EXECUTIVE SUMMARY

TeleGeography WAN Manager Survey

WAN Manager Survey 2020

Technology such as SD-WAN, migration to the cloud, and the sudden surge of remote and distributed work have upended the modern WAN. The composition of the underlay, flow of traffic, end points of workers, and security postures are all undergoing a massive shift. Like the protagonist in Canadian power trio Rush's hit "Tom Sawyer," WAN managers are realizing that "changes aren't permanent, but change is." Since 2018 we have been trying to track how these changes appear in actual enterprise network choices.

This year our survey focused on three key topics:

1. Like in all previous versions we asked questions about how networks are currently configured. This included the prominence of MPLS versus other underlay technologies, the distribution of various bandwidths for these underlay products, and product sourcing strategies.

2. We asked about SD-WAN adoption including types of vendors, factors for adoption, and management levels.

3. We asked a few questions about how COVID impacted the network including questions on how much of the workforce went remote and how the sudden addition of distributed workers impacted WAN management.

This executive summary presents some key findings on some of these questions.

Key Findings

Enterprises were running MPLS at an average of 71% of sites during 2018-20.

MPLS use is, however, apparently on the decline. The average network in 2018 had MPLS at 82% of sites and only 58% of sites in 2020.

DIA is the key underlay product for larger capacity sites. More than one quarter of DIA sites were larger than 100 Mbps.

Forty-three percent of enterprise respondents have installed SD-WAN, compared to just 18% in 2018.

Increasing site capacity and using alternative access solutions are key motivators for WAN

managers pursuing SD-WAN.

A co-managed SD-WAN solution is the most popular option at 40% of respondents.

The majority of enterprises–85%–reported that the majority of their workforce was working remote at some point during the pandemic.

Congestion at internet gateways from the influx of remote users and the performance of at-home broadband posed the thorniest challenges for WAN managers at the on-set of the pandemic.

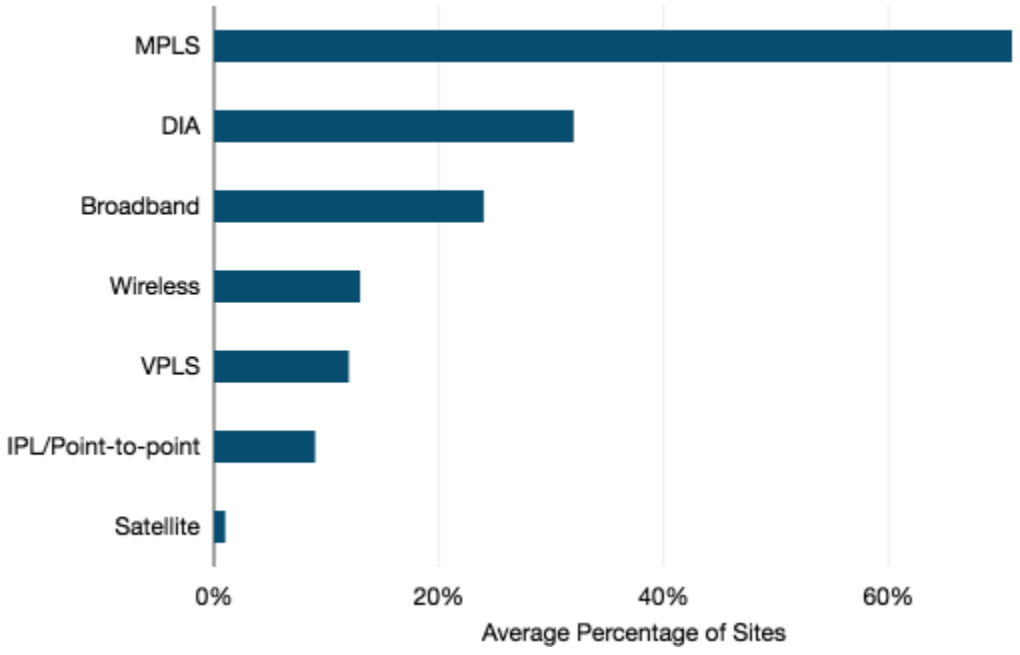
Network Configuration

SD-WAN frees WAN managers to select a broad mix of underlay technologies. Enterprises also increasingly opt for local rather than centralized internet breakouts whether or not they have adopted SD-WAN. Because of these changes, many in the industry have been wondering how much longer MPLS will be the dominant product in the WAN. To keep track of how enterprises might shift their connectivity, we have asked about WAN configurations since 2018. The survey included several questions about the size, geography, and sourcing of multinational corporate networks.

While there are undeniably forces at work that are likely to diminish MPLS use going forward, it was still the most prominent network product deployed on global enterprise WANs in these survey years. The average respondent's WAN was running MPLS at 71% of sites (averaged across 2018-2020), which easily eclipsed other underlay products.

FIGURE 1

What is the average product mix of your WAN sites? (2018-20)



Notes: Each bar represents the average percentage of WAN sites using the listed products across all respondents from 2018-2020.

Source: TeleGeography

This is how the some of the other products were distributed:

Internet services are likely growing today, but were far from ubiquitous in respondent networks.

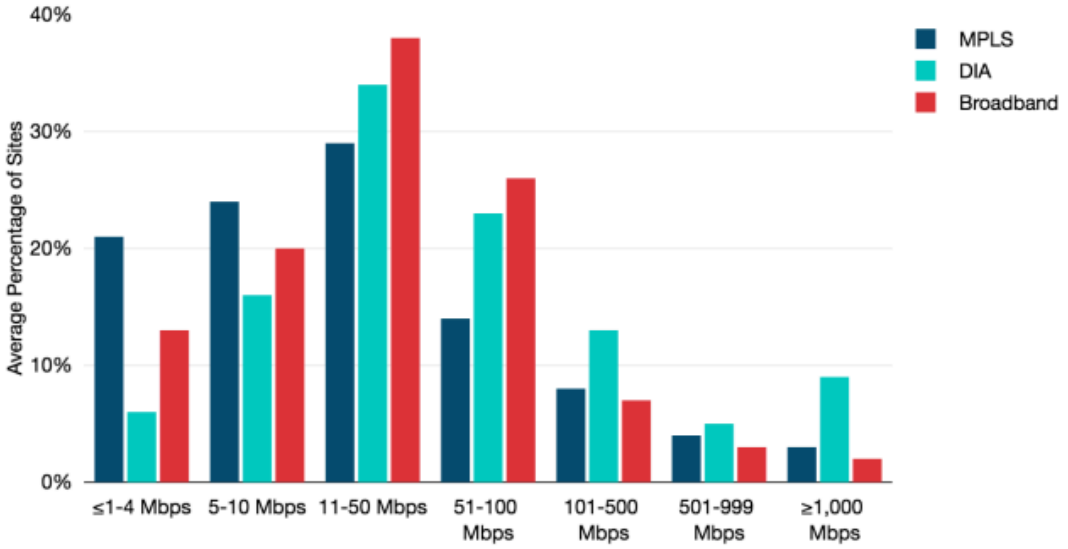
The average network was running DIA at about one-third of sites and broadband at about one-quarter of sites.

Wireless and satellite represented a very small percentage of WAN sites and were often only used as backups, temporary connectivity, or when no wireline service is available. It is notable, however, that about 5% of respondents had wireless at all or nearly all sites.

While some individual carrier MPLS and DIA pricing plans have converged, by and large we still see a fairly significant price spread between MPLS and DIA at a market level. There is undeniably a massive price spread between MPLS and broadband. So, it is not surprising to see MPLS port sizes skew lower than internet circuit sizes.

FIGURE 2

What percentage of your global ports fall within each port size/bandwidth range? (2018-20)



Notes: Each bar represents the average percent across all respondents from 2018-2020 of each bandwidth range for each respondent's global MPLS, DIA, or business broadband sites.

Source: TeleGeography

MPLS port sizes skewed toward the lower capacities. Three-quarters of MPLS sites were 50 Mbps or below.

DIA was the most commonly used product at the higher end of the ranges in our survey, with about one-quarter of sites above 100 Mbps.

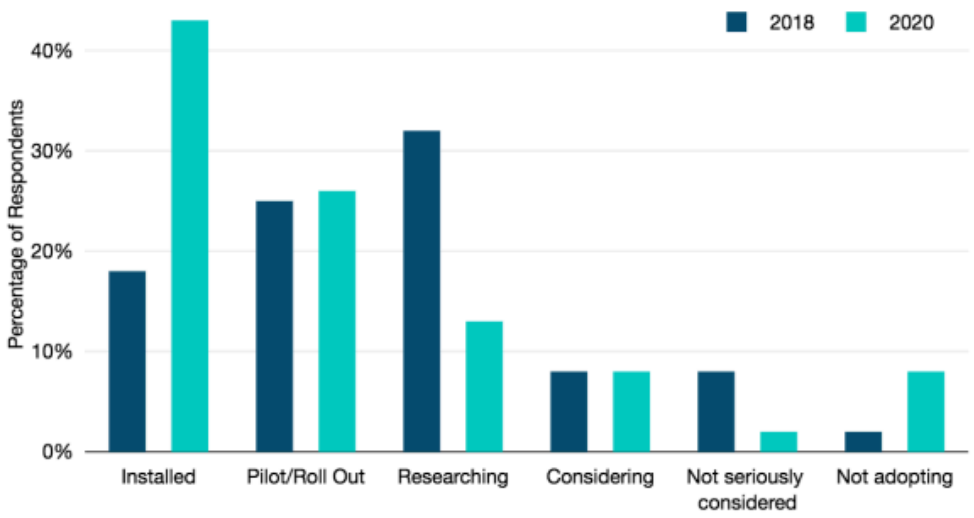
While larger sites from >FastE to ≥GigE are fairly uncommon, they were most likely to be DIA. Nearly one in ten DIA sites were GigE or above.

SD-WAN Adoption

The number of enterprises deploying SD-WAN increased significantly between 2018 and 2020. The figure below compares where respondents were in the process of researching and adopting SD-WAN in 2018 (the dark blue columns) versus 2020 (the turquoise columns).

FIGURE 3

Stage of Adoption of SD-WAN (2018 vs. 2020)



Notes: Each bar demonstrates the percentage of all valid respondents in 2020 and 2018 who are in each stage of SD-WAN Adoption.

Source: TeleGeography

There have been some notable shifts over the past two years:

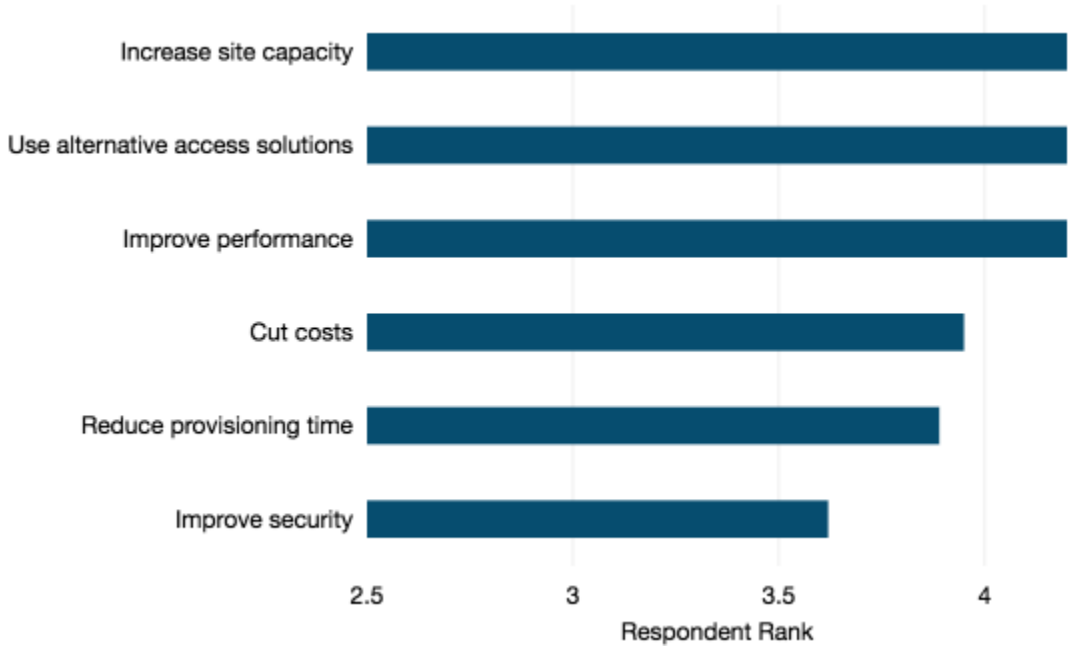
Only 18% of respondents reported they had installed SD-WAN on at least part of their network in 2018. In 2020, 43% of respondents indicated they had installed the service, a sizable increase.

Only 10% of respondents were either 'not seriously considering' SD-WAN or had decided against adopting the technology, but the not adopting category did increase since 2018.

The initial marketing for SD-WAN surrounded the ability to cut network spend "in half." For some, that promise remains attractive, but the ability to create a more agile, flexible, optimized network without increasing costs has emerged as a powerful motivator for adopting SD-WAN. We asked respondents to rank the importance of the following factors in deciding to pursue SD-WAN with one being the least important factors and five being the most.

FIGURE 4

Reasons for Adopting SD-WAN (2020)



Notes: Each bar demonstrates the average rank respondents from 2020 who are at least considering SD-WAN up to have already installed it assigned to the given factor in terms of importance in making their decision to adopt the technology.

Source: TeleGeography

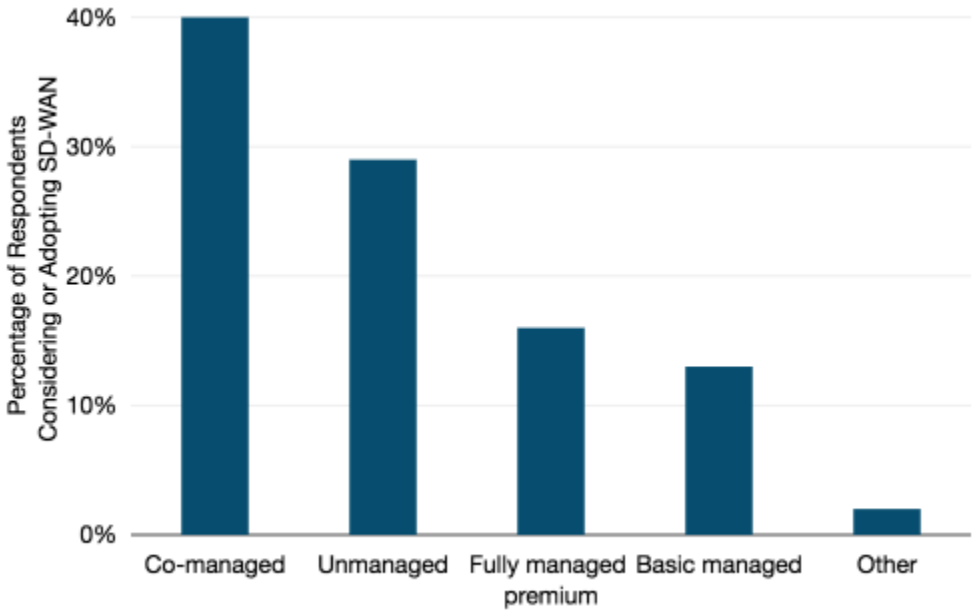
Increasing site capacity, using alternative underlay technologies, and improving performance were all highly ranked as important factors in adopting SD-WAN.

Improving security, while certainly important to enterprises, had the least impact on SD-WAN adoption specifically.

The spectrum of carrier involvement in a managed SD-WAN service differs between service providers and packages. It can range from a carrier-provided unmanaged SD-WAN overlay (similar to what you would get directly from an SD-WAN vendor) to a fully managed carrier service where a provider handles installation, ongoing support of deployment, and policy implementation. In the middle, you find co-managed SD-WAN services where a provider handles deployment and management, but an enterprise can view network analytics, add applications and establish policies through their customer portal.

FIGURE 5

Level of SD-WAN Management Selected/Plan to Select (2020)



Source: TeleGeography

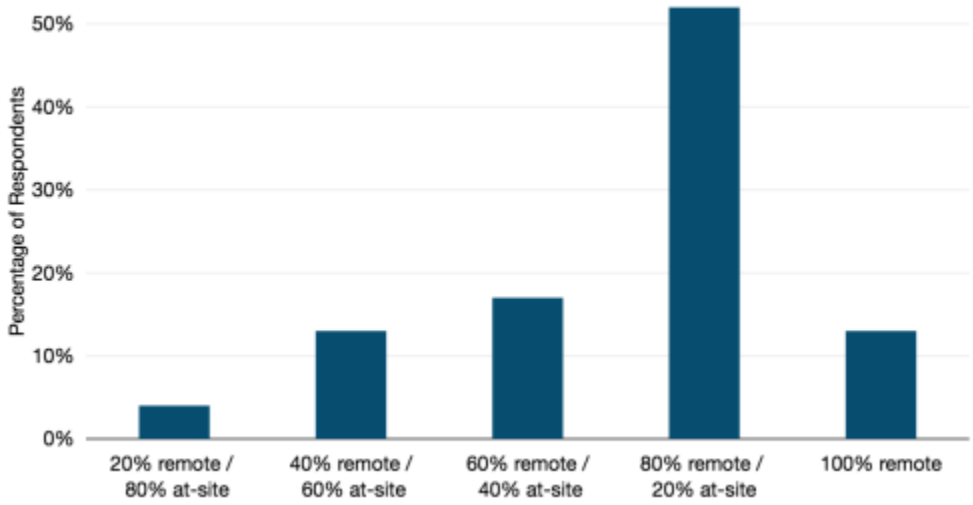
We found that a co-managed solution was the most popular configuration in our respondents (40%), followed by unmanaged (29%), and then fully managed or basic managed.

Impact of COVID on the WAN

Faced with government mandates and health guidelines, companies had the daunting challenge of taking their workforces remote essentially overnight. According to a report by Global Workplace Analytics, remote workers made up only 3.6% (or 5 million) of the United States workforce before COVID-19. And as we can see from our respondents, there was a massive shift across the board to remote work among the companies we surveyed.

FIGURE 6

How much of your workforce is remote in 2020?



Notes: Each bar represents the percentage of respondents who reported that their company was at each ratio of remote to at-site workers.

Source: TeleGeography

We asked WAN managers how much their office shifted to working remotely in 2020:

Eighty-five percent of responding companies had the majority of their workforce working remote.

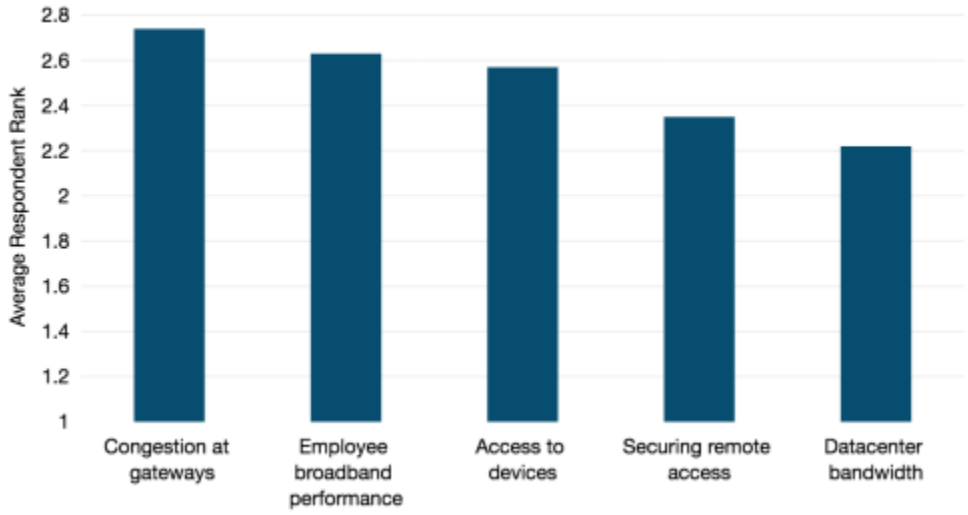
The most common configuration was having approximately 80% of workers remote, with 20% at job sites. The on-site employees are often essential positions that cannot be done remotely, such as workers on a factory floor or on-premises data center technicians.

Seventeen percent reported a split of about 60% working from home and 40% at-site, while 13% reported their entire workforce had shifted to remote work.

We asked WAN managers to rank the biggest challenges in moving a company to remote work en masse on a scale of one to five, with five being the most challenging and one the least. Three things stood out as particularly notable roadblocks:

FIGURE 7

What challenges did you face in adjusting to remote work?



Notes: Each bar demonstrates the average rank respondents assigned to the given factor in terms of level of challenge in making the transition to widespread remote work.

Source: TeleGeography

Responding network managers ranked gateway congestion as their biggest challenge in adjusting to distributed work, with an average rank of 2.7 out of 5.

Employee broadband performance is probably where the IT team has the least control, but that doesn't stop the user complaints from rolling in. Respondents gave handling at-home internet performance issues an average ranking of around 2.6 out of 5.

Some IT departments faced the issue of not having enough work laptops or other devices in inventory to send home with employees–earning a third place rank of about 2.5.

Conclusion: Understanding the WAN as it is to see where it is going

Our on-going survey effort has enabled us to offer concrete data points around many of these oft-discussed trends. We have seen MPLS use decline as SD-WAN adoption has increased. We have seen DIA emerge as the underlay option of note for high-capacity sites. In the full report we break trends out by industry to understand how line of business can affect computing and networking needs. We also include quotes from WAN managers on these questions from our in-depth follow-up interviews to provide deeper explanation and rationale for their choices.

The three sections are tied to each other, but can be read on their own. The data on how networks are configured brings in data from SD-WAN adoption, and the section on SD-WAN considers the state of the underlay network. The impact of COVID on the WAN is further impacted by pre-pandemic SD-WAN adoption and network configuration. Our goal in presenting the full report is to offer end-users and vendors a clear picture of how mid-to-large enterprises are adjusting to emerging WAN technologies and choices and therefore make more informed decisions. We rarely make specific recommendations, particularly as each network is in many respects unique, but rather want to provide a snapshot for industry players on both sides of the market to formulate a picture of where the WAN is and where it is going.

The content on the preceding pages is a section from TeleGeography's Wan Manager Survey

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