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The Cloud-First WAN Company

4TH ANNUAL

Global State of the WAN Report

Survey Report 2020

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Global State Of The WAN

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Letter from the CMO

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Dear WAN Enthusiast

Welcome to the 4th edition of Aryaka's annual Global State-of-the WAN (SOTW) report. This report is based on a global survey we undertook soliciting responses from over 1000 enterprises involving network and IT practitioners.

As companies become more global, and as more applications move to a cloud-based delivery model, the wide area network (WAN) is increasingly more strategic to the distributed enterprise.

This report puts a spotlight on the WAN transformation in its various forms touching upon the software-defined WAN (SD-WAN), security, application performance, AI/ML and more. While the foundational data is culled from the global survey, the report is sprinkled with insights and analysis from Aryaka experts.

We've also distilled some best practices and shared them as part of a checklist for network administrators and CIOs that could be useful in planning cycles

I would like to thank the Aryaka team that helped craft the survey and bring out this edition of the report in a consumable manner. It is a labor of love and we take a lot of pride in bringing this to you.

Best regards,

Shashi Kiran
Chief Marketing Officer (CMO)
Aryaka Networks

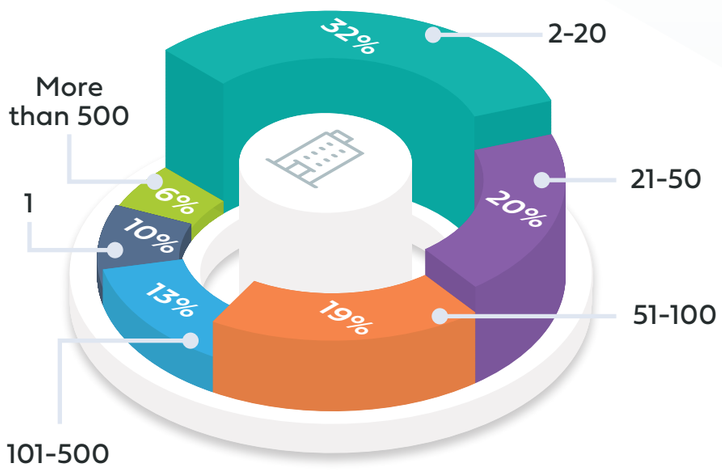
Executive Summary

As multi-cloud deployments become even more mainstream, and both security and remote employee connectivity become integrated with SD-WAN, enterprises continue to face challenges with network performance and complexity.

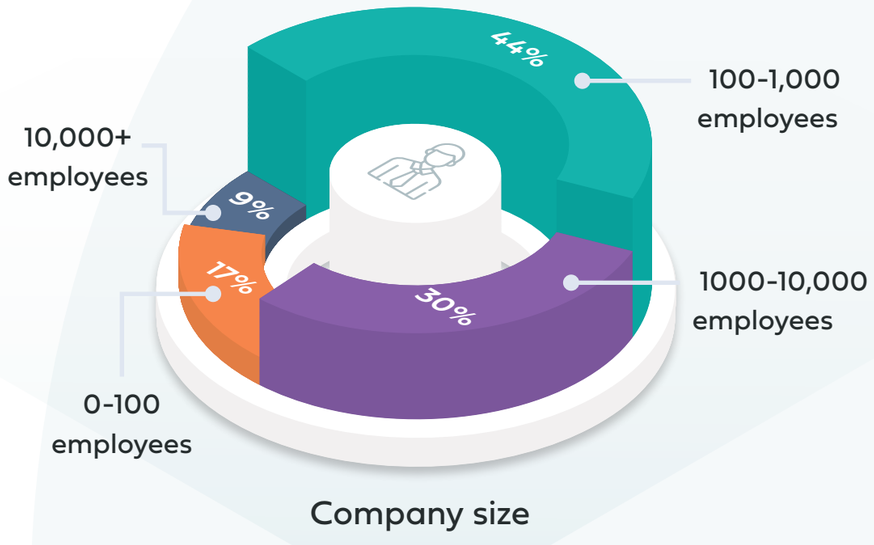
In our **4th annual** Global State-of-the-WAN report, we surveyed over **1,000** network and IT practitioners at **global enterprises** in **various industries** and **across all regions** to better understand their WAN challenges, priorities, and plans for 2020 and beyond.

A common theme is application performance, hostage to complexity, skills gaps, and the set of diverse services expected to be supported by a WAN that is expected to be a catalyst for Digital and WAN Transformation.

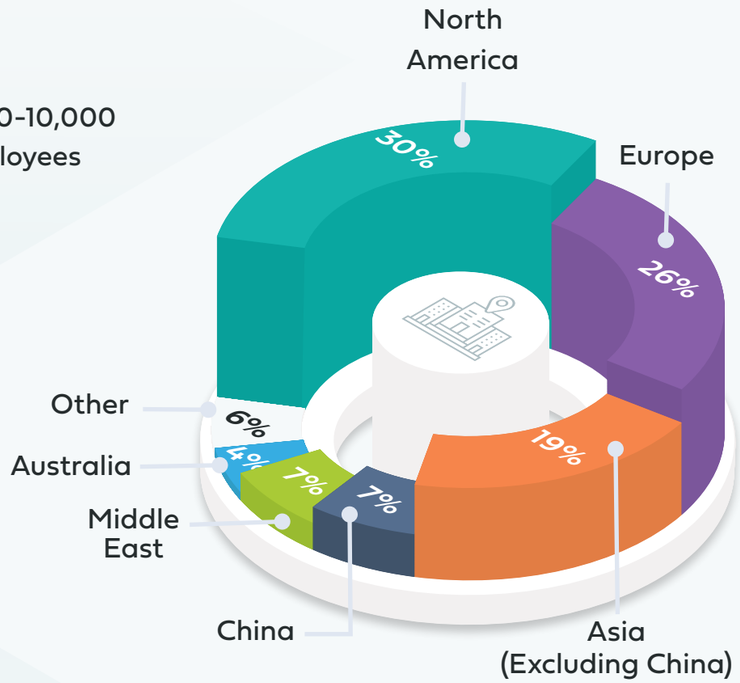
Organizational demographics



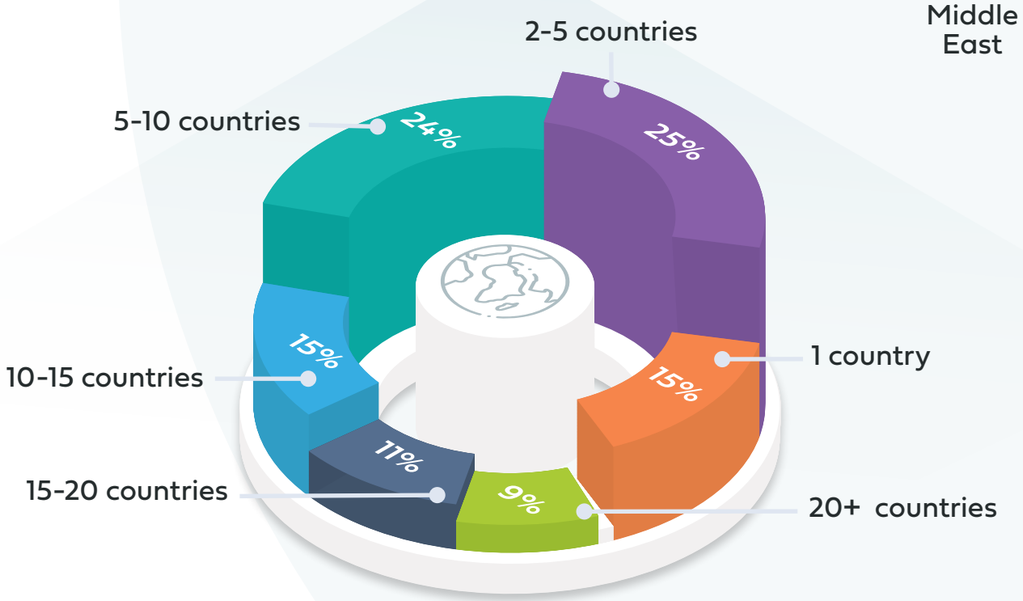
Global Offices



Company size



Organization Headquarters



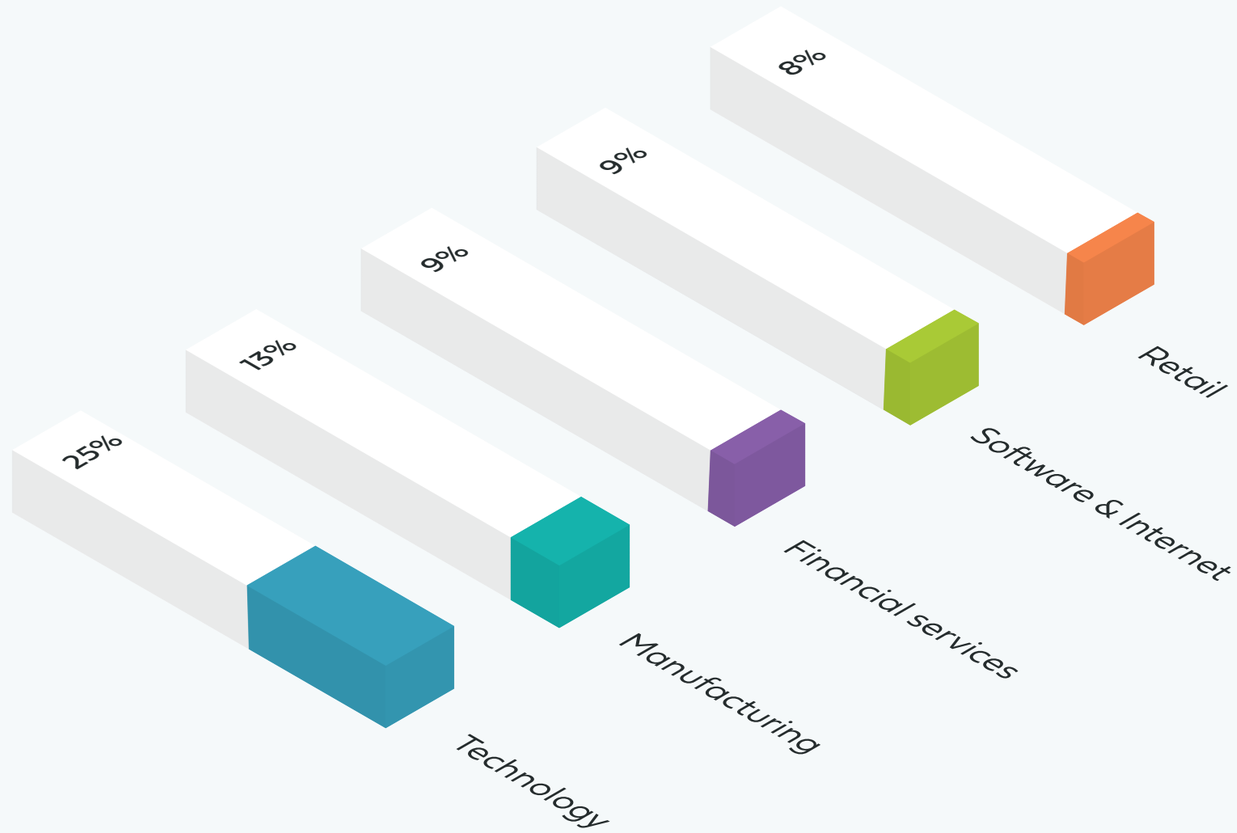
Company Operating

Total Responses	1031

Industry

Top Responses	%
Technology	25%
Manufacturing	13%
Financial services	9%
Software & Internet	9%
Retail	8%

Total Responses	987

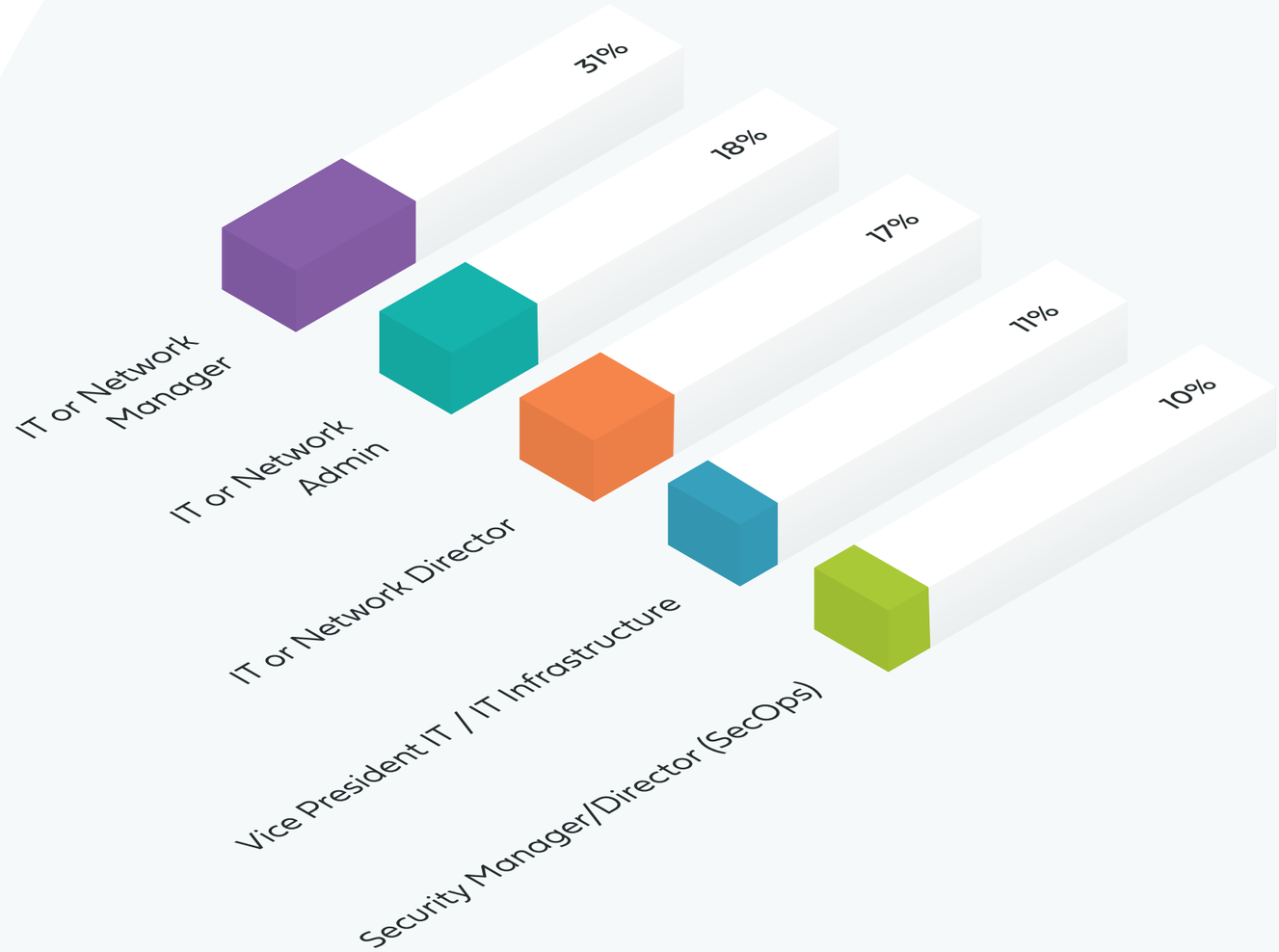


The survey also included:

Business services 7%, transportation and logistics 5%, healthcare 6%, pharmaceutical 2%, travel and leisure 1%, real estate and construction 2%, education 2%, energy and utilities 2%, media and advertising 1%, telecommunications 5%, food and beverage 1%, non-profit 1%, other 1%,

Respondent's role in company

Top Responses	%
IT or Network Manager	31%
IT or Network Admin	18%
IT or Network Director	17%
Vice President IT / IT Infrastructure	11%
Security Manager/Director (SecOps)	10%
Total Responses	**987**



The survey also included:

Chief Information Officer 9%, Other 3%

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Year-on-Year observations

1 COMPLEXITY IMPACTS PERFORMANCE

Complexity (37%) is the new leader, growing from **35% in 2019** and only **13% in 2018.** This ultimately leads to poor application performance for both on-prem (32%) vs 23%, and cloud apps (32%) vs 24%. It replaces cost, dropping from 40% in 2019 to 16% in 2020. For end-to-end performance, only **9%** of respondents state that they have no issues, down from 35% in 2019.

2 ADDRESSING APPLICATION PERFORMANCE ISSUES

Application performance continues to be the biggest area of investment of time for IT organizations. This spans remote workers **(47%)**, growing from **36%** in 2019, the branch (43%), down from 45%, and integration of cloud and SaaS application origins (42%), growing from 20%. Evidence is that remote workers are placing additional burden upon the network. Managing telcos grew from **16%** in 2018, **29%** in 2019, to **34%** this year.

3 UNIFIED COMMUNICATIONS AS-A-SERVICE A PERENNIAL CHALLENGE

Set-up and management **(48%)** is the new top challenge, growing from 28% in 2019. This replaces poor voice or video as well as lag/delay as the top concern, highlighting both complexity and network performance. Respondents with no stated issues dropped from **25%** in 2019 to **12%** this year.

4 AUTOMATION IS KEY

IT departments plan to invest in automation **(41%)** which is the new leader, growing from 31% in 2019. Cloud migration moved from **31%** to 36%, analytics from 28% to 33%, and security dropping from 34% to 30%.

5 SECURITY AND SD-WAN CONVERGENCE

54% look to multiple vendors for the edge, but only **44%** in the cloud. CIOs want end-to-end security with hybrid flexibility, with deployment at the edge or in the cloud, and with the ability to leverage their existing vendors. **SASE** in the discussion.

6 ENTER 5G

42% are looking to invest in 5G, followed by IoT at 29%, AI/ML at 27%, and Blockchain at 21%. 5G is receiving interest as a potential primary form of SD-WAN connectivity.

7 REMOVE SD-WAN BARRIERS

SD-WAN application performance is now top-of-mind, at **43%** vs **13%** in 2019, followed by the skills gap (40%) vs 31%, increased spending (35%), the previous leader, and additional complexity (34%) vs 25%. These are all areas addressed by a managed service.

8 CONSIDER A MANAGED SD-WAN

There is growing SD-WAN managed service acceptance **(87%)** vs **59%** in 2019, and IT organizations are looking for their adopted SD-WAN deployment to integrate diverse capabilities including WAN optimization (42%), the cloud (41%), and security (40%), and MPLS replacement (35%). Support for remote workers grew from **21%** in 2019 to **33%** in 2020. The services integrated track last year's survey, and the major advantage of a managed service is that it can offer these features, while reducing operational complexity and ensuring performance.

1

Part 1: WAN challenges

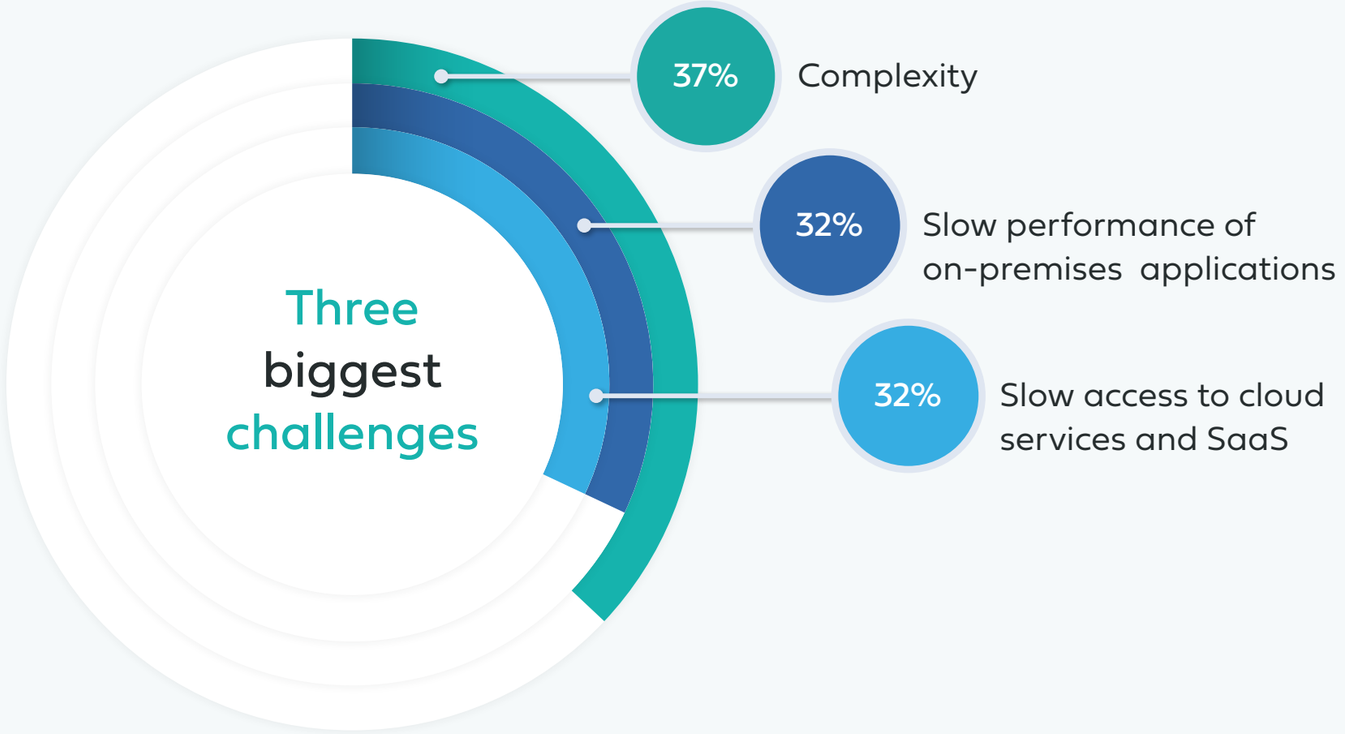
Enterprise complexity at the edge and within the cloud creates a challenging environment for IT organizations.

Complexity

IT managers identify complexity and slow performance of both on-prem and cloud-based applications as their biggest concerns. Complexity replaces cost as the #1 concern.

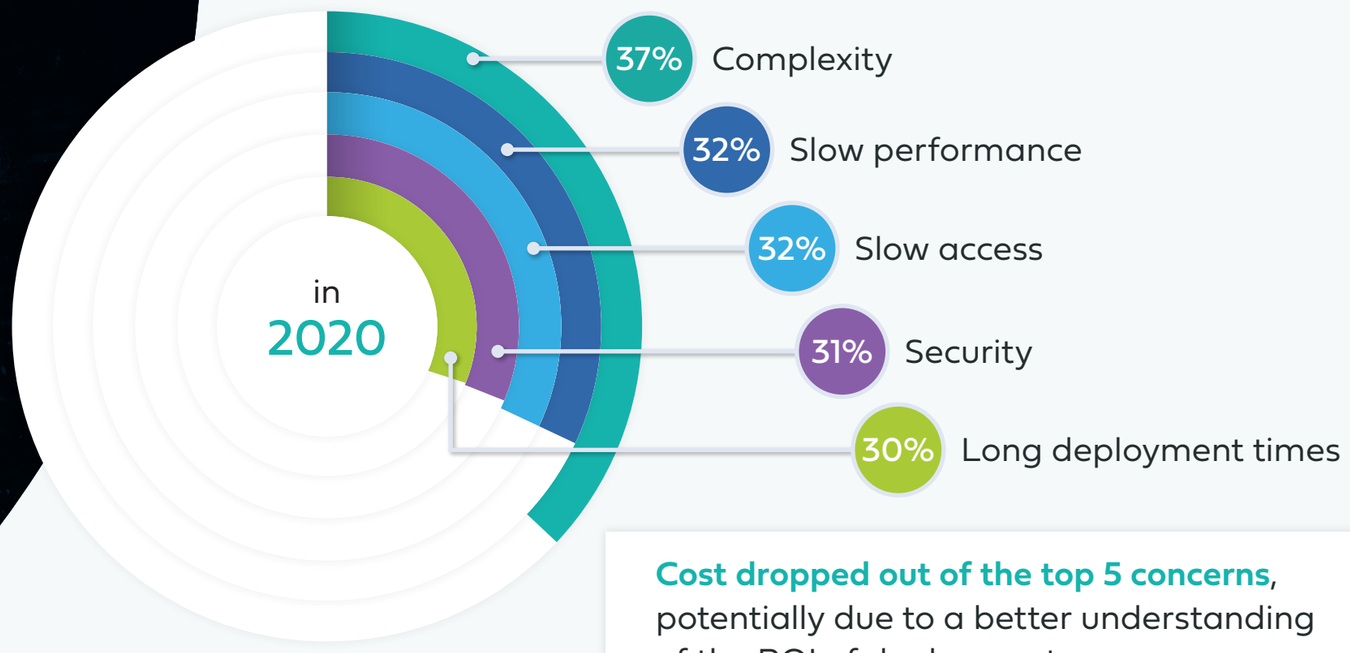
Three Biggest challenges with the WAN

Top Responses	%
High complexity/difficult to manage or maintain	37%
Slow performance of on-premises applications	32%
Slow access to cloud services and SaaS applications	32%
Total Responses	**997**

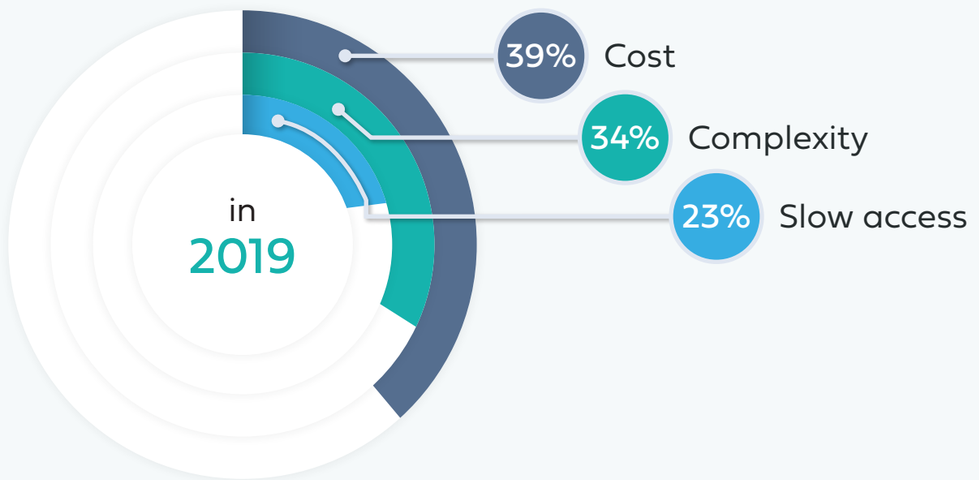


The survey also included:

Poor voice or video quality 31%, lack of visibility 30%, lack of adequate security 26%, long deployment times to bring up new sites 23%, high costs 16%



Cost dropped out of the top 5 concerns, potentially due to a better understanding of the ROI of deployment



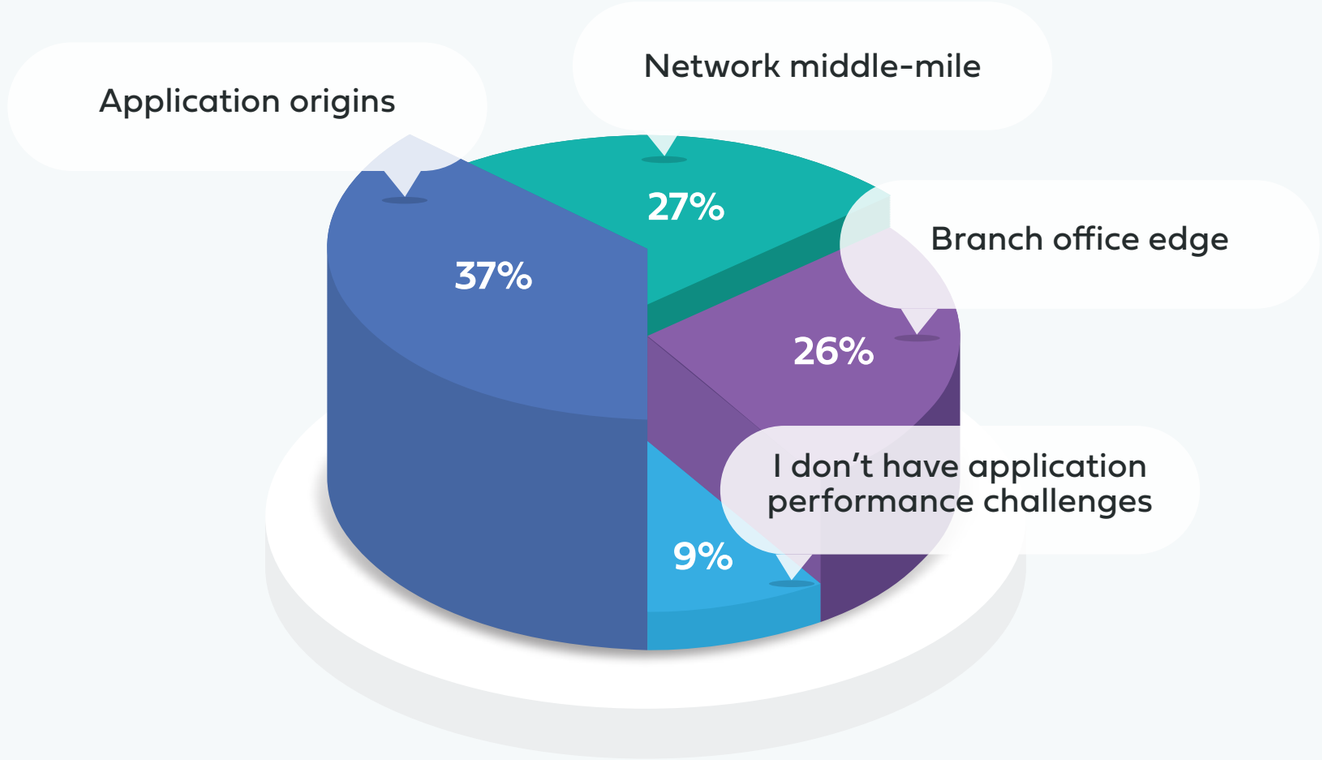
ii

Demystifying application performance

IT is getting better at identifying the source of a pplication performance issues., but can’t focus on just one segment of the WAN. The first, middle, and last miles all contribute.

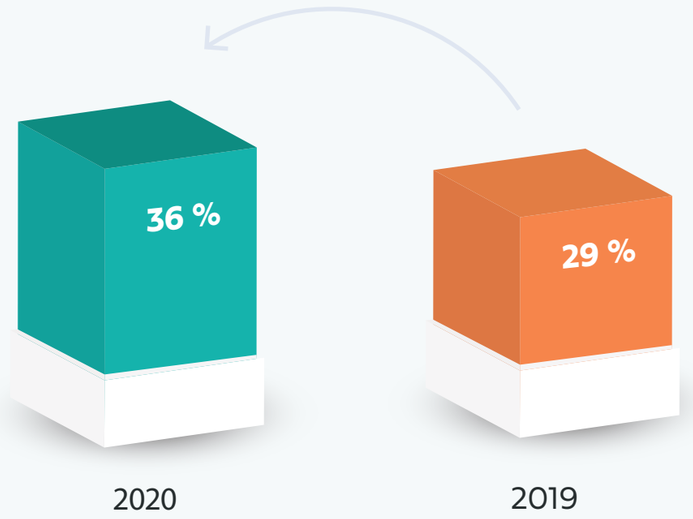
Application performance challenges across the WAN

Top Responses	%
Application origins (i.e., cloud, data center)	37%
Network middle-mile	27%
Branch office edge	26%
I don’t have application performance challenges	9%
Total Responses	**997**

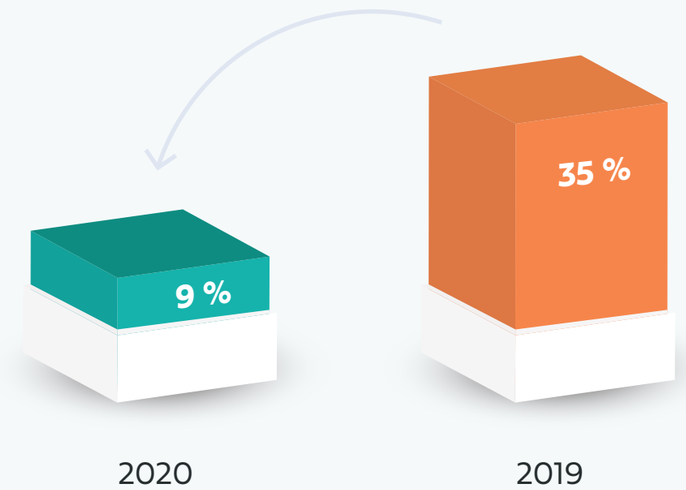


In contrast to other verticals that identified the application origin as the top issue, business and logistics identified the network middle-mile as their chief concern.

Vertical Insights



Respondents identifying the primary source of performance challenges as the app origin



Respondents who stated they have no performance issues

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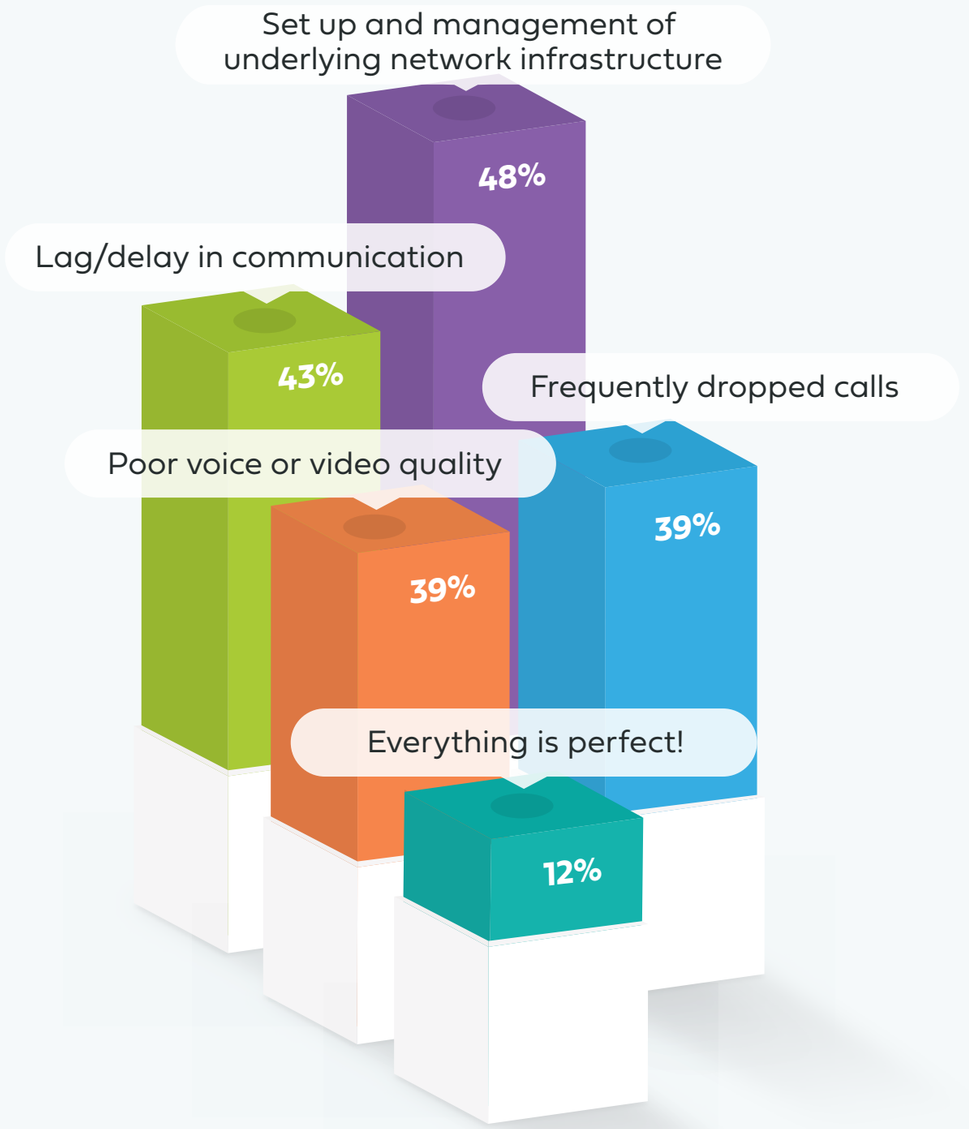
Unified Communications as-a-Service challenge

We also know that Unified communications as a service (UCaaS) is challenging to deploy globally. Once again, complexity is the culprit, and today's network managers have higher performance expectations.

Top 5 biggest challenges with real-time voice and video performance

Top Responses	%
Set up and management of underlying network infrastructure	48%
Lag/delay in communication	43%
Frequently dropped calls	39%
Poor voice or video quality	39%
Everything is perfect!	12%
Total Responses	**997**



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Set-up and management

2020	2019	2018
48%	27%	10%

#1 Challenge for **voice and video**

Lag/delay in network performance

2020	2019	2018
43%	30%	19%

Lag/delay was a close 2nd highlighting **network performance issues**

Calls and quality

2020	2019	2018
39%	41%	52%

Poor voice and video quality went from 52% in **2018** to 41% in **2019** to 39% in **2020**

Setup and management issues and performance continue to grow year on year while concerns regarding calls are dropping.

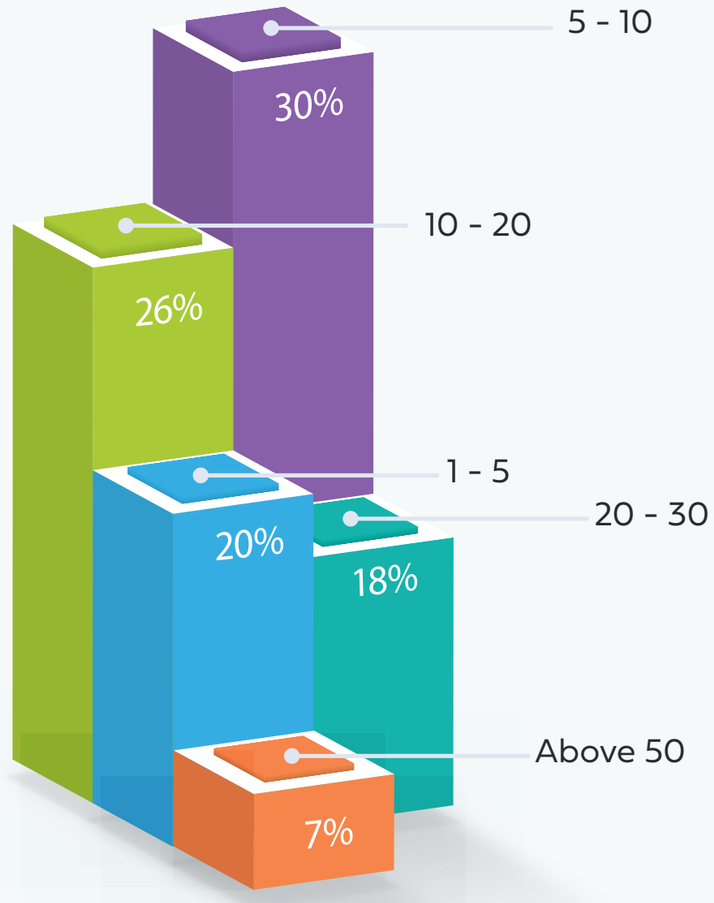
iv

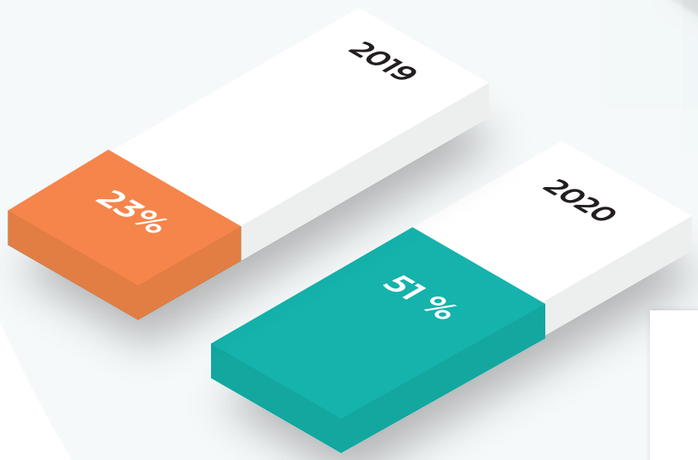
A SaaSy world

Focusing on Software-as-a-Service (SaaS) and looking at the bigger picture, the majority of enterprises leverage over 10 cloud-based applications, speaking to the criticality of cloud performance.

Total number of SaaS applications in use

Top Responses	%
5 - 10	30%
10 - 20	26%
1 - 5	20%
20 - 30	18%
Above 50	7%
Total Responses	**1031**





Technology, software, and transportation verticals are heavier SaaS users; manufacturing is lower.

Vertical Insights

A growing number of companies are deploying **10+ SaaS applications**

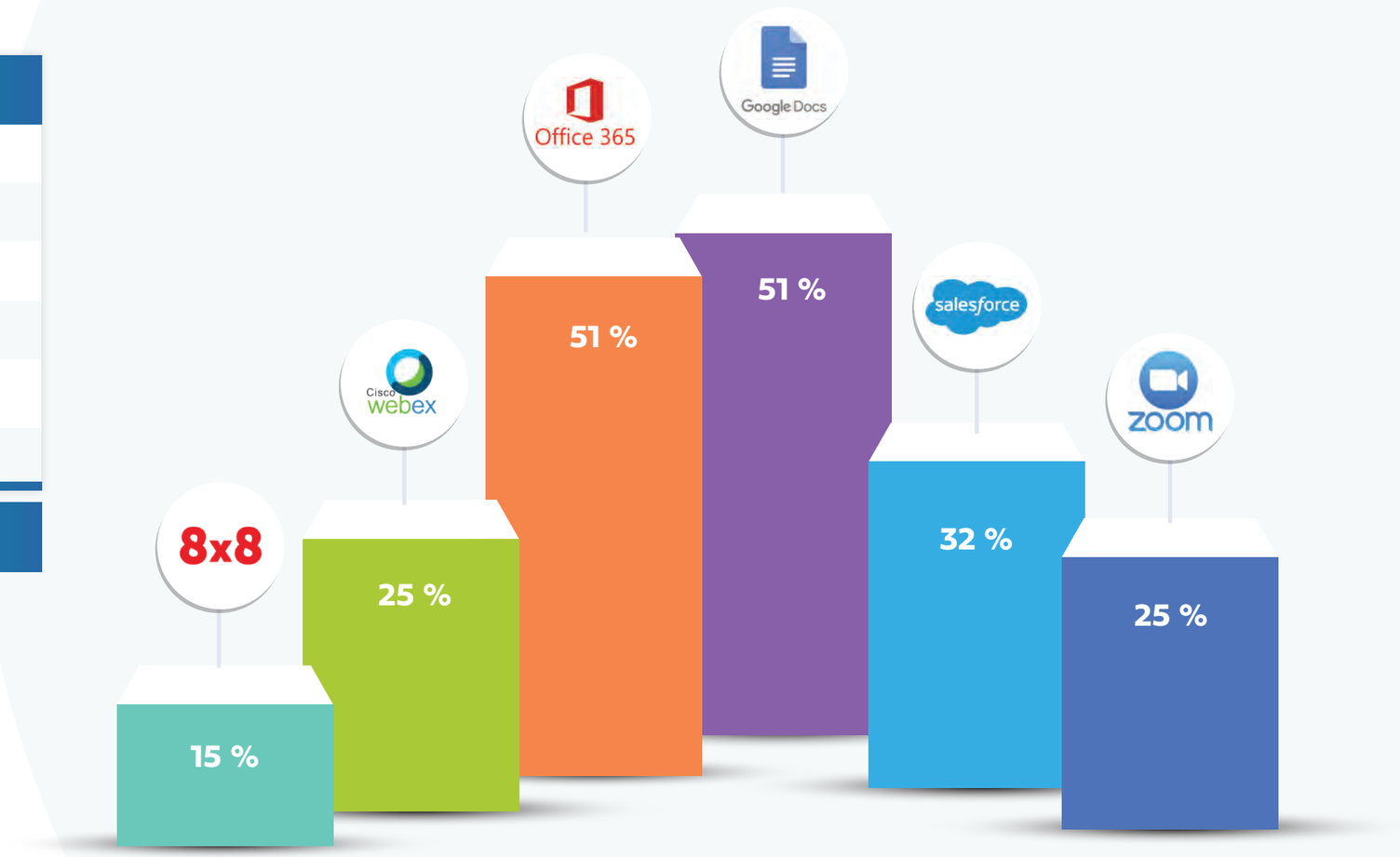
V

UCaaS and collaboration diversity

Deployments rely on over a dozen UCaaS vendors, adding to complexity.

Top Cloud/SaaS applications for the global enterprise

Top Responses	%
Office365	51%
Google Docs	51%
Salesforce	32%
Zoom	25%
WebEx	25%
8x8	15%
Total Responses	1002



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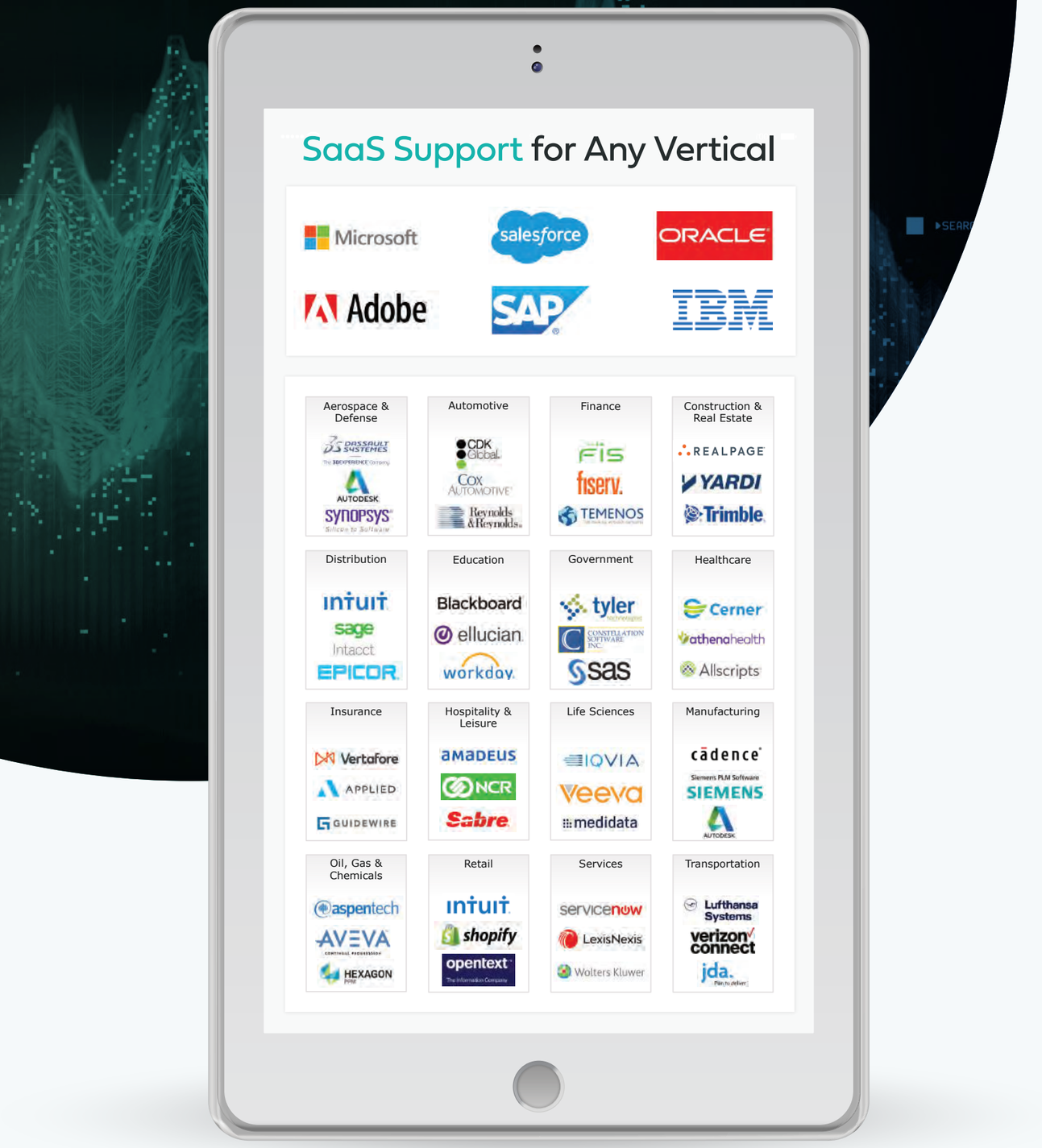
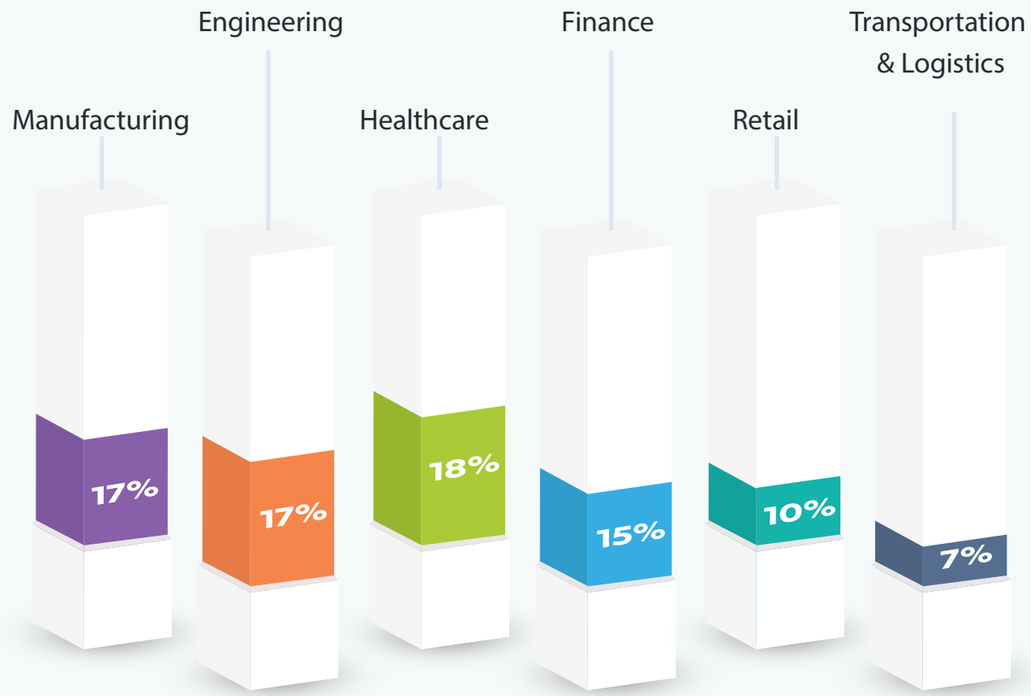
Specialty applications

Specialized applications are also widely adopted by manufacturing, healthcare, engineering, finance and retail. Any new deployment must be able to support them.





Beyond the SaaS-based applications used across multiple industries, each vertical has their own specialized applications, some SaaS, but many hosted locally. These applications many times require high bandwidth, low latency, and security.

Vertical Insights

vii

A Multi-Cloud world

Where are these applications and what clouds do they connect to? For a mix of IaaS/PaaS and SaaS, Azure and Google reign supreme. AWS is leveraged more for IaaS and PaaS.

Public cloud connectivity

Top Responses	%
Google Cloud	60%
Microsoft Azure	56%
AWS	32%
Oracle Cloud	30%
IBM Cloud	29%
Alibaba Cloud	18%
Total Responses	**1002**

Numbers skewed since all public clouds other than AWS also include SaaS applications.

Vertical Insights

The survey also included:

others 1%

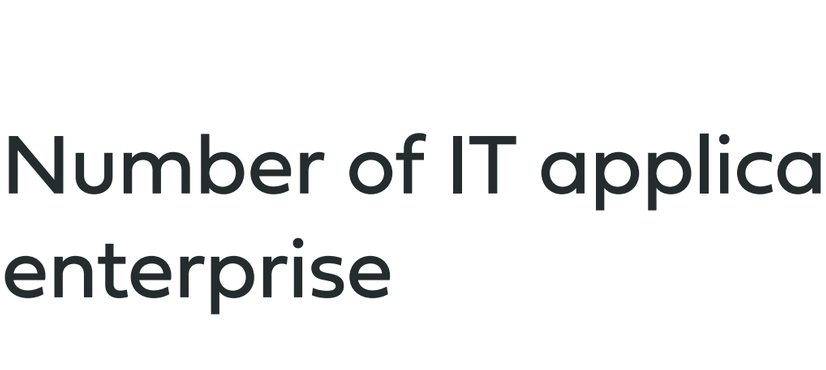
viii

Buckets of applications

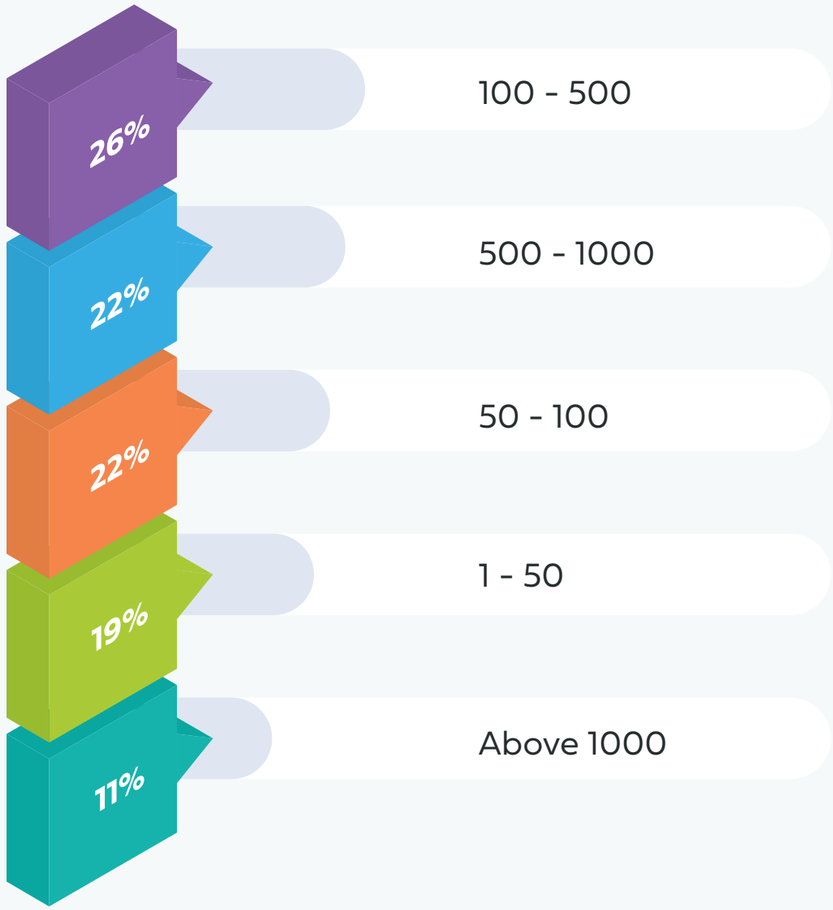
And, enterprises continue to increase their number and diversity of applications.

Number of IT applications in the enterprise

Top Responses	%
100 - 500	26%
500 - 1000	22%
50 - 100	22%
1 - 50	19%
Above 1000	11%



A growing number of companies are deploying **100+ applications**



Total Responses	1031

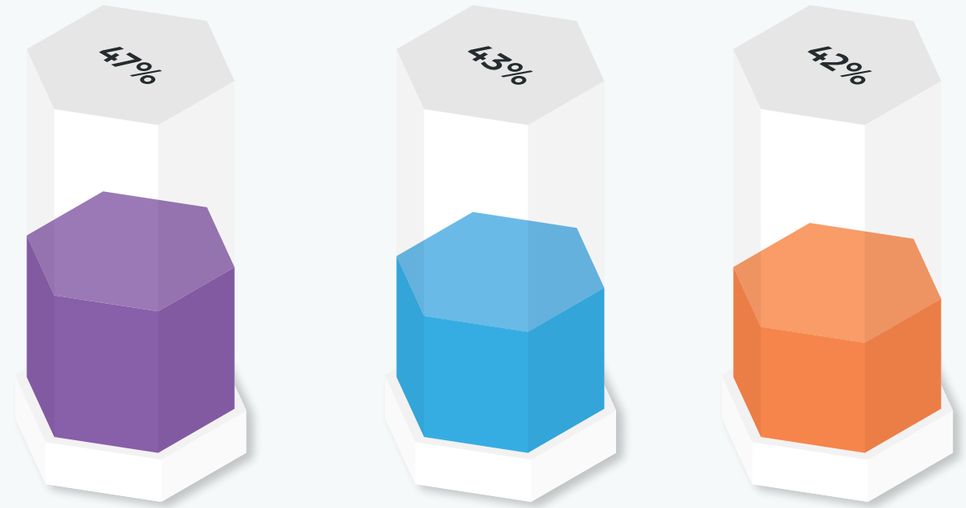
ix

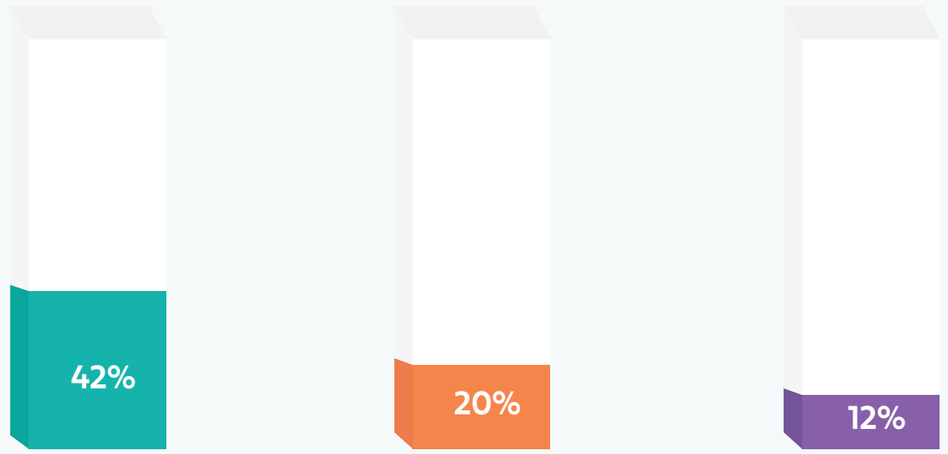
Top IT problems

With so many applications in use, many of which are cloud-based, IT is consumed by managing application performance and access to the cloud. And it's only getting more complex, highlighting the need for a managed service for many organizations.

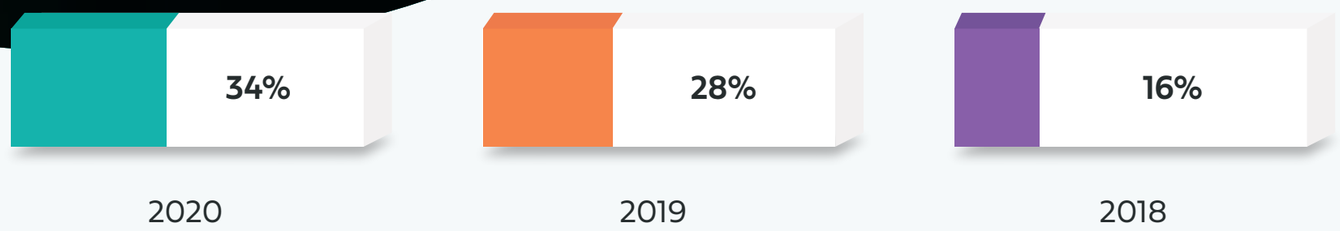
Troubleshooting focus areas

Top Responses	%
Poor user experience for remote and mobile users	47%
Poor user experience in branch offices	43%
Accessing/integrating cloud and SaaS application origins	42%
Security breaches	38%
Managing telcos/service providers is a nightmare!	34%
Issues caused by shadow IT	12%
Total Responses	**997**





Respondents who cited cloud and SaaS application performance were time consuming



Respondents who cited managing telcos and service providers were time consuming

Year on year growth for provider management, and application performance

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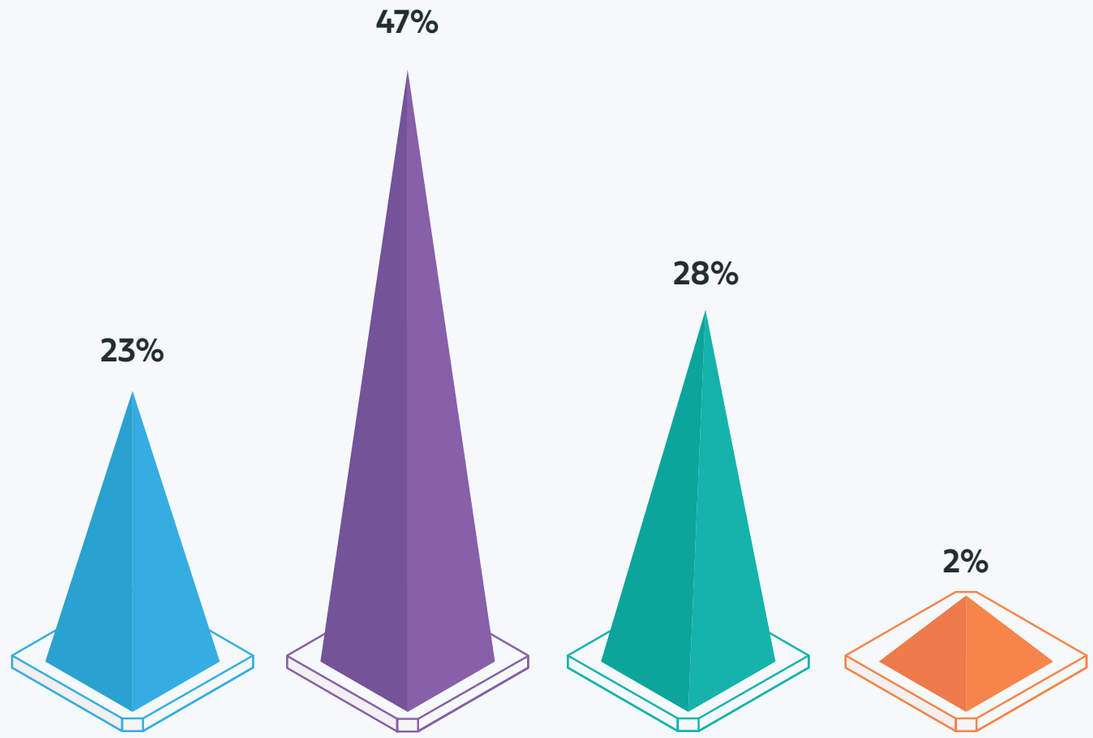
x

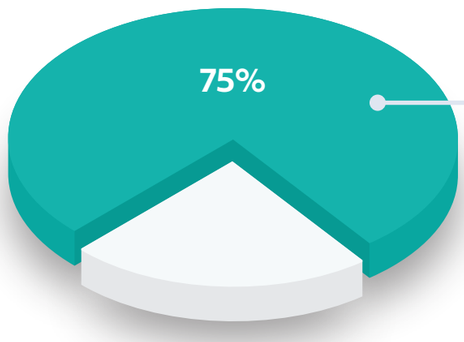
WAN site activation times

Lastly, new site installations are still slow. This delays implementations and the ability to quickly respond to changing market conditions or external events.

Time to activate a new site globally

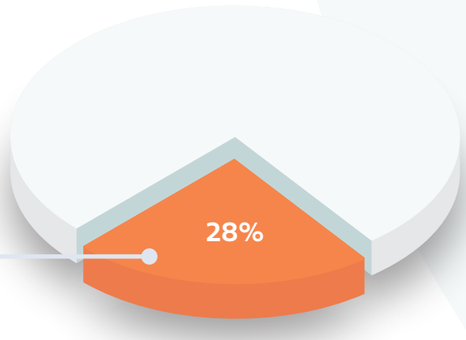
Top Responses	%
Less than a week	23%
Between a week and a month	47%
More than a month	28%
Don't know	2%
Total Responses	1031





Respondents reported they wait over **one week** for a new site to be deployed

Respondents reported they wait over **a month** for a new site to be deployed



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Part 2: WAN Planning

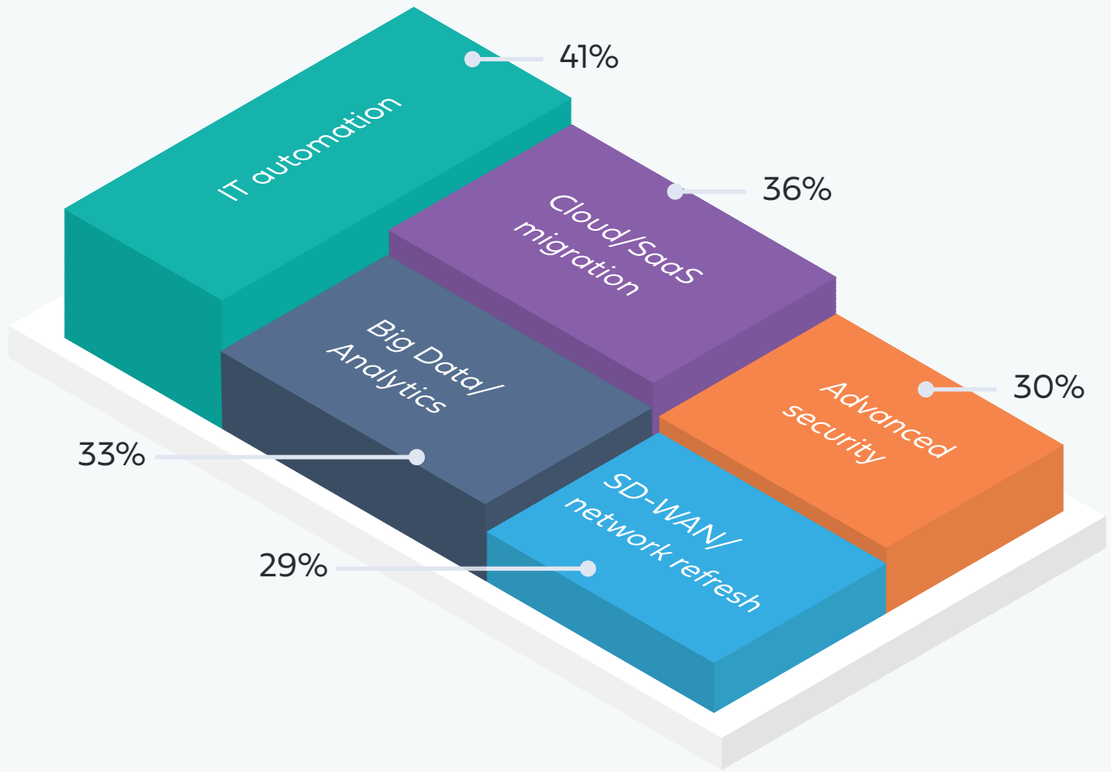
So, what are enterprise doing to address complexity and the time spent managing WAN issues? Here is where a managed SD-WAN and other WAN transformation projects may help.

Major IT initiatives

Enterprise-wide, major initiatives include automation, advanced security, the cloud and newer areas of investment such as IoT, AI/ML and Blockchain.

Top 5 enterprise IT initiatives for WAN transformation

Top Responses	%
IT automation	41%
Cloud/SaaS migration	36%
Big Data/Analytics	33%
Advanced security	30%
SD-WAN/network refresh	29%
Total Responses	1002



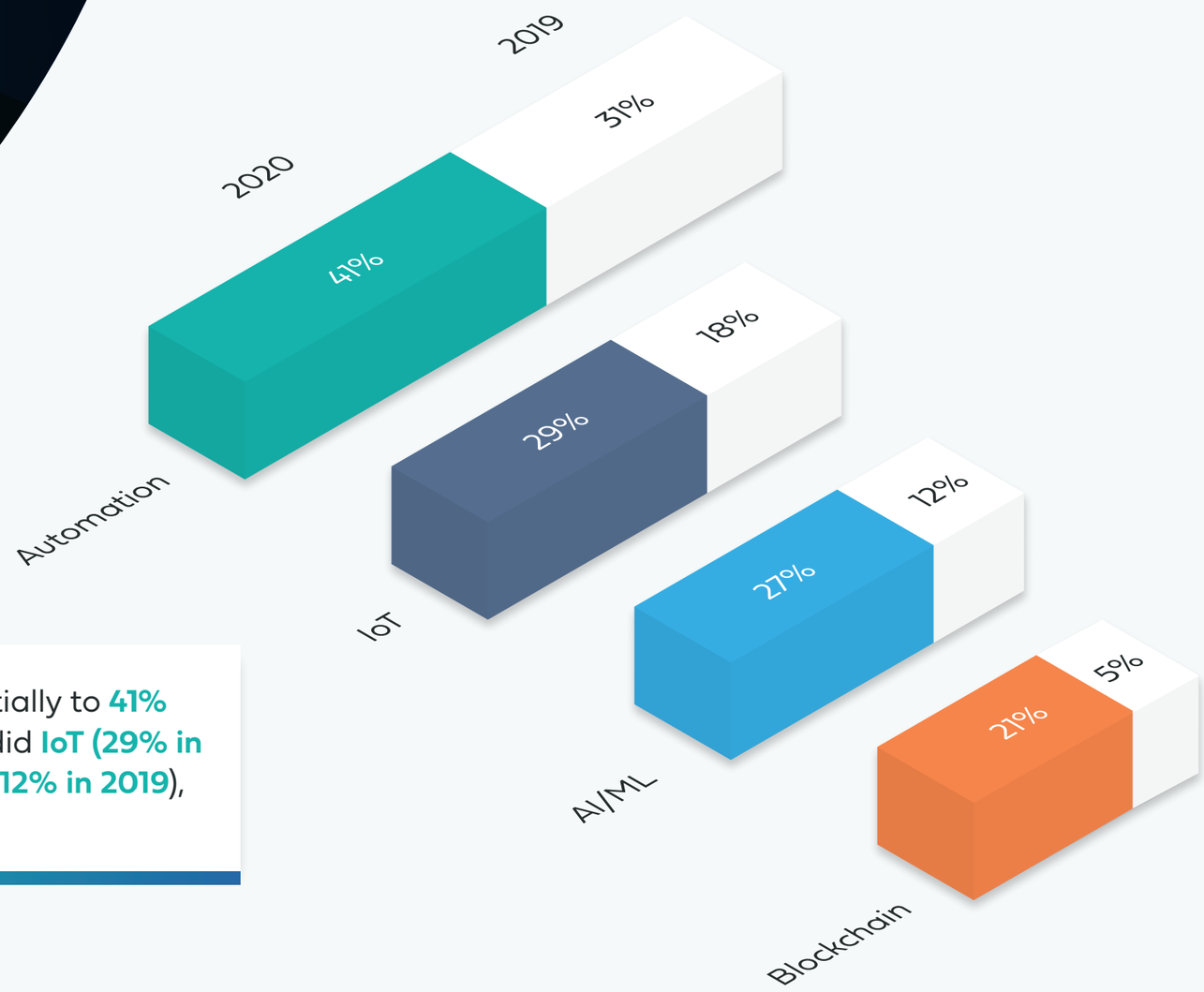
Companies of all sizes had roughly the same results.

Vertical Insights

The survey also included:

Internet of things 29%, artificial intelligence/machine learning 27%, application/network performance management 24%, virtualization 24%, mobility 23%, blockchain 20%, datacenter consolidation 19%, devops 18%, unified communications/ucaas 12%

IT initiatives year-on-year comparison



For broad IT initiatives, **automation grew** substantially to **41% of respondents in 2020** from only **31% in 2019**, as did **IoT (29% in 2020** from **18% in 2019**), **AI/ML** (**27% in 2020** from **12% in 2019**), and **Blockchain** (**21% in 2020** from **5% in 2019**).

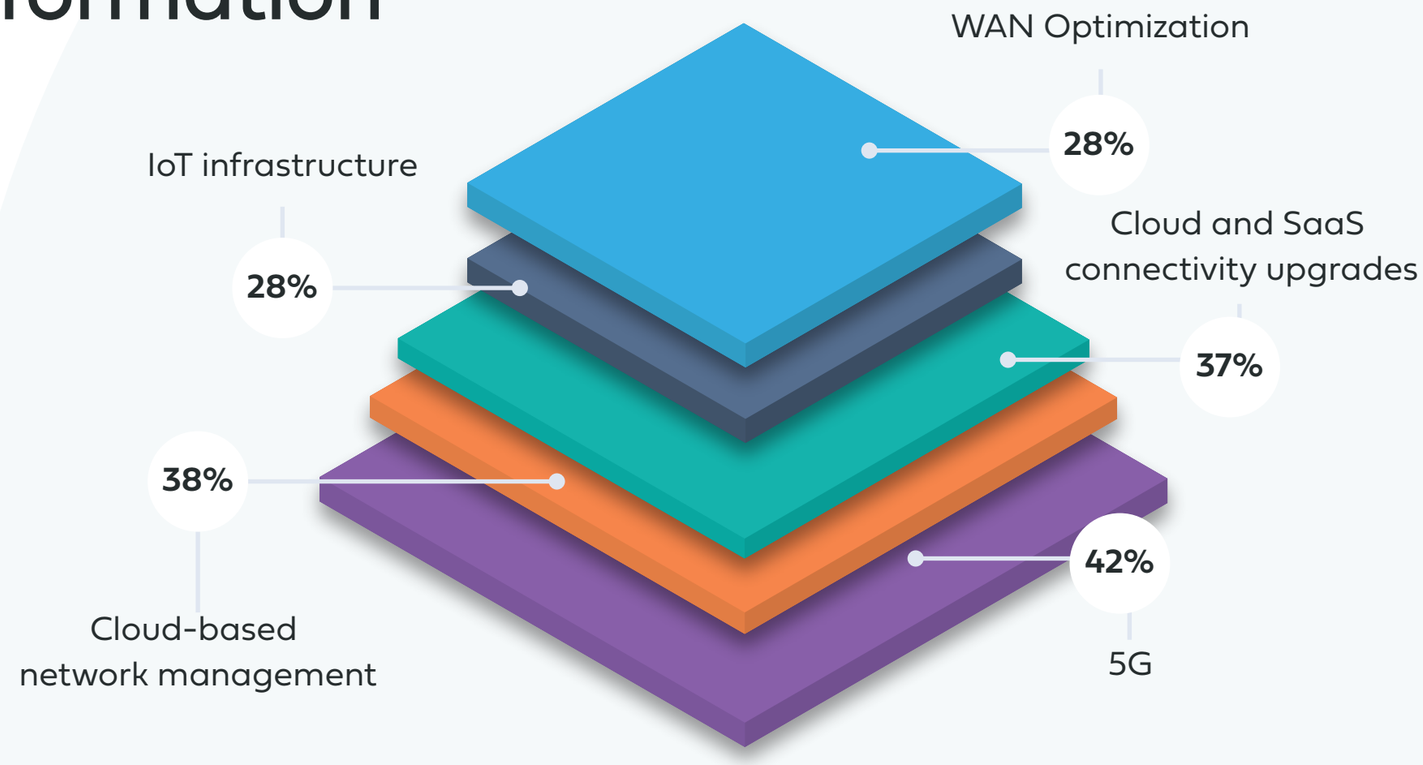
ii

Top networking initiatives

On the cloud front, upgrades and management are key as well as a keen interest in 5G. This last initiative reflects the view that 5G will play a role as a primary connectivity option for SD-WAN.

Top 5 enterprise networking initiatives for WAN transformation

Top Responses	%
5G	42%
Cloud-based network management	38%
Cloud and SaaS connectivity upgrades	37%
IoT infrastructure	28%
WAN Optimization	28%
Total Responses	1002



The survey also included:

Remote access vpn 27%, network management and monitoring 27%, complete WAN refresh 25%, SD-WAN 25%, network automation 25%, LTE 24%, SDN 13%

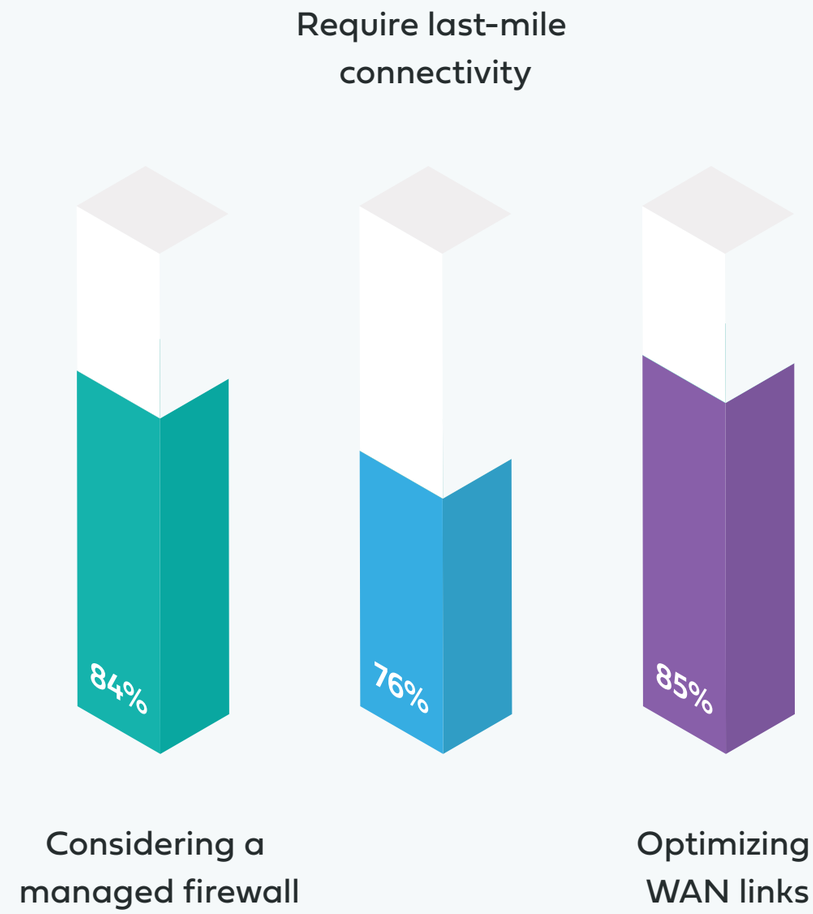
iii

Going beyond SD-WAN

Managed firewalls, managed last-mile connectivity and WAN optimization are all high areas of investment. The flipside is that the combination of these across the WAN can be complex to deploy and manage.

Top 3 WAN features

Value-Add	Managed FW	Last Mile	WAN link
Yes	84%	76%	85%
No	12%	19%	11%
Don't know	4%	6%	3%
Total Responses	994		



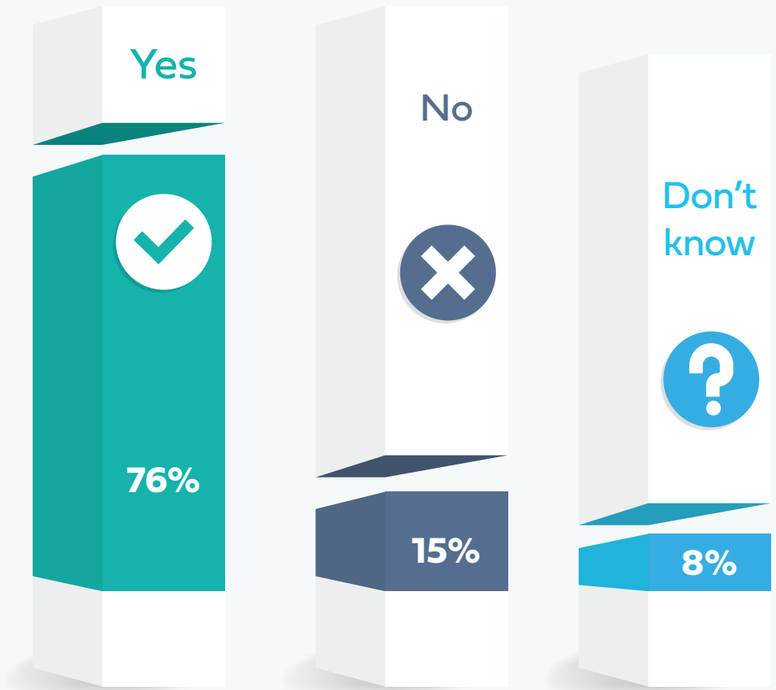
iv

Whither MPLS?

Most enterprises still leverage MPLS and will continue to do so. Interoperability is key for successful SD-WAN deployments.

Planning to refresh MPLS contracts

Top Responses	%
Yes	76%
No	15%
Don’t know	9%
Total Responses	**1031**



Note that companies with offices in 10+ countries leverage MPLS more than those with smaller footprints.

Vertical Insights

V

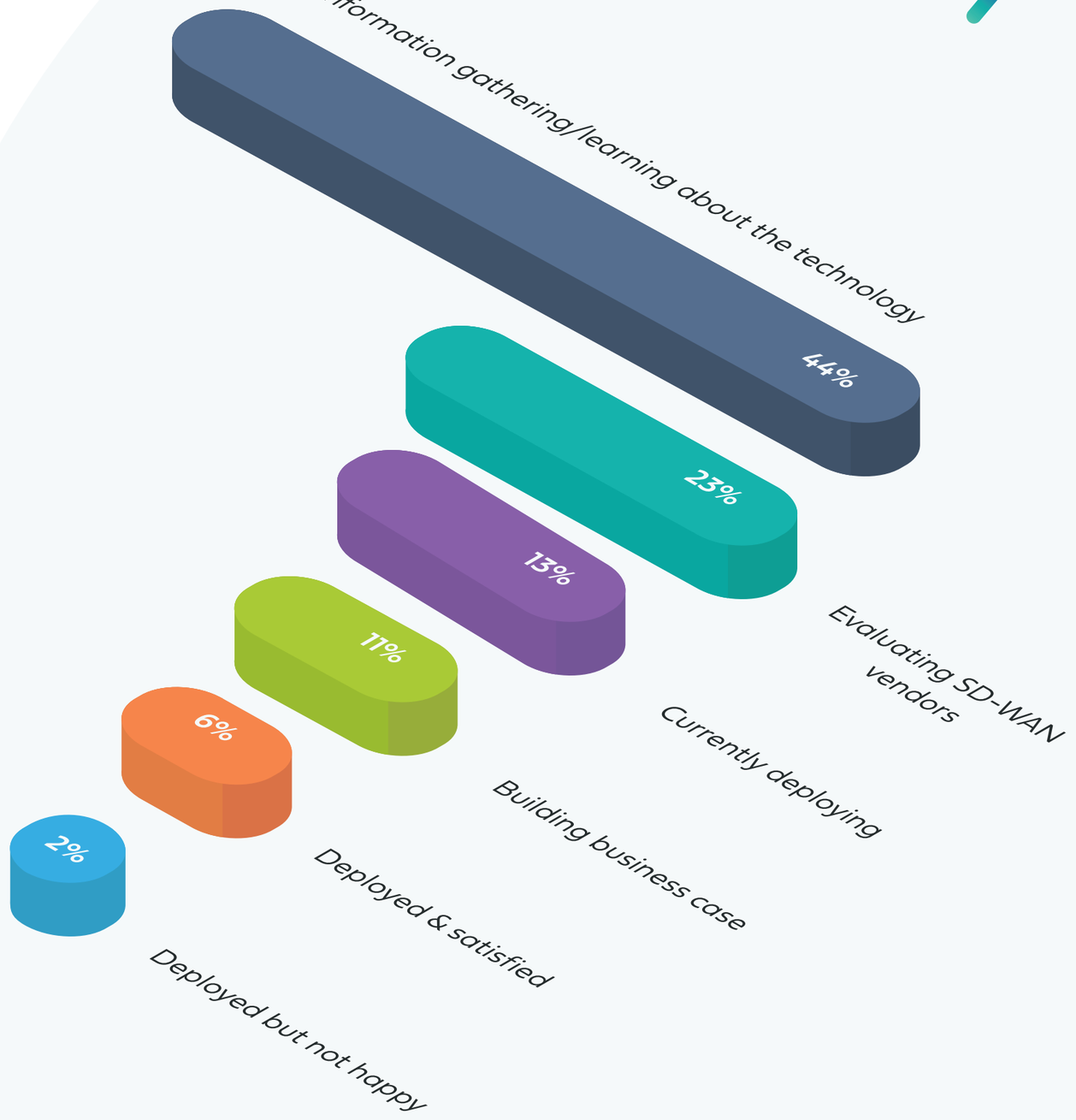
WAN evolution buyer journey

Buyers are at various stages of their SD-WAN evaluation, but most are still gathering information or evaluating vendors.

SD-WAN buying cycle

Top Responses	%
Information gathering/learning about the technology	44%
Evaluating vendors	23%
Currently deploying	13%
Built a business case/finalized budget & timeline	11%
Deployed and satisfied	6%
Deployed but not happy	2%

Total Responses	993



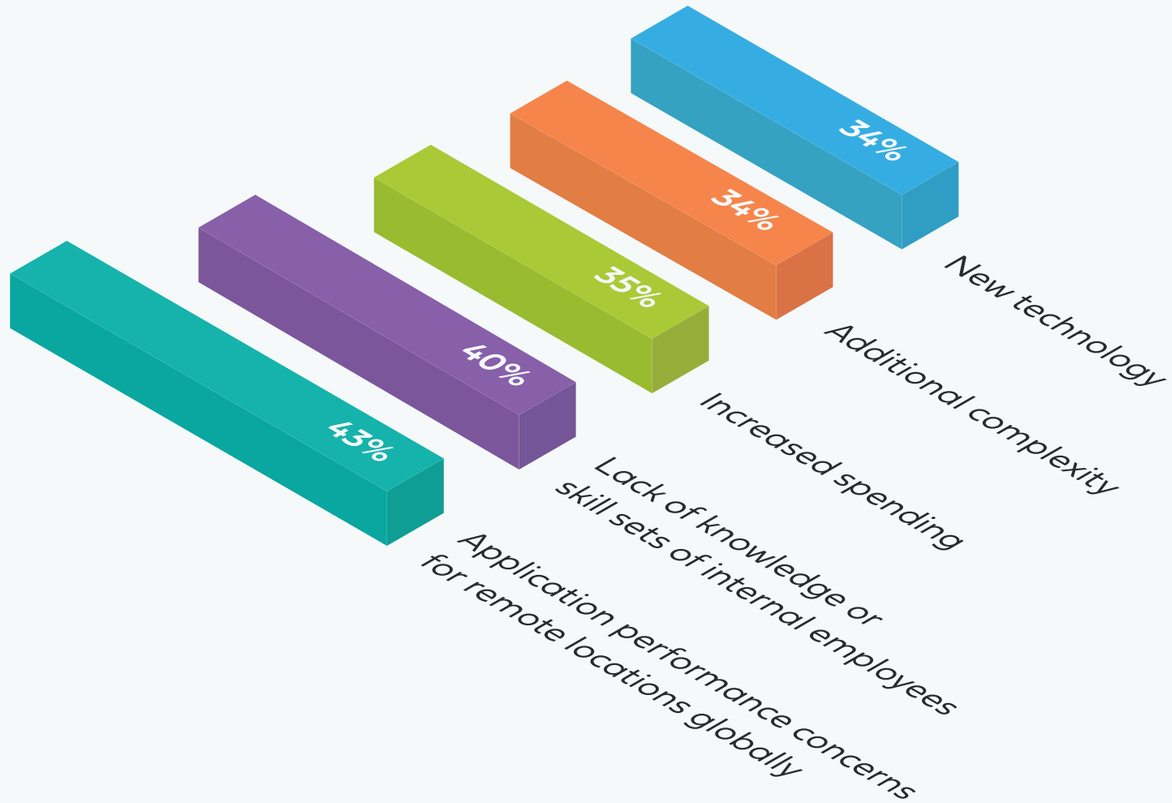
vi

Barriers to SD-WAN

When evaluating SD-WAN, what are the potential barriers? Following the other conclusions within the report, application performance is now the #1 potential barrier to adopting SD-WAN, a major jump from previous years, followed by knowledge gaps. Complexity is #3. Overall, cost seems less a consideration vs performance and complexity, while enterprise have worries as to whether SD-WAN will deliver promised improvements.

Potential barriers for SD-WAN adoption

Top Responses	%
Application performance concerns for remote locations globally	43%
Lack of knowledge or skill sets of internal employees	40%
Will result in increased spending	35%
Will result in additional complexity	34%
It's still very new technology	34%
Total Responses	988



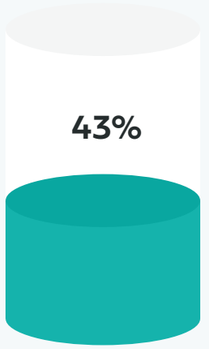
Larger companies are more impacted by application performance and internal politics, while smaller companies are more concerned with knowledge gaps.

Vertical Insights

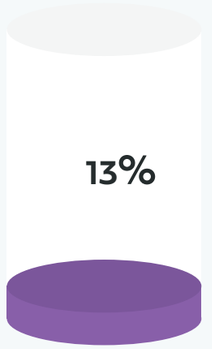
The survey also included:

Lack of will in it leadership 33%, internal politics 30%, there are no barriers to adoption 9% , lack of SLAs 26%, other 1%

#1



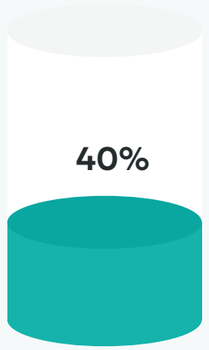
2020



2019

Application performance for remote locations #1 **perceived barrier to adopting SD-WAN**

#2



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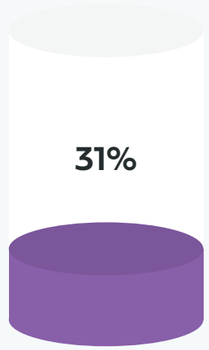
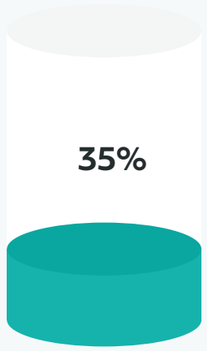


2019

Increased **spending**

#3



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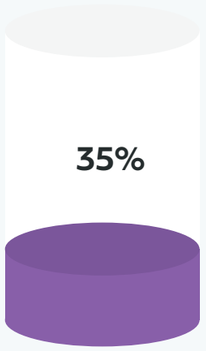


2019

Lack of **knowledge**

Cost and knowledge are still major concerns, but application performance is now the leading concern.

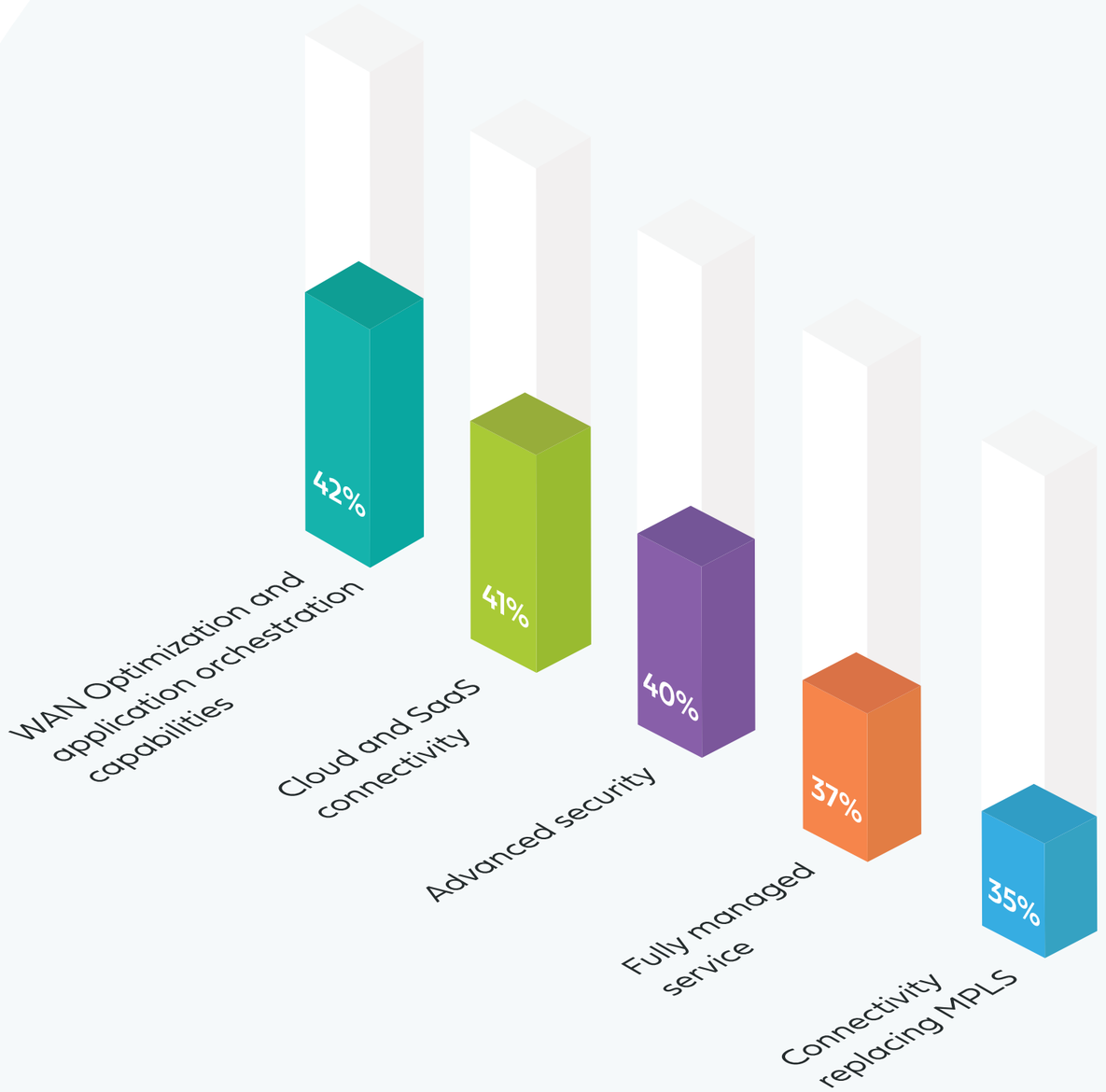
vii

SD-WAN expectations

With the barriers addressed, what expectations do planners have? The cloud and WAN optimization are still key requirements to a successful SD-WAN solution, but NFV, support for remote workers and the desire for a managed service have grown substantially. Add in security and all of these features illustrate the many moving parts critical to an SD-WAN deployment. Remote access growth lends itself to the importance of an integrated offering that spans both fixed and mobile/remote workers.

Features to integrate with an SD-WAN solution

Top Responses	%
WAN Optimization and application orchestration capabilities	42%
Cloud and SaaS connectivity	41%
Advanced security features	40%
Fully managed service	37%
Connectivity replacing MPLS	35%
Total Responses	988



The survey also included:

NFV (Network Functions Virtualization) at branch to replace appliances 33%, routing 26%, QoS 18%, support for remote and mobile employees 32%, network and application visibility portal 9%

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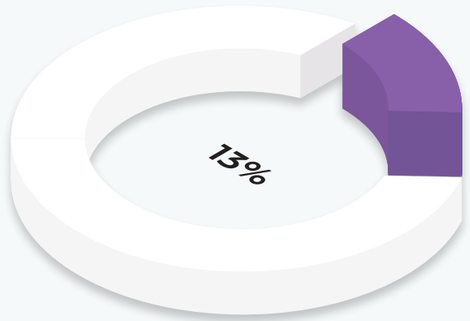
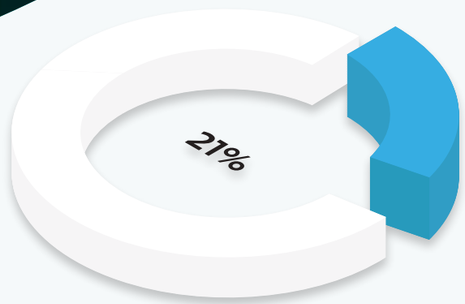
2020



2019

Network Functions Virtualization (NFV) at a branch to replace physical appliances

2020



2019

Support for **remote employees**

Remote worker support, NFV, and a fully managed SD-WAN gain in importance

2020

2019

Desire for a **fully managed SD-WAN**

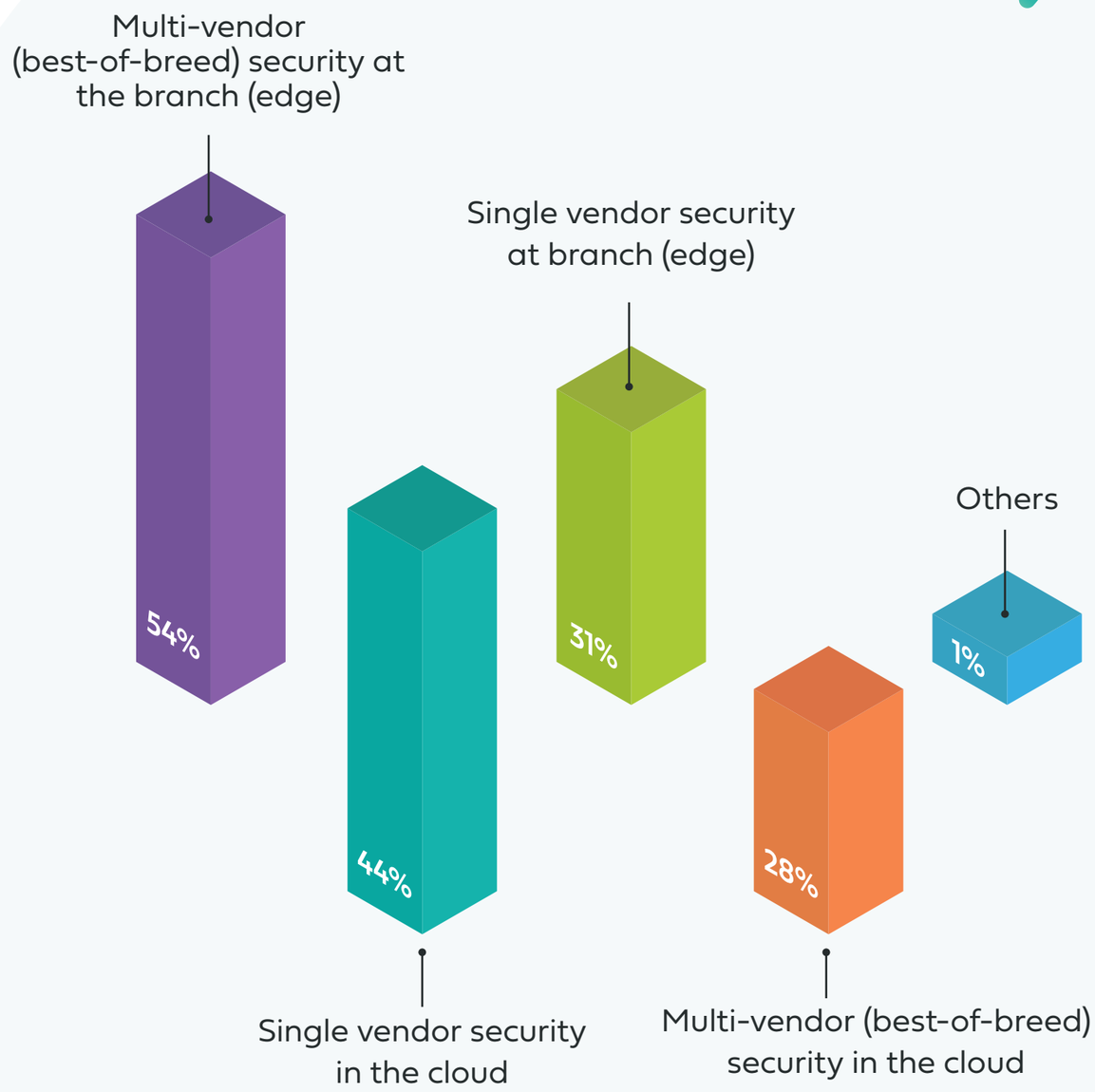
viii

Securing the SD-WAN

IT is split on whether to rely on a single vendor or multiple vendors for security and whether to deploy a full security stack at the branch or within the cloud. An SD-WAN offering must therefore offer flexibility.

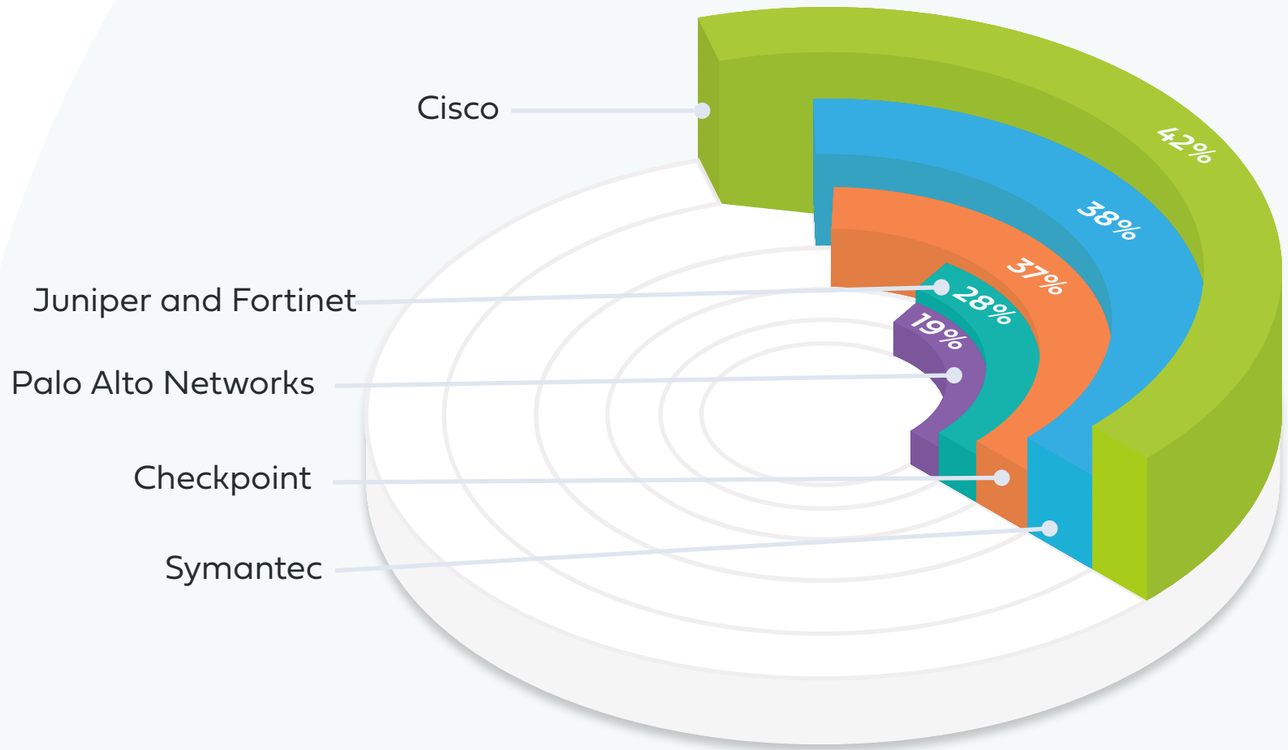
Security and SD-WAN

Top Responses	%
Multi-vendor (best-of-breed) security at the branch (edge)	54%
Single vendor security in the cloud	44%
Single vendor security at branch (edge)	31%
Multi-vendor (best-of-breed) security in the cloud	28%
Other	1%
Total Responses	988



Security vendor choices

Top Responses	%
Cisco	42%
Symantec	38%
Checkpoint	37%
Juniper	28%
Fortinet	28%
Palo Alto Networks	19%
Total Responses	**986**



The survey also included:

SonicWall 17%, Zscaler 16%, Barracuda 8% Others 1%

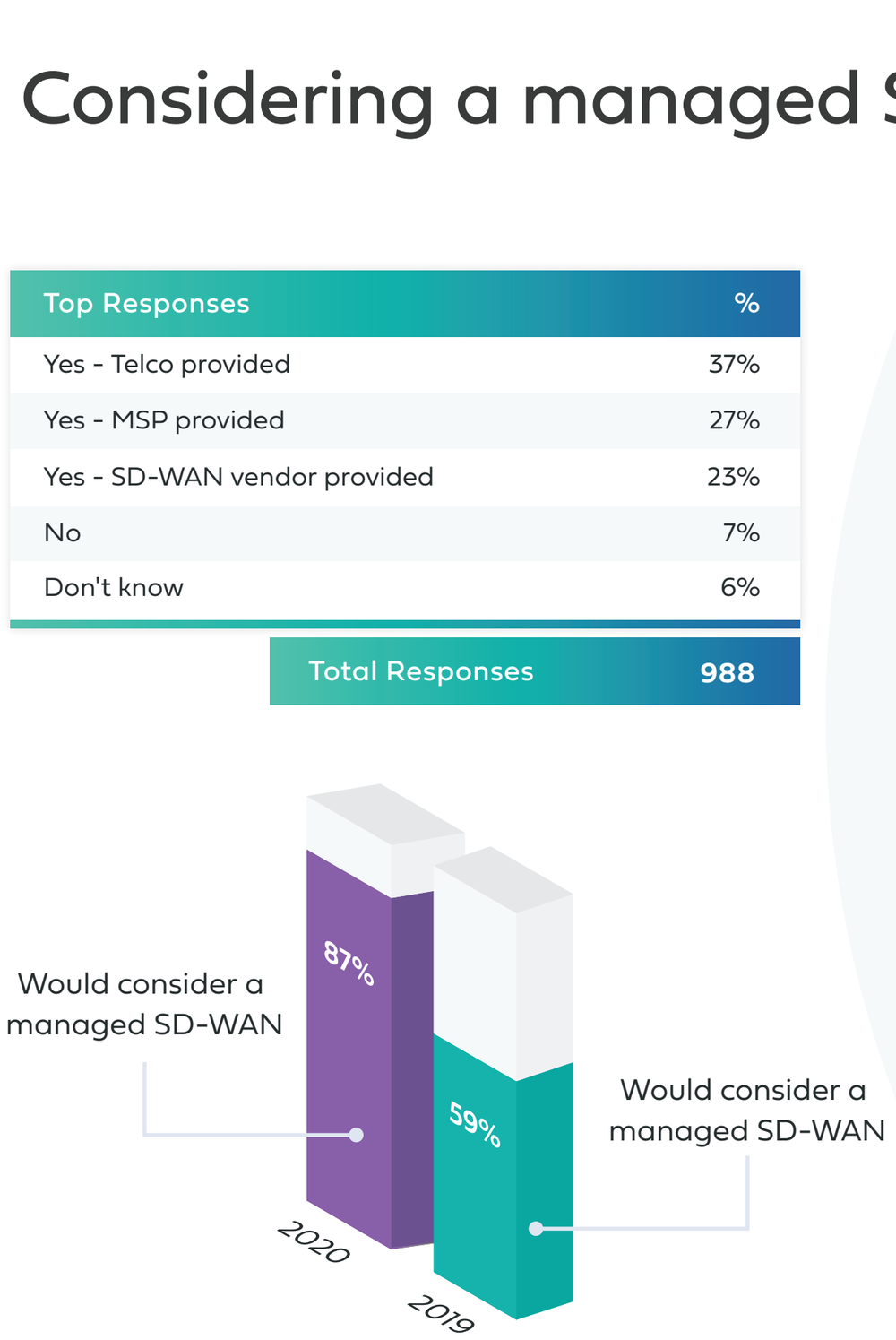
ix

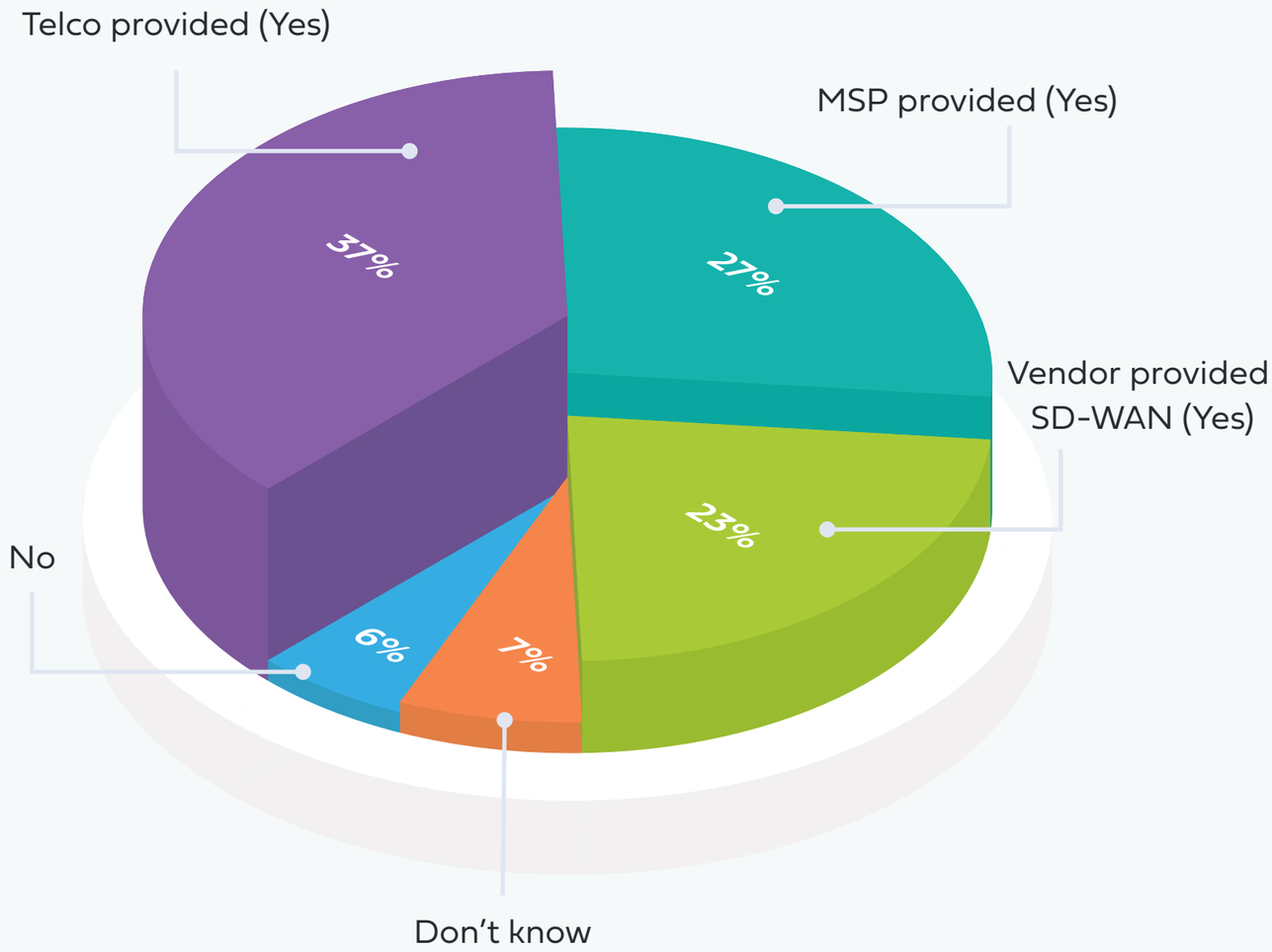
Consume or construct?

We see a growing acceptance of a managed offering, likely in response to the increasing complexities and challenges detailed earlier. This managed offering will leverage a network consumption model, where the enterprise consumes an SD-WAN service instead of constructing it (DIY) on their own.

Considering a managed SD-WAN

Top Responses	%
Yes - Telco provided	37%
Yes - MSP provided	27%
Yes - SD-WAN vendor provided	23%
No	7%
Don't know	6%
Total Responses	988





Planning Checklist

Network Admin Planning

- Design and evaluate solutions for operational simplicity
- Define and measure SLAs for Global application performance
- Focus on application experience. Plan for SaaS growth
- Evaluate suitability of network for global voice and video delivery
- Explore a multi-cloud architecture
- Prepare a plan for migrating off MPLS with costs, timelines and risks
- Plan for service delivery and application experience vs. just speeds/feeds
- Don’t underestimate the need for WAN optimization
- Talk to your counterparts in security, application and cloud and establish a common WAN blueprint
- Plan for a remote workforce

CIO Planning

- Establish a culture for collaboration between your network, security, cloud and application teams to drive change management – Be seen as the agent for change
- Recognize that the WAN is a very strategic asset that can enable/disable 90% of your other investments
- Empower and back your network teams for WAN transformation
- Commit to Cloud-First WAN principles
- Evaluate in-house vs. managed services approaches
- Explore as-a-service approaches to de-risk change management and accelerate transformation
- Challenge your teams to navigate and get past old-world Telco contracts
- Double down on productivity and collaboration approaches as well as remote-worker strategies
- Invest in automation, 5G, AI/ML technologies with predictive analytics
- Don’t panic!

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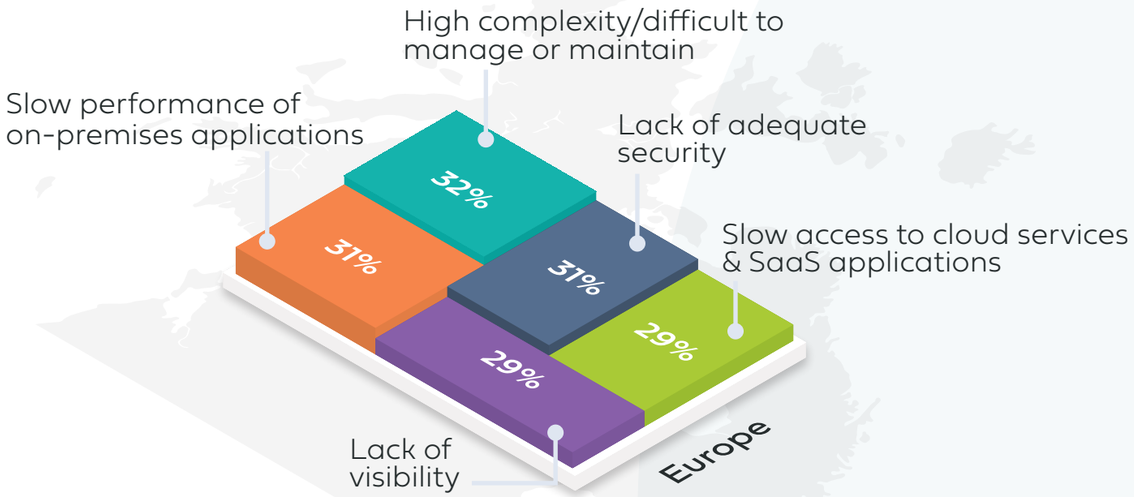
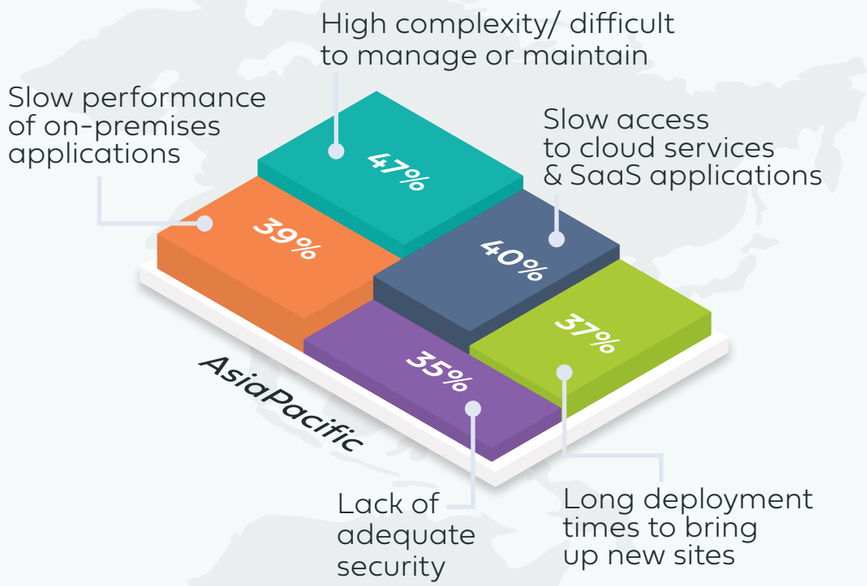
3

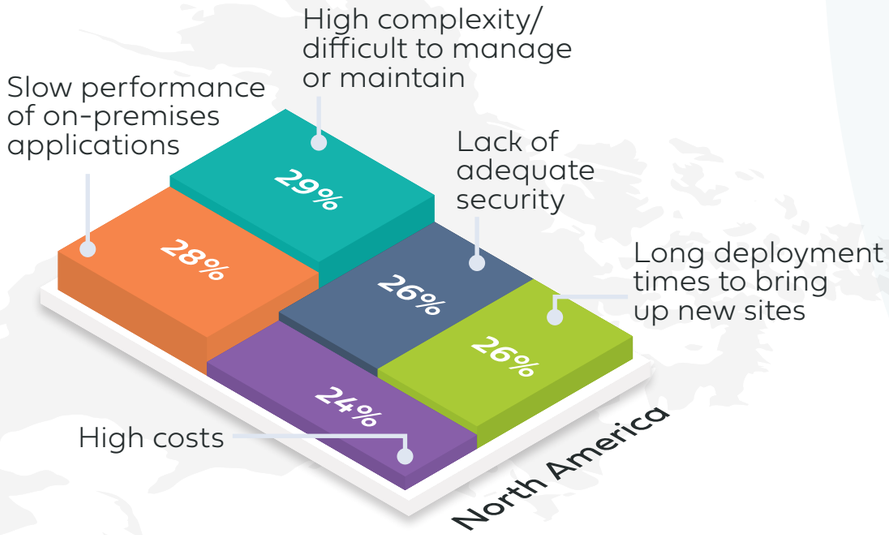
Part 3: Geographic Breakdown

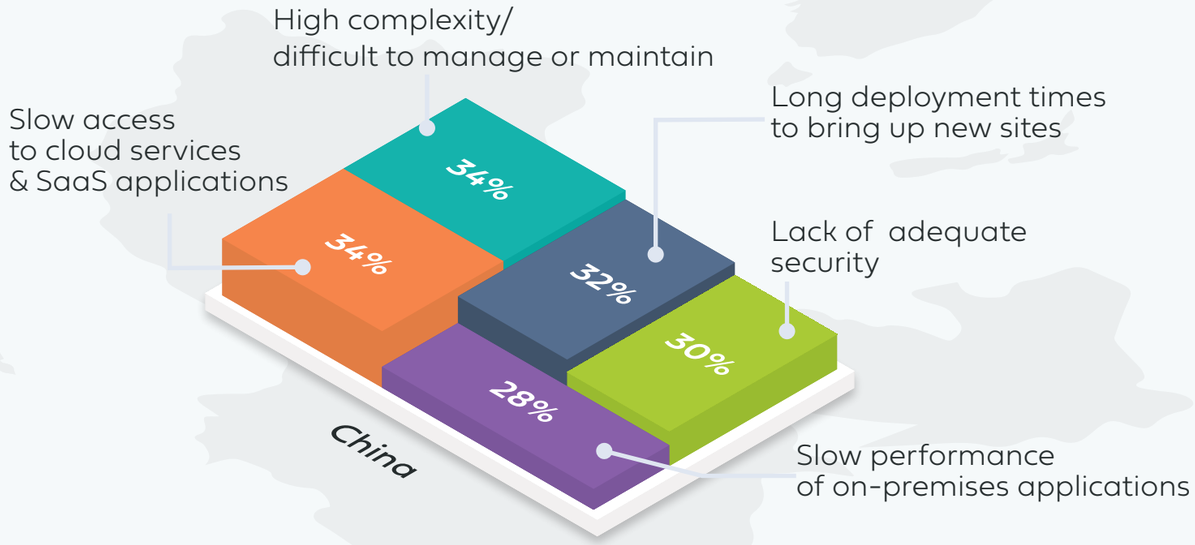
This section details the geographic breakdown for the more insightful responses. We look at North America, Europe, Non-China Asia, and China.

Top 5 challenges faced by the WAN



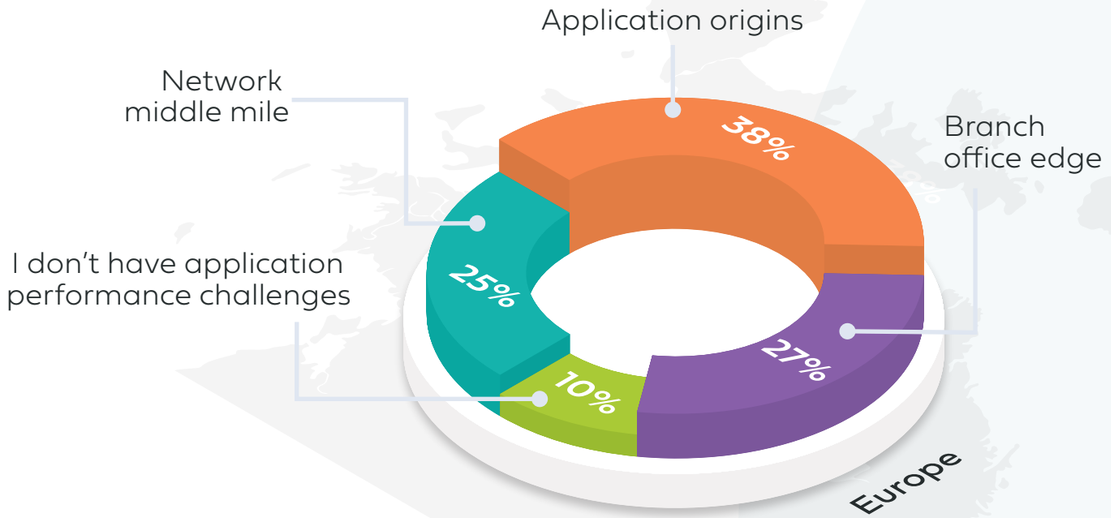


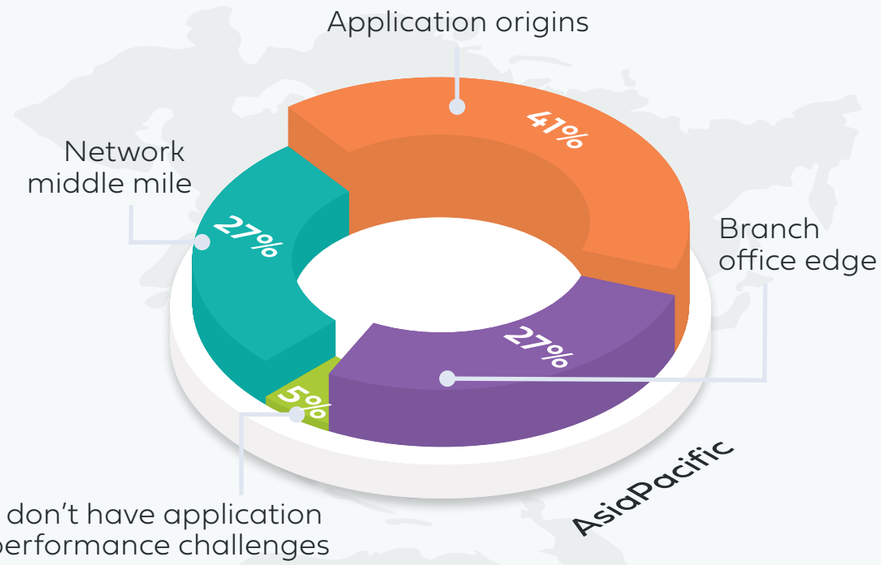


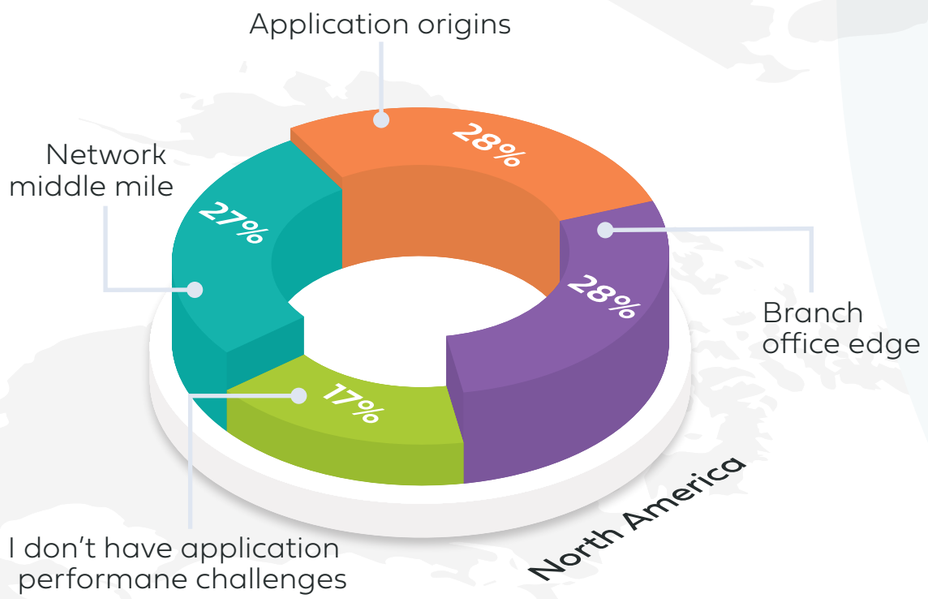


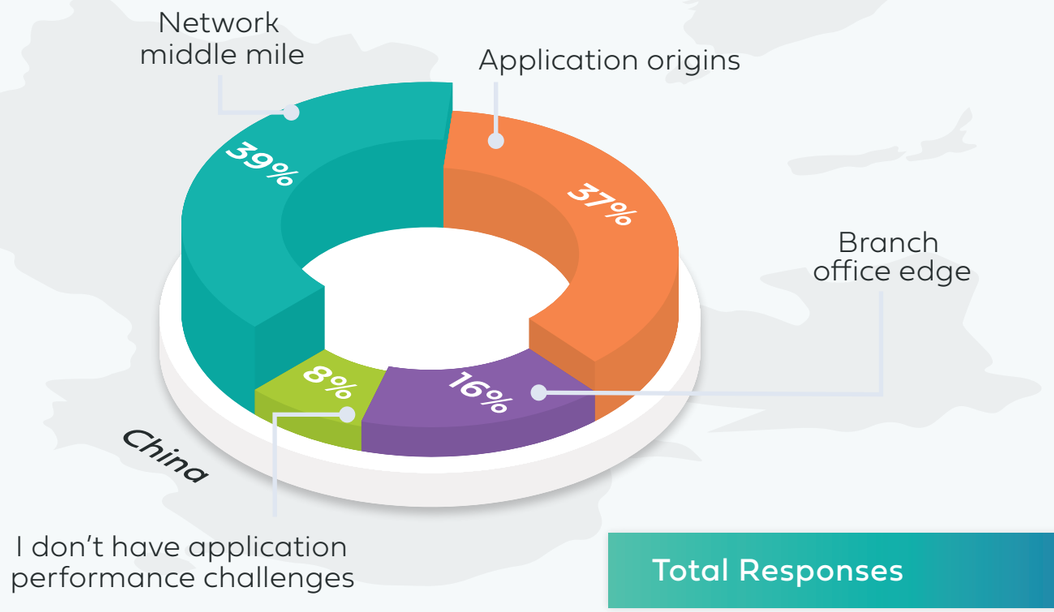
Total Responses	987

Global application performance challenges



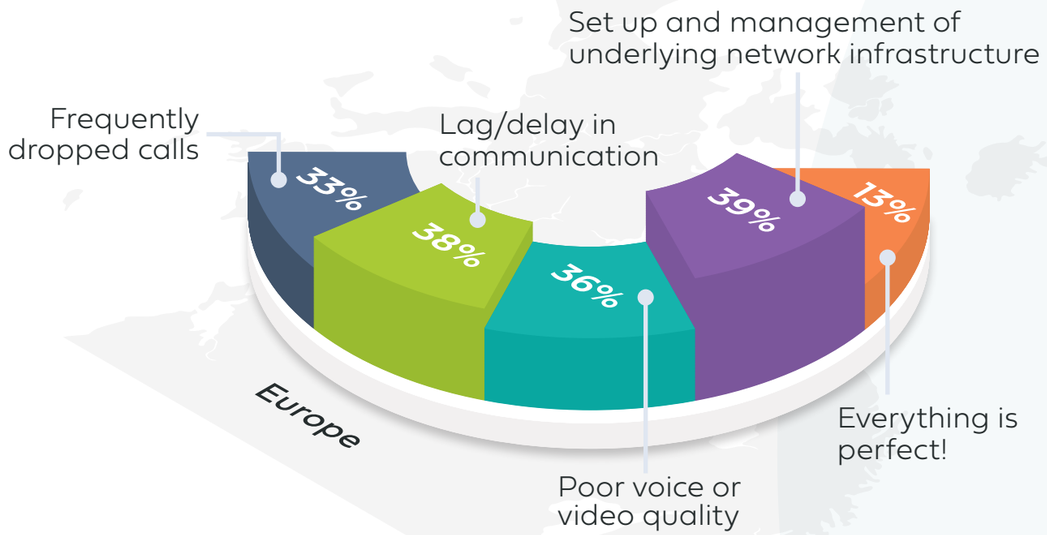


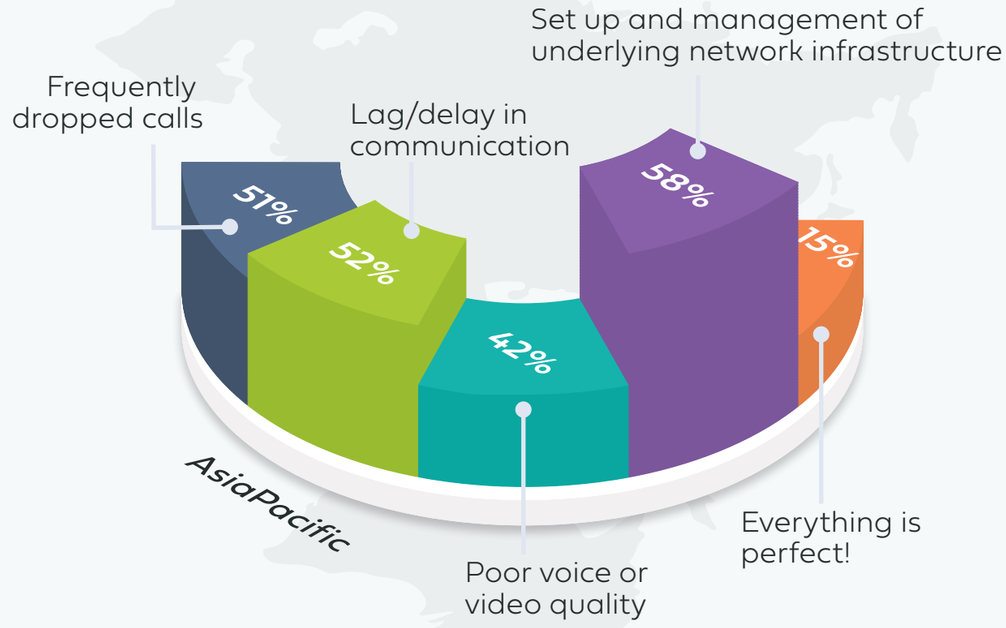


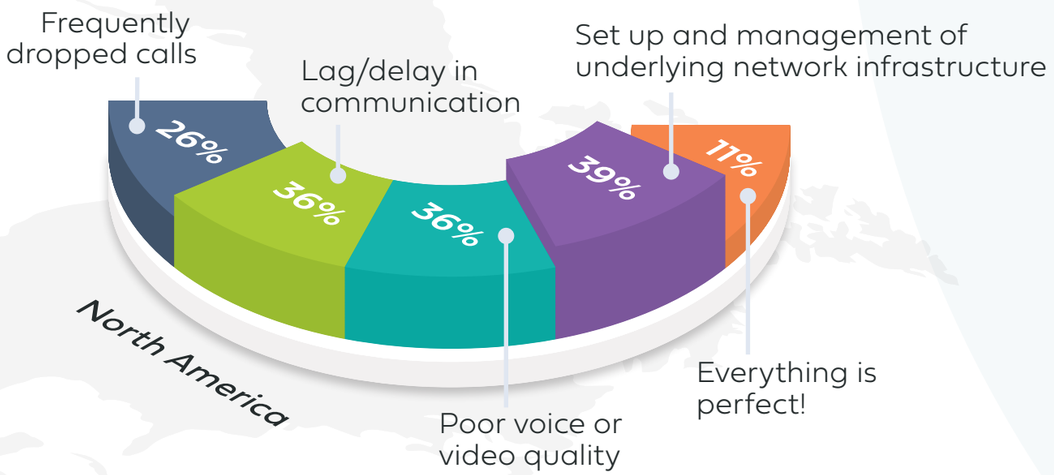


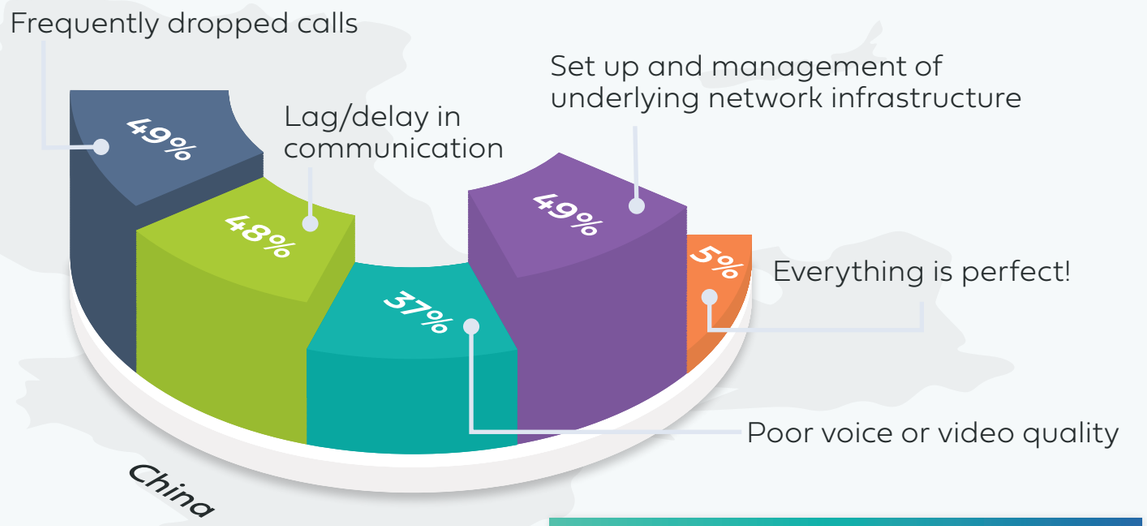
Total Responses 987

Biggest real-time voice and video performance challenges



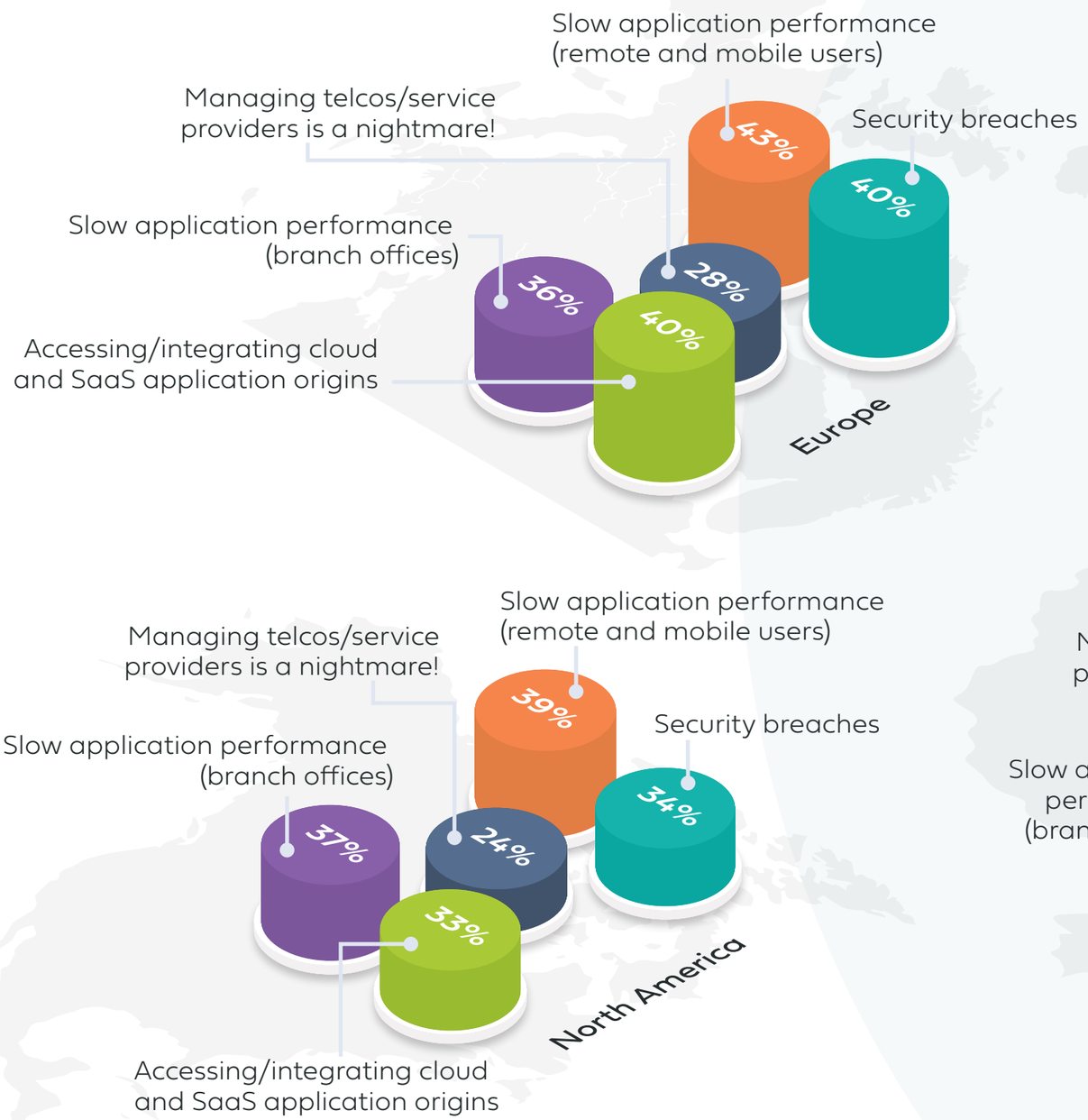






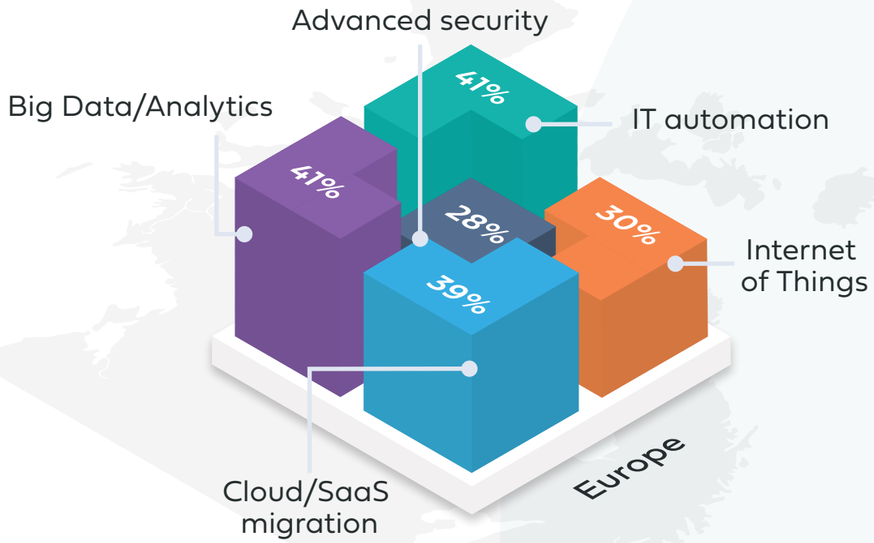
Total Responses	987

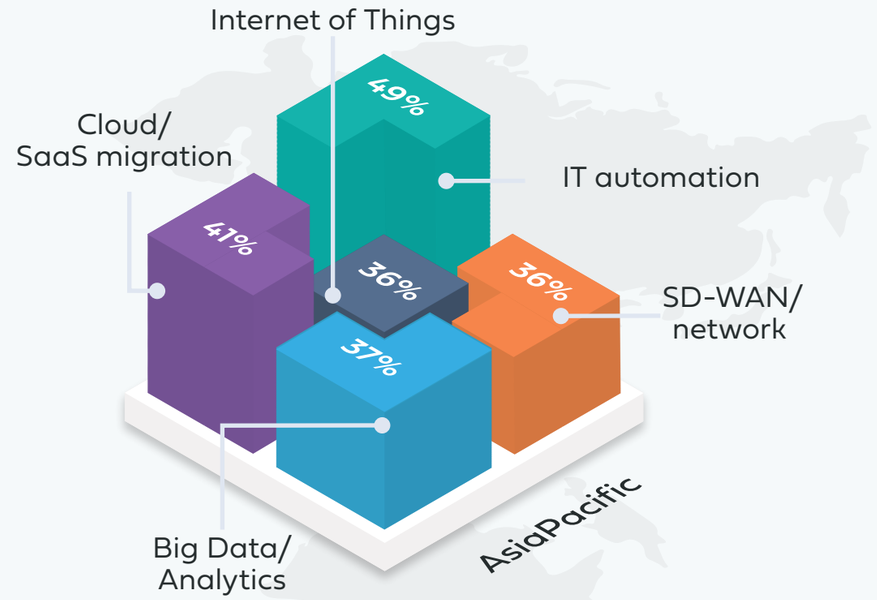
Top support and helpdesk issues

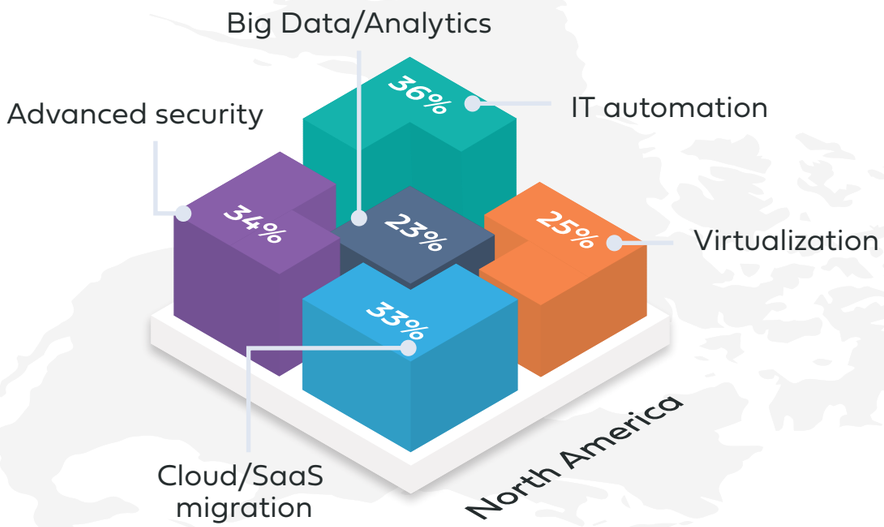


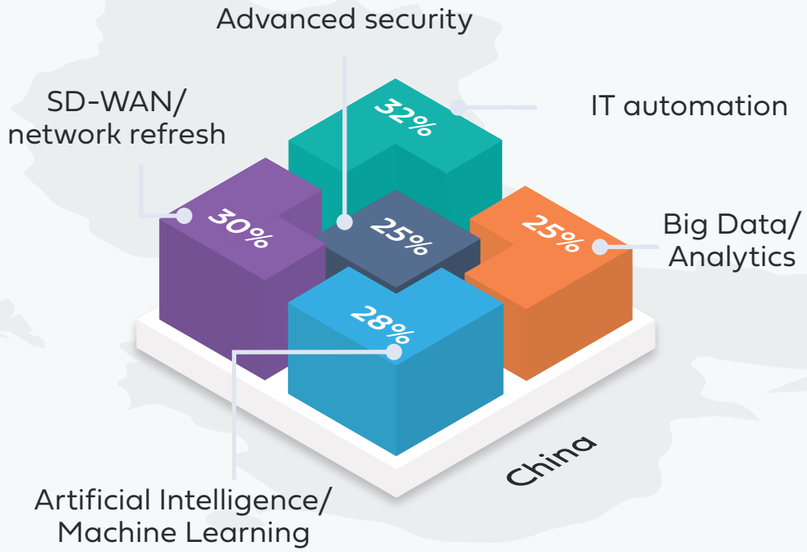
Total Responses	987

Enterprise IT initiatives for 2020



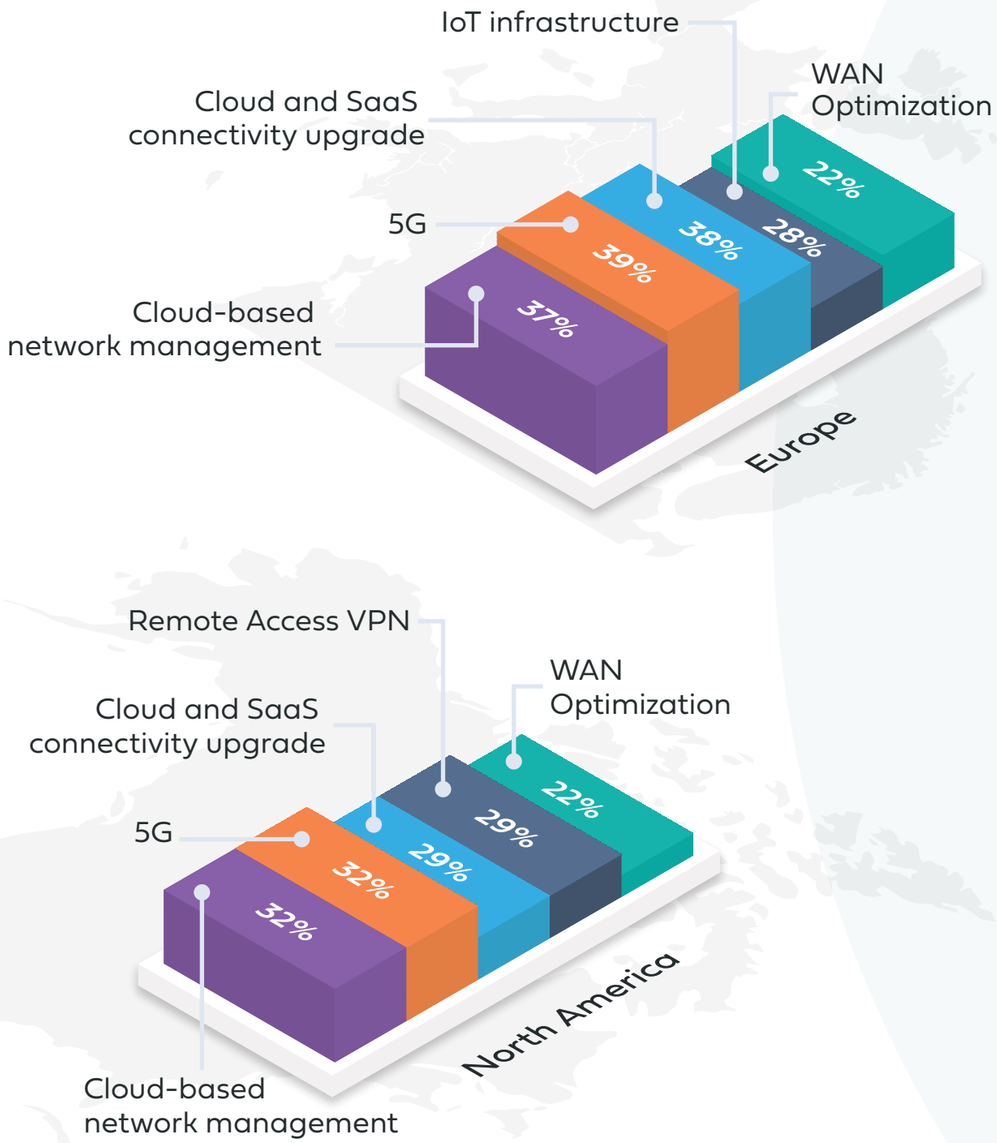


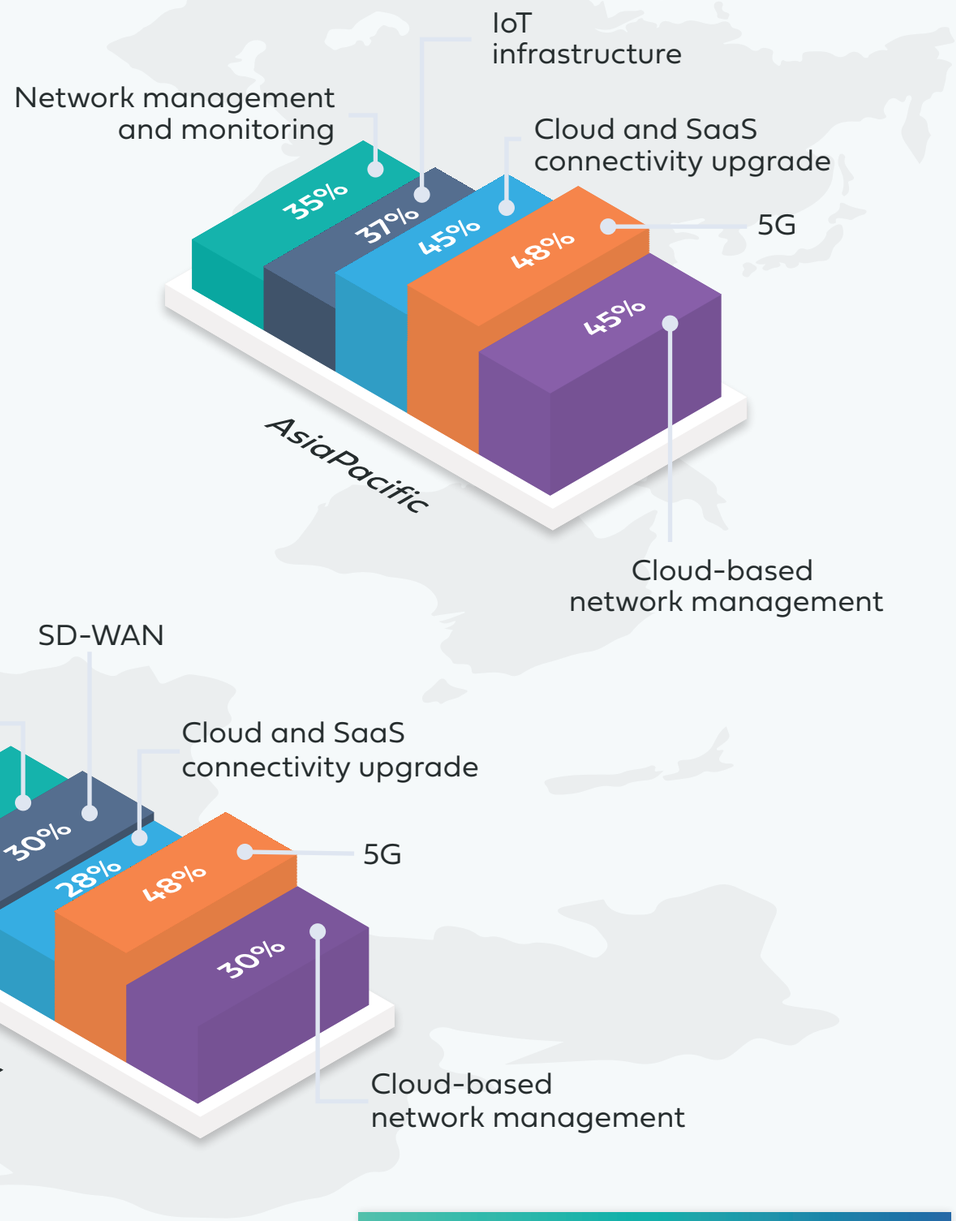




Total Responses 999

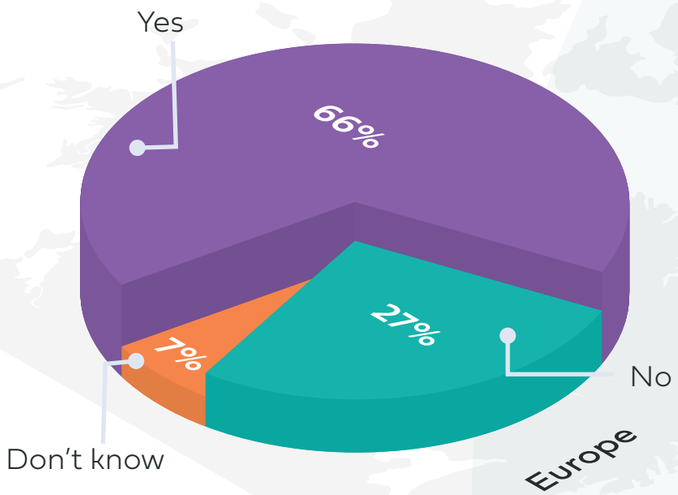
Enterprise networking initiatives in 2020

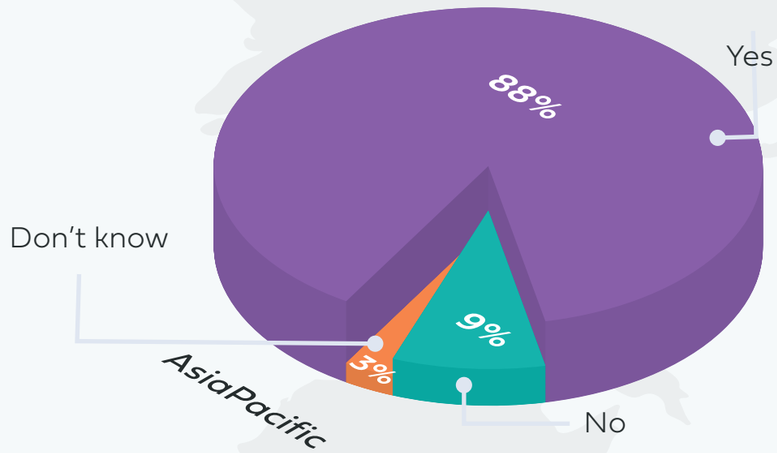


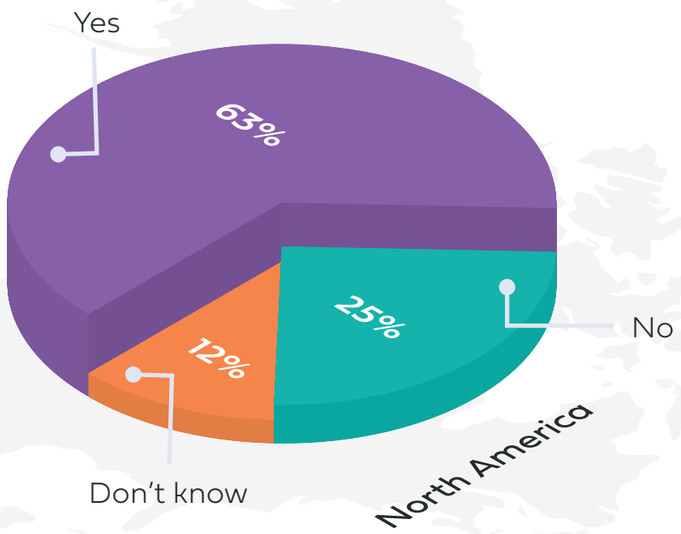


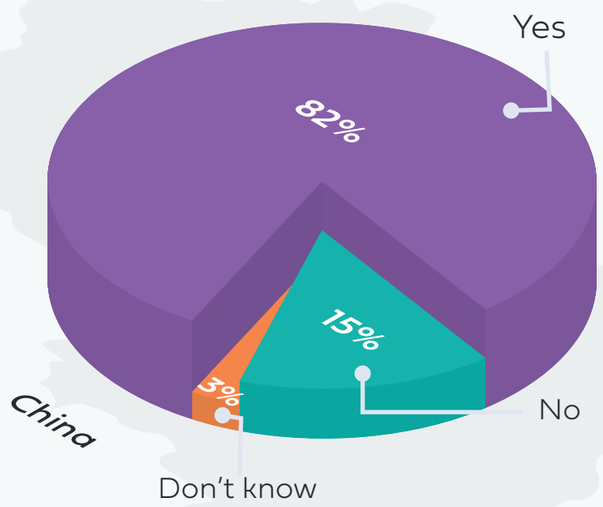
Total Responses 987

Managed last mile connectivity



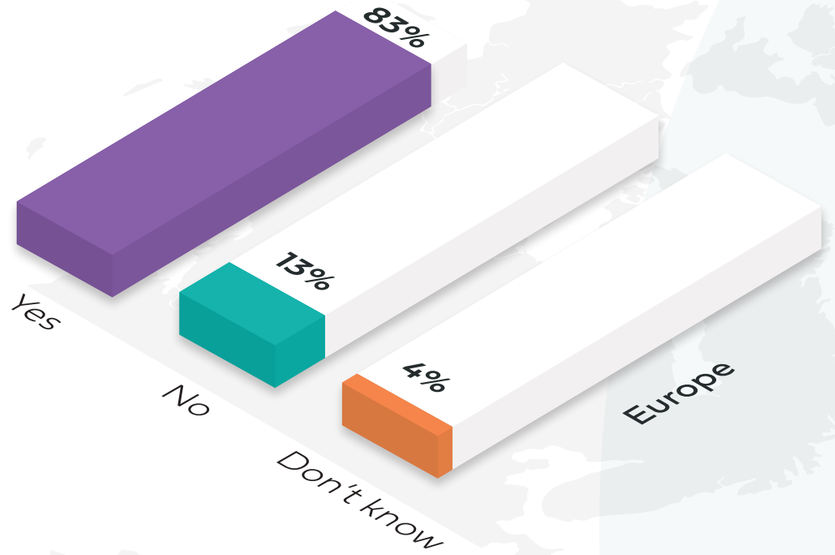


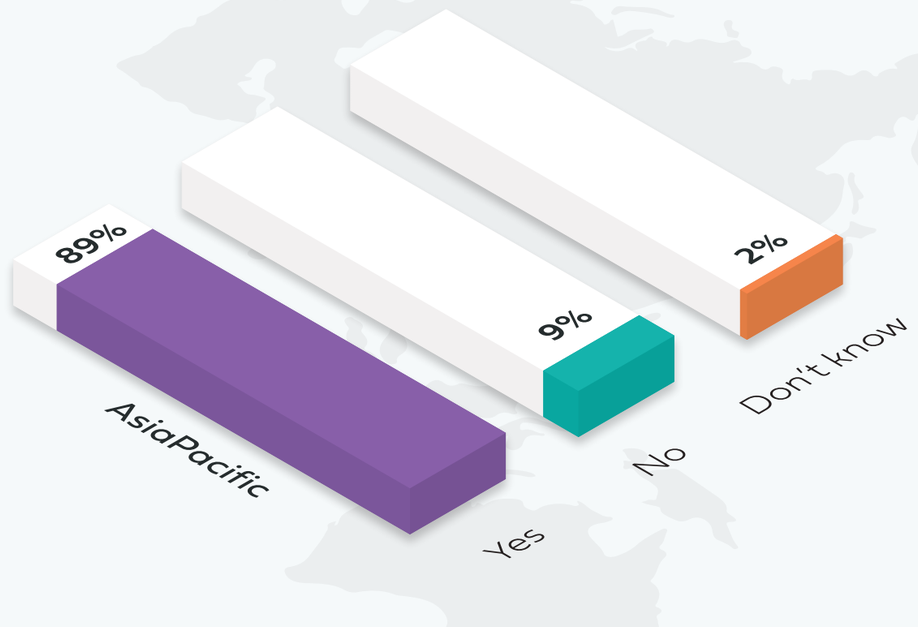


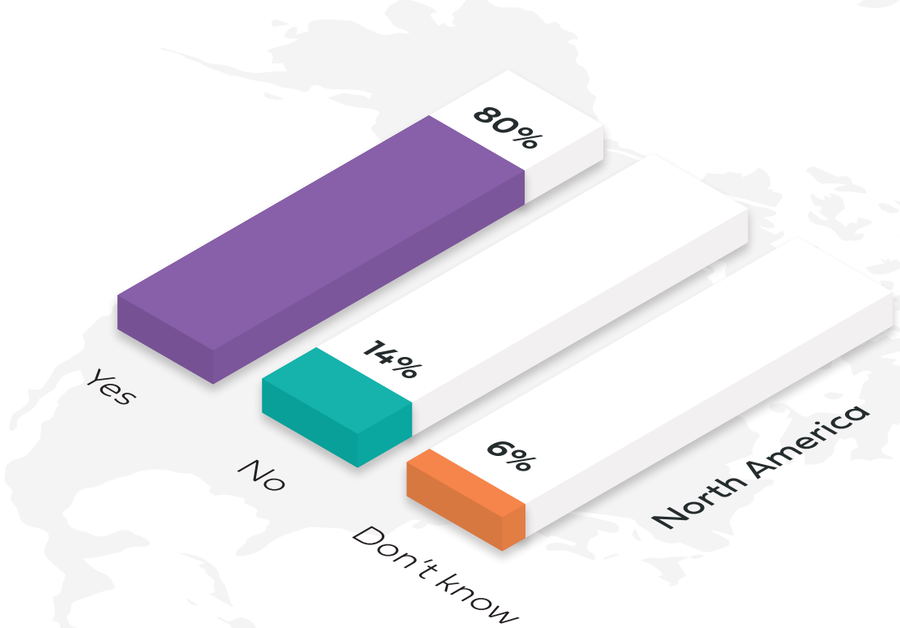


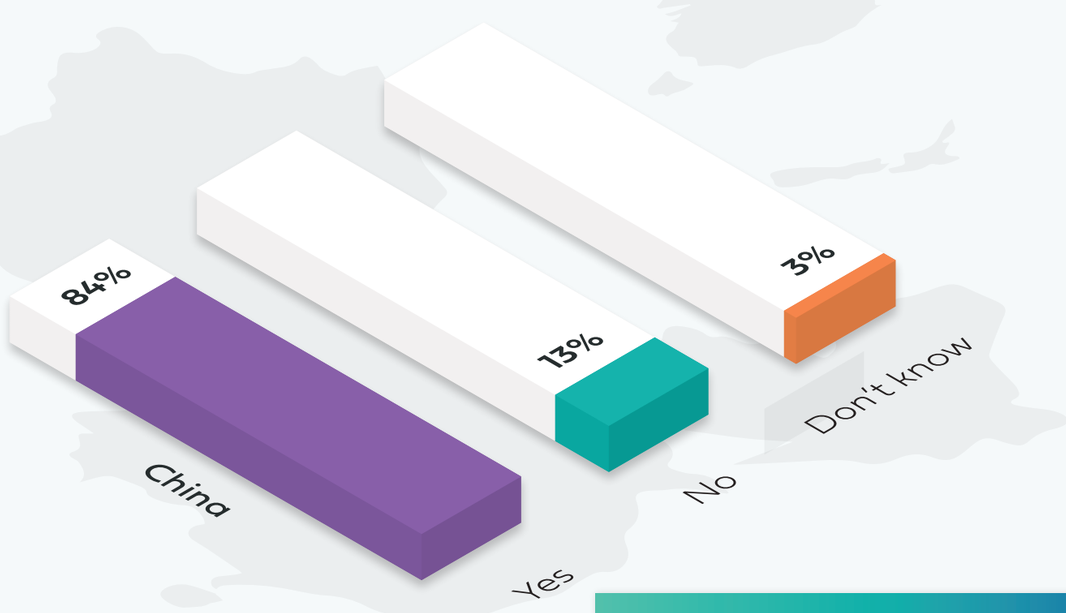
Total Responses 987

WAN link optimization



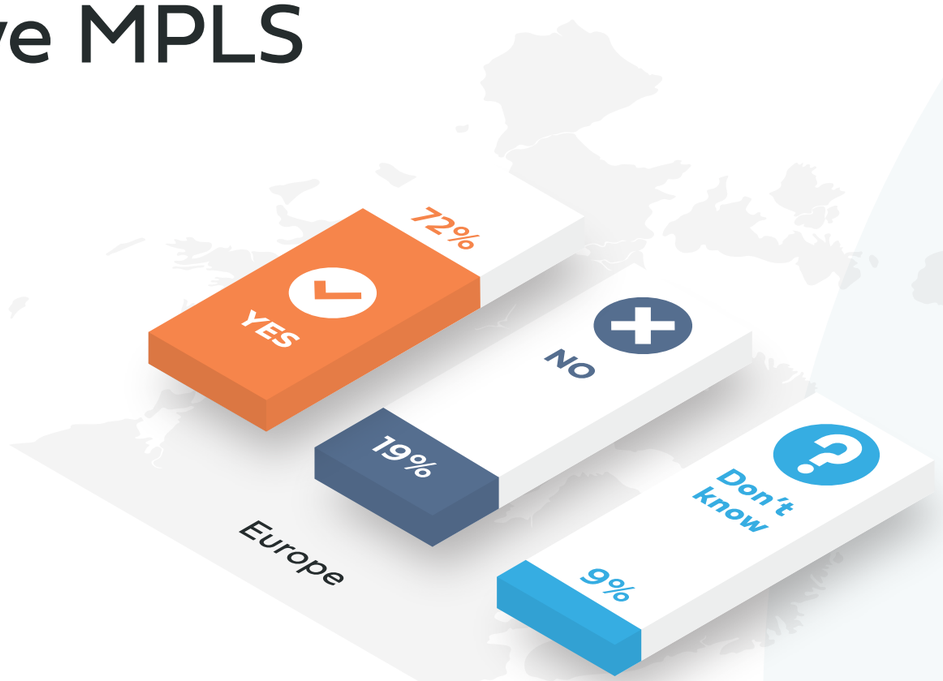


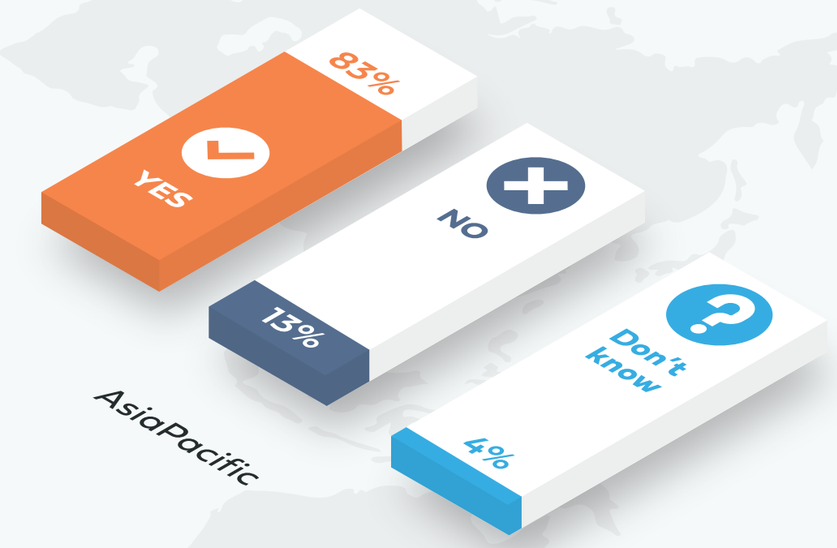




Total Responses	987

Have MPLS



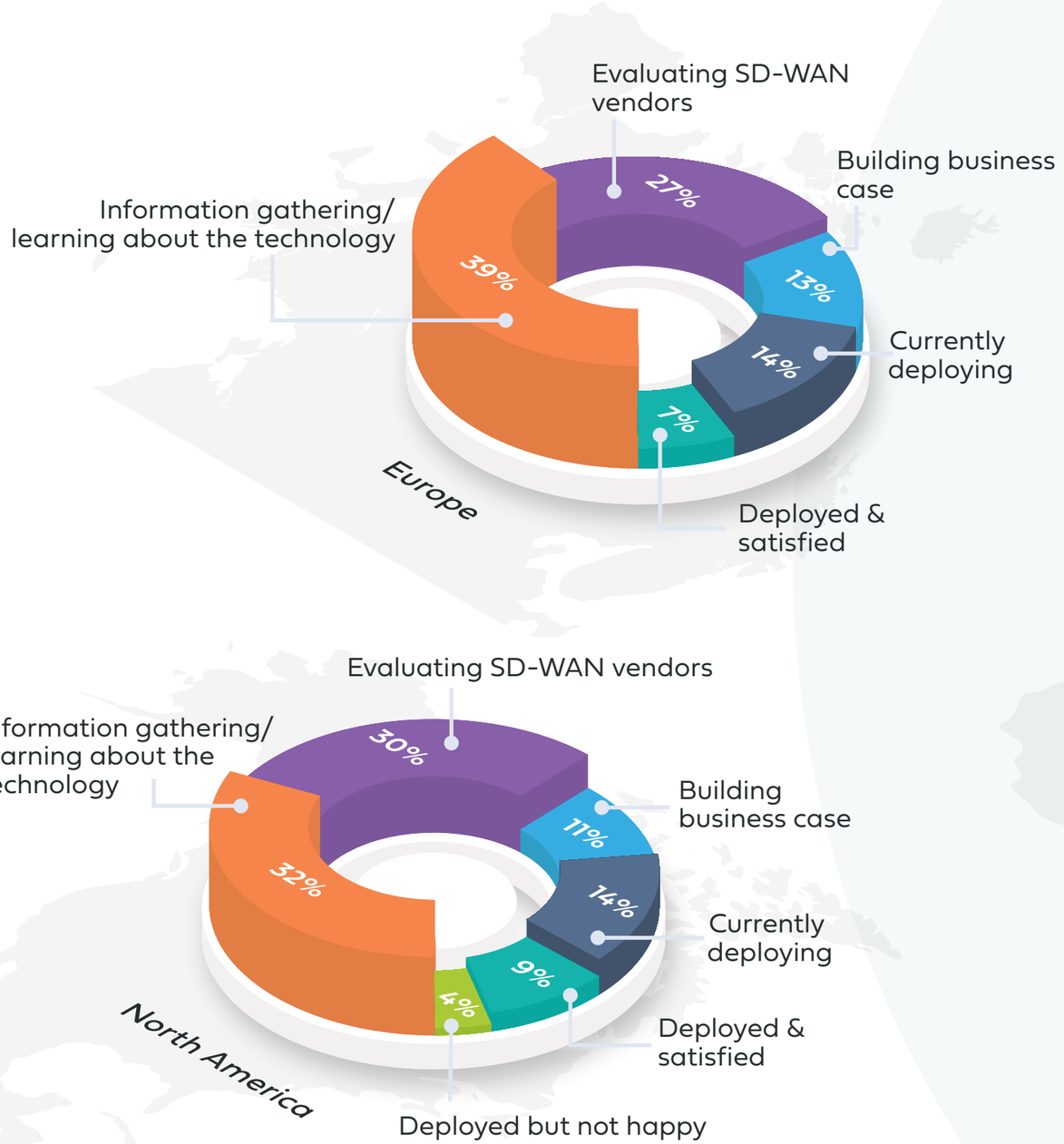


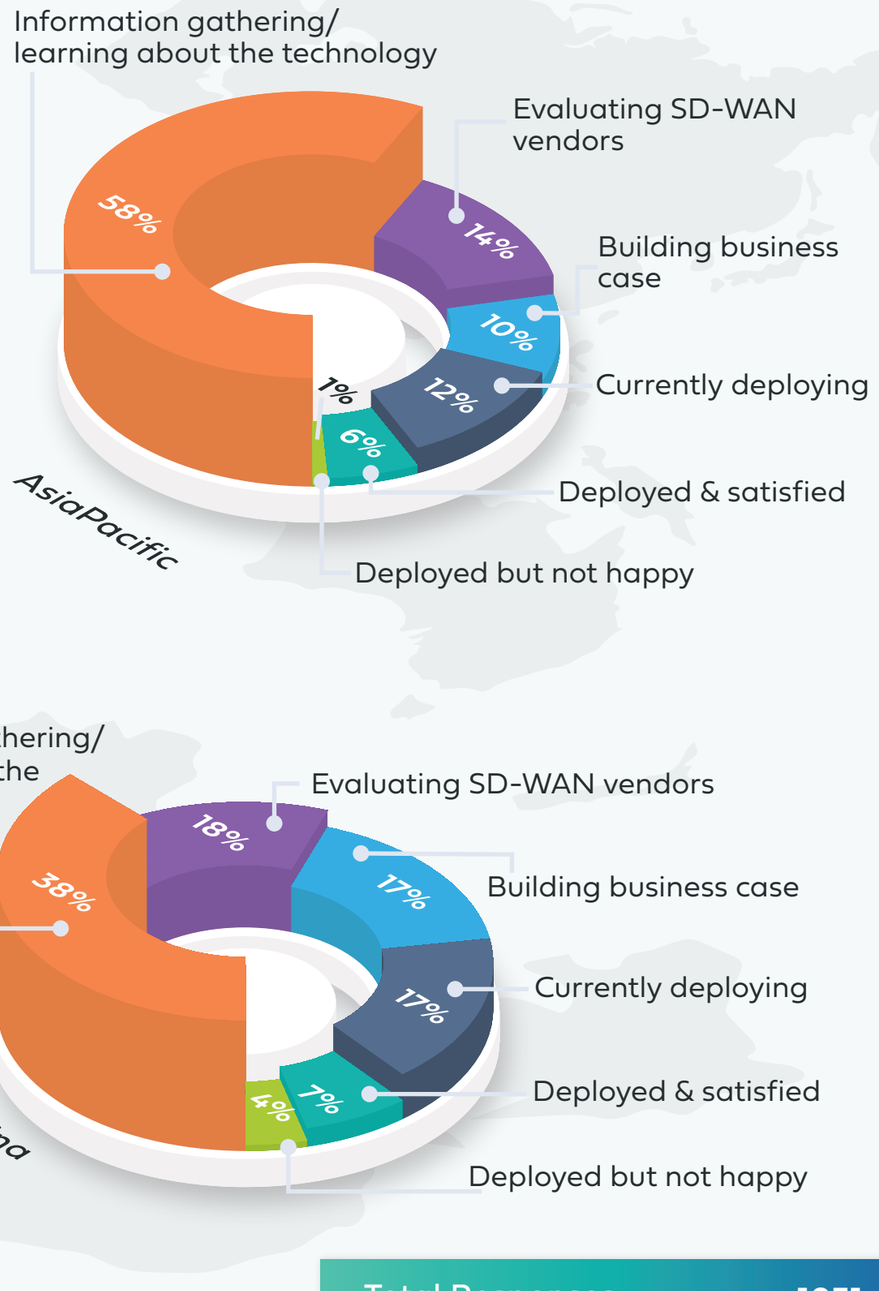
Total Responses	1031

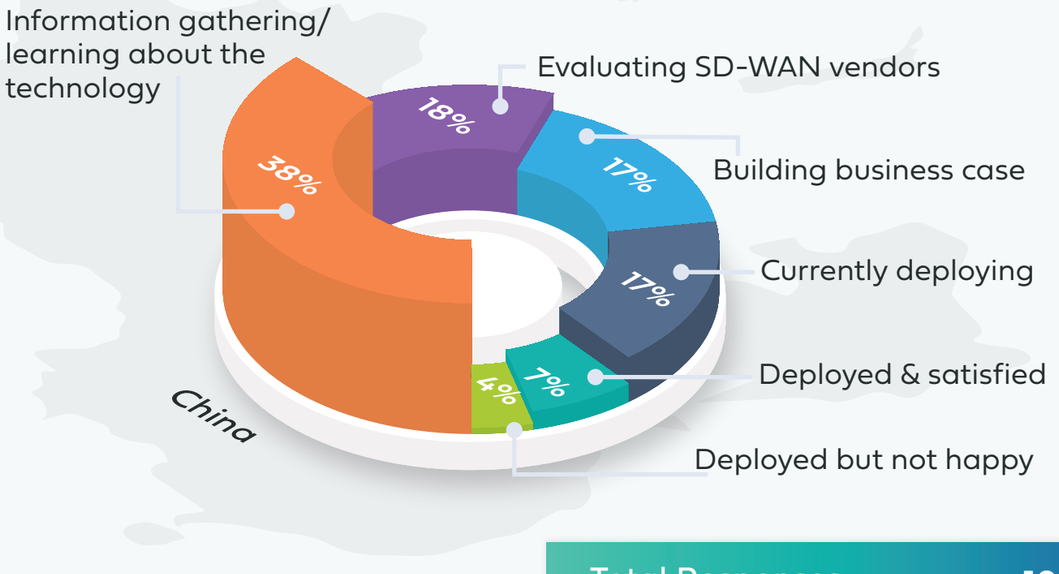
Refresh MPLS contracts

Total Responses 1031

SD-WAN buying cycle

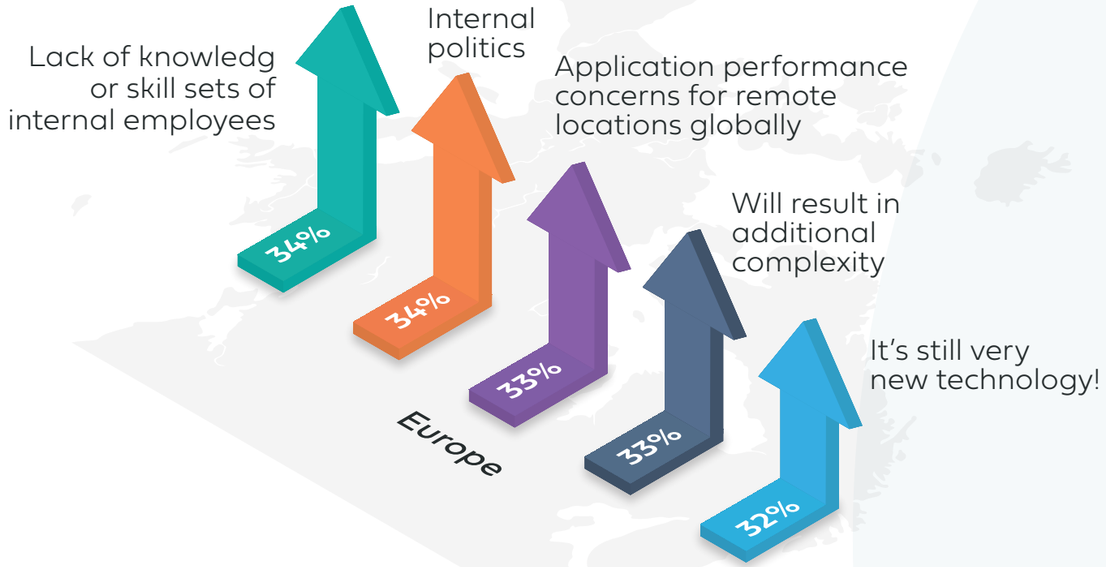


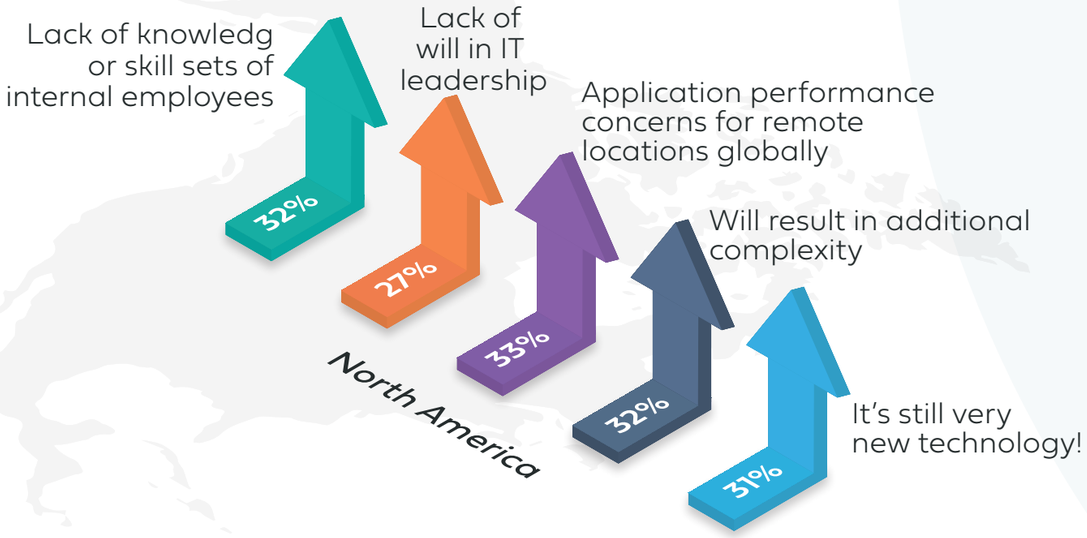


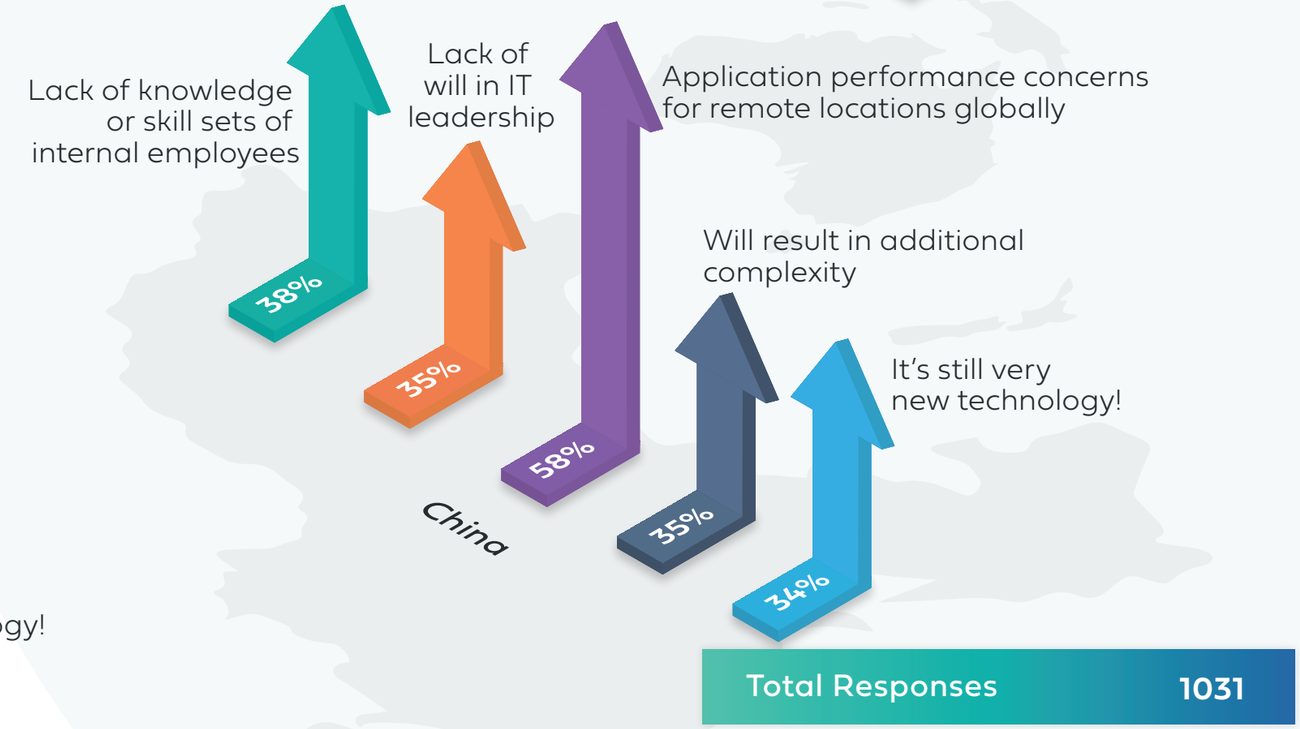


Total Responses	1031

SD-WAN adoption barriers

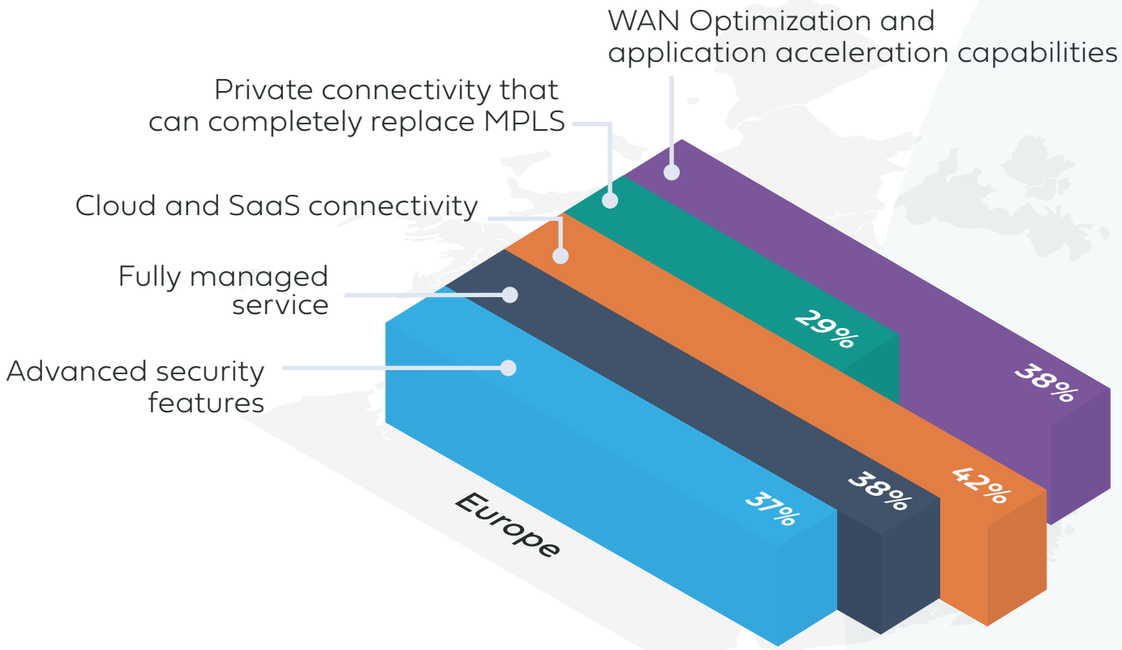


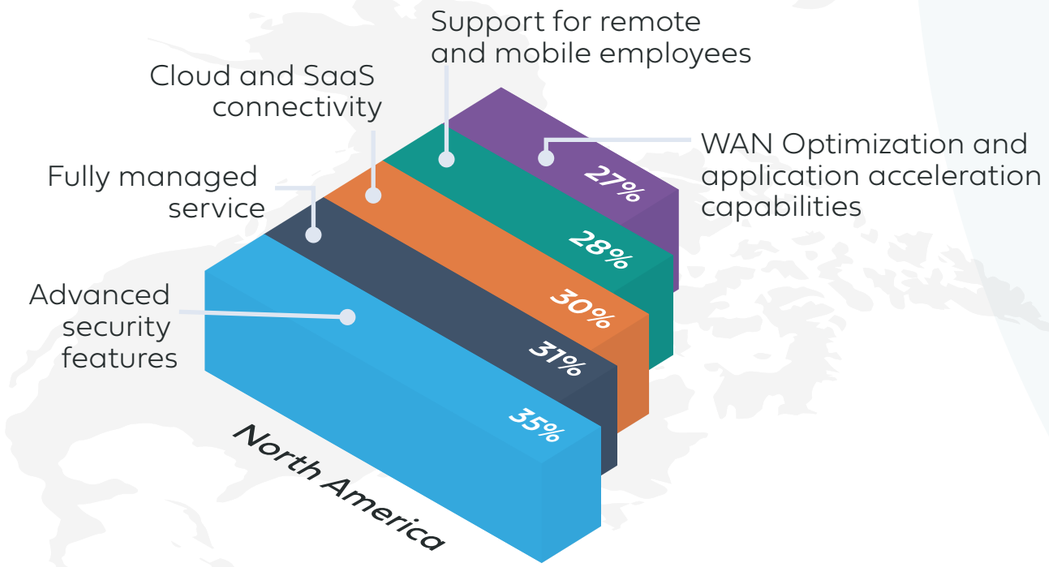


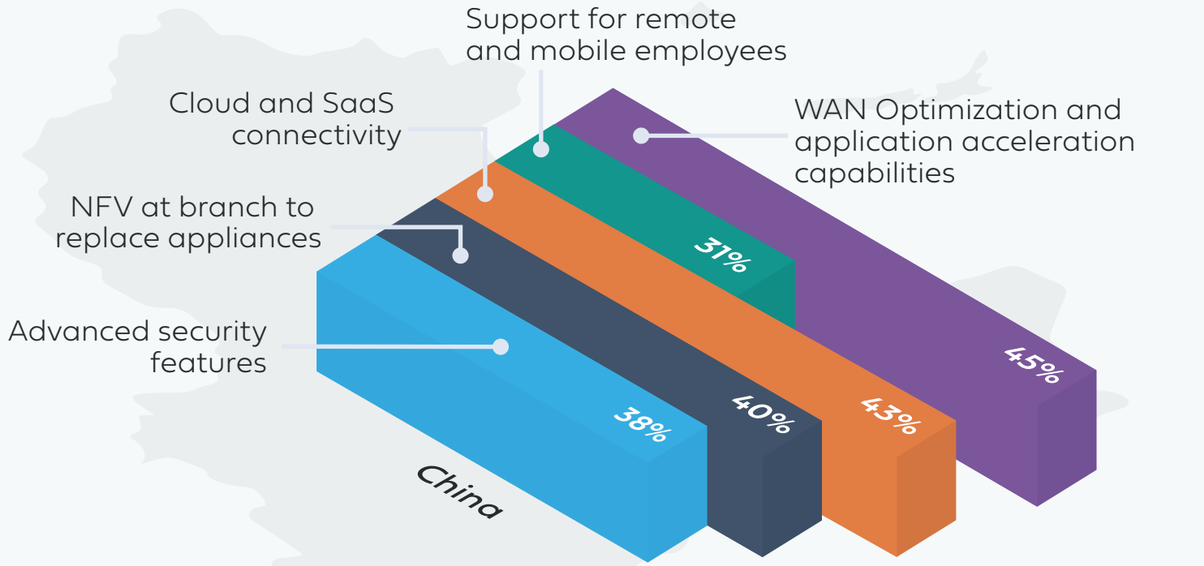


Total Responses 1031

Top 5 SD-WAN features

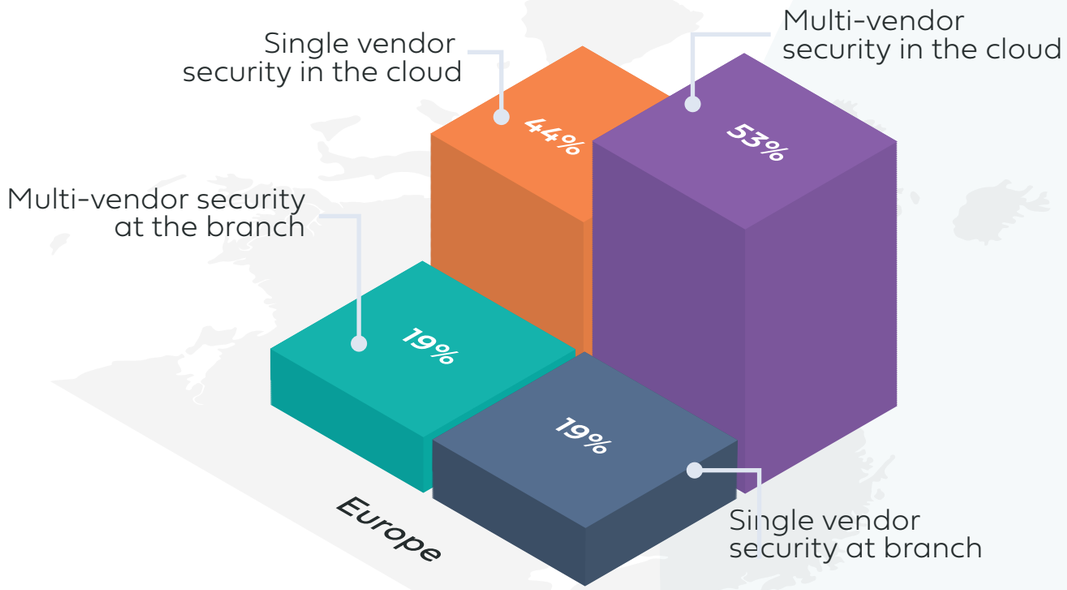


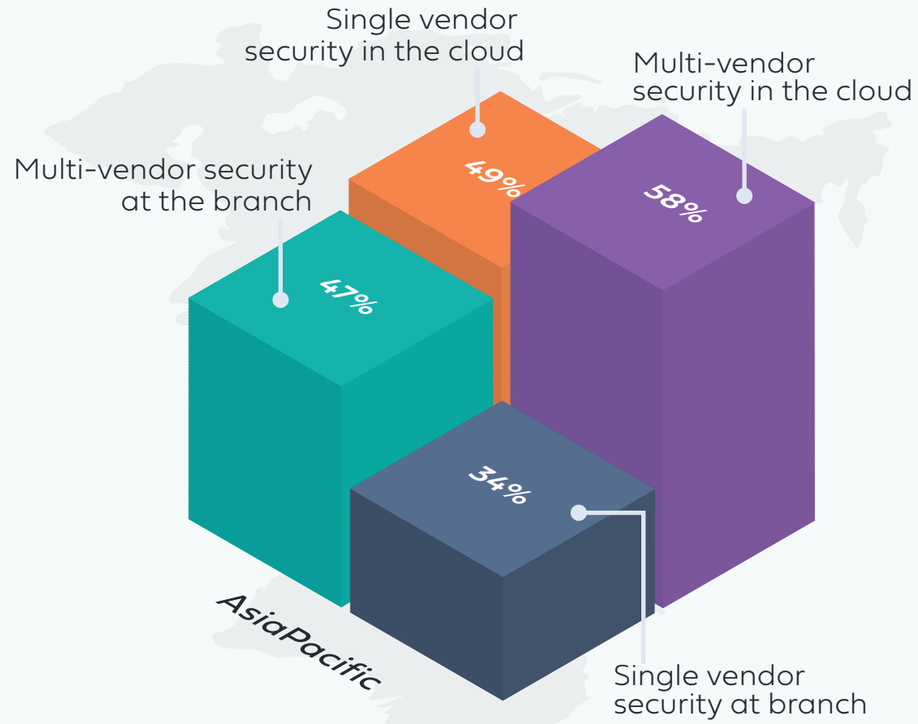


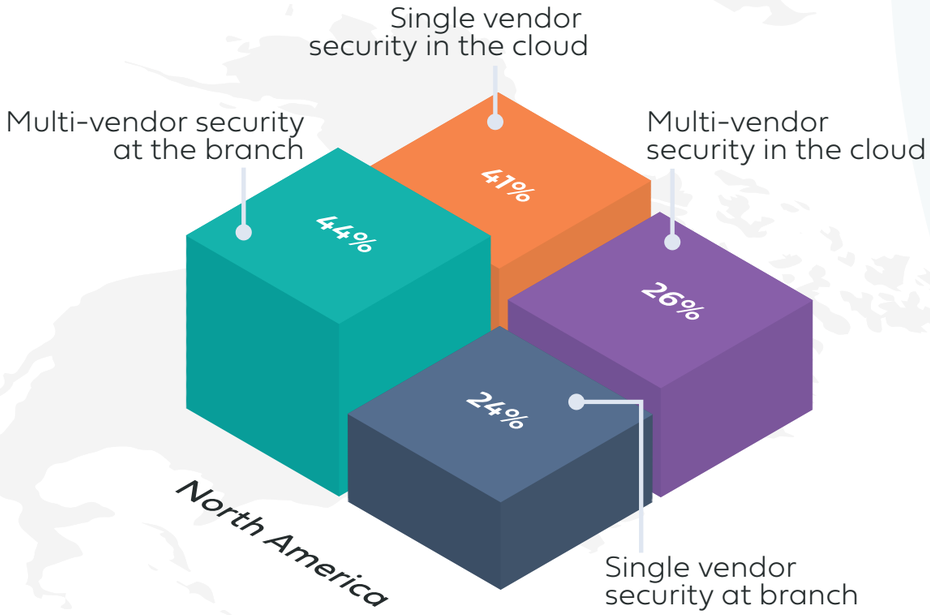


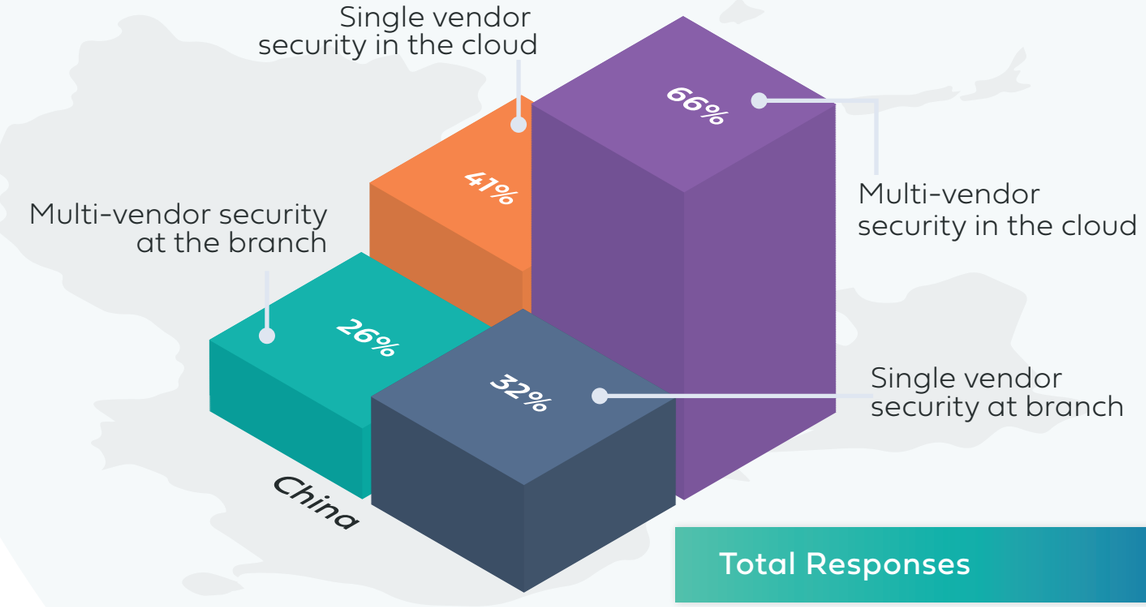
Total Responses 987

SD-WAN and security



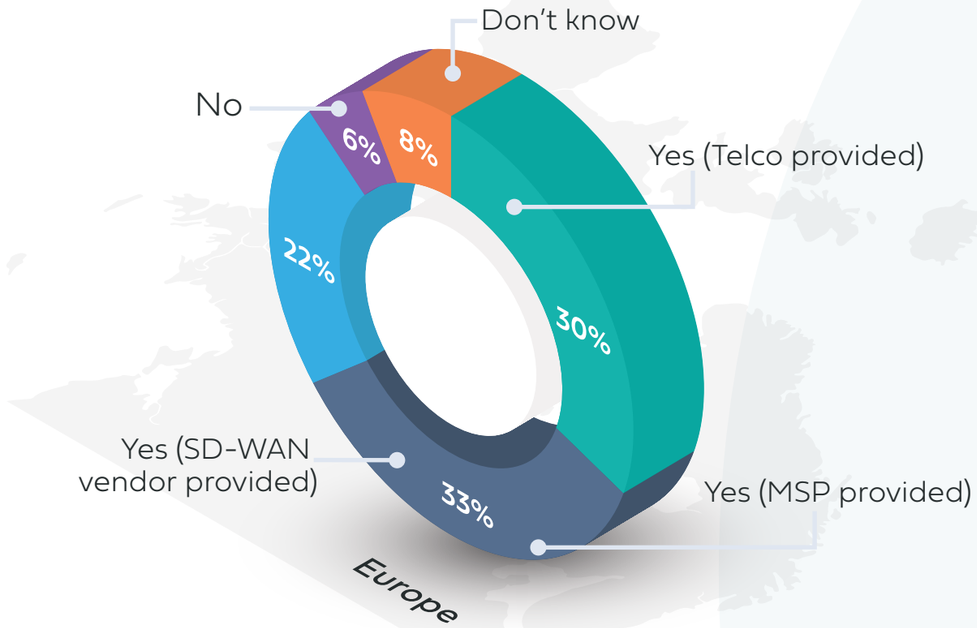


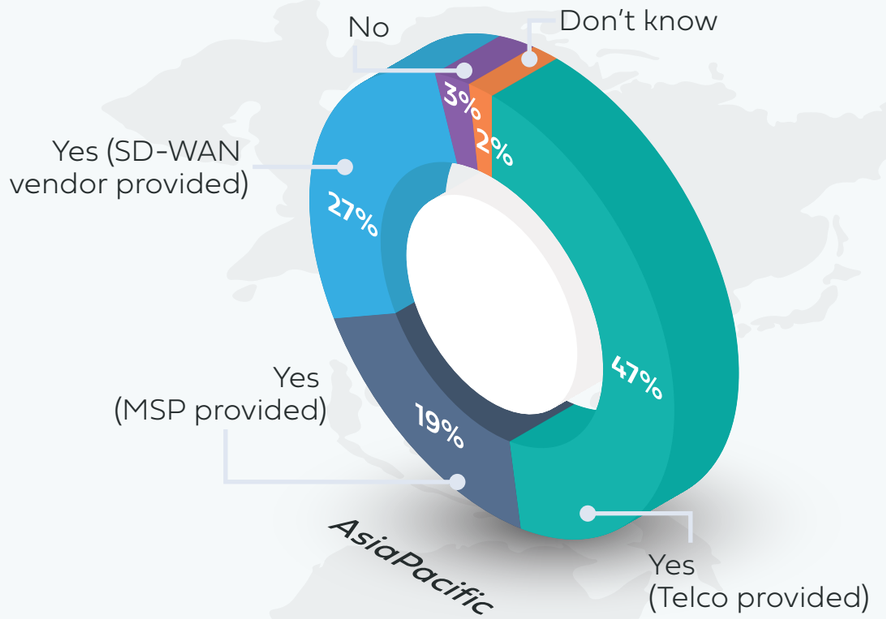


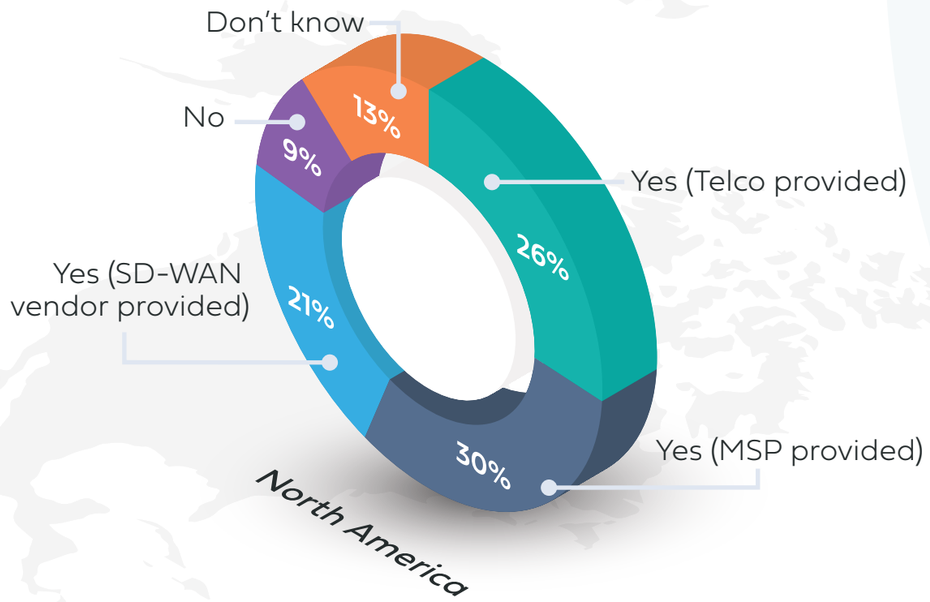


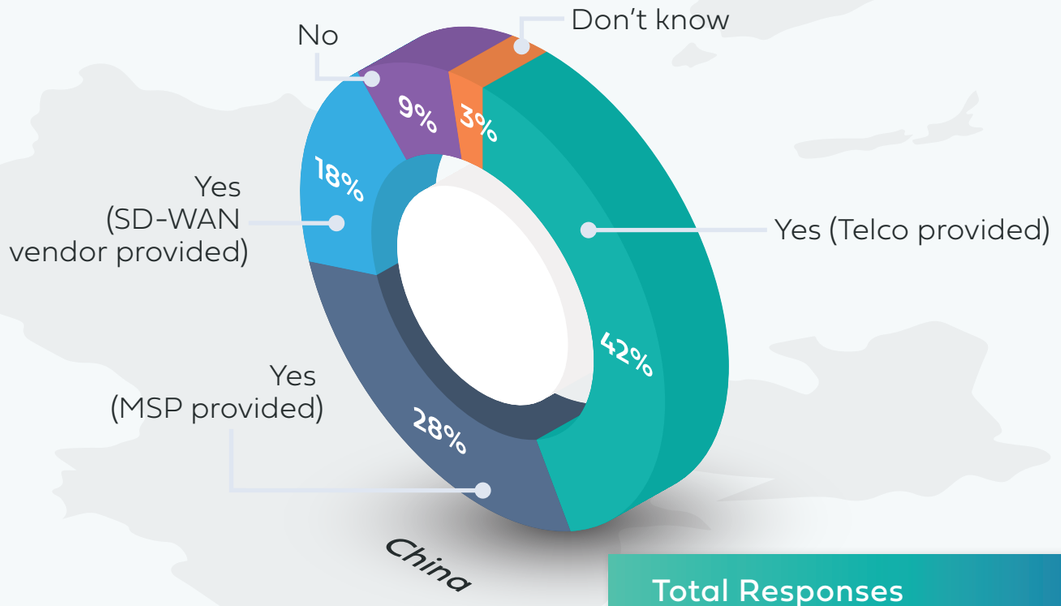
Total Responses	987

Managed SD-WAN considerations









Total Responses	987

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Global State Of The WAN

About Aryaka Networks

Aryaka, the Cloud-First WAN company, brings agility, simplicity and a great experience to consuming the WAN-as-a-service. An optimized global network and innovative technology stack delivers the industry's #1 managed SD-WAN service and sets the gold standard for application performance. Aryaka's SmartServices offer connectivity, application acceleration, security, cloud networking and insights leveraging global orchestration and provisioning. The company's customers include hundreds of global enterprises including several in the Fortune 100.

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