# AVANT
# SD-WAN
## 6-12 Report

**Complimentary Inaugural Report Courtesy of**

SOMMITA
TECHNOLOGY GROUP, LLC

**September 2019**
v3

## Complimentary Inaugural Report Courtesy of

SOMMITA
TECHNOLOGY GROUP, LLC

We are excited to provide you with a complimentary copy of the AVANT Research & Analytics 6-12 Report on SD-WAN. As your Trusted Advisor, we aim to empower you with the information and resources you need to support your company's digital transformation.

There has never been a faster pace of change in IT, and the pace is accelerating every year. This 6-12 Report arms you with the most relevant information and insights necessary to assist you in evaluating a migration to SD-WAN over the next six to twelve months.

We look forward to supporting your IT needs and business outcomes to help you differentiate and stay ahead of your competition in this fast-paced and ever-changing world.

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TRUSTED ADVISOR™
POWERED BY AVANT

## About the Analyst

Ken Presti develops the strategic framework and manages the process of leveraging AVANT's internal data and external data to drive high-value market research designed to help consultants, agents, channel partners, and other members of the Trusted Advisor community more effectively help their business customers understand and evaluate Information Technologies.

Ken Presti comes to the table with a wealth of experience in market research, survey development, focus group moderation, interviewing, and content development for the technology industry. His primary area of expertise is focused on go-to-market and channel strategies spanning the industry sectors of networking, cloud, security, and telecom.

A former Research Director of IDC's Network Channels & Alliances service, he has served as a Trusted Advisor to several key networking vendors and service providers. He has also led his own market research and channel advisory firm, Presti Research & Consulting, and has worked with other prominent channel consultancies. Presti specializes in combining empirical data, his own experience with the perspectives of industry leaders in a way that fully illustrates technology trends, business model evolution, likely outcomes, and strategies for success.

**Contact us at research@goavant.net.**

# Introduction

## Welcome to the inaugural AVANT "6-12 Report,"

developed by AVANT Research & Analytics with the assistance of technical teams within AVANT Communications, and backed by a wealth of data secured by AVANT in our normal course of business, our own primary research of end customers (AVANT State of Disruption Study), plus other reputable industries sources.

Our reports will focus on today's most disruptive technologies, where the pace of change is rapid. These companies or technologies, which may have been relatively anonymous just a few years ago, have now emerged as highly viable solutions to resolve the business needs that led to their creation. They have, in effect, disrupted the IT landscape, which is well known for its accelerating pace of change and innovation.

The 6-12 Report is designed to provide enterprise technology leaders with a contemporary and relevant overview of the featured subject for the next six to 12 months. Each subject is selected based on its opportunity for adopting companies to realize competitive advantages within their particular industry, market space, or company size.

## Our Mission

AVANT enables Trusted Advisors (agents, VARs, MSPs, consultants and similar channel partners) to support their business customers with IT technology decisions, with a specialization in disruptive technologies and solutions. We accomplish this with our:

- **AVANT Technical Specialists** that study the ins and outs of the latest IT technologies
- **AVANT Assessment Data** collected during thousands of customer assessments and resulting customer decisions
- **AVANT Primary Research** of both customers and trusted advisors, to inform our decision making process
- **AVANT PATHFINDER** an IT Decision Making tool and repository of AVANT's market intelligence, allowing for comparative searches and intelligent search to help (1 minute video of the Pathfinder)
- **AVANT Analysts** to conduct research and analyze data for in-depth analysis



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AVANT's Platform for IT Decision Making has assisted Trusted Advisors and their customers with thousands of IT decisions annually for customers of all sizes, from SMB to Fortune 500, providing us a large experience base and data set to reflect upon. Our role in supporting real world IT decision making with Trusted Advisors and their customers with leading technologies and solutions places us in a unique position to see near real-time market trends.

Our data is collected through sales efforts in conjunction with the Trusted Advisor community, through assessment data collected at the outset of the sales discussion, and through various market research tools, including surveys, interviews, focus groups, and external reports.

## SD-WAN: Is It Ready for Prime Time?

This 6-12 Report focuses on the market dynamics around software defined wide-area networking, (SD-WAN), a wide-area networking technology that has gained substantial momentum as a means of supporting latency-sensitive applications while at the same time controlling costs and enhancing performance.

**Key aspects covered in this report include:**

- **How enterprise customers can leverage SD-WAN towards increased network performance and/or lower costs**
- **The types of applications best served by SD-WAN**
- **The key players in the SD-WAN space**

We will also explore additional issues around benefits to your company, the status of MPLS, impacts on cybersecurity, and whether there is a continuing need for firewalls and routers.

The selection of the right SD-WAN solution for your company can be a time-consuming and complex task. There are many criteria to consider, including applications supported, security needs, geographic needs, preference for self or turnkey management, and many more. This report will help you to evaluate this wide variety of options and considerations that should factor into your technology planning processes.

## The Rate of Disruption Index (RDI)

AVANT Research and Analytics has conducted a study of the most disruptive technologies changing today's IT landscape, including SD-WAN, UCaaS, Hyperscale Platforms, Colocation, and Managed Security Services. Our goal was to assist our readers in assessing the rate of transition from one technology to a newer technology that is either taking its place or supplementing it. The "Rate of Disruption Index," or "RDI," represents the year-over-year shift in market uptake, as perceived by respondents to AVANT's State of Disruption Survey, conducted in the spring of 2019. Our study showed SD-WAN had the highest RDI index and represented the most disruptive technology measured in the study.

AVANT polled 300 US-based enterprise decision-makers at either the C-suite or Management/VP-level in IT, security, or finance. To qualify for the survey, respondents had to be involved in choosing or helping the organization to implement new data network, voice, or compute infrastructure technology including buying/selecting new tools and services. Respondents include statistically significant subsets from the following five industries: Manufacturing Financial Services, Healthcare/Medical, E-commerce, and Consulting/Business Services.

As part of the survey, respondents were asked to compare their current progress within a technology transition with where that progress stood at the end of 2018. That data was then processed through a mathematical equation that quantifies that progress. For example, respondents were

## SD-WAN by the Numbers

SD-WAN is the most disruptive technology in AVANT's 2019 State of Disruption Study, a groundbreaking market research initiative of more than 300 technology decision-makers evaluating the most disruptive technologies changing today's IT landscape, including SD-WAN, UCaaS, Hyperscale Platforms, Colocation, and Managed Security Services. Our goal was to measure how rapidly the market is transitioning from a legacy technology to a newer technology that is either replacing or supplementing it. The "Rate of Disruption Index," or "RDI," represents the year-over-year shift in market displacement, based on responses to the survey conducted in the spring of 2019. The RDI is useful for comparing the significance of market impacts in a way revenue numbers and or revenue growth alone cannot. For more information on how the RDI is calculated, please see the sidebar. Using this metric, SD-WAN is posting a year over year 13% RDI in supplementing or replacing non-SD-WAN enabled networks. This RDI is nearly twice as great as the Cloud infrastructure 7% RDI replacing legacy on premise servers to cloud platforms, as well as twice as great as the UCaaS 7% RDI replacing legacy PBX platforms.

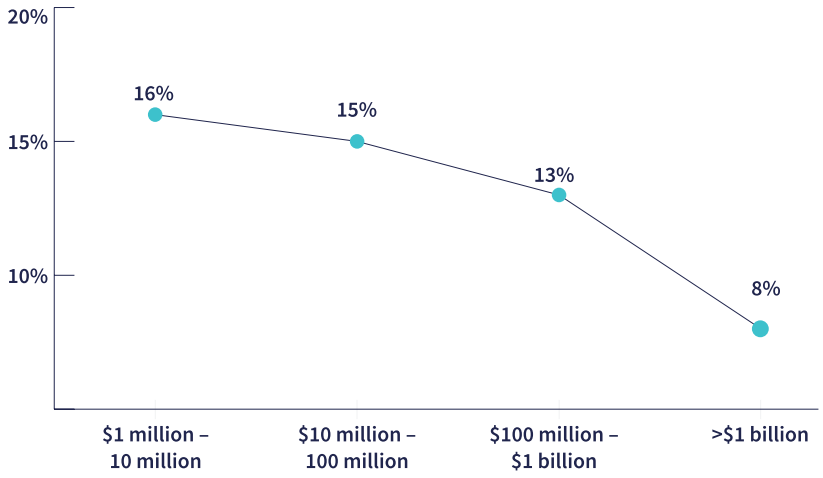
**SD-WAN has the highest RDI in the State of Disruption study.**

| SD-WAN | UCaaS | Cloud |
|---|---|---|
| **13%** RDI | **7%** RDI | **7%** RDI |

Source: AVANT State of Disruption Report 2019

The data shows that SD-WAN adoption is fastest in smaller companies with an RDI of 15%-16% for companies $1M to $10M and $10 to $100M, but still respectable for > $1B companies with an RDI of 8%, still beating UCaaS and Cloud adoption RDI rates mentioned earlier.

**RDI of SD-WAN adoption, by company size (revenue)**




Source: AVANT State of Disruption Report 2019

It is AVANT's belief that SD-WAN will continue to make ongoing incursions into the higher end of enterprise, beginning at remote offices, and other edges of the network, and then reaching steadily closer towards the core.

From a broad market perspective, the numbers show a strong upswing for SD-WAN. According to Framingham, Massachusetts-based international Data Corporation (IDC) the infrastructure market for SD-WAN is predicted to expand at a 30.8% compound annual growth rate (CAGR) from 2018 to 2023, reaching $5.25 billion, according to IDC's SD-WAN Infrastructure Forecast.

Frost & Sullivan is only slightly less bullish, measuring the SD-WAN market at a mere $593 million in 2017 but expecting it to reach $4.4 billion by 2023. AVANT's own research demonstrates that 68 percent of Trusted Advisor channel sellers believe customers will buy SD-WAN by 2021, up from 49 percent in 2019.

**Customers who will buy SD-WAN**


Source: AVANT Cloud Channel Survey 2019

## (RDI cont.)

asked to position, on a scale of 1 to 10, where their security infrastructure fell at the end of 2018, with "1" being 100% in-house resources, and "10" being 100% cloud based. We then asked respondents to again position and the same scale where their security infrastructure is expected to fall at the end of 2019. In a scenario in which the average of all respondents was "7" on the first question, followed by an average of "8" on the second question, we measured the rate of disruption, accordingly:

**(8-7)/7 = 0.1429**

This computes to an RDI of approximately 14 percent, representing the rate at which business leaders expect to transition to a cloud-based model, and thereby displacing, or disrupting, the on-premises approach to security. To view this a different way, if the two models were tectonic plates pushing against each other, the RDI represents the earthquake, and its shift in plate tectonics.

This statistic will be used in this 6-12 Report, as well as in forthcoming 6-12 Reports on other technologies and business models.

The RDI is useful in understanding how adoption rates of new technologies are displacing legacy solutions as a comparative measurement to company sizes, market segments and as a comparative tool to other technology trends in a way financial market size does and growth does not, since the financial growth or revenue size of particular solution does not inform us, in and of itself, how much of an impact this growth is really having on a legacy alternative and normalizes this impact across different comparisons.

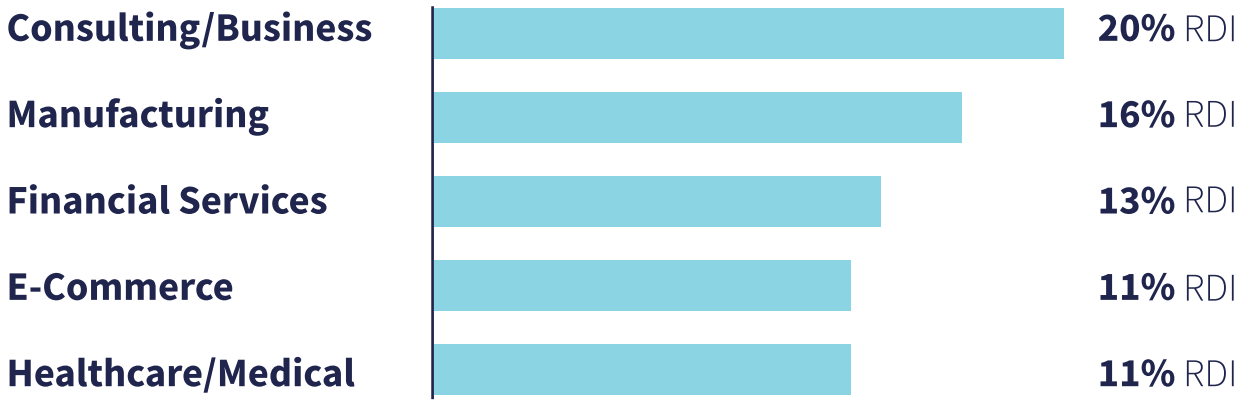
(Avant 2019 Cloud Channel Survey of 187 channel sellers). Although AVANT has named SD-WAN as the industry's #1 most disruptive technology, SD-WAN's market uptake is not yet coming at the expense of legacy MPLS technology, given that 53 percent of $1B enterprises still plan to invest in MPLS, while the lower end of the market is displacing MPLS much more quickly (Avant State of Disruption 2019).

**53%** **of companies >$1B still plan to buy MPLS**

Source: AVANT State of Disruption Report 2019

SD-WAN technology can be purchased on a CAPEX model or on a monthly basis, sometimes with an upfront hardware charge for on premises equipment, or the on-premise hardware cost is rolled into the monthly charge. OPEX charges are typically charged based on maximum capacity while monthly contracts typically charge by stair-stepped bandwidth throughput corresponding to various price bands, or alternatively by actual use statistics.

When SD-WAN is looked at by the top 5 industries adopting it, Consulting/Business Services is posting the highest rate of disruption at 20 percent RDI while e-commerce and Healthcare/medical post the lowest disruption among the top five at 11 percent RDI.




Source: AVANT State of Disruption Report 2019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## Key Value Proposition

The reasons for market penetration are not hard to understand.

The emergence of a widening variety of latency-sensitive and bandwidth-heavy applications is driving a need for increased demands on corporate networks, while at the same time reinforcing a certain cost consciousness and security awareness. Increasingly, data traffic no longer lives solely within the confines of a corporate data network. The trends to leverage cloud platforms such as UCaaS, CRM, and email are also changing corporate WAN requirements. SD-WAN can meet these needs and can be used in conjunction with any other network technologies, including broadband, MPLS, Ethernet, 4G/5G wireless, DSL, private fiber networks, and satellite.

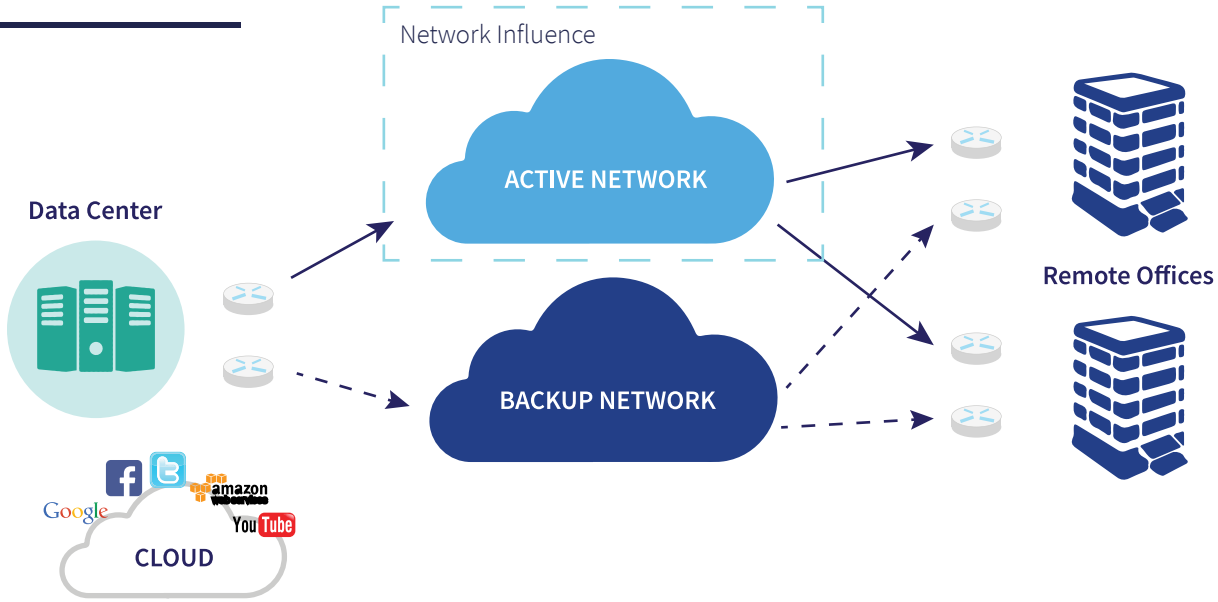
How does SD-WAN work? SD-WAN evaluates network traffic patterns and chooses the most efficient route across the network in real time. It can combine multiple lower-cost networks that have variable performance characteristics, and even combine them with guaranteed quality more expensive networks like MPLS to achieve even better performing networks than any individual network alone. An SD-WAN network continuously monitors performance feedback telemetry across an end to end SD-WAN deployment and makes dynamic packet or session level data decision as to which path network traffic will use. If broadband is performing better than MPLS in that particular moment, it will choose the broadband connection. It also has the ability to prioritize traffic based on user defined rules, ensuring the most important or network sensitive traffic is handled accordingly.

SD-WAN also enhances network efficiency by leveraging some of the most important characteristics of the cloud; namely fully leveraging the many-to-many connections possible with the internet, instead of transmitting data from point-to-point in predefined networks utilizing the old hub-and-spoke or star models, thereby adding to latency and cost. To further enhance cloud-based application performance, some SD-WAN providers also have direct connections into the most popular cloud-based applications and global data center providers, enabling customers to leverage their networks' SD-WAN edge deployments. Other SD-WAN providers have their own backbone network, with dedicated high performing network connections regionally or around the globe, providing a high performing express route for more reliable connectivity to countries, where internet latency can often be a problem.

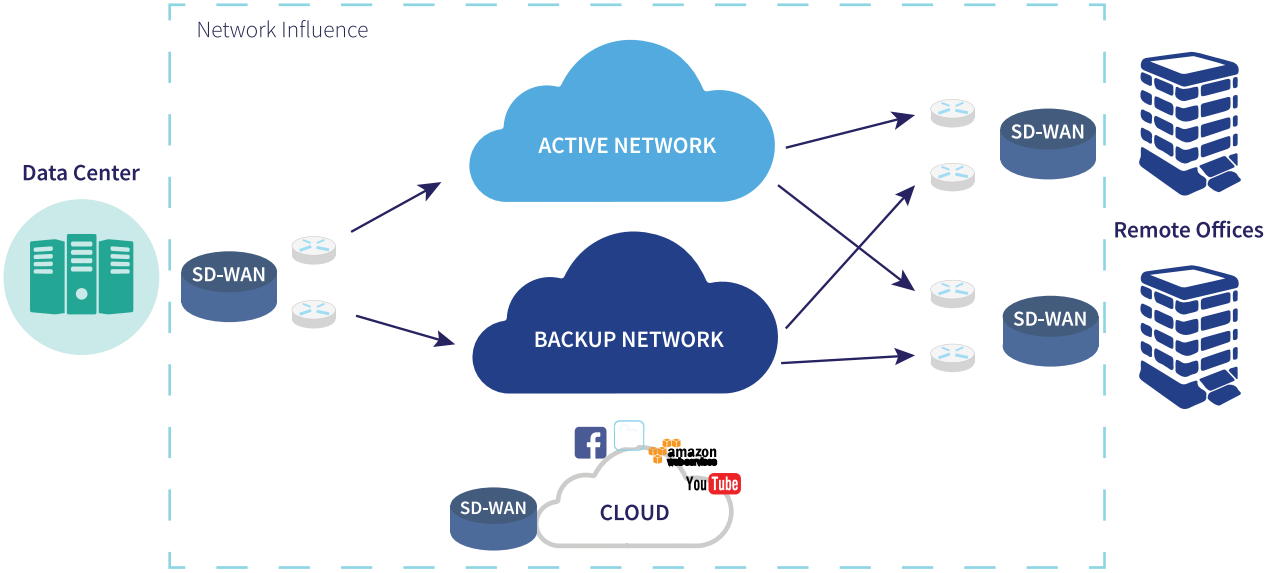
The ability of SD-WAN to dynamically make a decision on where to route traffic makes it an ideal solution for higher reliability networks. Multiple service providers can be used in an all-active configuration in order to minimize the impact of an outage. As always, establishing a service level agreement targeting your company's needs and resources is also highly beneficial. Pre-SD-WAN technology was not very friendly to managing multiple simultaneous networks, at times requiring backup networks to remain dormant awaiting an outage, or taking too long to transition and reroute traffic, which would drop calls and other network sensitive applications. SD-WAN allows for the simultaneous use of the backup network, achieving more combined bandwidth availability and higher performance than any single network due to dynamic routing.

"Mid-size and small enterprises are moving quickly to cloud, with large enterprises consideration rates increasing more each day" said Gary Levy, VP Worldwide Alliances and Channels at Oracle Communications. "As mission critical applications are sourced across cloud environments, enterprises are re-thinking how they are leveraging MPLS. We find that enterprises are reducing expensive point to point MPLS circuits, increasing usage of less expensive broadband internet, and rapidly deploying SD-WAN."

## Before SD-WAN




## After SD-WAN




Users can still configure SD-WAN solutions with backup networks that are nominally unused, however the use of some of these secondary networks may carry higher operational expense than others. Some SD-WAN edge devices come with built in LTE capabilities for built in resiliency or you may choose to have additional circuits intended for network resiliency with a lower monthly fee but high usage rate. Therefore, for better cost control, a return to the primary network should be made as soon as feasible.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The ability to simultaneously handle multiple networks makes SD-WAN a great network transition tool. One can implement SD-WAN in advance of the expiration of an MPLS contract, still leveraging the MPLS connectivity for the combined SD-WAN network, and then decide to add alternative networks, or supplement the MPLS network without needing to decommission and transition off the MPLS WAN immediately. There is no need to wait for your MPLS network contract to expire before starting to trial and implement your SD-WAN network.

**The ability to simultaneously handle multiple networks makes SD-WAN a great network transition tool.**

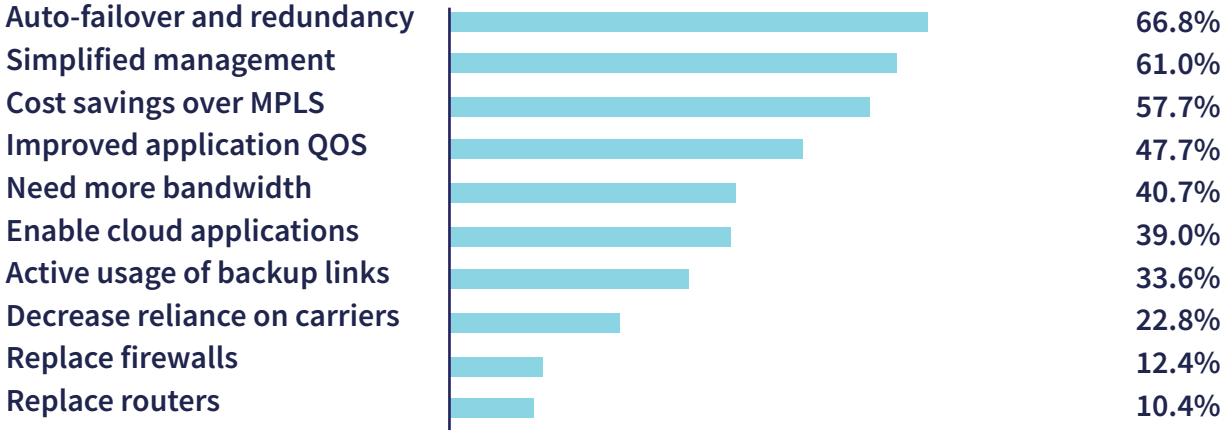
Depending on the solution, SD-WAN can also incorporate many security features, replacing standalone security appliances, firewalls, VPNs and more advanced security functionality.

Lastly, it can also be a replacement for the corporate edge router, and some even have WIFI access capabilities making it an ideal solution for a remote office or retail chain.

"It is a simpler and more efficient way to handle routing and unify the functions of multiple devices," said Paul Weiss, Vice President of Helm Partners, LLC, a Pennsylvania-based Trusted Advisor. "It can also drill down to help me understand how applications are being used, the performance across my connections, and how my sites and my people are doing. There's a significant advantage to business intelligence and the ability to troubleshoot as compared to traditional routing and firewalling models. You can also use these capabilities to build up your uptime or strengthen security."

## Why are you looking at SD-WAN?

(By percentage of 241 respondents)




Source: AVANT Research & Analytics, August 2019

Enterprise customers report that their teams typically see a noticeable performance boost when SD-WAN is integrated into the network. This can be especially critical when using UCaaS, CCaaS, or any other software-as-a-service offerings, given that these technologies can have a direct cause-and-effect relationship with customer service and customer experience.

According to AVANT's Assessment Data, auto failover and redundancy represents the number one reason why enterprise customers first take a look at SD-WAN. Simplified management and cost savings over MPLS ranked second and third, respectively.

Companies in the 250-500 seat range were far more drawn to potential cost savings (77%) than any other value category.

**Current & Planned WAN Environments**

**62%** currently have MPLS

**40%** plan to keep original network

**39%** plan to replace original network

Source: AVANT Research & Analytics, August 2019

According to AVANT's assessment data, most companies are coming to SD-WAN from a MPLS environment (62 percent), and 40 percent report a near-term plan to keep their original network, while a nearly equal percentage plan to replace their original network sooner rather than later. Approximately 40 percent are aiming at an SD-WAN set up that includes Dual Internet connections and 39 percent are planning a hybrid environment that includes MPLS. Products and technologies that users may choose to displace through the adoption of SD-WAN include routers (55 percent), standalone firewalls (47 percent) and WAN optimization (23 percent), given that these functions can now be delivered by other means.

Oftentimes, a discussion on SD WAN begins with a conversation on an entirely different subject – most likely a value proposition around UCaaS, SaaS, or some other application that requires a substantial amount of bandwidth or is otherwise latency sensitive. In such circumstances, the discussion can turn to SD-WAN as a means of providing the network power necessary to support the higher-level application that is intended to provide a competitive differentiator for the customer.

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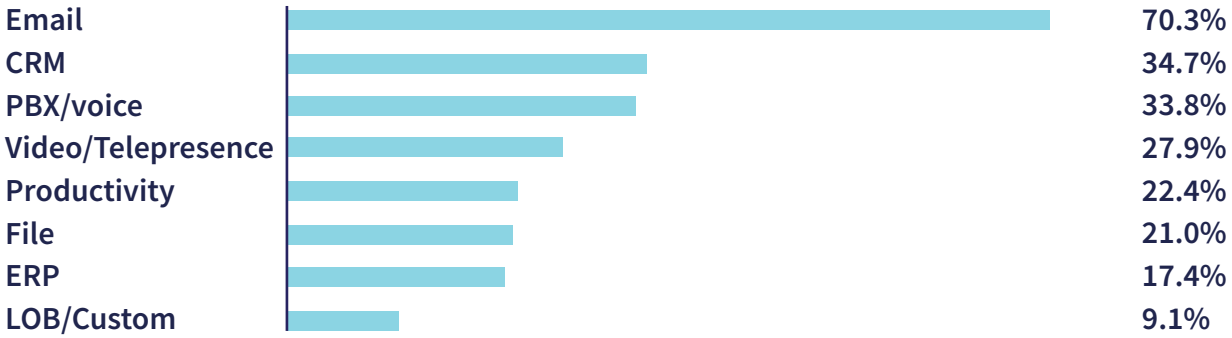
It is important to take stock of how your company uses technologies and where those technologies are located. The tables below show how customer organizations tend to deploy various technologies and applications, based on AVANT's assessment data. Depending on where these technologies and applications are located, different solutions may be the right choice. For example, some providers may incorporate a global backbone network or one that has connectivity built into your specific data center or cloud application, thereby establishing for themselves a position on your short list of potential providers.

## Which apps are hosted in the cloud?

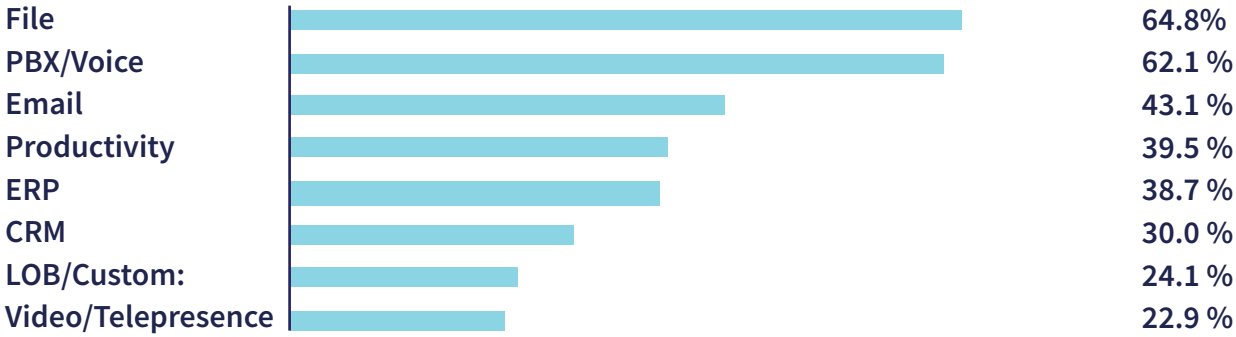
(By percentage of 219 respondents)




Source: AVANT Research & Analytics, August 2019

## Which apps are hosted in the data center?

(By percentage of 253 respondents)




Source: AVANT Research & Analytics, August 2019

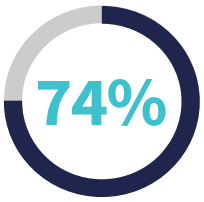
As shown in the charts, different companies often have a very different approach to whether specific applications are stored in a data center or in the cloud. However, the movement towards cloud and the "as-a-service" phenomenon continues unabated, and the right SD-WAN solution can be an enabling tool.

With all these disruptive capabilities packaged into a single solution, it is not surprising that many traditional router and software companies have recently made acquisitions of startup SD-WAN providers such as Talari by Oracle, Velocloud by VMWare and Viptela by Cisco, often for very high multiples.


Although SD-WAN delivers on much of the promise of next generation networking, buyers are also well advised to select their SD-WAN solutions carefully, given that SD-WAN products are not yet interoperable among vendors.

## Security

Like everything in this world of technology, effective security needs to be baked in to virtually every value proposition put on the table. This is important to today's enterprise technology buyers who evaluate different offerings and build the internal consensus to either accept or decline an offered solution.




**fear a cyberattack will cost them their job.**

Source: AVANT State of Disruption Report 2019

According to AVANT's State of Disruption Report, 74 percent of surveyed technology decision makers fear that a successful cyberattack could cost them their jobs. Fewer than half believed that their companies were well prepared to handle an attack and mitigate the results.

SD-WAN solutions typically include their own security protections, such as stateful firewall capabilities, site-to-site encryption, application policy control, segmentation for VLANs and split tunneling, and authentication between edge devices and the controller. How SD-WAN companies deliver security solutions varies widely, with some becoming security technology providers with their own technology and development as a core part of their SD-WAN value proposition, while others are partnering with market leaders to embed security solutions within their product. Most will interoperate effectively with third-party security tools and services, although some may interoperate better than others. Therefore, your current set up of firewalls and other security gear may not need to be displaced with the advent of SD-WAN, but it does make sense to review the technical notes of the specific SD-WAN company for their preferred recommendations.

The addition of new technologies and infrastructure almost always expands the attack surface. Thus, technology buyers as well as technology sellers need to be keenly aware of their level of exposure. This is especially true of companies leveraging local Internet breakout, rather than backhauling through a data center. As the data travels across the Internet, protections for layer 4 through layer 7 of the OSI stack will likely be necessary. Security technologies of particular focus should include next-generation firewall with intrusion prevention, web filtering, and DNS security. These, however, can become quite costly when being applied to a large number of remote facilities. Looking at the other side of the coin, it's also true that a successful breach at a remote office can often be used as an effective bridgehead to gain access to central corporate resources.

"Security continues to be the number one concern that IT decision makers have when considering migration to SD-WAN," said Ray Watson, Vice President of Innovation at Masergy. "This ultimately favors solutions which tightly integrate and support unified threat management as well as managed detection and response."


Source: AVANT Research & Analytics, August 2019

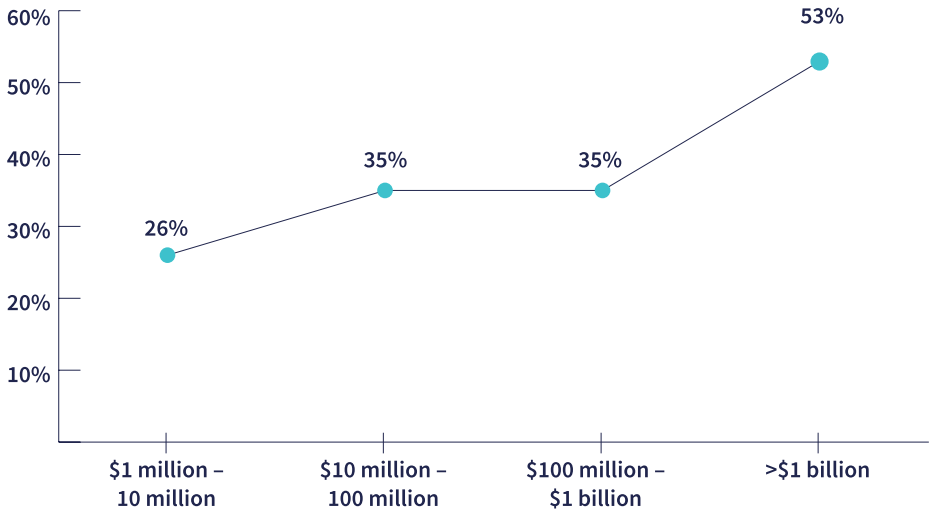
According to AVANT's Assessment Data, 54 percent of customers entering the SD-WAN decision discussion are uncertain of how to approach security, while 22 percent are planning to install a next-generation firewall at each site. Another 14 percent are planning to use a cloud-based firewall service. Those who are uncertain would be well advised to work closely with their Trusted Advisor to ascertain the best solution for their needs.

## Competing Technologies

SD-WAN is widely viewed as being in the slow-motion process of displacing multiprotocol label switching (MPLS), a routing technology that uses abbreviated labels, as opposed to lengthy network addresses, accelerating traffic flows by avoiding the need to use conventional routing tables. MPLS supports a wide variety of network technologies, including T1/E1, Frame Relay, and DSL.

Having gotten its start in the early 2000s, MPLS is widely deployed, and continues to have a strong position in enterprise networks, particularly, though not exclusively, in the cores of those networks. In fact, according to AVANT's 2019 State of Disruption survey, 40% percent of overall respondents that have already deployed MPLS planned to meaningfully increase their use of MPLS in 2019. Just under 15 percent expected their position with MPLS to remain about the same. 53% of companies with revenues in excess of a billion dollars plan to meaningfully increase their MPLS usage. Among companies with under $1 million in revenues, that stat dropped substantially to 26%, while 25 percent expected to transition away from MPLS.

**Significant invesement in MPLS in 2019, by company size (revenue)**




Source: AVANT State of Disruption Report 2019

**Share of Broadband in SD-WAN Networks**

Source: AVANT State of Disruption Report 2019


The continued significant investment in MPLS by 40% of companies is not surprising given that SD-WAN networks can continue to leverage already deployed MPLS networks without the need for replacement by SD-WAN enabled broadband connectivity or other lower cost solutions. However, the addition of broadband to SD-WAN enabled networks is also increasing. AVANT's State of Disruption Report finds the average share of Broadband traffic in an SD-WAN network is about 63% in 2018 growing to 70% by 2019, and some of this growth will be at the expense of MPLS networks. SD-WAN's ability to co-exist with already deployed networks demonstrates one of the strengths of SD-WAN and a key reason for its rapid adoption.

"The thing to understand is what size of enterprise is using MPLS, and for what applications," said Nate Grinnell, VP of Global Sales at Cybraics, who until recently worked extensively with SD-WAN. "Smaller enterprises are quicker to go to the cloud with their mission critical applications, meaning they will more quickly move away from MPLS at the edge. Instead, they're adopting SD-WAN much faster than what we're seeing at the larger enterprise where the decline of MPLS is slower."

MPLS is generally regarded as more expensive than SD-WAN, though much of those savings tends to be linked to SD-WAN's ability to leverage the public network in a secure manner; a path that is typically simpler and less expensive than the private networks necessary to support MPLS.

For companies planning to move from MPLS to SD-WAN, it's important to review your existing contract in advance of the renewal – especially given the fact that many of these contracts default to an auto-renewal setting that requires 30 to 90 days' notice in advance of the end of the current contract. Similarly, punitive terms for early termination are also very common. If your company is not quite ready to terminate by the contract's end date, it is usually possible to move to a month-to-month arrangement, albeit at higher cost per month than would usually be the case with a longer-term contract. Or, you may choose to run MPLS and SD-WAN concurrently, as illustrated above by the State of Disruption data. In such circumstances, carriers are sometimes willing to allow you to shift your bandwidth consumption and resulting fees from one service to another, assuming of course that both services are coming from the same provider.

## Key Players in the World of SD-WAN

SD-WAN involves a number of key players who come to the table with different portions of the value proposition. The general categories listed below are not necessarily mutually exclusive, but the correct choice or choices largely depend on your needs, your budget, the direction you want to take, and the degree to which you need help with the selection and technical aspects.

## Product Vendors

These are the companies that develop the software, products and solutions that deliver the technology of SD-WAN. These entities fall into two basic camps: those which are "pure-play" SD-WAN vendors and entered the market directly from start-up mode; and those which have their roots in some other related technology, typically networking or security. Though neither group carries a distinct advantage against the other, it's important to keep in mind that the latter category comes to SD-WAN as an extension of their previous strategy. Buyers will therefore want to evaluate these offerings based on their specific functionality, and further remember that SD-WAN products and solutions are rarely fully interoperable between one vendor and another. Vendors of the technology often rely upon MSPs and Carriers to manage and offer their products, though some also have their own professional services arms. Buying a vendor's native technology solution may often require deployment and management of the SD-WAN network.

## MSPs

This category may, in many respects, function in a model very similar to the carrier, except that MSPs are not likely to have their own network beyond, perhaps bundling third-party on-ramps to the network of a much larger service provider. MSPs use vendor products mentioned above, sometimes with a portfolio of vendors to choose from, to deliver a turn-key SD-WAN solution and are not themselves the technology developer of SD-WAN. MSPs will argue that they are the best choice for SD-WAN implementations because some offer the ability to aggregate billing and support of circuits from various carriers and serve as a single throat to choke, or back to pat, with no finger pointing. However, to some extent this is something a carrier can offer as well. MSPs can often optimize a given solution to your needs and be able to function in a mode very similar to consultants (see below).

## Carriers

Carriers typically offer SD-WAN as an add-on service to their data circuits and related offerings, and act as an MSP. Most carrier providers have taken the step of selling SD-WAN without requiring any of their circuits as part of the solution, however about one-in-five require at least some portion of the SD-WAN network to run over their own data network. This is a smart approach to combat one of the standalone SD-WAN solution providers key differentiators – the independence of network providers. Carriers will argue that owning the network provides them a better end-to-end experience of the implementation. The SD-WAN solutions are based on the vendor technologies mentioned above. This may come as a one-size-fits-all type of proposition; in which case you won't be able to make vendor selections or choose among other options for the underlying technology. But what you give up in terms of choices may be counterbalanced through greatly enhanced simplicity, plus the ability to negotiate lower rates by signing up for a more expansive service package. On the other hand, the more your communications needs are met by any one single source, the more you become susceptible to outages, carrier-targeted security breaches, and other issues.

## Consultant/Agent/Reseller/Trusted Advisor

This segment of the industry typically does not have an internally developed product or technology. They instead are designed to function as independent entities that can help you sort through the available options based on the specifics needs, budgets, and legacy infrastructure of your company. Their role is to do the necessary legwork, understanding the differentiators among the various offerings as well as those of the vendors that provide them. Aside from helping with the pre-sales phase of the engagement, they can also play a key role in deployment, optimization, support, training, and other facets of technology.

## Where to Look

AVANT works with a variety of vendors and service providers from all three camps. Information from a number of these vendors is attached as an addendum to this report. This is not represented as an exhaustive list of key companies competing in the SD-WAN space but is submitted for the perusal of interested buyers.

### Standalone Product Vendors:

| | |
|---|---|
| aryaka | Proprietary WAN-as-a-Service over private backbone |
| bigleaf network | Proprietary SD-WAN-as-a-Service |
| CATO NETWORKS | WAN-as-a-service; private network backbone |
| cisco viptela | Proprietary SD-WAN via Viptela, Meraki acquisitions |
| CLOUDGENIX | Proprietary SD-WAN; management via Wipro |
| FORTINET | Proprietary SD-WAN |
| open systems | Proprietary SD-WAN |
| ORACLE Communications | Proprietary SD-WAN via Talari acquisition |
| silver peak | Proprietary SD-WAN |
| VERSA NETWORKS | Proprietary SD-WAN |
| velocloud™ vmware | Proprietary SD-WAN via VeloCloud acquisition |

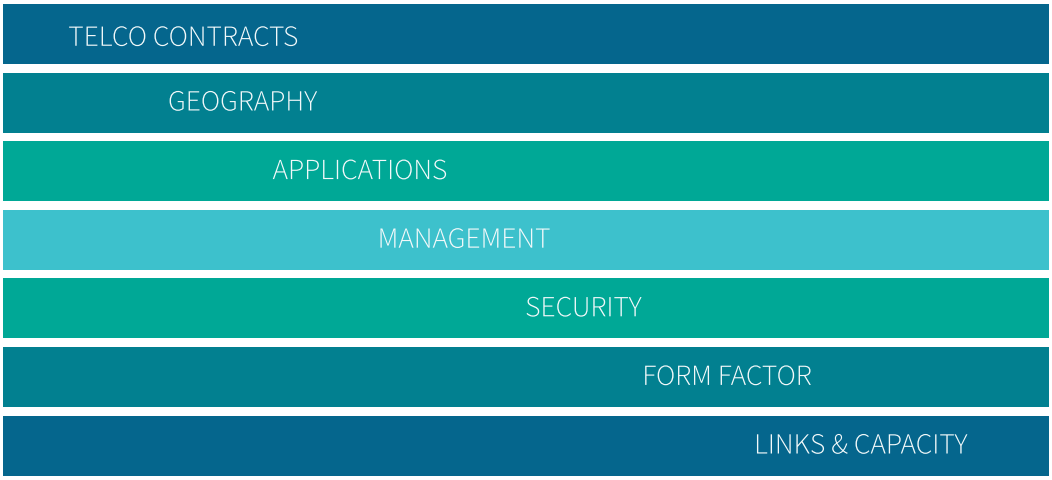
## Participating Carriers/Aggregators:

| | |
|---|---|
| AT&T Business | Uses VMware SD-WAN via VeloCloud |
| Atlantic Metro | Uses VMware SD-WAN by VeloCloud |
| BCN | Uses VMware SD-WAN by VeloCloud |
| BULLSEYE TELECOM | Uses VMware SD-WAN by VeloCloud |
| 中国电信 CHINA TELECOM | Uses Versa, Silver Peak |
| aptum | Uses Nuage |
| CenturyLink™ | Uses Versa, Cisco Meraki, Cisco Viptela |
| COMCAST BUSINESS | Uses Versa Networks |
| gtt | Uses VMware SD-WAN by VeloCloud |
| MASERGY | Uses Fortinet, Silver Peak, and others |
| SPECTROTEL | Uses VeloCloud, Fortinet, Cisco Meraki, Bigleaf |
| TATA | Uses proprietary technologies, Cisco, Versa |
| TPX COMMUNICATIONS | Uses VMware SD-WAN by VeloCloud |
| verizon | Uses Cisco Viptela, Versa Networks |
| WINDSTREAM ENTERPRISE | Uses VMware SD-WAN by VeloCloud, Fortinet |
| zayo | Uses Versa Networks |

**MSPs:**

| | |
|---|---|
| cbts | Offers VMware SD-WAN by VeloCloud, Cisco Meraki and Viptela |
| COEO | Offers Versa Networks |
| CISSDM SOFTWARE DEFINED MANAGEMENT | Offers Cisco Meraki, VMware SD-WAN by VeloCloud, Cisco iWAN, Cisco Viptela, Silver Peak, Oracle Talari |
| expereo | Aggregator offering Cisco Viptela, Silver Peak, Aryaka, VMware SD-WAN by VeloCloud |
| Granite | Aggregator offering Cisco Meraki, VMware SD-WAN by VeloCloud, Cisco iWAN, Cisco Viptela, Fortinet and others |
| hypercore networks | Resale of multiple carriers and cable companies |
| ignyte | Offers Talari, Cisco Meraki, Cisco Viptela, Fortinet, Silver Peak |
| MetTel | Aggregator offering VeloCloud over private backbone |
| NetFortris | Offers VMware SD-WAN by VeloCloud |
| NETRIO | Offers Versa, Cato, InfoVista, Silver Peak, VeloCloud |
| NetWolves | Offers Cisco Meraki, BigLeaf, Riverbed, and proprietary solutions |
| nitel | Offers Versa Networks, Barracuda, Cisco Viptela |
| RapidScale A Cox Business Company | Offers VeloCloud, Citrix |
| THRIVE | Offers Fortinet, Silver Peak |

## Criteria to Consider when making an SD-WAN Technology Decision:




The move towards SD-WAN is often a detailed decision-making process that takes into account a variety of facets and may cross the boundaries of multiple organizations within your company, including management, IT, security, and finance. Also, given the variety of available options we recommend you consult with third party Trusted Advisors familiar with the SD-WAN landscape to help you make a well-informed choice. Factors to consider when choosing an SD-WAN partner can be visualized as a series of tracks or "swim lanes" for greater organizational purposes.

For example, you will likely want to review your existing telco contracts to determine when those contracts are up for renewal, and what the terms might be for early withdrawal. In many cases, enterprise customers are moving to SD-WAN from MPLS, either in whole or in part. In this case, it is often advantageous to explore whether the current contracted telco also provides SD-WAN. This may be your easiest option for transition, but it is useful to review your business needs and understand what alternative providers may offer the best solution for your company especially since SD-WAN is inherently connectivity agnostic, and may be delivered in different form factors, either on-premises or cloud-based. Similarly, some telcos may have stronger positions in some geographies as opposed to others. In this case, the locations of your remote sites become a more prominent factor in your decision-making process. In addition, some solutions work better in a global environment based on the types of networks in use.

As we've already discussed, applications, management, and security are also among the fundamentals worthy of consideration. You should ask yourself the question:

- What applications will be running over the network and where are they located?
- Are the any highly network sensitive applications to consider?
- Am I equipped to manage the SD-WAN network myself or do I want a full turnkey solution?
- What are the security requirements for the solution and is there an opportunity for enhancing my security posture depending on the chosen solution?

In addition, the adoption of SD-WAN is part of an overarching WAN modernization strategy that includes choosing the links best suited to delivering the necessary capacity.

## Points to Ponder

- SD-WAN is showing rapid market uptake, meaning that many of your competitors may be taking advantage of its benefits.
- If you're doing UCaaS or CCaaS, office 365, salesforce.com, AWS, Azure, Google, or cybersecurity, SD-WAN may in effect be a necessary network upgrade.
- Costs versus value: Bear in mind that some estimates for cost reduction associated with SD-WAN may be overstated. Your mileage may vary. However, the fundamental reason to explore SD-WAN is based on the network performance and the latency-sensitive applications that are enabled by it.
- SD-WAN will not immediately displace MPLS across the broad market. But the continued use of MPLS should not delay trialing or even implementing SD-WAN along with it.
- Many carriers are adopting SD-WAN, even though they can often make more money by selling MPLS. They do so out of recognition of the direction of the market plus their own need to evolve.
- Firewalls and routers will potentially be displaced by multi-function SD-WAN boxes, meaning that your current infrastructure mix is likely to change over the course of time.

## Questions to ask when exploring SD-WAN

- How do you expect your security posture to change with SD-WAN?
- What are your current throughput requirements?
- What are your most critical applications, and where are they hosted?
- Are you considering hosting SD-WAN appliances in the cloud, and/or connecting via private circuits?
- To what extent is your technical team familiar with SD WAN, and what level of assistance are they likely to require?
- For more information on SD WAN, on the applications supported by SD WAN, or on any other technology issue, please consult your Trusted Advisor.
- Do you prefer a do-it-yourself technology, installation support or fully managed support? Note that some options only come fully managed or require a third installation or management.



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