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Secure SD-WAN —
Laying a Foundation for SASE

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Secure SD-WAN — Laying a Foundation for SASE

Introduction — SD-WAN Grows Up

Over the last few years, SD-WAN has made significant strides in the enterprise world. Gartner **estimates that enterprise spending on managed SD-WAN services** will hit $5.7 billion in 2023, growing at a phenomenal annual rate of 76.1%. Even with the temporary impact from the pandemic, AvidThink expects the SD-WAN market to recover quickly and accelerate as we adapt to a hybrid work-from-home (WFH)/work-from-anywhere (WFA) setup with a partial return to offices (known as go-to-office or GTO).

Meanwhile, the recent arrival of Secure Access Service Edge (SASE) has laid down a clear path for SD-WAN's evolution. SD-WAN was focused on transforming the enterprise WAN from the branch customer premises equipment (CPE) inwards towards the enterprise core: combining zero-touch provisioning, multilink and bonding, routing, WAN optimization, encryption, and security with a centrally managed orchestrator. SASE, on the other hand, starts from the cloud and radiates outwards.

SASE Goals and Benefits

Secure SD-WAN converges network and security at the enterprise edge, but SASE goes further. SASE includes the entire category of SD-WAN and adds edge security services, like cloud access services broker (CASB), next-generation firewall (NGFW), secure web gateway (SWG), zero-trust network access (ZTNA), and several others. Gartner, the firm that coined SASE, points out that due to the broad scope of the definition, few vendors qualify as SASE, and even those vendors who do, don't have the full complement of services.

> **In many ways, SD-WAN can be viewed as the initial steppingstone or on-ramp to SASE.**
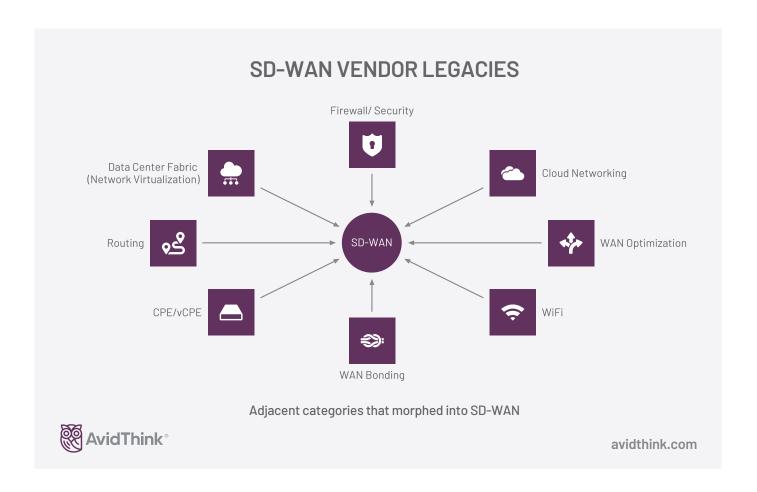
Nonetheless, by converging networking and security into a single cloud-based offering, SASE can serve branch locations, mobile, and WFH/WFA users. To obtain SASE's benefits, a company employee is automatically connected to the closest cloud gateway to turn on its protective shield. Many SASE offerings provide improved connectivity by leveraging private internet backbones and direct connections to popular hyperscale clouds and SaaS services. Therefore, the number of SASE points-of-presence and proximity to enterprise users will affect the performance of the SASE offering.

Just as not all of today's SD-WAN or security vendors will get to SASE in one hop, enterprises will also make their journey via a few incremental steps. First, transforming their WAN and legacy VPN connectivity via SD-WAN, then expanding services on that SD-WAN deployment, followed by migrating all enterprise edge security and networking services to a SASE model. In many ways, SD-WAN can be viewed as the initial steppingstone or on-ramp to SASE.

Where is SD-WAN Today?

We've evolved since the early days where multiple adjacent network and security offerings jostled to claim the holy grail of SD-WAN. Those initial participants hailed from different networking categories, including routing, firewall, WAN optimization, WAN bonding, WiFi, and data center fabric (see diagram below). They all scrambled to add capabilities like zero-touch provisioning (ZTP), centralized cloud management, and multilink optimization to qualify as SD-WAN products.

SD-WAN VENDOR LEGACIES

Firewall/ Security

Data Center Fabric (Network Virtualization)

Cloud Networking

Routing

SD-WAN

WAN Optimization

CPE/vCPE

WiFi

WAN Bonding

Adjacent categories that morphed into SD-WAN

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Today, the SD-WAN market has consolidated, and leading vendors are at different stages in achieving SD-WAN nirvana, but SASE's arrival has moved the goalposts. Here is where we see SD-WAN technologies used currently:

- **Branch locations** — As part of WAN transformation, the branch use case with CPE component was where SD-WAN got its start. A hybrid WFH (work-from-home)/GTO (go-to-office) model has become the new norm for how and where employees work.

- **Mobile or home locations** — A few SD-WAN solutions had previously embarked on mobile or software clients, which provide centralized policy and compliance, but not the other branch-centric attributes of SD-WAN products. When COVID-19 arrived and VPN servers floundered under the additional load, enterprises turned to SD-WAN software solutions (and initial SASE services such as ZTNA). As we look forward to hybrid working models, SD-WAN solutions that do not have a software or mobile client will be driven by enterprises to add one.

- **Cloud locations** — Similar to mobile and software SD-WAN options, enterprises also demanded that SD-WAN solutions extend into virtual private clouds (VPCs) within hyperscale cloud platforms. As enterprises expanded their cloud strategies, this nascent capability turned into secure multicloud connectivity.

SD-WAN and CPEs Not Going Away

Whether as vendor-supplied CPEs or as software functions running on a universal CPE (uCPE), SD-WAN will continue to thrive. Post COVID, enterprise branches are returning to semi-normal operations, renewing the need for ongoing WAN transformation. The need for redundancy, regulatory compliance and disconnected operation will not go away. Likewise, WiFi support, network access control, and remote monitoring at branches will continue to be requirements. ZTNA (or next-generation VPN) clients enable the mobile WFA use cases (laptops on-the-go, phones, tablets) with cloud security, and a CPE component, whether part of an SD-WAN solution today or an evolved SASE solution tomorrow, can provide comprehensive protection for branch and home offices.

> **Post COVID, enterprise branches will see a return to semi-normal operations, renewing the need for ongoing WAN transformation.**

AvidThink has noticed that enterprises have started shipping all-in-one CPEs that provide dual redundant links and WiFi to key employees' homes. These SD-WAN offerings provide a secure WiFi connection for employee devices: laptop, tablets, mobile, with reliable connectivity and visibility for the IT team. These CPE-based solutions ensure that corporate assets are isolated from unsecured IoT devices (cameras, sprinkler systems, toasters, teenagers' gaming PCs) and can provide proactive monitoring. Ensuring ongoing productivity, visibility, policy enforcement and corporate security at home has become an ongoing IT priority in today's enterprises.

SD-WAN — On-Ramp to SASE

Nonetheless, some SD-WAN vendors are delivering SASE services today via the cloud and on-premises while other SD-WAN vendors continue to mature and position into SASE by adding cloud-based capabilities to their product mix. With the pressure from enterprises to accommodate laptops and mobile devices outside offices, and a desire to improve users' quality of experience, many SD-WAN vendors and service providers are taking the following steps:

- **Adding software and mobile clients** — This provides comprehensive and seamless security and network access policies across all access locations and types, whether employees are in the office or elsewhere.

- **Implementing cloud gateways** — SD-WAN vendors that did not previously have a cloud component are now adding these options. Whether operated by the vendor or managed service providers (or the enterprise), these gateways provide a landing point where advanced services can be offered without burdening the software client or on-premises CPE.

- **Expanding gateway availability** — Those vendors who had cloud gateways are either adding more of them across more locations (points-of-presence or POPs) to reduce the latency when connecting or bulking up their backbone connectivity across these locations. A subset of SD-WAN/SASE vendors improve application performance by running private backbones or leveraging existing cloud backbones/co-location providers (i.e., Equinix, Azure, AWS, Google Cloud, etc.) to provide direct connections to hyperscaler clouds and popular SaaS services.

Finally, and as a significant steppingstone to SASE, we see SD-WAN (and early SASE) vendors and service providers enhancing their cloud-based security services. From adding NGFW features to incorporating SWG, ZTNA, and rudimentary CASB capabilities, vendors and MSPs are trying to consolidate more security functions in the cloud offerings to increase their value

add and, therefore, revenues. Some are chaining together existing security appliances to provide these unified offerings. Others are taking the route of developing these features from the ground up, hoping to get synergies in a clean-slate implementation. Clean-slate implementations, both on premises or in the cloud, can reduce the number of passes over each network packet, reducing latency and improving efficiency and performance.

Enterprise Journey to SASE

While SD-WAN and SASE vendors and providers build up their offering, enterprises can embark on their own parallel journey to SASE. As we've indicated, enterprises need to first shore up their immediate remote connectivity and security gaps by implementing SD-WAN to branches and ZTNA/SASE software client options for their mobile and laptop users. SD-WAN deployment ensures a consistent set of security and access policies across the enterprise access surface and provides uniform visibility.

> **While AvidThink believes that all these SD-WAN vendors will attain their eventual goal with sufficient time and investment, we believe that selecting the right SD-WAN partner today can accelerate an enterprise's route from SD-WAN to SASE.**

For users that aren't in branches and protected by SD-WAN CPEs, an enterprise might choose to enable more cloud-centric SASE-type capabilities to increase the level of protection provided to these employees. Utilizing a cloud gateway as the employee's first landing point in a nearby POP could improve their user application experience and productivity.

As vendors improve their cloud-based offerings and become more compliant with full-blown SASE, enterprises can decide which features make sense to turn on for which subset of employees and locations.

Taking the First SASE Step

There are numerous SD-WAN solutions in the market today, and many are rebranding themselves as SASE. While AvidThink believes that all these SD-WAN vendors will attain their eventual goal with sufficient time and investment, we believe that selecting the right SD-WAN partner today can accelerate an enterprise's route from SD-WAN to SASE.

Every enterprise has different immediate needs unique to their vertical, company size, geographic locations, and business models. Nevertheless, finding an SD-WAN architecture with a rich SD-WAN feature set — particularly around security — that is application-aware and has proven itself in scale deployments will be necessary. Likewise, we believe that an SD-WAN vendor with cloud gateways, successful software and mobile clients, and an ability to thrive in a managed services world (either alone or with MSP/SP partners) would get to SASE faster.

With SASE as the next stage of its growth, SD-WAN is growing up all too soon. With the guidelines we've outlined in this brief, enterprises can get safely started on SD-WAN today, with an eye to the future and full-blown SASE.

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