Business Value of Cisco SD-WAN Solutions: Studying the Results of Deployed Organizations

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April 2019

Business Value Highlights

2.25 times
more bandwidth

65% lower
cost of connectivity for equivalent bandwidth

38% lower
five-year cost of operations

33% more
efficient WAN management

59% faster
to onboard new services

58% faster
to implement policy and configuration changes

94% less
unplanned downtime

Almost two times (45%)
reduced application latency

$14.98 million
higher revenue per organization per year

EXECUTIVE SUMMARY

Through a comprehensive data collection process, IDC recently interviewed enterprises with distributed business operations to understand the impact of deploying Cisco software-defined wide area networking (SD-WAN) technology. This white paper captures the striking and informative results of that study: Organizations described substantially improving wide area networking (WAN) performance even while optimizing the costs of running their WAN environments. As a result, they have generated significant value for their businesses by:

- **Increasing performance while lowering connectivity costs** by increasing bandwidth even as they reduce overall connectivity costs
- **Requiring less IT staff time to manage and secure WANs** through centralized software-defined automation and segmentation, helping further optimize the cost of running WANs
- **Providing higher-performing and more reliable** business applications, enabling higher employee productivity levels
- **Instilling business operations with greater scalability and flexibility,** helping address more business opportunities and thereby increase revenue

These findings reinforce why the emergence of SD-WAN technology has been one of the most important advancements for enterprise networks in recent years. As enterprises continue to deploy SD-WAN technology and scale its use beyond initial implementations into full-scale initiatives, the benefits of SD-WAN technology increase.

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SITUATION OVERVIEW

Traditional enterprise WANs were simply not built to meet the needs of today's modern enterprises. Fundamentally, these previous-generation WAN management platforms were architected to provide connectivity between enterprise remote and branch offices back to a centralized datacenter where most of the enterprise's applications were hosted. Today's world is much different. The rise and mainstream adoption of cloud computing services — both SaaS applications and IaaS workloads — mean that mission-critical enterprise applications do not just reside in the corporate datacenter. But too often enterprises still backhaul WAN traffic to a datacenter before connecting employees to cloud-based platforms, adding unnecessary cost and creating unneeded lag.

Traditional WANs can also be cumbersome to manage, leading to inefficiencies and potential security lapses. For example, enterprises increasingly want to integrate broadband, LTE, and MPLS connections into a branch office. Traditional WAN management platforms don't allow organizations to centrally manage these multiple connection types, don't allow organizations to apply dynamic routing and consistent policy enforcement, and don't have strong security measures in place across all connection types. Meanwhile, deploying new remote or branch office sites has been an arduous and costly process that typically requires technical personnel onsite to manage the rollout.

SD-WAN technology solves all these problems and more. SD-WANs have an application policy controller to dynamically manage WAN traffic across multiple links. This enables centralized visibility and control over multiple WAN connections and sites at once. Furthermore, if performance degradation occurs, SD-WANs can automatically fail traffic over to another connection method to ensure high levels of application and user experience. Built-in analytics tools help organizations monitor and track everything occurring across their multiple WAN links.

SD-WANs have significant benefits for security too. The first step toward having a secure enterprise WAN is to have visibility into what's happening on the network. SD-WANs allow integrated visibility and management across multiple links. Furthermore, SD-WANs can have integrated security resources, such as next-generation firewalls, intrusion prevention systems (IPS), URL filtering for phishing attacks, and other security tools, built into them. SD-WANs can alert users of unusual activity on the WAN so actions can be taken to quarantine potential security threats on the network.

Combined, these benefits have led SD-WAN technology to be one of the fastest-growing segments of the networking industry. For the past two years, IDC has conducted worldwide enterprise surveys to gauge adoption of SD-WAN technology. In 2017, less than 10% of global enterprises had deployed SD-WAN; in 2018, the number had risen to 40%, with 95% of respondents expecting to deploy SD-WAN within the coming two years.

Study participants represented the experiences of organizations that come from a variety of industry verticals — including financial services, healthcare, natural resources, pharmaceutical, and retail — but share a common need to provide optimized IT and network performance across distributed operations that include a large number of retail branches, business sites, and office locations (see Table 1).

Industry verticals interviewed:

Financial services, healthcare (2), natural resources (2), pharmaceutical, retail (2)

"We are moving to more cloud/SaaS-based applications and we did not believe our MPLS/regional internet breakout model would scale to meet the need — in terms of either performance or cost."

THE RESULTS AND DETAILS FROM THE BUSINESS VALUE STUDY

Study Demographics

IDC interviewed eight organizations with distributed operations that require efficient and robust WANs and that have deployed Cisco SD-WAN solutions. Interviews were in-depth in nature and focused on understanding both the quantitative and qualitative impact of using Cisco SD-WAN for these organizations. Overall, study participants have a large enterprise profile in terms of both average number of employees (71,550) and average annual revenue ($51.5 billion), reflecting their very significant business operations. Study participants represented the experiences of organizations that come from a variety of industry verticals — including financial services, healthcare, natural resources, pharmaceutical, and retail — but share a common need to provide optimized IT and network performance across distributed operations that include a large number of retail branches, business sites, and office locations (see Table 1).

TABLE 1

Demographics of Interviewed Organizations

	Average	Median
Number of employees	71,550	47,000
Number of IT staff	1,462	850
Number of business applications	951	450
Revenue per year	$51.5 billion	$15.9 billion
Industries	Financial services, healthcare (2), natural resources (2), pharmaceutical, retail (2)	

n = 8
Source: IDC, 2019

Selection and Use of Cisco SD-WAN by Interviewed Organizations

Interviewed organizations chose to deploy Cisco SD-WAN after carefully considering how they could best ensure that their WANs will have the cost efficiency, performance, and flexibility needed to support their changing business operations. They described the need to overcome limitations to their previous WAN environments, including the high cost of increasing performance and limiting friction that prevented them from scaling effectively, and challenges in supporting changing IT strategies, including making greater use of multicloud delivery models for business applications. Several interviewed organizations described their selection criteria:

- **Support trend toward cloud-based applications and higher traffic:** *"We are moving to more cloud/SaaS-based applications and we did not believe our MPLS/regional internet breakout model would scale to meet the need — in terms of either performance or cost."*
- **Provide required levels of WAN scalability:** *"We considered continuing to scale up our legacy WAN environment, but this looked like a losing battle over time. Cisco SD-WAN was chosen after a very competitive assessment and technical bake-off. Cisco SD-WAN simply did everything and was easier to configure and manage."*

Interviewed organizations have already deployed Cisco SD-WAN across significant parts of their business operations. At the time of interviews, they reported using Cisco SD-WAN to connect an average of 624 branches and sites and 7 organizational campuses. These Cisco SD-WAN environments connect a variety of operational locations for these organizations, including bank branches, retail outlets, and branch offices, among others (see Table 2).

TABLE 2

Cisco SD-WAN Environments

	Average	Median
Number of branches/sites	624	133
Number of campuses	7	3
Number of business applications	211	225
Number of users	28,719	13,500

n = 8
Source: IDC, 2019

Business Value Results

Interviewed organizations identified a common core value proposition in connecting their operations with Cisco SD-WAN solutions, reporting improved performance even as they optimize costs. They have gained improved WAN performance by increasing the bandwidth available to users and the business, even as they have optimized and even reduced their connectivity-related costs. Meanwhile, their IT teams have benefited from centralization and software-defined automation to manage and secure their WAN environments more efficiently and effectively. Study participants cited the following benefits while describing the impact of Cisco SD-WAN on their WAN costs and performance:

- **Lower costs with much more bandwidth:** *"We've reduced our WAN spend this year alone by hundreds of thousands of dollars with Cisco SD-WAN even as we've increased bandwidth. The average increase in bandwidth is significant — 2Mbps to 1Gbps for some applications."*
- **Higher-performing and more robust WAN:** *"We've provided significantly more WAN/internet bandwidth with Cisco SD-WAN, which impacts user productivity. We've enabled cloud-based services — both SaaS and IaaS — where the network is no longer the bottleneck. . . . We've seen downtime shrink to almost zero, and we're doing all of this at a lower cost than before."*

"We've provided significantly more WAN/internet bandwidth with Cisco SD-WAN, which impacts user productivity. We've enabled cloud-based services — both SaaS and IaaS — where the network is no longer the bottleneck."

Increasing Bandwidth in a Cost-Effective Manner

Study participants reported that Cisco SD-WAN has enabled them to overcome persistent challenges in balancing WAN performance and costs. They explained that they have significantly increased the amount of bandwidth available with Cisco SD-WAN even as they have reduced the cost of providing bandwidth. Interviewed organizations attributed their ability to increase bandwidth even as they reduce costs to a number of factors enabled by Cisco SD-WAN, including:

- More easily adding less expensive bandwidth from another provider
- Making more efficient use of bandwidth to run business applications
- Prioritizing network traffic and having the ability to aggregate bandwidth
- Ensuring service levels across locations and sites, thereby using bandwidth more consistently

Study participants have been able to achieve these bandwidth-related efficiencies in large part because of the functionalities of Cisco SD-WAN that relate to automation and policy-based prioritization. The result for interviewed organizations is striking. As shown in Figure 1, they have more than doubled the amount of bandwidth available to their business operations (125% increase). Importantly, they have done this even while reducing the cost of connectivity by an average of 21%. Specific feedback from interviewed Cisco customers underscored these overall results: *"Cost savings with Cisco SD-WAN have been important for us. We have doubled the bandwidth and have reduced spend by 50%. Also, we have cost containment while we grow."*

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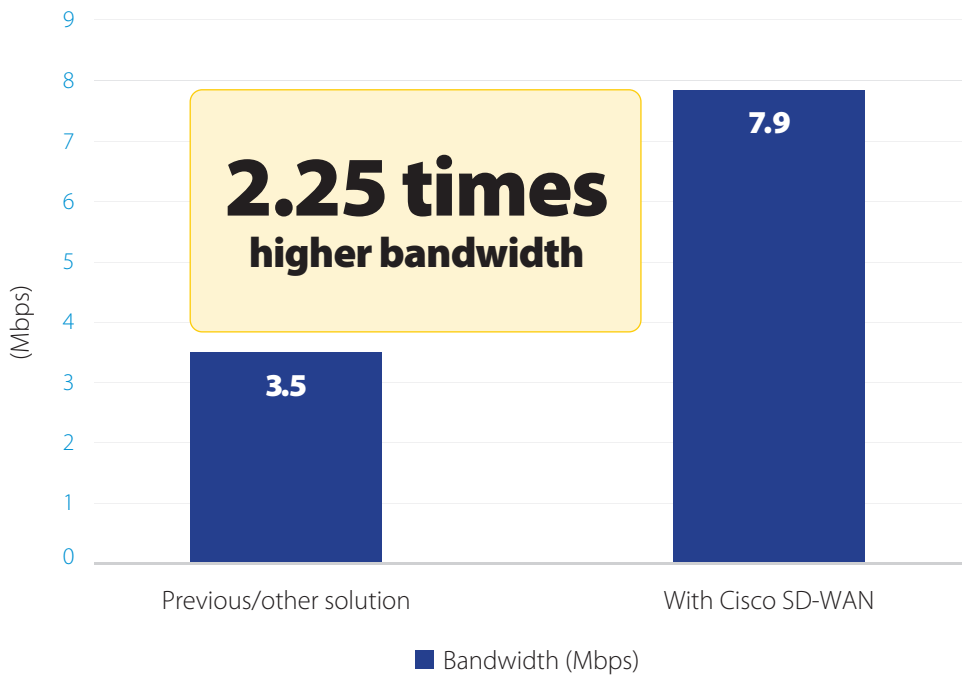
FIGURE 1

Network Bandwidth: with Cisco SD-WAN



n = 8
Source: IDC, 2019

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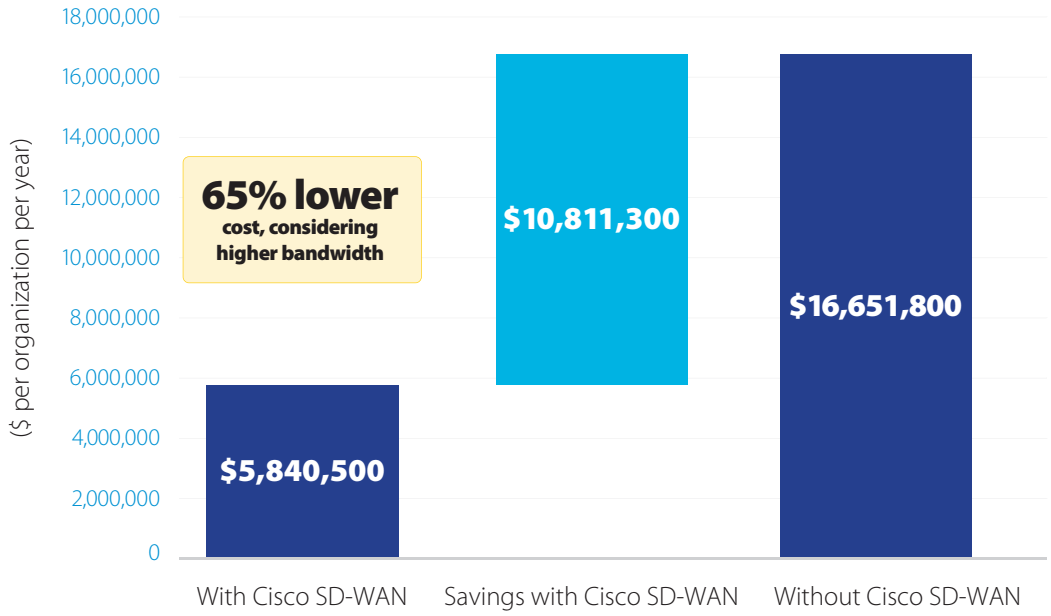
The connectivity-related cost efficiencies enabled by Cisco SD-WAN for study participants are especially significant when considering increases to bandwidth. Interviewed organizations are not only realizing actual cost savings, as shown in Figure 1, but also avoiding significant additional costs that they would otherwise need to incur to achieve equivalent levels of bandwidth, as shown in Figure 2. One study participant described delivering much higher bandwidth levels at the same cost as follows: *"We are not saving money with Cisco SD-WAN, but we are getting more out of our money. Before we might have had a 3Mbps MPLS connection and now we have a 10Mbps connection and 100 x 10 broadband for the same cost."* IDC calculates that interviewed Cisco customers are spending an average of 65% less on connectivity than they would otherwise require to provide equivalent levels of bandwidth.

FIGURE 2

Cost of Connectivity Avoided with Cisco SD-WAN



n = 8
Source: IDC, 2019

Optimizing the Costs of Running Wide Area Network Environments

WANs also carry costs related to staff time to deployment, operations, and security. The staff time required for these activities can quickly add up, from the perspective of both centralized staff responsible for WAN operations and staff time requirements at branch and remote locations. Activities such as patching, updating, and troubleshooting WAN environments require staff resources that organizations can use to support other, more valuable aspects of their operations.

Study participants explained that the IT teams responsible for their WAN environments have benefited significantly from centralization, automation, and improved performance with Cisco SD-WAN. For example, study participants reported carrying out software updates in substantially less time — 51% faster on average — with Cisco SD-WAN by being able to automatically push out updates across WAN sites. As a result, they must spend less time on day-to-day activities related to their WANs and have time to take on and support other IT and business initiatives. As shown in Table 3, IDC calculates that these teams are one-third more efficient (33%) with Cisco SD-WAN. Interviewed organizations provided insight into how these IT teams benefit from Cisco SD-WAN:

- **Reduced staff time required for monitoring and troubleshooting:** *"Cisco SD-WAN takes a lot less upkeep time than traditional routers. I would estimate a 40% reduction in time spent in troubleshooting and monitoring the environment — most of that on the troubleshooting side. . . . Also, central management means we have to apply standards, which creates stability and reduces the time spent troubleshooting and firefighting."*
- **Ease of applying and managing policy:** *"Managing policy is much easier and less time consuming with Cisco SD-WAN, especially across our global infrastructure. . . . We spend less time managing unplanned downtime and performance issues, as well as less time for designing and deploying capacity for new application and service capabilities."*

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TABLE 3

Impact on IT Network Infrastructure Management Team: Cisco SD-WAN

	Previous/Other Solution	With Cisco SD-WAN	Difference	Change (%)
Equivalent productivity value of IT network management team — FTEs per organization	6.7	10.0	3.3	33
Staff time to manage WANs (hours per 100 users per year)	65	44	21	33
Staff time required per software update/upgrade (hours)	15.7	7.7	8.0	51

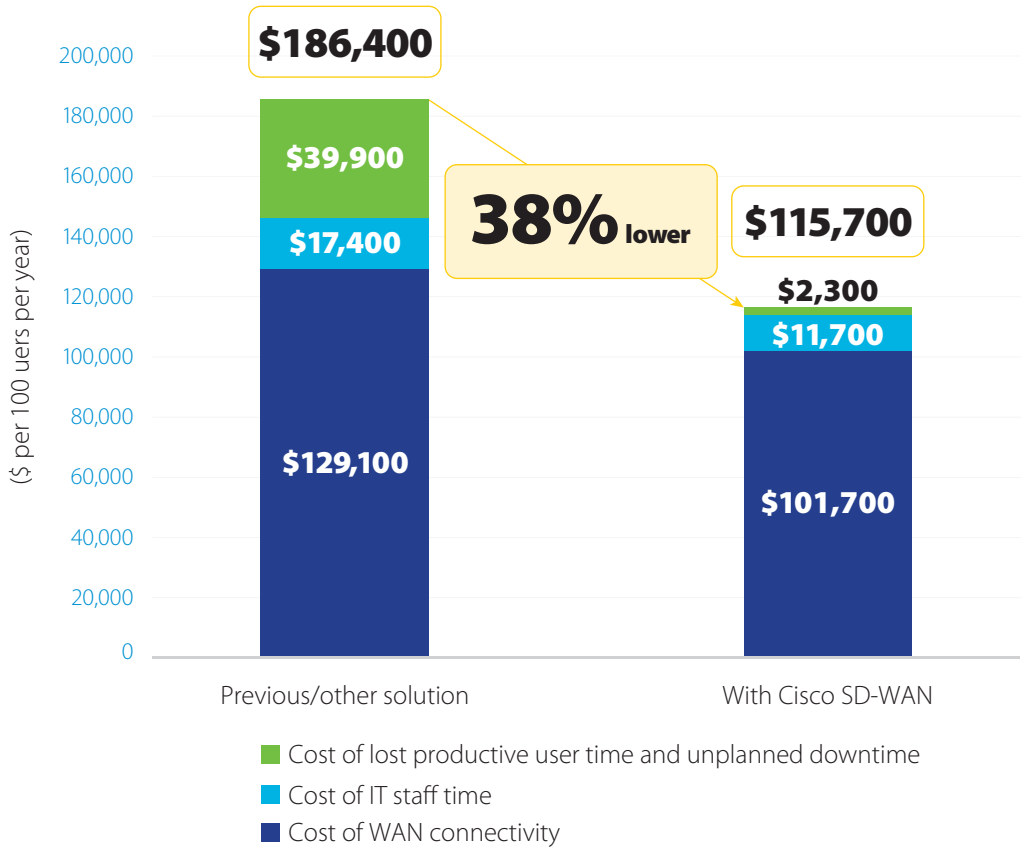
n = 8
Source: IDC, 2019

Cisco SD-WAN is enabling interviewed organizations to run their WANs at a lower cost even as they increase bandwidth and improve WAN performance.

Between reducing the cost of connectivity and delivering efficiencies for IT teams, Cisco SD-WAN is enabling interviewed organizations to run their WANs at a lower cost even as they increase bandwidth and improve WAN performance. Also, study participants have greatly reduced the cost of WAN-related outages to their businesses (refer to Table 4), providing additional user productivity benefits. Overall, IDC calculates that these organizations will reduce the cost of running their WANs by 38% over five years with Cisco SD-WAN including the cost of connectivity (before versus after, not including costs avoided with bandwidth increase as shown in Figure 3), IT staff time, and lost user productivity due to WAN outages.

FIGURE 3

Cost of Operations over Five Years per 100 Users



n = 8

Note: Data does not include circuit costs.

Source: IDC, 2019

Improving WAN Agility, Performance, and Security

Study participants also explained that deployment of Cisco SD-WAN has alleviated challenges associated with extending and securing their WAN environments while enabling much improved network performance and reliability. All of these factors are essential to these organizations' efforts to maximize the generation of value through their distributed operations and to minimize business risk.

"Making network changes has been a huge change with Cisco SD-WAN. It used to be that implementing network changes to support internet-based services took many months. Now, the network provides agility where services can be deployed in the cloud immediately."

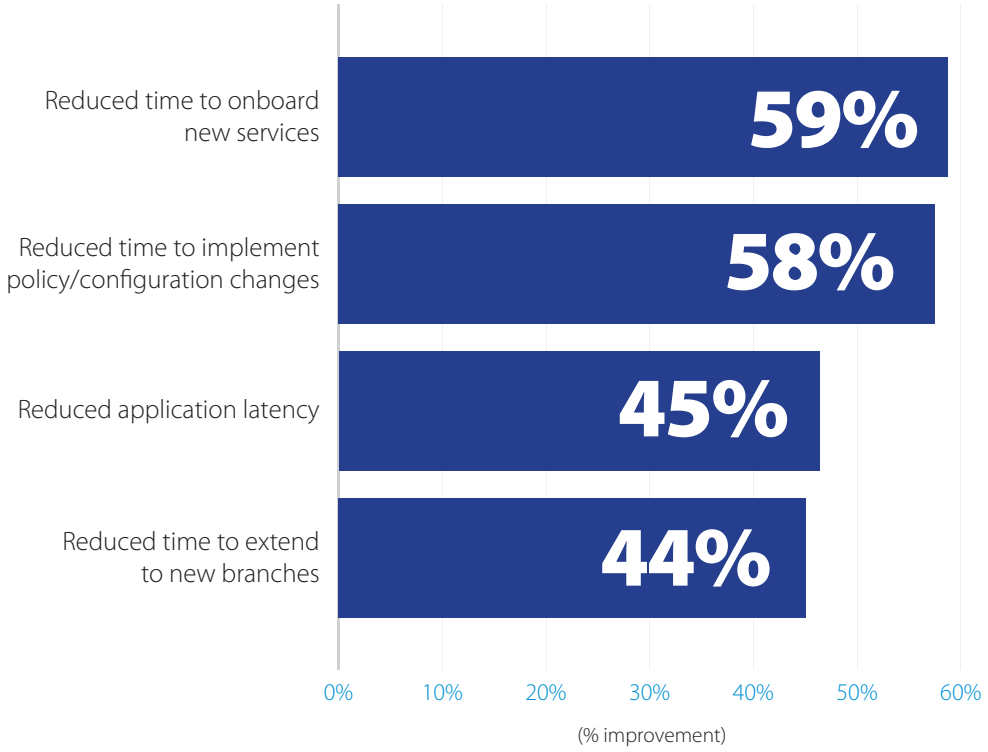
Connecting Operations with Agility and Strong Network Performance

Interviewed organizations cited challenges in providing the levels of performance and agility needed to support business operations with their legacy WAN environments. They often struggled to extend their WANs efficiently and deliver the requisite quality of application performance at noncentral locations. As shown in Figure 4, these organizations have made strong strides toward having their WAN environments match their business requirements with Cisco SD-WAN, registering substantial improvements in agility-related metrics, such as extending their WANs to new locations (44% faster) and reducing the time required to make a network policy or configuration change (58% faster). One organization explained: *"Making network changes has been a huge change with Cisco SD-WAN. It used to be that implementing network changes to support internet-based services took many months. Now, the network provides agility where services can be deployed in the cloud immediately."*

Meanwhile, study participants have also registered strong benefits from improved network performance with Cisco SD-WAN. Application latency, which relates strongly to user experience, is now almost two times better on average (45% lower), and they are able to onboard new services significantly faster (59%). These metrics speak to study participants' improved ability to support their businesses with high-performing and timely applications and services with Cisco SD-WAN, helping better meet business objectives. One organization spoke about the impact of having a higher-performing and more agile WAN on development: *"A good measure of developer productivity is the time it takes to download source code, which has gone from hours to minutes with Cisco SD-WAN. . . . We do a lot of IT development in-house, so the source code access improvements are important."*

FIGURE 4

Business Agility and Performance Metrics: Cisco SD-WAN



n = 8
Source: IDC, 2019

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Reducing Risk Associated with WAN Performance

Study participants also reported substantially improving WAN performance in terms of availability with Cisco SD-WAN. By leveraging automation and more robust WAN architectures, they have reduced both the incidence and the duration of impactful outages. One organization commented on increasing the resiliency of its network by providing additional capacity: *"We've definitely reduced network outages with Cisco SD-WAN. One of the things we did when we moved to Cisco SD-WAN is put out 4G connections with it. That made a huge difference in reducing downtime."* Another interviewed Cisco customer has limited network performance issues: *"Network degradation happens if one of the circuits is up but it is not performing well, and this is an area where Cisco SD-WAN has helped a lot. Before, we used to get what we called 'slow network tickets,' and those have probably been reduced by 70%."* Study participants have reduced the impact of unplanned downtime affecting their WANs by an average of 94%, bringing down lost user productivity from an average of more than 2 hours per user per year to less than 10 minutes (see Table 4).

"We've definitely reduced network outages with Cisco SD-WAN. One of the things we did when we moved to Cisco SD-WAN is put out 4G connections with it. That made a huge difference in reducing downtime."

TABLE 4

Impact on IT Network Infrastructure Management Team: Cisco SD-WAN

	Previous/Other Solution	With Cisco SD-WAN	Difference	Change (%)
Unplanned outages per year per organization	5.9	1.1	4.8	82
MTTR (hours)	4.6	2.7	1.9	41
Hours of lost productive time per user per year	2.1	0.1	2	94
Value of lost productive time per year in FTEs per organization	32.7	1.9	30.8	94

n = 8
Source: IDC, 2019

Enhanced and Robust WAN Security Through Segmentation

Interviewed organizations also reported improving the security of their WANs with Cisco SD-WAN. For some organizations, quantifying the value of improved security was challenging, but they nonetheless recognized it as a core benefit of Cisco SD-WAN. In particular, they attributed improvements and efficiencies in ensuring security to capabilities gained with Cisco SD-WAN in terms of network segmentation for users and particular applications and services. One organization can now more easily balance security and business concerns: *"The fact that we can do end-to-end segmentation with Cisco SD-WAN has allowed us to build out a framework to put devices on the network that maybe we don't fully trust but that the business wants while still securing the network."* Another organization noted the benefit of segmentation from a performance perspective: *"We can segment our network traffic with Cisco SD-WAN, which is new for us. On the performance side, we can pick the right transport based on how the network is performing at that moment — it's more of a policy issue. For example, we can reroute traffic say to handle video traffic. That is an improvement."*

"The fact that we can do end-to-end segmentation with Cisco SD-WAN has allowed us to build out a framework to put devices on the network that maybe we don't fully trust but that the business wants while still securing the network."

"Our communications with customers are more reliable with Cisco SD-WAN and that results in smoother operations and some additional revenue. … A 5% increase is a reasonable estimate."

Improving Business Results

Study participants attributed both improved business results and improved operational efficiencies to improved WAN performance and agility with Cisco SD-WAN. On the business side, they can extend their WANs to support business expansion with greater ease and ensure higher quality of service for customers through improved performance, both of which help them realize higher revenue. IDC calculates that interviewed Cisco customers will realize almost an average of $15 million per year in additional revenue (see Table 5). One interviewed organization explained the benefit of improved WAN performance for its business: *"Our communications with customers are more reliable with Cisco SD-WAN and that results in smoother operations and some additional revenue. … A 5% increase is a reasonable estimate."* Meanwhile, another interviewed organization spoke to the overall impact of improved WAN performance and reliability, including in terms of enabling users to reach higher productivity levels: *"We have provided significantly more WAN/internet bandwidth with Cisco SD-WAN, which impacts user productivity. We've enabled cloud-based services — both SaaS and IaaS — where the 'network' is no longer the bottleneck. … We've seen downtime shrink to almost zero, and we're doing all of this at a lower cost than before."*

TABLE 5

Business Productivity Benefits: Revenue Gains

	Per Organization	Per 100 Users
Higher revenue		
Additional revenue per year	$14.98 million	$52,000
Total recognized revenue per year	$2.25 million	$7,800

n = 8

Note: The IDC model assumes a 15% margin assumption for recognizing user productivity and revenue gains.

Source: IDC, 2019

CHALLENGES AND OPPORTUNITIES

Enterprise adoption of SD-WAN technology has moved beyond initial implementations and into mainstream adoption, and as it's done, it provides both challenges and opportunities for enterprises and vendors alike. For end users, a key priority is efficiently and securely managing SD-WAN deployments as they grow from initial proofs of concept to widespread rollouts. Many of the foundational characteristics of SD-WAN aid in this process, including the centrally managed software-based platforms for managing WAN traffic policies. From a deployment standpoint, zero-touch provisioning of infrastructure allows for even nontechnical IT staff to simply plug in a hardware device that automatically connects to a cloud-based management platform.

For vendors like Cisco, it's essential that the company help guide enterprises through this journey from exploring SD-WAN solutions to enterprise-wide deployments to ensure enterprises gain the maximum value from this powerful technology. It's also important for vendors to help organizations think about the next evolution of SD-WAN technology and, specifically, how virtual network functions will increasingly be deployed across the WAN at enterprise remote and branch offices. This idea of the Software-Defined Branch (SD-Branch) will enable enterprises to become more agile in how critical network functions like security tools, wireless LAN controllers, and virtual routers are deployed and managed across the WAN. Vendors and enterprises alike have a role in ensuring efficient and secure rollouts of modern SD-WAN technologies. They also have a responsibility to think about how this technology will evolve into the future to keep up with the ever-increasing demands of modern digital businesses.

CONCLUSION

IDC interviewed enterprises about their use of Cisco SD-WAN solutions to support their WANs upon which their business operations depend. Study participants reported achieving significant value through their use of Cisco SD-WAN solutions by optimizing WAN-related connectivity costs and enabling their businesses through improving the performance and flexibility of their WANs. For study participants, this has resulted in benefits such as lower WAN connectivity costs even as WAN performance increases substantially, lower IT staff time requirements to operate and support expanding WAN environments, and better business results in terms of higher revenue and increased employee productivity. These benefits point to the extent to which these interviewed Cisco customers have leveraged Cisco SD-WAN to address WAN-related challenges in their traditional architectures and enable their WANs to create and drive value for their organizations.

APPENDIX

IDC's standard ROI methodology was utilized for this project. This methodology is based on gathering data from organizations currently using Cisco SD-WAN solutions as the foundation for the model. Based on interviews with these study participants, IDC has calculated the benefits and costs to these organizations of using Cisco SD-WAN solutions.

IDC bases the Business Value calculations on a number of assumptions, which are summarized as follows:

- Time values are multiplied by burdened salary (salary + 28% for benefits and overhead) to quantify efficiency and productivity savings. For purposes of this analysis, based on the geographic locations of the interviewed organizations, IDC has used assumptions of an average fully loaded salary of $100,000 per year for IT staff members and an average fully loaded salary of $70,000 per year for non-IT staff members. IDC assumes that employees work 1,880 hours per year (47 weeks x 40 hours).
- Downtime values are a product of the number of hours of downtime multiplied by the number of users affected.
- The impact of unplanned downtime is quantified in terms of impaired end-user productivity and lost revenue.
- Lost productivity is a product of downtime multiplied by burdened salary.
- Because every hour of downtime does not equate to a lost hour of productivity or revenue generation, IDC attributes only a fraction of the result to savings. As part of our assessment, we asked each interviewed organization what fraction of downtime hours to use in calculating productivity savings and the reduction in lost revenue. IDC then taxes the revenue and user productivity gains at that rate.

Note: All numbers in this document may not be exact due to rounding.

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