SD-WAN Networks Enable Modern Digital Business Ecosystems

Vetted Third-Party Service Providers Facilitate The Creation Of Individualized Business Network Fabrics

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Table Of Contents

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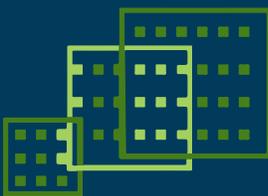**FORRESTER®**

Executive Summary

Customers rely on personal value ecosystems — the set of digitally connected products and services that individuals combine to help satisfy their needs and desires.[1] Similarly, every company delivers a connected fabric of business services and business capabilities to adapt to their customer's changing expectations. Thus, the emerging digital ecosystems consist of multiple systems (systems of engagement, systems of record, systems of insight, consumers, and digital customer experience, to name a few). These systems can start, stop, and emerge from an infinite number of locations and from any number of sources. However, traditional wide area network (WAN) architectures weren't created to support a digital ecosystem but rather for legacy information technology services and operations.

In February 2017, Windstream Enterprise commissioned Forrester Consulting to understand how software-defined WAN (SD-WAN) solutions can help midmarket organizations achieve their objectives with regard to their digital ecosystems. The decisions and processes of implementing an SD-WAN can be complicated with many factors to consider, such as implementation, ongoing optimization, and management. As midmarket enterprises work to understand potential challenges, they are looking for help in making an implementation decision to manage the process.

KEY FINDINGS

› **SD-WAN aligns network architecture to the business ecosystem strategy.** Cloud and virtualization distribute data and services to the best platform to mirror the business ecosystem. SD-WAN enables companies to weave together the right services to support customer touchpoints.

› **Ecosystems provide more value but are also more challenging.** Hybrid connections allow organizations the improved performance and resiliency needed for digital businesses, but these connections require a dispersion of services once relegated to data centers, such as firewalls. The vast expansion often overwhelms internal infrastructure teams.

› **Third-party service providers can augment infrastructure and operations (I&O) resources.** Third-party service providers have built businesses on connecting together different customers and systems. IT professionals' time can be better spent on rolling out digital services on a network platform designed, managed, and tuned for their specific ecosystem versus managing an SD-WAN platform.

Digital Transformation Depends On The Network Ecosystem

A recent Forrester report highlights the speed at which companies ignite or extinguish a web of relations across partners, employees, business assets, and digital resources to meet customers' experience expectations.[2] A business might have thousands or even millions of players buying, selling, and trading with one another in an elaborate web of multilayered relationships. Today's network infrastructures must mirror the digital business web by weaving together services across different connections from a variety of digital resources, such as public cloud, private data centers, and remote locations (see Figure 1).[3] In essence, the network becomes the fabric for the digital business ecosystem. It's no surprise to find that 90% of organizations consider their network either critical or important to the success of their digital transformation; more than half said the network is critical to success.

Yet existing WAN architectures create connectivity problems for organizations. Fifty-four percent of decision makers experience challenges maintaining security levels that meet business requirements, and 53% struggle to deliver reliable connectivity due to legacy WAN architecture.

"How important is your organization's network to the success of your company's digital transformation?"
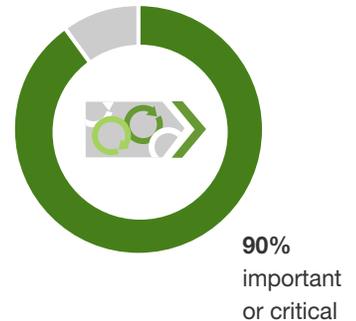
90%
important
or critical

Base: 157 IT and networking decision-makers at companies within the US
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise March, 2017

Figure 1: Networking Infrastructures Weave Together The Digital Business Ecosystem

Ecosystem-driven businesses make dynamic connections between all players, transforming how they deliver value to their customers and transforming their operational capabilities.
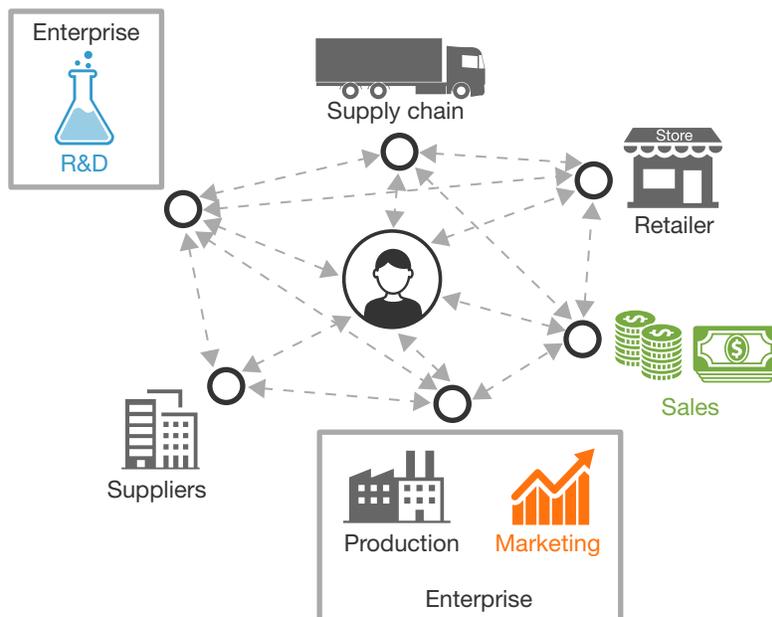
54% of organizations consider their network critical to a successful digital transformation.

59733   Source: Forrester Research, Inc. Unauthorized reproduction, citation, or distribution prohibited.

2 | SD-WAN Networks Enable Modern Digital Business Ecosystems

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Organizations need to evolve their networks to:

› **Support digital transformation**. Companies embarking on digital initiatives to drive competitive advantage realize that they need a reliable network to support these initiatives. Top strategic network and telecommunications priorities over the next 12 months include increasing WAN capacity (51%), followed by improving network security (45%). To achieve these imperatives, 43% plan to refresh, update, or re-architect their WAN — this can include increasing bandwidth and deploying hybrid WAN or SD-WAN (see Figure 2).
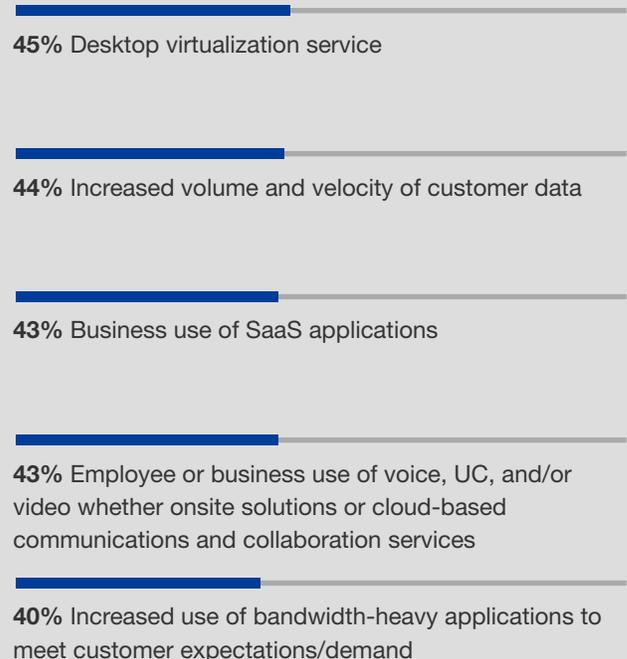
› **Transmit exponentially increasing amounts of data.** Network and IT decision makers prioritize WAN updates to keep pace with the sheer volume and velocity of data collected from customers and from the edge of the network. Further, businesses respond to rising customer and employee expectations by adopting bandwidth-heavy applications that put a strain on WANs. These applications include desktop virtualization, software-as-a-service (SaaS), and unified communications (UC) — voice, video, collaboration — whether hosted on-premises or in the cloud (See Figure 2).

Figure 2: Network Priorities And Drivers

"What are your organization's top strategic network and telecommunications priorities during the next 12 months?" (Select all that apply)

51% Increase/upgrade Internet bandwidth or WAN capacity at data centers/hubs

45% Improve network security

43% Refresh, update, or re-architect the WAN
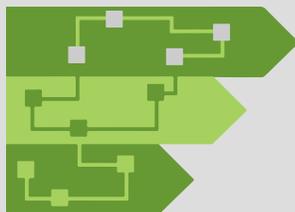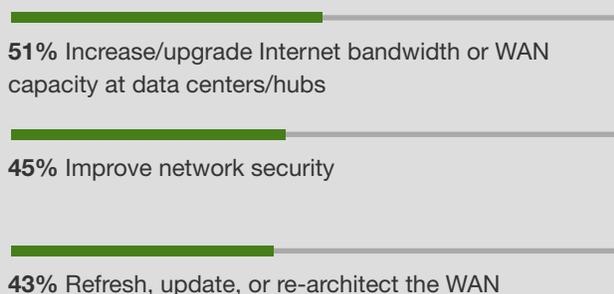
"Which of the following are driving the need for an update/upgrade?"* (Select all that apply)

45% Desktop virtualization service

44% Increased volume and velocity of customer data

43% Business use of SaaS applications

43% Employee or business use of voice, UC, and/or video whether onsite solutions or cloud-based communications and collaboration services

40% Increased use of bandwidth-heavy applications to meet customer expectations/demand

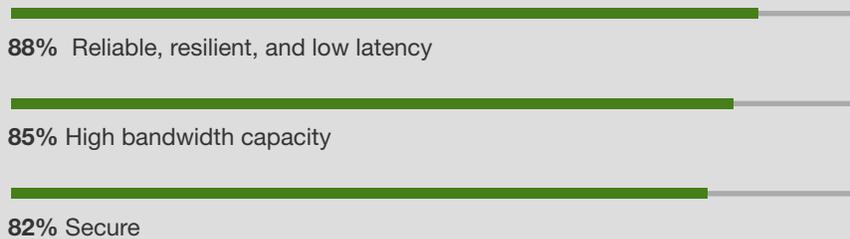Base: 157 IT and networking decision makers at companies within the US
*Base: 107 IT and networking decision makers at companies within the US who prioritize improving WAN
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

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› **Create a WAN fabric.** The new WAN architecture reflects the business ecosystem. The emergence of private and public clouds disperses data, applications, and services from a central location to the best business platform. A fabric of connections and various transports links the business together.

› **Improve resiliency and bandwidth while delivering secure connections.** When upgrading the WAN, businesses seek capabilities that allow them to scale easily, increase efficiency, minimize latency, and keep critical data safe. Eighty-eight percent of organizations cite reliability, resiliency, and low latency as very or critically important for their network infrastructure. Bandwidth capacity (85%) and security (82%) are also among the most important infrastructure capabilities.

› **Align SD-WAN implementation drivers.** Over half of IT and networking decision makers turn to SD-WAN to lower WAN service costs while 48% seek increased network security (see Figure 3).

Figure 3: Need For Critical Features Drives SD-WAN Consideration

Critical or very important network infrastructure features

88% Reliable, resilient, and low latency

85% High bandwidth capacity

82% Secure

SD-WAN implementation drivers

53% Lower WAN services costs

48% Increase network security

46% Increase readiness for upcoming technology trends

42% Reduce WAN downtime

Base: 157 IT and networking decision makers at companies within the US
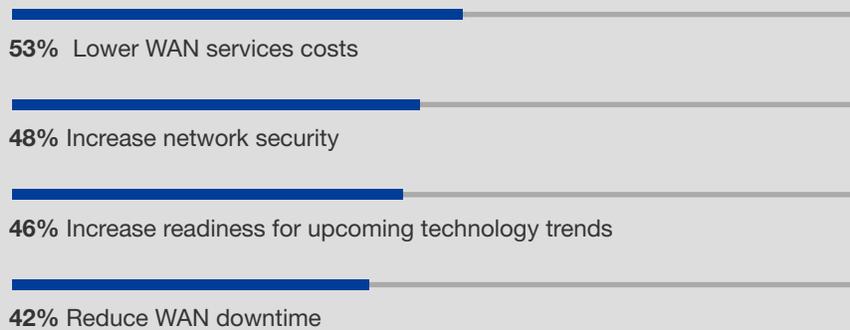Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

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Next-Generation WAN Enables Network Agility But Can Be A Big Undertaking

According to the Forrester Data Global Business Technographics® Networks And Telecommunications Survey, 2017, 64% of US-based companies are in the stages of planning to implement or expanding implementation of an SD-WAN solution from a traditional WAN in the next 12 months. IT and network decision makers hope to overcome security and agility issues of legacy WAN architectures by implementing SD-WAN. Whereas legacy designs forced all traffic to the central location through a single connection, the new approach helps remote locations leverage the best link to the right resource based on business metrics and policies. This also means advanced network services that only resided in a data center are dispersed to where all the data, applications, services, and employees exist (see Figure 4).[4]

And there's a difference between firms that have implemented SD-WAN or have expansion plans and those still in the planning and consideration phase. Those who have already implemented are focused on increasing network security, lowering operational costs, and increasing network agility, because they've already realized some initial benefit from implementation. Those planning and considering SD-WAN are focused on increased security, but they are also heavily focused on reducing WAN downtime and centralizing IT resources away from the remote or branch office locations (see Figure 5).

However, for all of the value that SD-WAN brings, IT and networking professionals envision challenges with the technology:

› **Decision makers struggle to overcome the dispersion of network services.** Fifty-two percent of IT and network decision makers experience challenges when deploying and/or managing SD-WAN or hybrid WAN at remote office locations, which require a myriad of services, such as security and optimization services, that once resided in a data center (see Figure 6). Our survey also revealed that obstacles vary by implementation stage. Relative to their counterparts already implementing SD-WAN, companies planning an SD-WAN implementation express more uncertainty when it comes to building a network service chain (44%), managing security (49%), and understanding the role of third-party solutions (51%).

› **It taxes their internal resources.** Nearly 40% of companies experience or anticipate a lack of internal resources and the skillsets to design, deploy, and manage SD-WAN infrastructure. And when it comes to processes for designing WAN, only 37% of implementers and 32% of planners have design processes in place.

68% of planners and 63% of implementers feel that their networking organization lacks the processes to design SD-WAN.

Figure 4

A Fabric Of Connections Across The Business Requires The Dispersion Of Network Functions And Services
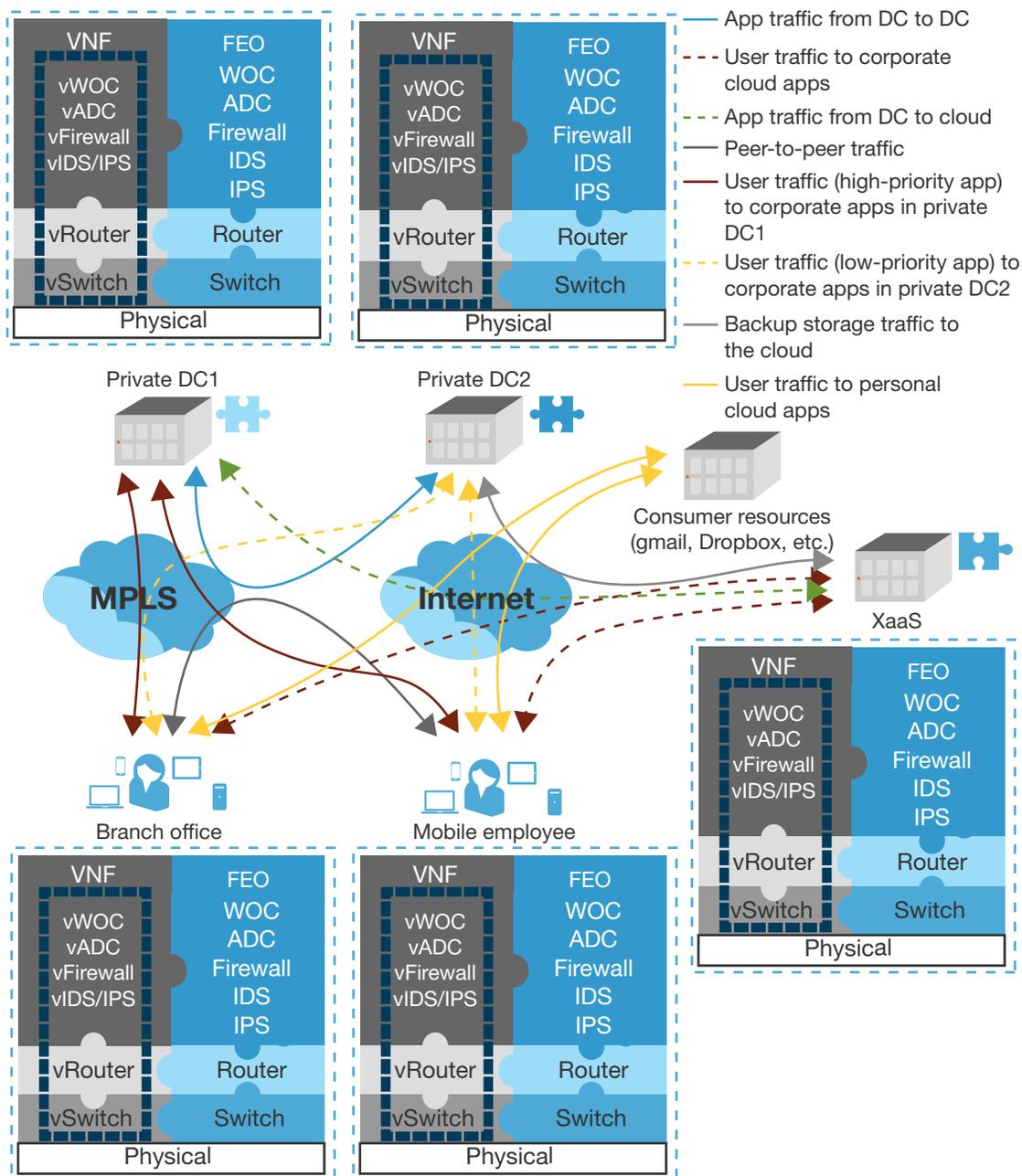
Legend:
- App traffic from DC to DC
- User traffic to corporate cloud apps
- App traffic from DC to cloud
- Peer-to-peer traffic
- User traffic (high-priority app) to corporate apps in private DC1
- User traffic (low-priority app) to corporate apps in private DC2
- Backup storage traffic to the cloud
- User traffic to personal cloud apps

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Figure 5: SD-WAN Implementation Drivers

"Which of the following items are driving your organization's need to implement or consider implementing software-defined WAN (SD-WAN)?"

■ Implemented/expanding SD-WAN (N = 78)   ■ Planning/interested SD-WAN (N = 79)

Driver	Implemented/expanding	Planning/interested
Increase network security	46%	49%
Lower operational costs	40%	37%
Increase agility of the network	40%	35%
Simplify management of the network	38%	33%
Lower infrastructure costs	37%	27%
Reduce WAN downtime	37%	47%
Consolidate network intelligence/visibility	37%	24%
Deploy a repeatable model for each site	31%	28%
Centralize IT resources away from remote office/branch office locations (including headcount)	28%	46%
Leverage multiple types of WAN transports and connections simultaneously	27%	29%

Figure 6: Barriers To SD-WAN Adoption

"What barriers or challenges do you anticipate in your organization's adoption of SD-WAN?" (Select all that apply)
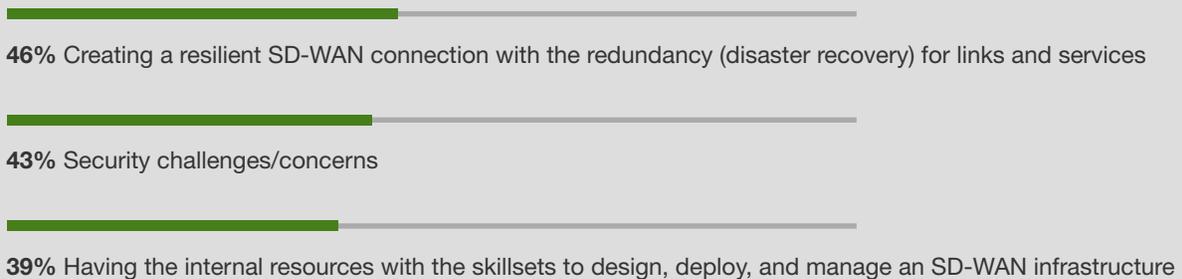
46% Creating a resilient SD-WAN connection with the redundancy (disaster recovery) for links and services

43% Security challenges/concerns

39% Having the internal resources with the skillsets to design, deploy, and manage an SD-WAN infrastructure

Base: 157 IT and networking decision makers at companies within the US
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

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Service Providers Help Firms Realize SD-WAN Benefits

Third-party partners and service providers can really help alleviate challenges, but decision makers need more information in order to decide how and when to incorporate third parties.

› **Help from third-party providers can smooth SD-WAN implementation.** More than four out of five companies implementing or considering SD-WAN are turning to a network operator, telecommunications provider, or managed service provider for SD-WAN solutions (see Figure 7).

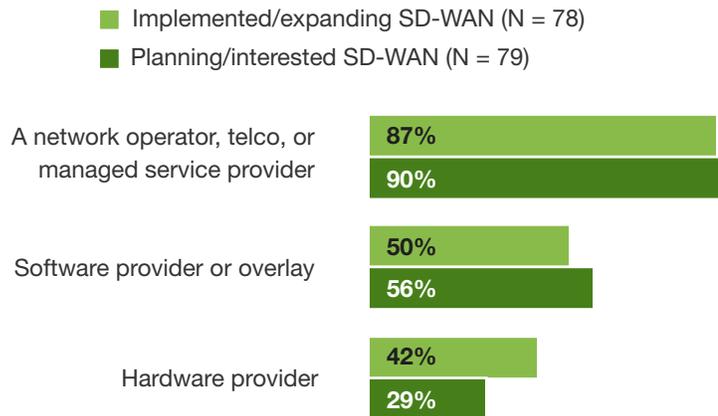› **Early SD-WAN claims skew perceptions.** Emerging SD-WAN vendors touted how easy it was to deploy SD-WAN software on servers and set up application policies for particular links. However, the industry didn't mention the increased complexity that hybrid WAN or SD-WAN would bring. Few discussed how service chaining would occur, who would manage all the security controls, or how to monitor this new environment. This is why more than a third of companies (36%) struggle with the decision about managing SD-WAN internally or turning to an outside partner. In fact, 42% of companies that have already implemented or are expanding SD-WAN are evaluating if they will manage SD-WAN internally or have a third-party partner do it (see Figure 8). It's possible that these companies realize the complexity of the implementation.

› **Decision makers are unsure about what is available from third-party partners.** IT and networking decision makers find it challenging to understand specifically what third-party solutions to provide when it comes to SD-WAN. More than half (51%) of planning/ interested decision makers report they don't understand what SD-WAN solutions third-party partners can provide (see Figure 8).

Companies already implementing or expanding SD-WAN have a clearer understanding of what a third- party provider can offer compared with those who are still in the planning phase.

Figure 7: Providers Turned To For SD-WAN

"Which of the following providers do you turn to for SD-WAN or hybrid WAN solutions?" (Select all that apply)

■ Implemented/expanding SD-WAN (N = 78)
■ Planning/interested SD-WAN (N = 79)

A network operator, telco, or managed service provider
- 87%
- 90%

Software provider or overlay
- 50%
- 56%

Hardware provider
- 42%
- 29%

Base: 157 IT and networking decision makers at companies within the US
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

Figure 8: Anticipated SD-WAN Adoption Challenges

"What barriers or challenges do you anticipate in your organization's adoption of SD-WAN?"
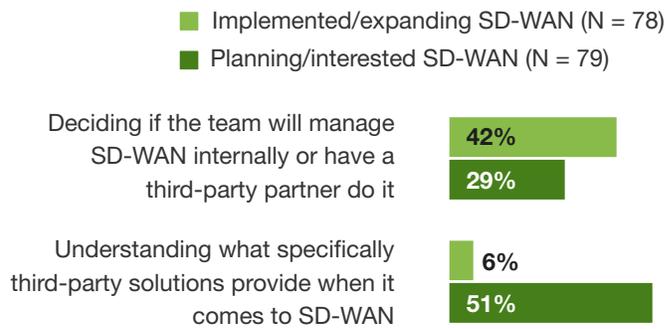
■ Implemented/expanding SD-WAN (N = 78)
■ Planning/interested SD-WAN (N = 79)

Deciding if the team will manage SD-WAN internally or have a third-party partner do it
- 42%
- 29%

Understanding what specifically third-party solutions provide when it comes to SD-WAN
- 6%
- 51%

Base: 157 IT and networking decision makers at companies within the US
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

Service Providers Will Differentiate On Security, Reliability, And Service Options

The deluge of digital services being implemented at remote locations pushes many organizations past their ability to serve them. More and more organizations turn to third-party service providers to augment their infrastructure and operations teams. While some organizations initially implement SD-WAN in-house, many find that third-party providers are powerful partners.

While in some IT decision making scenarios there may be a perceived tendency to evaluate or pick a partner based on cost, the IT and networking decision makers surveyed here placed cost at the bottom of the list of selection criteria. This is because the entire business is riding on the performance of the network, and SD-WAN is not a commoditized solution. Instead, IT and networking teams consider other criteria more important (see Figure 9). They determine if the service provider offers:

› **Secure infrastructure.** Data is the lifeblood of a business and must always be protected. Eighty-six percent of respondents placed a secure infrastructure at the top of the requirements for service provider partners.

› **Reliable, trusted infrastructure.** Digital enterprises have no room for error, which means infrastructure has to be designed at a higher reliability point than in the past. IT and networking decision makers placed the following criteria within the top five important aspects that a service provider must support: no single point of failure, consistent service performance and availability coverage, and active-active controls. In addition, 84% of IT and networking professionals are seeking solutions from a reliable, trusted brand.

› **A catalog of services.** Digital businesses aren't serving up generic business applications but unique services tied to that industry. The underlying networking infrastructure must be built to serve that particular business, such as a manufacturing plant, a mobile bank vehicle, or a sports stadium. Large breadth of access technologies and the ability to have multiple links at locations ranked in the top half of the characteristics a service provider must have.

Figure 8: Importance Of WAN Service Provider Selection Criteria

"How important are the following criteria to your firm when selecting a service provider for wide area networking (WAN) services?" (Very important/Important)

86% Secure network

85% Consistent service performance (SLAs) and service availability/coverage

84% Reliable brand

84% Provided active-active controls

84% No single point of failure

83% Ability to offer multiple types of links at remote locations

82% Infrastructure design and ongoing support from one provider

82% Large breadth of access technology choices

81% Vendor financial stability

81% Provided additional managed back-end support

81% Delivery options

81% Quality of customer ePortal

80% Ability to purchase multiple/bundled services from the same provider

79% Company reputation of innovation

79% Additional value-added/managed services

78% Existing customer/peer references

77% Large array of pricing options

69% Existing relationship

68% On-net reach

66% Lowest cost provider

Base: 157 IT and networking decision makers at companies within the US
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

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Evaluating third-party service partners is mission-critical, especially when considering new services such as SD-WAN, and IT and networking decision makers must ask tough questions.

CRITICAL QUESTIONS TO ASK THIRD-PARTY SERVICE PROVIDERS

1. What types of access diversity do you have? Can they be set up in active-active mode?

2. What level of reliability can you offer?

3. What are the varying degrees of hybrid WAN and SD-WAN management in place? If I don't want a fully managed service, what are some of the other services?

4. What types of tools do you provide to measure and manage your services? What kind of visibility and control do these tools offer? What reports do they offer?

5. Can you provide security at each level? What are methods for securing the data and location?

6. What service-level agreements (SLAs) do you offer?

7. What kind of support is offered? Is there a person or team available to help assess needs, plan, set business policies, implement, and optimize performance?

Key Recommendations

As companies work to meet rising customer expectations, they are transforming at different paces. These organizations need to find solutions and providers that can help design an SD-WAN approach and strategy that fits each unique business and provides a fabric to support their unique digital ecosystem. Forrester's in-depth survey of IT and networking decision makers about SD-WAN implementation plans, challenges, and anticipated benefits yielded several important recommendations for those currently working with third-party providers or for those considering a future SD-WAN implementation:

Focus on your core competency. With the growing complexity of WAN fabrics, IT should decide if the resources spent on designing, deploying, and managing WAN are appropriate to the business or if it makes sense to have a third party do it. By using a third party with competency in WAN and a strong track record with SD-WAN, the business can use IT resources to deploy digital services that enhance the business' competitiveness.

Start small. It's not an all-or-nothing proposition. Unlike other parts of the network, new approaches can be confined to small locations or geographies without much risk. In addition, SD-WAN can be deployed over current WANs so there is no need to "rip and replace" or disrupt current WAN applications. Organizations can find the approach that best fits their overall business and IT strategy.

Understand that hybrid is the new norm. IT professionals should be using a variety of connectivity options to improve performance, optimize costs, and spread risk out.

Focus on the results, not the technoglogy. Too many IT and networking professionals get caught up in the technology or products instead of focusing on the results, especially with a third party. Instead of evaluating how the third party does something, IT teams should spend their time and efforts setting up the SLAs and metrics for evaluating the service and vendor.
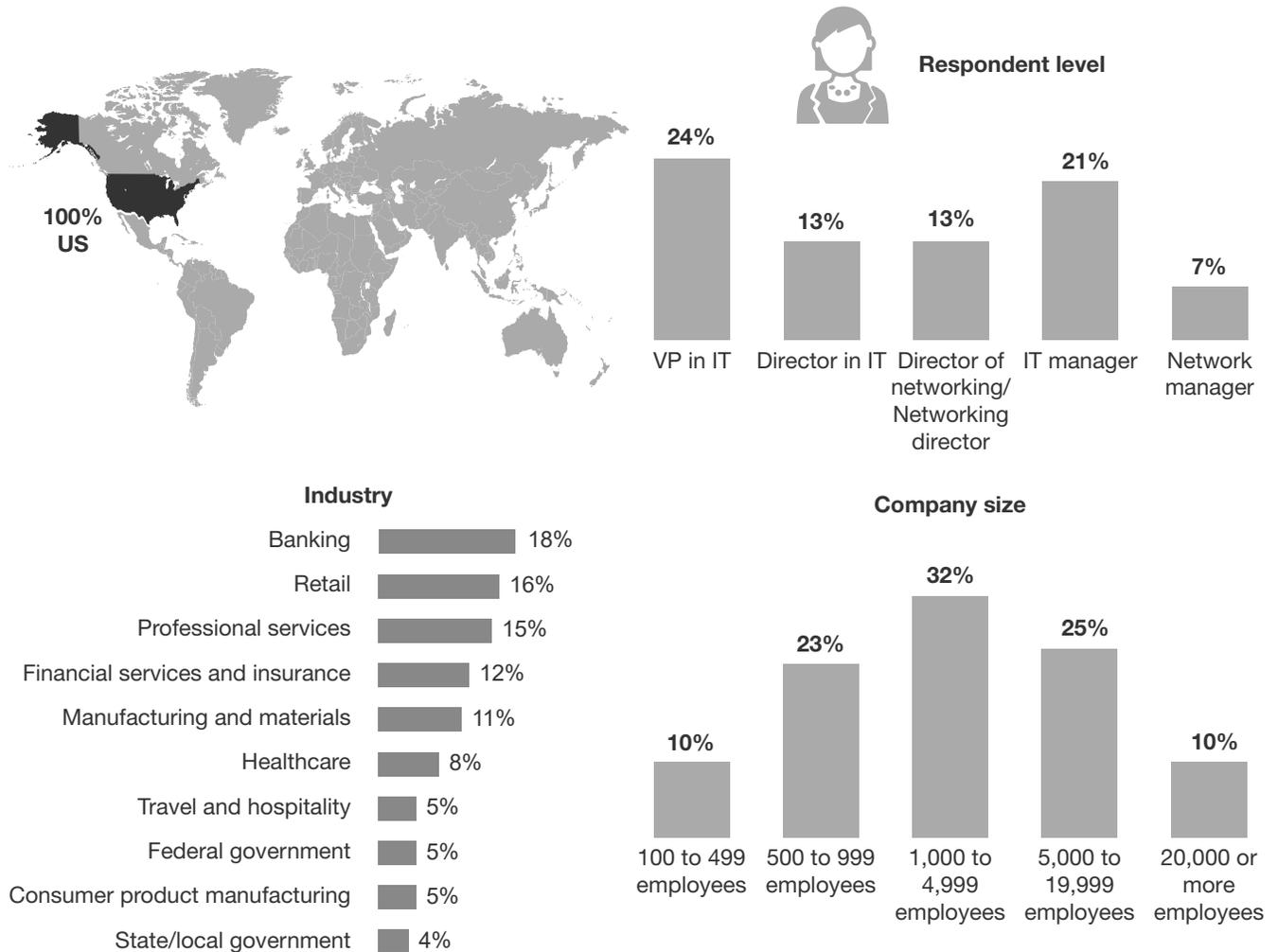
Focus on metrics that identify customer experience or revenue growth, not just costs. Business professionals should place winning, serving, and retaining customers ahead of costs. While measuring cost-effectiveness is important, organizations should develop other success metrics to completely understand the impact of SD-WAN on the entire business.

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Appendix A: Methodology

In this study, Forrester interviewed 157 IT and networking decision makers within the US to evaluate SD-WAN implementation plans and examine the role of third-party partners in the development of SD-WAN solutions. Survey participants included decision makers in IT and networking management. The study began in February 2017 and was completed in March 2017.

Appendix B: Demographics/Data

100% US

Respondent level

24%	13%	13%	21%	7%
VP in IT	Director in IT	Director of networking/ Networking director	IT manager	Network manager

Industry

Banking	18%
Retail	16%
Professional services	15%
Financial services and insurance	12%
Manufacturing and materials	11%
Healthcare	8%
Travel and hospitality	5%
Federal government	5%
Consumer product manufacturing	5%
State/local government	4%

Company size

10%	23%	32%	25%	10%
100 to 499 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 19,999 employees	20,000 or more employees

Base: 157 IT and networking decision makers at companies within the US
Source: A commissioned study conducted by Forrester Consulting on behalf of Windstream Enterprise, March 2017

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Appendix C: Supplemental Material

"How Ecosystems Fuel Digital Business," Forrester Research, Inc., October 20, 2015.

"Five Tenets Define Virtual Network Infrastructure, A Bold New Business Network," Forrester Research, Inc., October 20, 2016.

Appendix D: Endnotes

[1] Source: "Unleash Your Digital Predator," Forrester Research, Inc., March 8, 2017.

[2] Source: "How Ecosystems Fuel Digital Business," Forrester Research, Inc., October 20, 2015.

[3] Source: "'Five Tenets Define Virtual Network Infrastructure, A Bold New Business Network,' Forrester Research, Inc., October 20, 2016."

[4] Source: "'Five Tenets Define Virtual Network Infrastructure, A Bold New Business Network,' Forrester Research, Inc., October 20, 2016."

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