The Customer Journey to SD-WAN: Functional, Technical, and Economic Considerations

Thought Leadership Paper

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Bruce Page
Vice President, Custom Research
bpage@currentanalysis.com

Joel Stradling
Research Director
jstradling@currentanalysis.com

1. Top Adoption Drivers for SD-WAN

Summary: Over the last 18 months Software-Defined Wide-Area Networking (SD-WAN) has emerged as a new technique for building and operating enterprise IP networks. Based on implementing network functions such as routing and security as virtualized processes, SD-WAN can provide increased flexibility and agility for enterprise networks to better support new cloud-centric application architectures. In some cases, SD-WAN can reduce operating costs as well. This paper reviews the top functional, technical, and economic drivers of SD-WANs

Over the last 18 months, Software-Defined Wide-Area Networking (SD-WAN) has become a viable mechanism for enterprises that need to connect multiple sites in a virtual private network (VPN). According to recent Current Analysis research, 58% of enterprises are evaluating the use of SD-WAN in their networks. Further, they plan to allocate up to 8% of their networking budgets to SD-WAN equipment and services in 2017. Clearly, SD-WAN is a new tool in the enterprise networking toolkit. Why are enterprises turning to SD-WAN?

The answer, in short, is that SD-WAN fills a gap. One of the main hot buttons for enterprises looking to SD-WAN is the rapid turn up of multiple branch sites where there might not typically be an IT and network technician in place to oversee a complex installation. Instead, a relatively simple plug-and-play box can be shipped pre-configured to the site and auto-provision the link based on the 'Zero Touch' approach. According to Current Analysis research, most large-multi-site enterprises are using IP-MPLS for between 35% and 65% of connected sites today, with Internet VPN accounting for the rest. SD-WAN allows the enterprise to optimize traffic while maintaining security controls using built-in firewalls and traffic

separation. SD-WAN also allows enterprises to provision their WAN topology largely independent of their physical WAN, including support for sending specific application traffic between sites without having to pass through a central hub. However it must be remembered that a major outage of the physical WAN will also inevitably impact the SD-WAN overlay. Traffic paths are defined by policy and also increase resiliency by dynamically updating routes through the SD-WAN.
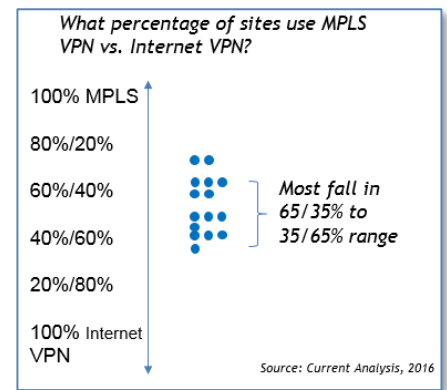
While SD-WAN offers these and other technical advantages, Current Analysis research has shown that there are also functional and economic benefits to SD-WAN. Following are the Top 7 factors that have led early adopter organizations to utilize SD-WANs.

Functional Attributes

1. **Supporting Business Growth.** For growing businesses, new sites need to be added to the corporate network, and of existing applications must be quickly be integrated to bring enable users. SD-WAN technologies exhibit several attributes that can potentially help IT departments quickly expand operations, such as putting in place links to business applications in public or private clouds, and packet steering over path-selected routes to make mission critical apps work properly.

   Moreover, user profiles need to be added to the company policy, and service orchestration and the single-pane management capabilities offered by SD-WAN vendors and service providers help support these processes. These and other automation techniques can permit enterprises to achieve optimal routing of traffic to and applications and services running in cloud environments, resulting in reduced congestion on WAN links and a smoother experience for users.

2. **Supporting Business Agility.** With a growing proportion of IT applications becoming provisioned via hosted infrastructure, an increasing proportion of network traffic is going off-site to data centers. This can cause response-time issues or degradation on jitter-sensitive applications such as VoIP or video if the network isn't provisioned accordingly. And because demand for these applications can rise and fall unpredictably, network managers are continually a step behind in their efforts to provision the necessary bandwidth to the user community.

   SD-WAN's ability to rapidly reconfigure bandwidth and assets on the VPN allows networking teams to respond with increased agility to support the business. As an example, at one multi-site enterprise users were reporting drop-outs and poor voice quality on VoIP, a business-critical application. Thanks to the management capabilities of their SD-WAN infrastructure, network managers were able to open a new port dedicated to VoIP traffic, fixing the issue within minutes. Similarly, if the business requires a change in Quality of Service (QoS) for a certain application, even an entirely new one, SD-WAN allows this to be provisioned in a few clicks, and often by the IT team itself. SD-WAN platforms enable public/private cloud networking and application architectures with new levels of flexibility, agility, and performance.

Economic Factors

3. **Right-Sizing Networking Cost.** With the exploding amount of traffic on networks today, driven by the proliferation of new apps and by the growing use of video, SD-WAN can be a means for reining in networking costs. The increased use of low latency, critical and jittery communications apps including voice and video are drivers for demand on capacity. Research by Current Analysis shows that

the majority of large enterprises have upgraded the bandwidth on their WAN links within the past 24 months. As they do so, the growing maturity of SD-WAN solutions allow them to consider achieving better performance by either adding more capacity via MPLS, public Internet, or broadband links, or by utilizing the existing links and seeking to control traffic paths and flows via software-defined network management tools . SD-WAN devices can help control how applications consume bandwidth and this is increasingly an option before 'throwing bandwidth' at a perceived issue. MPLS can be an expensive solution and may not be a requirement for all sites. SD-WAN can complement the MPLS estate providing a low cost access mechanism for right-sizing the cost of networking on a site-by-site basis.
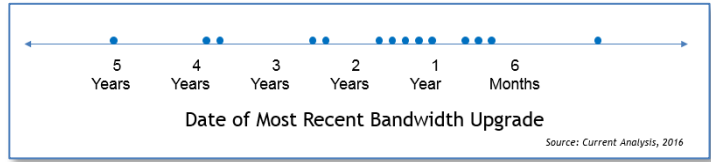
4. **Streamlined Contracting.** SD-WAN solutions can mean fewer contractual renegotiations and more efficient billing relations with service providers and WAN suppliers. SD-WAN allows enterprises to provision their WAN topology largely independent of their physical WAN, such as allowing specific applications between sites without having to pass through a central hub. Traffic paths are defined by policy and also increase resiliency by dynamically updating routes through the SD-WAN. Because SD-WAN allows circuits to be reconfigured on the fly as needs change, networking teams find they don't have to go to their service provider as often as they would have expected using other networking approaches such as MPLS.

5. **Easier Adds, Moves, and Changes.** Today's business environment is dynamic, to say the least. This puts enormous pressure on networking teams as they try to keep pace with requests from the business that have impacts on the network. Being able to implement changes to the company WAN quickly is a great advantage. IT departments can spin up software-based networking features quickly more effectively than before, and make their own policy control and assignations to make sure the networks and applications running on those networks perform to spec, and therefore return the expected benefits to the business. Service chaining in the traditional WAN can also result in very repetitive manual actions such as command-line scripting and all corporate traffic backhauled through a single secure Internet gateway, which is far from efficient. SD-WAN services may solve some of these issues with a more horizontal scaling of the network including the spinning up of virtual machines and deploying VNFs for more efficient dropping in of services and features into the SD-WAN fabric.

Technical Factors

6. **Orchestration Capability.** Responding to the need for dynamic resource allocation puts strain on a networking team's management capability. Thankfully, SD-WAN solutions typically provide IT teams with the ability to see all of their network-provided functions at once via a unified portal, allowing them to not just manage the network, but to manage the application and the customer experience. This is a major advantage reported by organizations that have moved to SD-WAN, allowing them to turn on or off services when/where they are needed, or to move the network function to where it's needed at the time.

7. **Do-it-Yourself or Managed.** SD-WAN solutions may be deployed on a "do it yourself" basis, or via a managed services model via service providers. The central orchestration of SD-WAN platforms makes this possible. However, not all enterprises have the expertise, or the time, to manage the SD-WAN themselves. Enterprises seeking to reduce management overhead can consider managed SD-WAN offerings from service providers. SD-WAN products already reduce operational management for the entire device and location lifecycle, but managed service providers can further add value by taking the deployment and infrastructure management off the customer's hands and presenting a portal for customer management.

Summary

SD-WAN solutions offer new capabilities to address the evolving needs of the enterprise to deploy and manage new and flexible as-a-Service delivery models. Early adopter organizations with multi-site locations, often from vertical sectors such as retail, financial, and professional services, are leveraging SD-WAN techniques today to address their needs for flexible and cost-efficient networking. These organizations are finding functional, economic, and technical advantages of the SD-WAN approach, helping to enhance enterprise agility and cost-competitiveness through innovative application of the new virtualized networking technologies.