

SD-WAN

Hype or Reality?



What You Need
to Know When
Considering SD-WAN
in Your Infrastructure

Is your WAN evolving with your business?

Traditional wide area networks (WANs) bring numerous challenges to the enterprise, ranging from increasing cost, performance issues and flexibility challenges. And with the onset of the cloud, today's IT teams are searching for solutions that meet the data accessibility demands from inside the organization to the edges of the earth.

Specific issues traditional WANs bring are:

- **Expensive Bandwidth:** Limited bandwidth of expensive private/MPLS circuits often inhibits rollout and impacts application performance.
- **Inconsistent Application Performance:** Application traffic over the Internet lacks service level agreements (SLAs) for predictable performance. When application QoS needs updating, changes must be made across the branch locations and the data center.
- **Data Center Dependent:** With traditional hub-and-spoke network design, traffic is routed to a core data center which can create performance issues.
- **Infrastructure Complexity:** With the sprawl of disparate devices and WAN connections, complexity grows.
- **Lengthy Provisioning Cycles:** For any new sites requiring circuit delivery and equipment provisioning, traditional WAN sites can take months to turn up.
- **Inadequate Redundancy and Resiliency:** The high cost of MPLS services often makes redundant local loop connections impractical and not always useful, meaning that downtime and intermittent connectivity problems arise.

To address some of the traditional WAN challenges, enterprises are adopting a new approach for their distributed networks - software-defined WAN (SD-WAN). SD-WAN offers better performance, agility, operational flexibility and potentially huge cost savings. But there are things to consider when choosing to move to a SD-WAN solution.



“The most significant driver of SD-WAN growth over the next five years will be digital transformation (DX) in which enterprises deploy 3rd Platform technologies, including cloud, big data and analytics, mobility, and social business, to unlock new sources of innovation and creativity that enhance customer experiences and improve financial performance.” (Source: [IDC](#))

SD-WAN vs. SDN

Like many technology terms, Software-Defined Network (SDN) and Software-Defined Wide Area Network (SD-WAN) are often confused. And while they are similar in their transformative results, SD-WAN is a specific application of SDN technology applied to WAN connections, which are used to connect enterprise networks (including branch offices and data centers) over large geographic distances.

[Gartner defines SD-WAN](#) solutions as...

A replacement for traditional WAN routers and are agnostic to WAN transport technologies. SD-WAN provides dynamic, policy-based, application path selection across multiple WAN connections and supports service chaining for additional services such as WAN optimization and firewalls.

Or, in other words...

SD-WAN elevates the WAN from an expensive, rigid, packet pushing necessity to something that provides business value.

So, how does SD-WAN work? At the basis of SD-WAN are four tangible areas in which it strives to improve today's WAN:

- Transport
- Path control
- Management
- Services simplification

Transport

SD-WAN changes the way we make decisions about WAN transport technologies (metro Ethernet, dark fiber, LTE, MPLS, Internet VPN, DWDM, VPLS, VSAT, etc.) from a technology decision to a business-centric one.

Traditional transport decisions were based on many factors including cost, bandwidth, SLA, multi-cast support, private network security, loop prevention, distributed vs. centralized Internet, routing complexity, geographic limitations, L2 extension, QoS support, etc. The list goes on...

Where SD-WAN transport decisions are much more around business-centric considerations like cost, SLA, bandwidth and geographic limitations.

Path Control

Path control involves two areas: what triggers a transport failover and what routing policy is defined.

- **Transport Failover:** Current WAN failover only works in hard network down scenarios, but many real-world service provider failures are brownouts with high packet loss or latency, allowing just enough pings to get through to prevent failover.
- **Routing Policy:** Most organizations use redundant transports as active/passive due to complexity (often no traffic steering policies), where SD-WAN enables active/active and tight policy definition for traffic steering.

Management

With new features like per-application traffic steering, WAN acceleration and evolving security technologies, visibility becomes crucial. Three key tools that a management platform should offer are real-time monitoring, historical reporting, and configuration/provisioning.

Services Simplification

After improving availability, policy enforcement and capacity of the WAN, additional services can be added. Many SD-WAN vendors with backgrounds in network services offer:

- **Security** – IPS/IDS, DIA, DNS security, malware prevention, web filtering, robust PKI environment, encryption everywhere (even on private links)
- **Application delivery** – some vendors have built their solution around caching of specific applications and extreme visibility into application performance
- **WAN acceleration** – Not all WAN acceleration is created equal. Many vendors claim to do it, but few do it well.

SD-WAN grows up

The WAN has been historically ignored as a necessary evil, but with the advent of cloud and ever-increasing bandwidth consumption, the WAN can no longer be brushed aside.

[According to Gartner](#), by 2020, more than 50% of WAN edge infrastructure refresh initiatives will be based on SD-WAN versus traditional routers.

The reason for moving to SD-WAN is that businesses in nearly every sector are seeking to modernize and remain competitive, which means that they're focused on increasing productivity, efficiency and reducing costs. And as cloud-based applications and the Internet of Things

(IoT) have continued to grow, so must the WAN.

The traditional MPLS-based WAN can't keep up with the necessary bandwidth, cloud connectivity optimization and required security to achieve the benefits of cloud-based applications and IoT technology.

This is why an enterprise-grade SD-WAN is so critical in offering a carrier- and transport-agnostic cloud-delivered overlay WAN architecture. SD-WAN can substantially lower WAN costs, reduce deployment times, provide application resiliency and the robust security that traditional MPLS just can't deliver.

SD-WAN enables digital and cloud transformation.



"The emergence of the software-defined wide area network (SD-WAN) will play a pivotal role in turning business objectives into reality very quickly. Why? One of the most critical benefits of an SD-WAN is allowing IT to rapidly respond to business needs in a very cost-effective and agile way." ([Network World from IDC](#))

What does SD-WAN accomplish?

Today's business needs to provide users with always-on access while responding to changing demands in real-time.

SD-WAN can help by:

- Increase available bandwidth (Active/Passive -> Active/Active)
 - Minimizes downtime by detecting "brownouts"
 - Simplifies operations (via simplifying WAN routing and better visibility)
 - Increases security (encryption everywhere, ease of introducing DIA)
- Better user performance (right app going down the right path all the time)
 - Potential transport cost reduction in some cases (e.g. replacing dual MPLS with hybrid MPLS+Internet)



How do I know if my organization is a good fit for SD-WAN?

While SD-WAN may seem like a no-brainer, next big evolution in the WAN, it's important to consider best-fit before making the decision to move forward with it. Some good indicators that SD-WAN might be a good fit for your organization:

- You have multiple transports at most, if not all, sites. (Note that this is required for SD-WAN.)
- You are undergoing an edge router refresh.
- You have expensive a WAN carrier contract up for renewal.

- You are increasing your presence in public cloud, SaaS or IaaS environments.
- You are deploying a new application that will consume lots of bandwidth (e.g. video).

Ultimately though, the sure way to determine if you should go with SD-WAN is to start by analyzing your current network issues. Once you pinpoint your trouble areas, it becomes more apparent whether or not the ideal solution for you is an SD-WAN strategy.



Start with a plan.

SD-WAN deployments are 95% planning and 5% implementation, so it's critical to develop a plan before embarking on an SD-WAN implementation.

First, decide what "winning" means for you by choosing one or two tightly-defined use cases. Some common use cases include:

- **Use case #1:** Need additional bandwidth at all sites and do not want links sitting idle.
- **Use case #2:** Existing connections to public clouds are often backhauled through a central data center, which leads to additional latency and points of failure - inefficient routing.
- **Use case #3:** Have 2x, 3x or more MPLS networks for uptime. Blending a single MPLS with one broadband ends up with roughly the same uptime as multiple MPLS networks.
- **Use case #4:** Spend way too much time on operations for the WAN due to working with slow service providers to increase bandwidth, or peer BGP, or change BGP policies.
- **Use case #5:** Steer bulk reliable traffic over cheap broadband while maintaining latency-sensitive traffic on private infrastructure.
- **Use case #6:** Require multi-tenant networks that are separate and distinct, but share underlying infrastructure.

Once the use case is determined, closely compare SD-WAN solutions, including:

- Consider cost and licensing models (CapEx/OpEx).
- Compare architectures (on-prem, cloud, cloud-gateways, distributed vs. centralized control plane).
- Validate that vendor-specific advanced features, like Forward Error Correction (FEC), will work in your environment.
- Verify the physical interface support (LTE, VSAT, T1/E1, MMF, SMF, copper, etc.).
- Identify key focus areas of vendors (e.g. segmentation, cloud on-ramp, services insertion).
- Look at the level of application awareness (just L4 ports or L7 + AppID).
- Consider the level of WAN acceleration support (de-dupe, caching or TCP optimization).

But, as [TechTarget points out](#), "Because enterprises, vendors and SD-WAN platforms are adapting at the same time, no single SD-WAN deployment strategy exists." What does this mean when developing your strategy? It means that starting with a strategy that addresses your current network pain points and that aligns with your infrastructure has to be the starting point.



Improving Your Chances for Success with a Trusted Partner

OneNeck excels at supporting organizations in the pursuit of simplifying their IT with SD-WAN by:

- Assessing your current IT environment
- Defining existing network topology and the associated pain points
- Providing essential IT requirements and considerations before migration
- Migrating the traditional WAN to an SD-WAN (or hybrid SD-WAN) solution
- Optimizing the SD-WAN to improve performance and network programmability

Clint Harder says that's where OneNeck provides the most value to your organization. We work in the background and advise you on next steps, but you, the CIO, are the real leader.

"We operate, optimize, secure and maintain our clients' technology," he says. "An IT solutions partner should provide fundamental support while offering strategic guidance, allowing you to execute your vision and enabling your people to focus on impactful projects."

To improve your chances of SD-WAN success, consider starting the strategic process with the experts at OneNeck by your side. From evaluating needs and identifying solutions, to helping you with implementation, we're prepared to be a partner you can count on.



[Contact us](#) today or give us a call to start the discussion
1-855-ONE.NECK