Twin Eagle Consulting
Enterprise Network Solutions

What is SD-WAN, and Why It Matters to Your Business

What is SD-WAN

SD-WAN is described as a software-defined network in or over a Wide Area Network. You may ask, how is SD-WAN different from what I am doing now? Can't a traditional network be software-defined? Software-defined in SD-WAN is more than just a management orchestrator tool used to manage the legacy routers and switches of the past. To understand SD-WAN, one must understand legacy routing.

Legacy routers usually select their routes based on existing routing protocols such as BGP, OSPF, EIGRP, and more. These routing protocols would then choose the best routes based on route metrics such as distance and cost and prioritized with other routing protocols in the routing table based on administrative distance. Generally, the route with the lowest administrative distance wins. These networks often had high failover times or would only failover to a backup network during a hard failover, such as the MPLS circuit is down. These legacy networks are typically called the underlay in SD-WAN. The reliable underlay network is the foundational building block to a successful SD-WAN deployment.

So, what is SD-WAN? SD-WAN is the overlay that allows you to select the best equal-cost routes from the underlay network based on user requirements. These user requirements can consider applications, IP addresses, latency, jitter, and packet loss when making routing decisions. SD-WAN allows an enterprise to utilize VPN tunnels over an internet connection to establish dynamic connectivity between locations. In some cases, this can eliminate the need for legacy routing. This can be as simple as implementing an underlay network with VPN tunnels and summarized static routes.

Key Metrics

- SD-WAN Cost Per Megabyte is Typically Reduced By 95 – 99% When Compared to MPLS WAN Cost When Utilizing Internet VPN Links

- Companies Realize a minimum of 16% Capital Cost Savings When Replacing Legacy Hardware

- Increases WAN Reliability

- SD-WAN is Vendor Agnostic which allows the company to use multiple Vendors and technologies in their network

- In Most Cases, SD-WAN Has a Retrun on Investment of Less Than 1 Year

Why Implement SD-WAN?

One may ask, why implement SD-WAN? Why reinvent the wheel? My existing network architecture has been working for over 20-years why change now? SD-WAN has some real advantages over traditional WAN architectures, such as Multiprotocol Label Switching (MPLS). These advantages come from cost savings, increased reliability, increased bandwidth, route versatility, and vendor agnostics. As you can see, there are some compelling reasons to review this further. Here are some critical aspects of each of these advantages.

1. **Cost Savings** – According to Enterprise Management Associates (EMA), most companies realize substantial cost savings over five years. When deployed correctly, companies typically see a payback period of less than 12-months with 5 x ROI after 5-years. These savings come from reduced operating cost, reduced capital cost, improved network reliability, and productivity gains. (Woods, 2019) Let's explore this further:

   a. **Reduced Operating Cost** - Companies that switch from an MPLS based network architecture to an internet-based architecture can see a 95% – 99% cost savings on their megabit-per-second cost when switching from MPLS Private Links.(Woods, 2019)

   b. **Reduced Capital Cost** - SD-WAN solutions can be integrated with firewalls and virtualized to minimize capital cost. A business typically realizes a minimum of 16% cost savings when replacing legacy network hardware with SD-WAN appliances. (Woods, 2019)

   c. **Improved Network Reliability** – In today's world, losing connectivity to the cloud and datacenter can be expensive. It is not uncommon for an organization to see outages cost an organization more than $100,000 per hour. SD-WAN, when engineered and deployed correctly, can eliminate these outages with simplified configurations and redundancy. In some cases, the increased reliability of the WAN network can pay for the entire SD-WAN deployment. (Woods, 2019)(Woods, 2019)

   d. **Increased Productivity** – From deployment to end-user experience, the organization receives an increase in productivity when utilizing SD-WAN. IT organizations see productivity increases from implementing the SD-WAN management tools that allow for features such as zero-touch provisioning and single-pane of glass management. Whereas the end user's productivity comes from improved network operations that deliver low latency, high-speed, reliable bandwidth that is optimized based on business function. (Woods, 2019)

2. **Increased Reliability** – Most SD-WAN solutions allow a company to use multiple bandwidth mediums to improve network performance and reliability. Most users experience sub-second failover times between their primary and secondary WAN circuits. Failover decisions are also determined by metrics such as Latency, Packet Loss, and Jitter. Basing circuit decisions on these metrics allows the SD-WAN solution to seamlessly move traffic between the failing circuit to the functioning circuit with little to no impact on the end-user.

3. **Route Versatility** – A viable SD-WAN solution should route traffic based on IP source and destination, application, protocols, and cloud services. SD-WAN eliminates the need to route all traffic back to a centralized data center to get to internet applications such as Office365, AWS, and Azure. Most SD-WAN solutions are application-aware, meaning that they can look at the application traffic and determine if it should be routed to the cloud,

data center, and internet. In other words, Office365 traffic can route directly to the internet, AWS traffic can route directly to AWS, and your Voice traffic can be routed directly to the proper Unified Communications as a service (UCAAS) provider. This ensures the best user experience while lowering cost.

4. **Vendor Agnostics** - SD-WAN eliminates the need to conduct business with private network providers that provide high-cost, low-performance circuits with lackluster support. SD-WAN gives the company the power to pick what technology is best for their environment based on cost, availability, and reliability. For instance, a business may choose to utilize dedicated gigabit fiber internet from one provider and Cable Broadband internet from another provider with VPN tunnels and internet offloading to create a low-cost, high bandwidth, and highly reliable WAN connection between a remote business location, data center, and cloud offerings such as Amazon's AWS or Microsoft's Azure.

How Does Twin Eagle Consulting Help?

1. We have network engineers with proven experience in engineering, deploying, and managing SD-WAN. Our experienced Network Engineers are trained and certified to deploy SD-WAN in Operational Technology (OT) and IT environments. We understand what it takes for a successful implementation of SD-WAN in your network.

2. Twin Eagle is a Fortinet and SilverPeak / Aruba partner. Both vendors are leaders in Gartner's magic quadrant and have a proven track record in implementing SD-WAN solutions into enterprise environments.

Interested?

Call or email us if you would like to see what kind of impact SD-WAN could have on your network. The consultation is 100% free.

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References

Woods, M. (2019, February 13). The ROI of SD-WAN. Retrieved December 22, 2020, from https://techspective.net/2019/02/12/the-roi-of-sd-wan/