Frost Radar™: North American Managed SD-WAN Services Market, 2020

A Benchmarking System to Spark Companies to Action - Innovation That Fuels New Deal Flow and Growth Pipelines
Strategic Imperative and Growth Environment
Strategic Imperative

• The North American managed software-defined wide area network (SD-WAN) services market is in the growth phase of the product life cycle. Across industries, businesses are embracing these services as an integral part of their WAN transformation strategy, largely to gain cost and operational efficiencies. Market revenues for 2019 exceeded $1.7 billion, with more than 160,000 SD-WAN sites operational today.

• However, as SD-WAN deployments have increased in the last 3 years, businesses realize that installing and managing multiple SD-WAN sites is complex. The process can be daunting when it involves multiple transport and access providers from across the globe. A managed service provider with the expertise and technology needed to integrate disparate operations and management systems from various access providers can help address the complexity. Hence, fully managed SD-WAN services continue to gain traction.

• Multiprotocol label switching (MPLS) and Ethernet WAN services are deeply embedded in business WAN networks, and SD-WAN is challenging the status quo of these technologies. While some customers have chosen to create hybrid SD-WAN networks by adding broadband links to MPLS or Ethernet WANs, others have chosen to disconnect private networks and instead utilize a combination of broadband, dedicated Internet access (DIA), and wireless links.

• Managed SD-WAN provider interviews indicate that a majority of the SD-WAN sites in operation today use DIA, broadband, and wireless links. The pressure on network managers to optimize networks as businesses adapt to the economic impact of the COVID-19 pandemic will increase the attractiveness of broadband and wireless services with SD-WAN.

Source: Frost & Sullivan
Managed SD-WAN presents service providers with upsell opportunities for hosted VoIP and UCaaS offerings while creating customer stickiness. Combining managed SD-WAN service with hosted voice and collaboration services represents a compelling value proposition. In the past, these services have relied on MPLS links for superior performance. With an SD-WAN solution, enterprise users can benefit from improved application performance using dual Internet-based links.

The growth in Internet of Things (IoT) applications and the need to process data faster for latency-sensitive applications are driving demand for edge computing. 5G mobile networking is critical to the success of edge computing because of its high-speed and low-latency bandwidth features. SD-WAN facilitates automated, optimized, and secure connectivity over 5G between endpoints (users or things) and edge compute nodes. The network slicing feature of 5G enables an SD-WAN platform to request virtualized slices on the network for different applications, based on centrally defined policies. SD-WAN vendors are looking to ship SD-WAN appliances with integrated 5G support to tap into edge computing and 5G trends, which will open up more opportunities for service providers to include wireless as part of their managed SD-WAN offering.

Source: Frost & Sullivan
Strategic Imperative (continued)

• Cost-effective branch site connectivity, fast deployment times, centralized network management, and optimized cloud connectivity are some the drivers for managed SD-WAN adoption. Particularly, cloud has been gaining traction among global businesses, with 75% of global IT decision-makers agreeing with the statement “the cloud is the most integral part of our digital transformation strategy” in Frost & Sullivan’s 2019 Cloud Survey. In the same survey, 37% of respondents indicated they currently use a hybrid cloud. As enterprise applications get distributed across multiple clouds, SD-WAN enables enterprise IT to predefine business policies through the SD-WAN controller, to specify which cloud applications are suitably accessed directly through the Internet versus backhauled to a hub site.

• The ability to apply consistent security policies from LAN to WAN to cloud is extremely important for businesses doing direct Internet breakout to cloud. A secure SD-WAN solution with integrated security and networking with the option to manage through a single pane of glass holds immense promise for enterprises’ cloud networking. Hence managed SD-WAN providers are increasingly partnering with SD-WAN vendors that offer native security functionality built into their SD-WAN platforms (e.g., Fortinet, as the FortiGate NGFW comes integrated with SD-WAN functionality).

• Most managed SD-WAN providers have a multi-vendor partner strategy with an average of 3-partner solutions. The Cisco Meraki solution, which is prevalent in the enterprise LAN and security space, is gaining traction for SD-WAN functionality, especially down market, in the small and lower end of midmarket segments. The solution’s simplicity, which allows fast deployment at low costs, is attracting customers. Whether this interest is temporary, due to the pandemic, or long-term remains undetermined as the solution is limited in features and bandwidth as business needs change.

Source: Frost & Sullivan
When the COVID-19 pandemic hit the global workforce in March 2020, remote work became the new norm. Businesses across industries use the public cloud to host key applications, and with advances in residential broadband and wireless speeds, remote workers can access most enterprise applications from home. Yes remote workers, remote students, and video streamers under one roof compete for bandwidth, so optimizing and prioritizing business applications on home networks is a challenge. SD-WAN solutions leverage real-time performance monitoring of transport networks to make application-aware, policy-based network link selections and steer traffic over the best available link. The rise in remote working creates opportunities for managed SD-WAN providers to bundle business-grade broadband/Internet and business wireless services with SD-WAN to tap the market opportunity.

The concept of self-healing WAN has been at the core of SD-WAN discussion since its inception owing to its SDN roots. Vendors and providers alike are investing and integrating artificial intelligence (AI) and machine learning (ML) tools to deliver on the promise of application-aware or intent-based networking to automate routine network operation tasks, set policies, measure network performance against set targets, and respond and rectify the networks as needed. Solutions available today are capable of predicting and notifying events, with providers working on incorporating robotic process automation to eliminate manual intervention, and instead have the WAN self-correct. Masergy and Windstream Enterprise are two service providers that have Alops capability enabled with their managed SD-WAN offerings today.
• While the market is currently flooded with purpose-built SD-WAN appliances, the network function virtualization (NFV)-based universal customer premises equipment (uCPE) approach is clearly gaining prominence, with most managed SD-WAN providers featured in this report supporting it. The cost of the uCPE and the complexity of service chaining were two challenges service providers faced in the approach in the past, which resulted in businesses choosing the easier route of installing an SD-WAN appliance approach. That trend is changing fast. The uCPE price has reduced by more than 50% in the last 2 years, and service providers have invested in network management tools and orchestration platforms to enable seamless service chaining. The ability to deploy multiple key network functions in virtual formats—routing, security, WAN optimization, session border controllers—is of immense value to businesses in terms of reducing appliance sprawl, network scalability, and manageability.

• As the NFV-based approach gains traction, the ability to instantiate VNFs on the uCPE, in the cloud, at the edge, and any virtualized platform becomes critical. Service providers are focused on developing domain orchestration capabilities to seamlessly deploy and manage network functions when needed.

• As SDN, NFV and SD-WAN technologies converge, advanced self-service portals that provide a single pane of glass view are important for network administrators. While most managed SD-WAN providers offer insights into overlay and underlay performance metrics through their portals, some service providers are offering self-service portals that provide a comprehensive view of key network solutions (VoIP, UCaaS, security), as well as SD-WAN and underlay networks.
Growth Environment

**Managed SD-WAN Defined:** In managed SD-WAN, the service provider acts as a single point of contact for the complete SD-WAN solution, including the SD-WAN appliance, software license, WAN services, and managed services.

Provider responsibilities in a managed SD-WAN service include:

- Procuring, installing, configuring, and managing the SD-WAN edge device (physical or virtual) and software
- Installing and managing the WAN links—their own, from a partner, or provided by the customer—that support the SD-WAN solution
- Managing (at least, partially) moves, adds, and changes across the SD-WAN solution
- Monitoring the service 24x7, troubleshooting, and restoring it in case of a problem
- Offering a service level agreement (SLA) for the entire solution and ensuring that performance guarantees offered in the SLA are met
- Creating optional value-added services such as WAN aggregation and continuity configurations, third-party access management, additional security features, or WAN optimization, to list a few.
- Supporting IT managers with a self-service portal interface that provides a granular level of visibility and control
- Billing for the service in a subscription-based model, where the customer pays a monthly recurring charge (MRC) for the managed SD-WAN. While some providers bill managed SD-WAN services as a single MRC for the edge device, bandwidth charges, and management fees, others charge bandwidth fees separately.

Source: Frost & Sullivan
A managed SD-WAN service can either be fully-managed, with the provider managing all aspects of the solution, or partially-managed/co-managed, with the enterprise IT team retaining control over some aspects. Service provider interviews indicate that while enterprises want to retain some control over the SD-WAN deployment, particularly related to policy management rights given to select employees, most want the service provider to have troubleshooting responsibilities. In the fully-managed option, customers still have visibility into network performance characteristics.

The managed SD-WAN market consists of the following 4 segments:

**Network service providers (NSPs):** This segment includes companies such as AT&T and Verizon that can combine their own network services with networks the customer decides to bring. However, most often, the customer stands to benefit from the network services owned by the provider because doing so offers tighter integration of SD-WAN solutions with the network and enables the provider to offer better SLAs.

**Managed service providers (MSPs):** This segment includes companies such as Masergy and TPx that offer managed services for a plethora of enterprise solutions, for example, network, security, unified communications, and cloud services. They generally have partnerships with several network and solution vendors and are in a position to combine SD-WAN with managed network services and offer optional value-added services as the end customers’ needs grow. While a handful of large providers dominate this segment, several small regional providers offer managed SD-WAN services to compete.

Source: Frost & Sullivan
Growth Environment (continued)

**System integrators (SIs):** This segment includes companies such as Tech Mahindra and IBM that have long been key participants in the managed network services space; large enterprise customers prefer working with SIs that can bring IT and network solutions together and reduce the burden of dealing with multiple network and solution vendors. SIs are quickly expanding their portfolios to include managed SD-WAN services, in response to customer demand.

**Value-added resellers (VARs):** This segment includes companies such as Avant and Telarus. VARs have emerged as a key channel through which some enterprises prefer to buy managed SD-WAN. VARs are able to bring the optimal set of solutions by partnering with various providers. Customers benefit from working through one channel for procuring solutions that are from different vendors but that appear as one cohesive solution. It also helps customers future-proof technology investments, as VARs are in a position to migrate their customers to evolving technologies. Some VARs partner directly with SD-WAN vendors, combining their SD-WAN solutions with networks from different service providers to offer managed SD-WAN to end customers. VARs also act as channel partners for NSPs and MSPs selling managed SD-WAN in the market.

*Source: Frost & Sullivan*
Forecast Methodology & Taxonomy

Frost & Sullivan conducted primary interviews with leading managed SD-WAN service providers and reviewed their solution portfolios, SD-WAN overlay partnerships, underlay or physical network reach, managed services capabilities, and ability to offer other value-added services.

A top-down approach was used to arrive at the managed SD-WAN forecasts. We used the managed SD-WAN customer sites forecast to estimate the revenue earned per site on an annual basis (aggregate of monthly recurring charges for 12 months) for overlay, underlay, and managed services.

- The economic downturn caused by COVID-19 will impact SD-WAN spending in the near term.
  - Highly distributed verticals such as retail and manufacturing are impacted negatively by the pandemic, which will slow market growth for the next couple of years.
  - Frost & Sullivan expects that as businesses reassess their technology spend, SD-WAN will emerge as a top choice for their networking needs, which will contribute to higher growth rates beyond 2022.

Managed SD-WAN Revenue Forecasts:

- **Overlay:** Revenues earned by managed SD-WAN providers for the CPE (either an SD-WAN appliance provided by the vendor or a virtualized CPE provided by the service provider; for example, AT&T can deliver SD-WAN on a VeloCloud appliance or its own FlexWare device), software licensing, and a managed services/professional services fee.
Forecast Methodology & Taxonomy (continued)

- **Underlay**: Revenues from the underlying transport network services that managed SD-WAN providers include with SD-WAN, usually MPLS, Ethernet, broadband, DIA, wireless or satellite. The underlay segment forecasts represent a combination of existing and new revenues from WAN links. For example, a customer could retain existing MPLS links at some sites, plus add new broadband links at those sites but choose to drop MPLS links at other sites and add dual broadband links. Readers are encouraged to interpret the numbers accordingly; not all of these revenues are new or incremental revenues, but mostly revenues shifting from one service to another.

- **Value Added Services**: Managed SD-WAN providers are able to earn additional pull-through revenues from customers buying services such as security, WAN optimization, application and network performance monitoring tools, bandwidth on-demand services, and VoIP and UCaaS solutions. *The pull-through revenues are not counted in the managed SD-WAN service forecast.* Future updates of the report may carve out pull-through revenues as a separate segment. Interviews with service providers indicate that the current pull-through revenue (including network services) from managed SD-WAN is in the range of $5 to $8 (up from $3 to $5 in 2018) for every dollar earned on the overlay. However, providers agree this includes revenue shifting from one product to another product, and not just net-new revenues.

**Customer Sites Forecasts:**
- Customer sites include both physical and virtual sites that deployed either on-premises or in the cloud.

Source: Frost & Sullivan
Frost Radar™
North American Managed SD-WAN Services Market
Frost Radar™ Competitive Environment

• The North American managed SD-WAN service market remains fragmented with NSPs, MSPs, SIs, and VARs competing for opportunities across business segments. While large NSPs and MSPs have significant SD-WAN deployments to their credit, the VARs and master agents channels dominate a large share of the market revenues today. VARs resell a plethora of communication services (e.g., network services, VoIP, UCaaS, security, SD-WAN) from several providers, giving them the flexibility to tap into a larger market opportunity. NSPs and MSPs partner with SIs and VARs to resell or white label their SD-WAN offering along with other solutions they offer.

• In this Radar™ report, Frost & Sullivan focuses on leading NSPs and MSPs that have full-fledged managed SD-WAN offerings in the market. Service providers are primarily analyzed based on their managed SD-WAN portfolios, which include but are not limited to: choice of SD-WAN vendor solutions; the underlay choices; managed service support before, during, and after deployment; self-service portals and network management capabilities; and the ability to deliver on value-added services to create customer stickiness (security, routing, VoIP, UCaaS). The competitive Radar™ mapping is based on full year 2019 quantitative data (a combination of operational sites and revenues) and features and functionalities that have been generally available in the market for at least six months.

• AT&T leads the North American SD-WAN market, and is a Growth and Innovation leader on the Frost Radar™ because of the completeness of its offering. The company has the largest number of operational managed SD-WAN sites in the market. AT&T’s focus on offering hybrid networking solutions, which allows customers to adapt SD-WAN at their own pace, has been a successful strategy.

Source: Frost & Sullivan
Companies to Action:
Companies to Be Considered First for Investment, Partnerships, or Benchmarking
AT&T

**INNOVATION**

- AT&T offers customers the choice to deploy over-the-top (OTT) SD-WAN (using VMware SD-WAN appliance), network-based SD-WAN (using FlexWare device), or a hybrid of the two. The company added Cisco SD-WAN to its mix of SD-WAN offerings in July 2020. The service is available as fully managed and co-managed options.
- The network-based service uses SD-WAN gateways distributed across AT&T’s MPLS network in AT&T Integrated Cloud nodes and a cloud-based orchestrator to route traffic. This offers inherent resiliency in that each SD-WAN site is assigned to primary and backup SD-WAN gateways and orchestrators. If the primary SD-WAN gateway fails, the traffic is automatically rerouted to the backup SD-WAN gateway. Similarly, if the primary orchestrator fails, the customer can simply log on to the backup orchestrator.
- AT&T offers visibility into all services via its Business Center online portal.

**GROWTH**

- AT&T has the most SD-WAN sites deployed in the North American market.
- The investments AT&T has made in SDN and NFV positions the company strongly as businesses speed up their digital strategy. The AT&T FlexWare Device eliminates the need for a separate CPE and allows businesses to seamlessly integrate SD-WAN (and other VNFs – routing, WAN optimization, security, SBCs) functionality into their WAN architectures, thus driving additional revenue growth while creating customer stickiness.
- The company’s SDN-based network on-demand offering gives customers the ability to procure dynamic bandwidth across AT&T Switched Ethernet, AT&T MPLS VPN, and AT&T Dedicated Internet services to increase flexibility in WAN provisioning.
- The Expert Engineer role that AT&T has created offers post-sale support for SD-WAN customers with a high-touch, deep network design verification covering WAN, LAN, and applications. The high-touch service helps in quick and seamless deployment of global sites.

**FROST PERSPECTIVE**

- The company’s focus on offering hybrid networking solutions, which allows customers to grow at a pace their WAN infrastructure calls for, has been a successful strategy. Customers have a broad range of network service choices (DIA, broadband, wireless, Ethernet, MPLS, and IP VPN) with SD-WAN that creates customer stickiness.
- AT&T’s hybrid approach, with pricing ranges from low-priced IPsec sites to medium-priced SD-WAN sites to higher-priced MPLS sites, enables AT&T to target a wide scope of customer segments by giving them the choice to deploy services that best suit their price points and application requirements. The hybrid approach is particularly significant to drive managed SD-WAN adoption as businesses of all sizes re-assess and optimize their technology spend to recover from the impact of COVID-19.

Source: Frost & Sullivan
The COVID-19 pandemic highlighted the invaluable contribution cloud and connectivity make to ensure business continuity. As businesses embrace cloud even more, a solid WAN strategy is critical. And no WAN transformation is complete without SD-WAN, thus driving demand for SD-WAN solutions and services.

Network and application security remains a key priority for enterprises. Managed SD-WAN providers are responding by adding vendor partners with integrated SD-WAN and security or by supporting security either in the cloud or as a VNF on their uCPE solutions. Focus is shifting beyond a stateful firewall to include integrated security features such as antivirus, web filtering, malware protection, and intrusion detection systems/intrusion prevention systems (IDS/IPS).

MPLS and Ethernet WAN services are deeply embedded in business WAN networks, and SD-WAN is challenging the status quo of these technologies. While some customers have chosen to create a hybrid SD-WAN network by adding broadband links to MPLS or Ethernet WANs, others have chosen to disconnect private networks and instead utilize a combination of broadband, DIA, and wireless links. Managed SD-WAN provider interviews indicate that a majority of the SD-WAN sites in operation today use DIA, broadband, and wireless links.

Source: Frost & Sullivan
Next Steps: Leveraging the Frost Radar™ to Empower Key Stakeholders
Significance of Being on the Frost Radar™

Companies plotted on the Frost Radar™ are the leaders in the industry for growth, innovation, or both. They are instrumental in advancing the industry into the future.

**GROWTH POTENTIAL**
Your organization has significant future growth potential, which makes it a Company to Action.

**BEST PRACTICES**
Your organization is well positioned to shape Growth Pipeline™ best practices in your industry.

**COMPETITIVE INTENSITY**
Your organization is one of the key drivers of competitive intensity in the growth environment.

**CUSTOMER VALUE**
Your organization has demonstrated the ability to significantly enhance its customer value proposition.

**PARTNER POTENTIAL**
Your organization is top of mind for customers, investors, value chain partners, and future talent as a significant value provider.

Source: Frost & Sullivan
Frost Radar™ Empowers the CEO’s Growth Team

**STRATEGIC IMPERATIVE**
- Growth is increasingly difficult to achieve.
- Competitive intensity is high.
- More collaboration, teamwork, and focus are needed.
- The growth environment is complex.

**LEVERAGING THE FROST RADAR™**
- The Growth Team has the tools needed to foster a collaborative environment among the entire management team to drive best practices.
- The Growth Team has a measurement platform to assess future growth potential.
- The Growth Team has the ability to support the CEO with a powerful Growth Pipeline™.

**NEXT STEPS**
- Growth Pipeline Audit™
- Growth Pipeline as a Service™
- Growth Pipeline™ Dialogue with Team Frost

Source: Frost & Sullivan
Frost Radar™ Empowers Investors

**STRATEGIC IMPERATIVE**

- Deal flow is low and competition is high.
- Due diligence is hampered by industry complexity.
- Portfolio management is not effective.

**LEVERAGING THE FROST RADAR™**

- Investors can focus on future growth potential by creating a powerful pipeline of Companies to Action for high-potential investments.
- Investors can perform due diligence that improves accuracy and accelerates the deal process.
- Investors can realize the maximum internal rate of return and ensure long-term success for shareholders.
- Investors can continually benchmark performance with best practices for optimal portfolio management.

**NEXT STEPS**

- Growth Pipeline™ Dialogue
- Opportunity Universe Workshop
- Growth Pipeline Audit™ as Mandated Due Diligence

Source: Frost & Sullivan
Frost Radar™ Empowers Customers

**STRATEGIC IMPERATIVE**

- Solutions are increasingly complex and have long-term implications.
- Vendor solutions can be confusing.
- Vendor volatility adds to the uncertainty.

**LEVERAGING THE FROST RADAR™**

- Customers have an analytical framework to benchmark potential vendors and identify partners that will provide powerful, long-term solutions.
- Customers can evaluate the most innovative solutions and understand how different solutions would meet their needs.
- Customers gain a long-term perspective on vendor partnerships.

**NEXT STEPS**

- Growth Pipeline™ Dialogue
- Growth Pipeline™ Diagnostic
- Frost Radar™ Benchmarking System

Source: Frost & Sullivan
Frost Radar™ Empowers the Board of Directors

**STRATEGIC IMPERATIVE**

- Growth is increasingly difficult; CEOs require guidance.
- The Growth Environment requires complex navigational skills.
- The customer value chain is changing.

**LEVERAGING THE FROST RADAR™**

- The Board of Directors has a unique measurement system to ensure oversight of the company’s long-term success.
- The Board of Directors has a discussion platform that centers on the driving issues, benchmarks, and best practices that will protect shareholder investment.
- The Board of Directors can ensure skillful mentoring, support, and governance of the CEO to maximize future growth potential.

**NEXT STEPS**

- Growth Pipeline Audit™
- Growth Pipeline as a Service™

Source: Frost & Sullivan
Frost Radar™ Analytics
Frost Radar™: Benchmarking Future Growth Potential
2 Major Indices, 10 Analytical Ingredients, 1 Platform

VERTICAL AXIS

Growth Index (GI) is a measure of a company’s growth performance and track record, along with its ability to develop and execute a fully aligned growth strategy and vision; a robust growth pipeline system; and effective market, competitor, and end-user focused sales and marketing strategies.

GROWTH INDEX ELEMENTS

• GI1: CUSTOMER SITES
  This is an indication of a company’s market reach measured by the number of operational SD-WAN sites for base year 2019.

• GI2: REVENUE GROWTH (PREVIOUS 3 YEARS)
  This is a look at a company’s revenue growth rate for the previous 3 years in the market/industry/category that forms the context for the given Frost Radar™.

• GI3: GROWTH PIPELINE
  This is an evaluation of the strength and leverage of a company’s growth pipeline system to continuously capture, analyze, and prioritize its universe of growth opportunities.

• GI4: VISION AND STRATEGY
  This is an assessment of how well a company’s growth strategy is aligned with its vision. Are the investments that a company is making in new products and markets consistent with the stated vision?

• GI5: SALES AND MARKETING
  This is a measure of the effectiveness of a company’s sales and marketing efforts in helping it drive demand and achieve its growth objectives.
**HORIZONTAL AXIS**

**Innovation Index (II)** is a measure of a company’s ability to develop products/services/solutions (with a clear understanding of disruptive Mega Trends) that are globally applicable, are able to evolve and expand to serve multiple markets, and are aligned to customers’ changing needs.

**INNOVATION INDEX ELEMENTS**

- **II1: INNOVATION SCALABILITY**
  This determines whether an organization’s innovations are globally scalable and applicable in both developing and mature markets, and also in adjacent and non-adjacent industry verticals.

- **II2: RESEARCH AND DEVELOPMENT**
  This is a measure of the efficacy of a company’s R&D strategy, as determined by the size of its R&D investment and how it feeds the innovation pipeline.

- **II3: PRODUCT PORTFOLIO**
  This is a measure of a company’s product portfolio, focusing on the relative contribution of new products to its annual revenue.

- **II4: MEGA TRENDS LEVERAGE**
  This is an assessment of a company’s proactive leverage of evolving, long-term opportunities and new business models, as the foundation of its innovation pipeline. An explanation of Mega Trends can be found [here](#).

- **II5: CUSTOMER ALIGNMENT**
  This evaluates the applicability of a company’s products/services/solutions to current and potential customers, as well as how its innovation strategy is influenced by evolving customer needs.
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Frost & Sullivan
3211 Scott Blvd., Suite 203
Santa Clara, CA 95054