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A BUYER'S GUIDE TO SD-WAN

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Software-Defined WAN - the case for change

Today, IT departments are under pressure to do more with less; manage more sites and clients with limited budgets and a relatively small team, without any reduction in reliability and security but all the time looking to improve the user experience. As new applications emerge, whether hosted on premise or in the cloud, demands on WAN throughput, efficiency, and reliability increase. It's a fine balancing act between improving WAN functionality and service levels while at the same time lowering costs.

Why you need a stronger (and more flexible) backbone to compete in the digital age?

There's a chasm developing between what existing wide area networks—based on Multiprotocol Label Switching (MPLS)—can deliver, and what the business actually needs. As organisations accelerate the adoption of cloud-based applications, existing WAN environments are holding them back; affecting not only their rate of growth but the end experience of their users.

- Traditional WAN was architected for branch-to-data centre traffic flows, not to support cloud-driven traffic patterns. Today, over 50% of traffic is in the cloud[1], yet for many, the network is not cloud aware. Or worse, users' SaaS experience may be better at home than on the WAN.

- With increased growing cloud adoption, having to connect to multiple clouds (SaaS/PaaS/IaaS providers) there is no real "perimeter" to network anymore. SaaS performs poorly and there are complex workflows for public cloud AWS/Azure.

- Application bandwidth requirements have dramatically increased as traffic grows 30% year on year[2]. But for the end user, the experience is unpredictable, as 70% of app outages[2] are tied to networking problems. And the challenge doesn't end there: Gartner estimates that by 2020, 63 million new devices will be online every second.[4]

- Businesses are dynamic, morphing at speed, yet due to rigid architectures, changes to the network are very slow, even for simple policy changes. Branches need to connect over any type of connection, but flexibility doesn't exist within the traditional WAN.

- Increasingly, businesses are looking to segment the WAN for different lines of business, applications, or guest access. They often find that segmentation options are limited, and of course there's a need to evidence compliance.

Businesses are crying out for more flexibility, agility and performance from their creaking networks. To stay competitive, you need a competitive WAN. Businesses who don't keep pace with WAN advancements will quite simply, be left behind.

What exactly is SD-WAN?

In the same way server virtualisation transformed data centres a decade ago, software defined WAN (SD-WAN) is set to be a game changer for wide area networking. But what exactly is SD-WAN? It's essentially a new way to approach routing in the cloud era.

SD-WAN is a cloud-delivered overlay WAN architecture that simplifies how organisations move workloads to any cloud, consume cloud hosted applications or enable new services in remote locations. It consolidates and virtualises remote WAN connections into a single layer, and centralised policies enable you to manage your entire network from a centralised dashboard. Your WAN costs drop yet you build application resiliency and provide a robust security architecture for hybrid networks.

Software Replacing Hardware

SD-WAN provides a layer of abstraction between the hardware itself and the networking running on it, so the software handles many of the more challenging elements of building out infrastructure. While hardware necessarily plays a role in WANs, many of its functions can now be seamlessly replaced by software solutions.[5]

How does SD-WAN compare with MPLS?

In its time, Multiprotocol Label Switching (MPLS), was revolutionary WAN technology as it didn't require any additional security because the traffic was routed across a private infrastructure. It was engineered to support data between sites, including voice and video files and critical applications.

A decade ago it represented "the wave of the future". However, consider how different the internet and our use of apps has been in the last 10 years. The internet is better-scaled, better-engineered and is growing in terms of bandwidth and performance. Our personal devices seamlessly connect with (generally) predictable performance. We now use corporate applications hosted in the cloud such as Office 365 and Salesforce.

In spite of the surge of benefits it once delivered, MPLS can't deliver the resilience, robust security, lower costs and reduced deployment times that SD-WAN can – and that modern businesses so desperately crave.

Up to 50% cost reduction: Despite the end-to-end QoS, the biggest downside to MPLS is really the cost. If your business needs 100Mbps+ bandwidth (and many do even without real-time applications), monthly circuit costs can be eye-wateringly high. SD-WAN however connects users to applications over any type of connection including MPLS, Internet and 4G LTE. By aggregating connections, you get fast speed at a low cost.

Adjusting on-the-fly: While MPLS only offers one static network connection, SD-WAN offers dynamic path selection, always sending your traffic across the Internet circuit via the fastest route.

Increased uptime: By aggregating multiple Internet and WAN connections, you get the benefit of seamless circuit redundancy. MPLS providers may failover to a secondary Internet connection but it's often not instantaneous; and there's very rarely a third option.

Distance is no longer a barrier: Not all remote locations can justify the high cost of an MPLS circuit or worse still, they're not serviceable by their MPLS provider. In the past this was accepted as a given and remote sites typically suffered reduced performance. However, SD-WAN is provider-agnostic and delivers the same benefits irrespective of underlying ISP.

Liberated to choose providers: Businesses often feel trapped with an MPLS – they can't face the hassle of switching all sites and often "grin and bear it" despite high-costs. With SD-WAN, companies aren't captive – they can easily add and remove ISP's at any site, any time.

By 2019, 80% of organisations will primarily use public cloud and there'll be 10 billion mobile-connected devices[3] - MPLS just can't keep up with that kind of growth.

A new WAN - the case for change

Businesses today are made up of a connected fabric of services and capabilities that enable them to adapt to their customer's expectations. These high-performance tech solutions help them deliver differentiated services and stand apart. However, to connect to distributed assets, businesses may leverage four or more connection technologies with the resultant network being a heterogeneous mesh between multiple remote offices, cloud deployments, software-as-a-service (SaaS) applications, data centres and mobile workers. Traditional wide area network architectures weren't created to support these new digital ecosystems. Instead of accelerating the adoption of bandwidth-heavy applications, WANs are preventing the business moving forward at pace.

SD-WAN is easier to deploy, manage and operate with:

- Cloud-first management and operations using a single WAN fabric across all end-points
- Simplified workflows for easier configuration, monitoring and troubleshooting
- Advanced analytics and assurance allowing application level control
- Deploy branches faster and at lower cost

Preparing for strategic conversations with your CEO and board

As network managers like you consider ways to improve WAN functionality while lowering costs, it's not surprising that the interest in SD-WANs has dramatically increased. With SD-WAN you can manage your entire network from a centralised dashboard, quickly deploy new branches with any transport, and automate operational workflows. The agile routing across your WAN not only reduces complexity but also cost – it's a no brainer!

But when positioning the economics with your management team, the base of the case really is cost and the opportunity to take back control: SD-WAN deployments can save millions in WAN service bills while reducing IT WAN management costs by 90% and improving uptime by 80%.

Here are several benefits organisations have experienced with SD-WAN:

- 80% reduction in cost/Mbps for a national insurance provider
- £15m reduction in Operating Expenses (OpEx) over three years for a retailer
- 5-fold improvement in Office 365 performance for an energy provider
- 100% application uptime during network failures for a national food distributor
- 4-fold improvement in application latency for a healthcare provider
- 12-fold improvement in change control time for a 3,000-site bank
- M&A integration within 2 weeks for a Fortune 50 healthcare provider
- Guest wireless deployment at more than 1,000 stores for a retailer

Source: Cisco

By 2020, more than 50 percent of WAN edge infrastructure refresh initiatives will be based on SD-WAN versus traditional routers.[4]

Game-changing technology – the 6 core benefits of SD-WAN:

The reason for moving to SD-WAN is that businesses in nearly every sector are seeking gains in productivity, efficiency and cost reduction from cloud-based applications and the Internet of Things (IoT). As employees and customers rely on mobile devices to run applications and watch video both on and off site, the need for a more optimised network continues to grow. SD-WAN can efficiently provide a high level of optimisation and bandwidth, whether at headquarters or at branch offices or at other locations, while significantly lowering costs.

Enabling digital & cloud transformation – SD-WAN simplifies how organizations move workloads to any cloud, consume cloud hosted applications or enable new services in remote locations.

Substantially lower WAN costs without compromising security – Save both CAPEX and OPEX and improve the performance of the WAN: SD-WAN lowers costs by 50% or more.

Rapidly reduce deployment times - SD-WAN enables faster, easier WAN deployment and operation, as well as faster performance while using less bandwidth, and helps you deploy new revenue generating services in minutes—not months.

Deliver application performance – Transform the end user experience with a predictable SLA and no app outages due to networking. Not only is application performance more reliable, applications will run faster and can be deployed in minutes.

Securely enhance flexibility: Radically simplify WAN segmentation with a controller-based network which operates as single, enormous next-generation firewall. Securely integrate separate networks onto the same WAN – corporate, guest, 3rd party, PCI and IoT – all within the branch site.

Robust security – Your existing WAN can't provide the security you need. SD-WAN easily and confidently supports the explosion in new endpoints by securely segmenting and adopting new users and devices at speed.

Bringing DevOps to Networking

Forward thinking businesses are bringing together their Development (Dev) and Operations (Ops) teams to create faster time to market with lower cost and higher quality. This really is a culture shift around how teams can better integrate and collaborate to get better results. DevOps is a mindset of moving away from fragile systems that take too long to deploy to reliable software that can be deployed quickly.

Cloud services embrace a DevOps mindset. Want a new environment? Spec it, activate a virtual datacentre, load up your application and you're done. This agile self-service approach is revolutionising how we build, deploy and deliver compute, storage and applications. However, for traditional infrastructures services – such as rigid MPLS services that only connect to physical locations (taking weeks if not months to install) – DevOps is not even a possibility. Slight configuration changes introduce long delays and typically companies overspend for overprovisioned circuits to accommodate bursts.

But an intelligent software layer such as SD-WAN can change the rigid and slow networking models of the past – and in effect bring DevOps to networking. Zero touch provisioning enables rapid provisioning of new branch locations and network services in minutes rather than months. Routing algorithms accommodate application requirements and adapt to real-time link conditions. The ability to connect any data services into the SD-WAN gives organisations incredible flexibility. For the first time in WAN networking, we can move from fragile to agile.

A Buyer's Checklist

Now is the time for network professionals to take a closer look at their WAN architecture and to model the pros and cons of sticking with their existing architecture against deploying SD-WAN. But not all SD-WAN's are created equal. There are new, sophisticated solutions in the market where service providers integrate additional services from the same box. When evaluating providers, consider the following:

1. What bottom line benefit is your business expecting? How does the solution reduce your Capex and Opex costs now and in the long term?

2. What's the speed of new deployments? If your provider is offering a hybrid model, you'll still need to accommodate the 3-month lead time for traditional connectivity.

3. Which carriers do they work with? Does this match your footprint requirements?

4. Does the solution simply mirror traffic over multiple links or can all WAN links carry production traffic?

5. Will they assist with a long-term traffic management policy that's aligned to your business priorities?

6. What multi-layer security is provided? Does this include encryption, authentication, segmentation and service chaining?

7. Does the provider partner with experienced, certified experts who have proven expertise deploying SD-WANs to organisations like yours?

8. How comprehensive is the solution? Does it cover all your applications on all networks?

9. What are the service levels and how are these reported? Does this match your business needs?

10. How will the deployment impact on your in-house team? Can you choose from managed, self-managed, or co-managed service design, aligned to the internal capability within your IT team?

Almost all of today's SD-WAN solutions support dynamic path selection from multiple WAN services including MPLS and broadband Internet, centralised provisioning to increase IT efficiency and zero-touch provisioning to enable rapid deployment. But performance-driven SD-WANs significantly improve application performance and Quality of Service (QoS) compared to other SD-WAN offerings. When evaluating SD-WANs, look for a solution that provides more options for IT while saving both Capex and Opex and improving the performance of the WAN.

Gartner predicts that spending on SD-WAN products will grow at a CAGR of 76.2% to $1.24 billion in 2020.[4]

Summary

Today, most WAN traffic is destined for the cloud. As network managers struggle to maintain security, reliable performance, and costs within their hybrid network topologies, they are looking for new capabilities that offer greater control over WAN environments.

SD-WAN is a potential game-changer for wide area networking. It significantly drops WAN costs, reduces the time to deploy services, builds application resiliency and provides a robust security architecture for hybrid networks. Plus, by providing the strongest security and the flexibility to support any platform, SD-WAN ensures that your users always have the best possible experience with the highest protection over any type of WAN connection.

Standing still isn't an option. For businesses to not only thrive, but survive, they need to embrace intelligent network technology that delivers on all fronts.

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