaaS infrastructures, detecting outages requires monitoring performance from the end-user perspective.

To address these challenges, network teams must continuously validate network performance by correlating it with actual user experience. Utilizing solutions that provide insights into end-to-end network delivery equips these teams to operationalize SD-WAN deployments effectively. Consequently, organizations can significantly improve their chances of successfully deploying SD-WAN and fully leveraging its substantial benefits.



# Network Observability by Broadcom Can Help You Get There

This comprehensive, modern network monitoring solution lets you:

- Correlate the SD-WAN overlay network to the physical underlay network performance.
- Identify the location and the root cause of underlay performance issues across ISPs and CSPs.
- Actively test network performance across clouds and apps from the end-user perspective.

One of the rare solutions offering active monitoring, Network Observability by Broadcom enables network operations teams to fully understand how performance is affected by common issues such as application outages, route changes, connectivity drops, and ISP peering changes. By isolating the root causes of problems, this solution helps network organizations reduce the MTTI for issues beyond their direct control, ensuring faster resolution and more reliable SD-WAN performance.

Visit our dedicated page to learn more about how modern SD-WAN monitoring can provide your organization with continuous performance validation.

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