White Paper

# Managed SD-WAN: A Compelling Case for Enterprises

Sponsored by: GTT

Ghassan Abdo
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## IDC OPINION

IDC predicts that worldwide spending on digital transformation (DX) technologies will expand at a compound annual growth rate (CAGR) of 17.9% through 2021 to more than $2.1 trillion. IDC believes that becoming digital native is mandatory to compete in today's business environment. Enterprises adopting DX will experience improved operational efficiencies, create opportunities for new revenue streams, and enhance customer experience.

Software-defined WAN (SD-WAN) is a strategic imperative for enterprises as they pursue their DX journey. Enterprises, however, have to navigate complex deployment and operational decisions related to the introduction of SD-WAN services. Managed SD-WAN becomes a compelling choice as it complements the technical benefits of the SD-WAN architecture with a commercial framework that provides full life-cycle advantages. Moving from a legacy WAN environment to a software-defined architecture can present deployment challenges for enterprises that are considering a do-it-yourself (DIY) approach. Besides de-risking SD-WAN deployment, a managed service provider can bring significant commercial benefits including a cloud consumption model, integration of full-scale security capabilities, a uniform service-level agreement (SLA), access to pretested multivendor virtual functions, an integrated self-service portal, and global reach.

Recent market developments have further emphasized the role of managed SD-WAN to help enterprises navigate through dynamic and, as recently experienced, unpredictable events. The most notable market dynamics include:

- COVID-19 is accelerating the trend toward remote working and online business transactions, further underscoring the critical role of agile WAN connectivity.
- The accelerating growth of global IP traffic estimated at a CAGR of 40% is impacting the economics of network expansion.
- The proliferation of Internet of Things (IoT) and growth of global e-commerce are moving intelligence and data gathering to the edge.
- The continued adoption of the cloud and cloud services is transforming WANs.
- The emerging customer demand for a rich media experience is pushing enterprises to increase bandwidth at branch locations.

Responding to these transformational forces and ensuring a successful digital transformation journey will require not only an adaptable WAN architecture but also a commercial framework best served with an experienced managed service provider.

## Enterprise Challenges with Legacy WAN

Enterprises that are embarking on the journey to become a digital enterprise realize that the WAN is a key enabler to this transformation. Legacy WAN architecture is not suitable to enable this transformation. Indeed, IDC's 2019 *Software-Defined WAN (SD-WAN) Survey* identifies 12 major challenges that surveyed enterprises face with legacy WAN architecture (see Figure 1). Of these challenges, the top 4 are the most critical to resolve as they counter the industry evolution and potentially inhibit progress toward DX. These are:

- Providing secure connectivity to cloud applications
- Managing complex connectivity options
- Creating a uniform customer experience in varying deployment models
- Rationalizing application sprawl at branch locations

## FIGURE 1

### Cloud Security and Rising WAN Complexity — Top WAN Challenges Today

*Q. Please select the three most important WAN challenges (from the following) that best relate to your company.*


n = 1,223

Note: Multiple responses were allowed.

Source: IDC's *Software-Defined WAN (SD-WAN) Survey,* November 2019

As we explore in the following sections, SD-WAN has emerged as the new architecture that enhances secure connectivity to the cloud, supports multi-connectivity options, simplifies customer experience across various deployment models, and moves multiple appliance-based applications at branch locations to virtualized network functions (VNFs). The adoption of managed SD-WAN services will improve networking agility, lower total cost of ownership (TCO), optimize application performance, and enhance security.

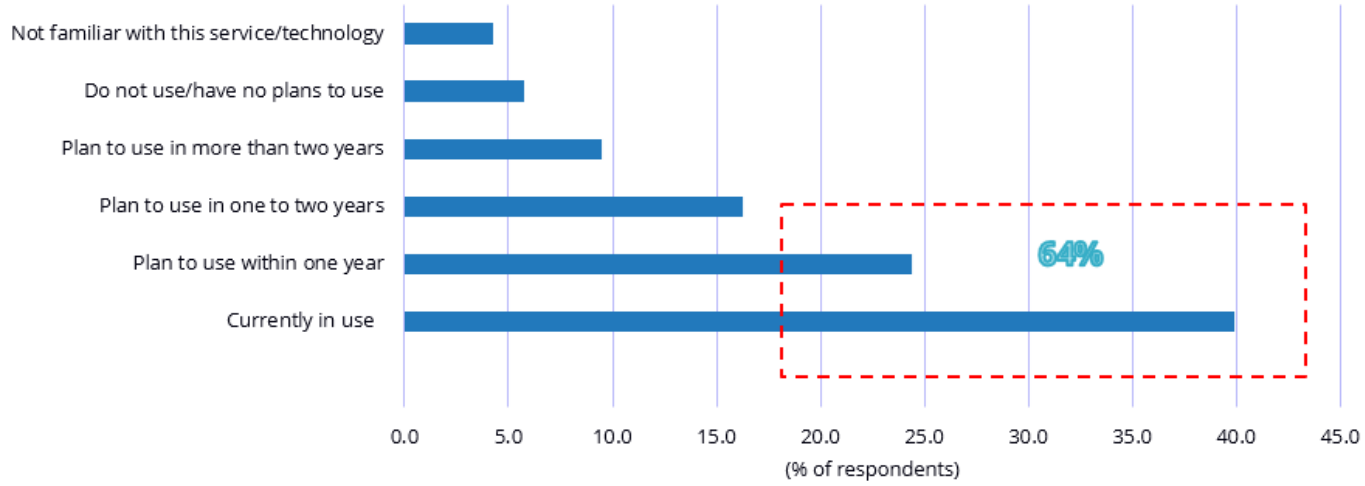
## Business and Technology Drivers for SD-WAN

Business demand and technology enablers have converged to drive accelerating adoption of SD-WAN. IDC's 2019 *U.S. Enterprise Communications Survey: Cloud and Collaboration Services* of 800 enterprises confirms this trend, with 64% of these enterprises planning to adopt SD-WAN technology over the next two years (see Figure 2).

## FIGURE 2

### Adoption of SD-WAN Technology

*Q. Are you implementing or do you plan to implement software-defined WAN (SD-WAN)?*




n = 800

Source: IDC's *U.S. Enterprise Communications Survey: Cloud and Collaboration Services,* September 2019

From a technology perspective, SD-WAN addresses the limitations of traditional enterprise WANs in areas such as support for cloud applications (software as a service [SaaS] and infrastructure as a service [IaaS]), simplified deployment and management, cost-effective bandwidth utilization, greater overall WAN flexibility and efficiency, and improved WAN security. A key advantage of SD-WAN is the self-service portal. The self-service portal was designed to mitigate the limitations of today's management portals that relied on cryptic CLI commands to manage WAN configurations. A self-service portal provides end-to-end visibility, manages third-party components, aggregates underlay and overlay monitoring, and is designed to support a holistic security approach.

The self-service portal is a key component of an orchestration strategy that provides optimal allocation of VNFs and integrates artificial intelligence/machine learning (AI/ML) technologies to provide predictive monitoring and facilitate configuration automation.

## SD-WAN Use Cases and Benefits

The following examples, based on interviews with enterprises that chose to adopt SD-WAN, highlight the primary motivations for SD-WAN:

- Banking branches needed to be upgraded to accommodate new customer services that included e-documents, enhanced video services, and faster access to cloud applications, all demanding higher bandwidth.
- Retail locations were susceptible to outages. Providing active redundancy with internet and mobile connectivity was key to improved availability.
- Manufacturing sites required access to cloud applications, driving higher traffic demand while maintaining a high quality of service (QoS).
- A manufacturer had separated MPLS from internet connectivity with single-point failures. Achieving redundancy was a key consideration.

The adoption of SD-WAN has provided these enterprises with the following material business benefits:

- Enterprises achieved cost-effective improvement in network traffic capacity. Lower reliance on MPLS to provide direct connectivity to cloud applications resulted in three to four times improvement in traffic with minimal cost increases.
- A fully managed SD-WAN service freed up critical networking and technical resources. These resources became available to develop innovative services and accelerate the enterprise DX journey.
- Enterprises experienced lower unplanned downtime, which resulted in better customer experience.

## The Case for Managed SD-WAN

Legacy WAN services relied on optimized hardware appliances (or routers) to deliver connectivity services to the enterprise. Both technically and commercially, these services were inflexible, difficult to manage, and bound by the capabilities of the networking vendor. SD-WAN promises to transform the WAN to software defined underpinned by virtualized network services. The architectural benefits of SD-WAN can be fully realized only with an equivalent flexible commercial framework, best provided by an experienced managed SD-WAN service provider.

Several advantages accrue with the choice of a managed SD-WAN service provider that generally are not available with a DIY option:

- The ability to negotiate a commercial agreement based on a single SLA to manage the diverse underlying network. Multi-location and multinational enterprises will reduce contractual and operational risks and related costs by signing a single SLA with a global managed SD-WAN service provider.
- The availability of a cloud consumption model based on monthly recurring charges. The pricing model may change among various providers but is generally based on branch size and bandwidth. A DIY option is generally restricted to a capex model.
- The flexibility to deploy VNFs at the CPE, provider edge, centralized datacenter, or cloud. These flexible deployment models can optimize opex and reduce overall TCO.

- The capability to size the CPE box and bandwidth needs on a per-branch basis and assume responsibility for achieving the contracted performance accordingly.
- The choice of managed services ranging from fully managed to co-managed. Enterprises will have the flexibility to choose a managed services option that best fits their operational needs and budget.
- The ability to host multivendor VNFs that have been certified by the service provider. This is more cost effective than standalone appliances providing the same functionality.
- The support of multivendor SD-WAN self-service portals, provided by most global service providers, simplifies the management, configuration, and reporting of SD-WAN services.

In addition, a managed SD-WAN service provider compensates for lack of internal resources or knowledge of this new technology. Except for very large enterprises with deep technical resources, most enterprises will be challenged to pursue a DIY approach for deploying SD-WAN services. A managed service provider can be relied on to train available technical personnel on the new technology, an added benefit for the enterprise. In summary, managed SD-WAN is the cornerstone of a journey toward a fully virtualized and software-defined architecture that underpins the evolution of digital-native enterprises.

## De-Risking the SD-WAN Deployment Journey

The choice of SD-WAN services is the first step of a deployment journey that involves decisions critical to achieving key milestones and eventually a successful deployment. Enterprises are cautious with the rollout of a new technology and its potential impact on mission-critical applications. This is supported by feedback received from several enterprises that have recently deployed managed SD-WAN services representing industries such as retail, finance, and manufacturing. All have experienced a set of challenges with these deployments that are best addressed through a strategic partnership with a service provider with deep managed services experience and a mature portfolio of SD-WAN solutions. The key takeaways from these deployments include the following:

- Plan ahead as integration into legacy WAN environment can be more complex than suggested by SD-WAN hardware and software vendors.
- Ensure that the proof-of-concept is as close as possible to live deployment to help iron out configuration issues and ready the branches for deployment.
- Involve SD-WAN vendors in the design phase to benefit from their experience in software-defined technologies and architecture.
- Plan for higher bandwidth than currently projected. With cloud adoption and reliance on video-enhanced services, traffic increases will exceed currently planned bandwidth rather quickly. A bandwidth-on-demand requirement was cited as a high priority for most enterprises.
- Communicate the plan of SD-WAN to all branch stakeholders and ensure proper training.
- Expect additional cost, especially related to circuit upgrades (e.g., copper to fiber). These up-front costs will be absorbed with lower opex and should not deter the move to SD-WAN.

These takeaways underscore the important role a managed service provider plays in de-risking the SD-WAN deployment. Choosing the right managed service provider is a key aspect of enjoying the full benefits of managed SD-WAN services. Recent IDC surveys indicate that enterprises value the following qualities in their choice of a managed SD-WAN service provider:

- Global tier 1 IP network with the ability to support demanding latency requirements
- Delivering on 99.999% network availability
- Broad range of secure connectivity solutions to cloud applications

- Flexibility to add/change bandwidth capacity on demand
- Support of multivendor technology solutions to tailor to specific customer needs
- Broad range of diverse access options at every branch location
- Application and network visibility across hybrid environments

The SD-WAN deployment journey has multiple phases and entails critical decisions that will impact its outcome. Communication service providers that have a long history of providing managed services will be critical partners in moving the SD-WAN deployment through its critical phases, including:

- **Planning and design.** This includes assessment of the existing environment, bandwidth planning, connectivity choices, and cost expectations.
- **The choice of SD-WAN technology solution.** Most mature communication service providers provide multivendor solutions to align the solution with the needs of the branch because no single solution fits all purposes.
- **Security — the underpinning of SD-WAN deployment.** Decisions on firewall, cloud-based secure interconnect, and other security features will require active collaboration with the managed service provider.
- **Bandwidth planning to decide on current and future traffic needs.** This includes the capability to change bandwidth on demand.
- **Planning for infrastructure upgrades (e.g., fiber connectivity).**
- **Deciding on proof of concept and key performance indicators.** This is a critical phase, which determines whether the whole deployment will go through.
- **The rollout schedule.** This pertains to the number of locations and full-scale deployment versus limited or phased deployment.
- **Access to self-service portal.** This entails training personnel to access configuration and performance data including dashboards.

Early adopters of SD-WAN that have gone through this deployment journey with the choice of a strategic managed SD-WAN service provider have enjoyed material business benefits. As SD-WAN moves from the early adopter phase to the early majority phase, many enterprise decision makers should incorporate the choice of a managed SD-WAN service provider as a strategic business imperative. The deployment journey is not without risks, but they are mostly related to planning and operational issues. Choosing the right managed service provider can mitigate these risks, providing a well-managed operational environment.

## FUTURE OUTLOOK

Deploying SD-WAN should be viewed within the context of a long-term journey that will impact the future operations of the enterprise. Managed service providers, technology vendors, and standardization bodies are exploring future developments of SD-WAN such as the following:

- Drive toward automation of processes to achieve the goal of self-configuring networks.
- Provide enhanced and real-time reporting of customer and application usage, enhanced with AI/ML.
- Agree on interoperability standards, such as multivendor and intercarrier interoperability standards, to enable true global end-to-end services.
- Address the needs of low-latency use cases with edge deployments.

- Provide for seamless integration of mobility and fixed network services.

The goal is to serve the needs of a massively distributed enterprise and respond to unforeseen events with an agile and responsive network capability.

## CONCLUSION

As SD-WAN adoption evolves from the early adopter phase to the early majority phase, enterprises are shifting their focus from evaluating the technical benefits of SD-WAN toward ensuring a successful deployment journey. As this document suggests, managed SD-WAN is a compelling choice because it optimizes the full life cycle of design, deployment, and management of SD-WAN services. The full benefit of managed SD-WAN is best achieved with the choice of a service provider with global presence, a mature SD-WAN portfolio, tier 1 underlay network, diverse access options, and a long history of providing managed services.

## MESSAGE FROM THE SPONSOR

GTT Communications, Inc. (NYSE: GTT) is headquartered in McLean, Virginia and employs 3,000 professionals in 55 offices worldwide. GTT owns and operates a global Tier 1 internet network ranked among the top 4 in the world. With a focus on serving only enterprises, GTT offers a unique approach to cloud networking, combining its top-ranked backbone network with more local access options than any other major carrier. GTT's comprehensive suite of services include SD-WAN and MPLS, internet, ethernet, optical transport, and managed services. Its managed SD-WAN service, with network-based gateways around the world, delivers global coverage, the broadest range of access options, and enhanced data security in a single, managed WAN, to ensure optimal application performance at every branch location.

## About IDC

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## Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-community.com
www.idc.com

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