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GLOBAL ENTERPRISE WAN VIRTUALIZATION STRATEGIES

SD-WAN Sets the Stage for Broader Adoption of Virtual Network Services

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Executive Summary

Top Tech Priorities

Enterprises ramped up their digital transformation efforts during **COVID-19.** The need to do more with less resources pushed businesses to further rely on technologies that directly impact business productivity.

- Hybrid and multi-cloud services
- Network and application security
- Big data analytics

Adoption

North America leads the SD-WAN market adoption curve. Europe and LATAM regions hold significant potential in the next few years.

14%

North American respondents **have deployed an SD-WAN Solution**, and **another 15% stating they are expanding to more locations.**

30%

Respondents from Europe and LATAM indicated they **will deploy SD-WAN in the next 24 months**.

Primary Benefit

When it comes to buying preferences, global businesses continue to prefer a fully managed SD-WAN delivered by a managed service provider.

The ability to optimize IT personnel due to centralized policy administration and management is the

#1 benefit from SD-WAN

NFV is Gaining Traction

While businesses continue to expand SD-WAN to additional locations, virtual network services are gaining traction as the ability to deploy multiple VNFs on a single appliance dramatically simplifies deployment and management efforts for the enterprise IT teams. SD-WAN, WAN optimization and Firewall VNFs are of priority for businesses when deploying uCPE.

uCPE deployment has resulted in up to

50%

reduction in hardware expenditure

and more than

50%

reduction in IT and network personnel time

About the Survey

To understand global enterprise perceptions and activities regarding enterprise WAN virtualization, Frost & Sullivan, on behalf of Lumen, conducted an end-user survey in April 2021. The net result is a set of data, and conclusions drawn from that data, which provides directional insight regarding the SD-WAN and NFV market trends and its impact on enterprise WAN architectures globally. Web based survey administered to IT decision makers.

650 COMPANIES REPRESENTED

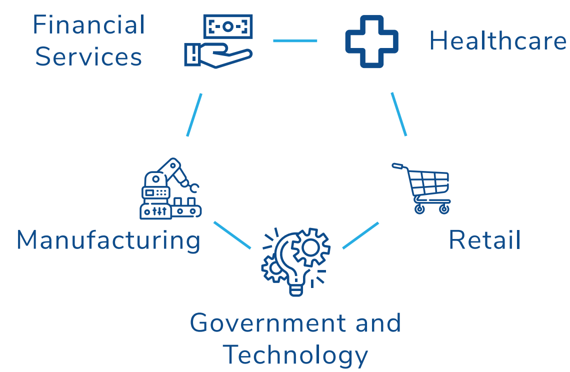
REGIONS

194 Europe Respondents (evenly split among Germany, France, and UK)

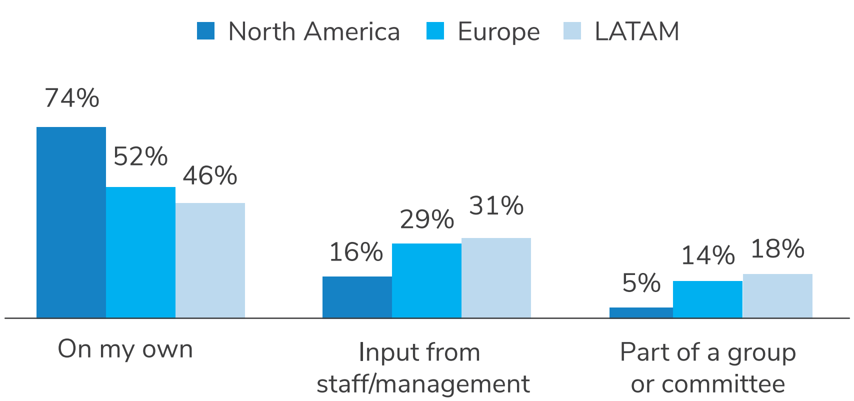
350 United States Respondents

153 LATAM Respondents (evenly split among Argentina, Brazil and Mexico)

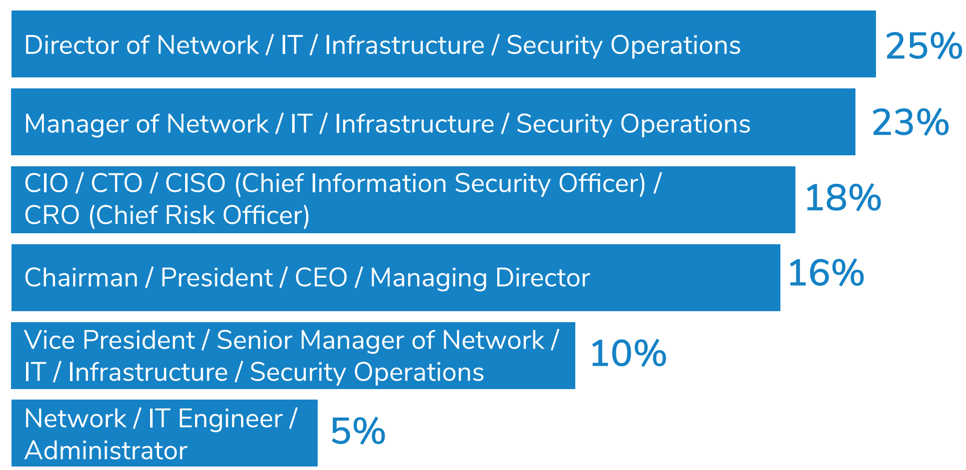
INDUSTRIES REPRESENTED



RESPONDENTS ROLE IN PURCHASE DECISIONS



RESPONDENTS JOB TITLE



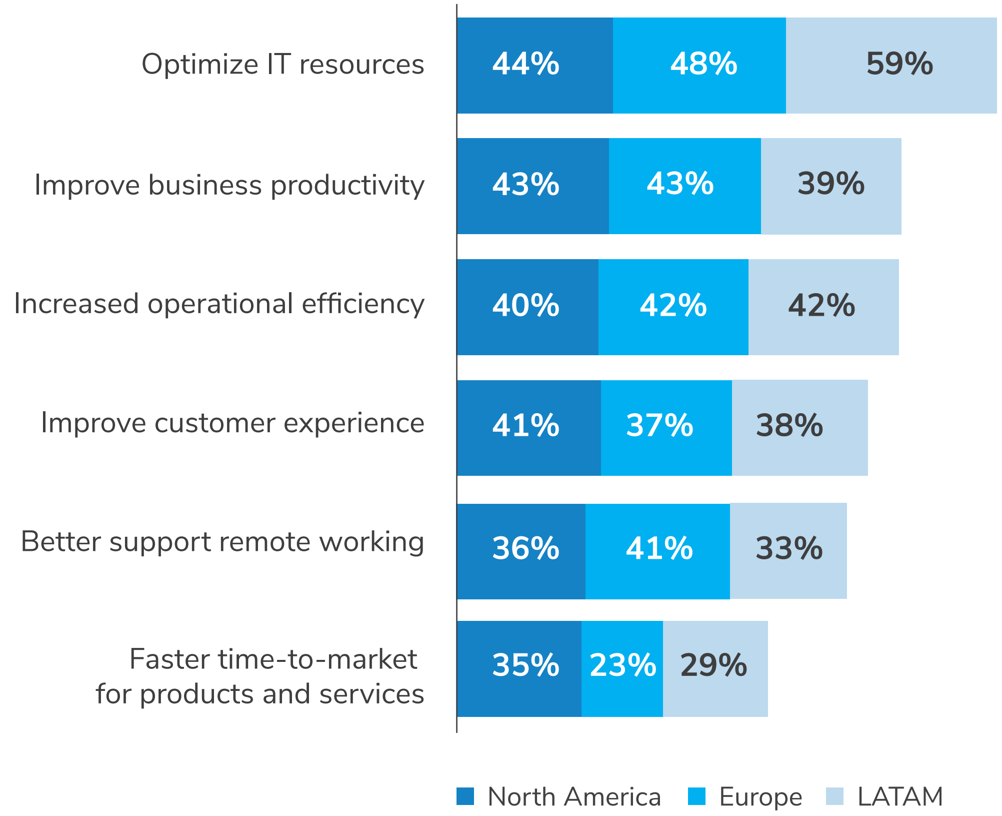
CHAPTER 1: ENTERPRISE DIGITAL TRANSFORMATION TRENDS

"Optimizing IT Resources" a Top Driver for Global Enterprise Digital Transformation Initiatives

Digital Transformation continues to be top-of-mind for business IT decision makers. In our survey, we asked respondents to rank the key business drivers influencing their DT initiatives.

Considering the impact COVID-19 pandemic continues to have on businesses, "optimize IT resources" being ranked the #1 driver seems apt, followed by "improve business productivity" and "increase operational efficiency."

Clearly the pandemic tested the limits of most organizations globally, and forced them to rethink their digital strategy. It is clear that investment in technology is more critical now than ever as it is key to ensure continuity of operations.



Question: Rate the key business drivers influencing your company's digital transformation initiatives. Use a scale of 1-5 where 5 means extremely important and 1 means not at all important. Chart shows respondent % for "important" and "slightly important"

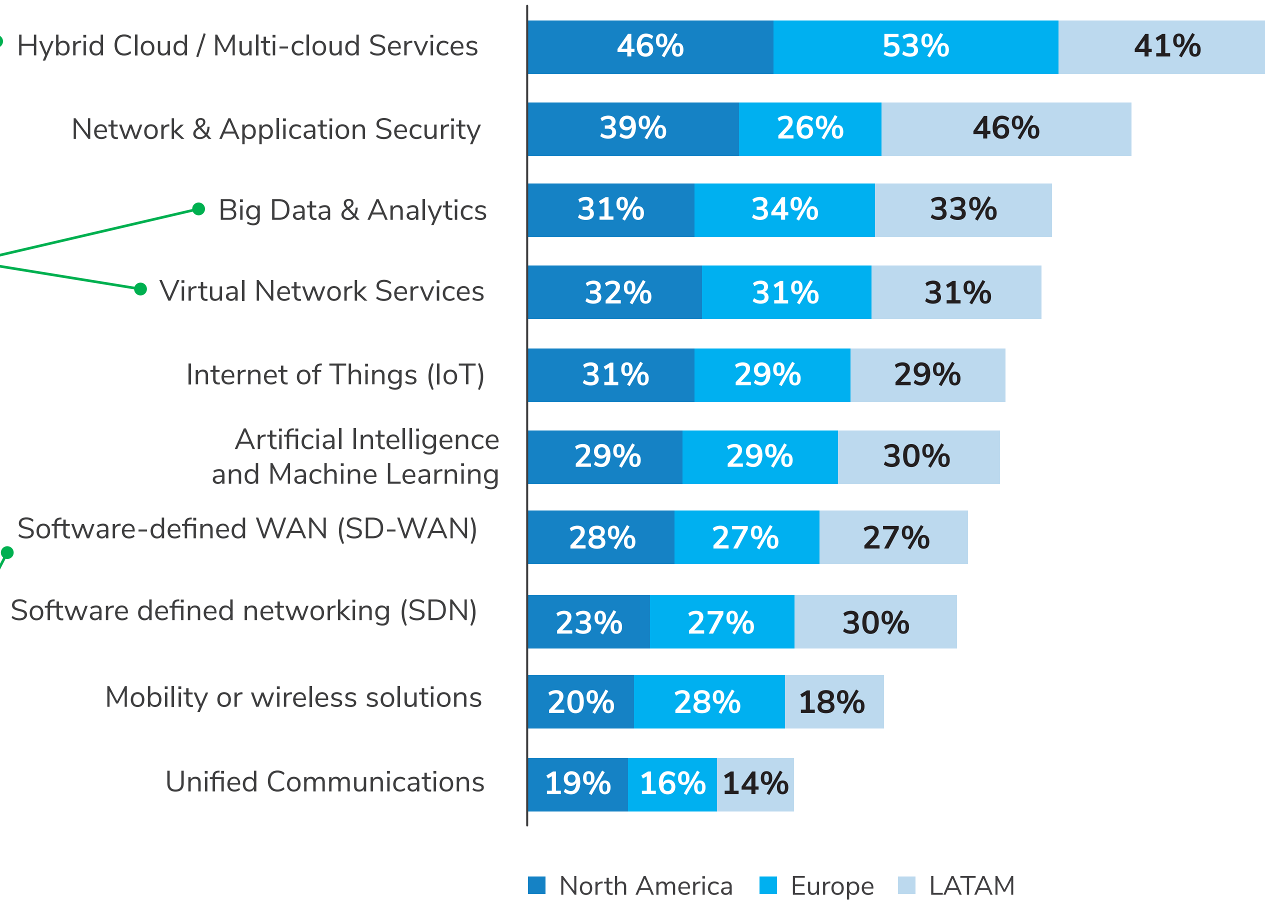
CHAPTER 1: ENTERPRISE DIGITAL TRANSFORMATION TRENDS

Hybrid Cloud/Multi-cloud Services is the Top Priority for Organizations in the Next 24 Months

Number one priority for businesses

Interestingly, Big Data & Analytics, and Virtual Network Services have moved up in terms of priority since we last surveyed in 2018. With the volume of internal and external data being collected and processed by organizations, it is no surprise that BDA is important to derive insights that directly help businesses achieve their DT goals.

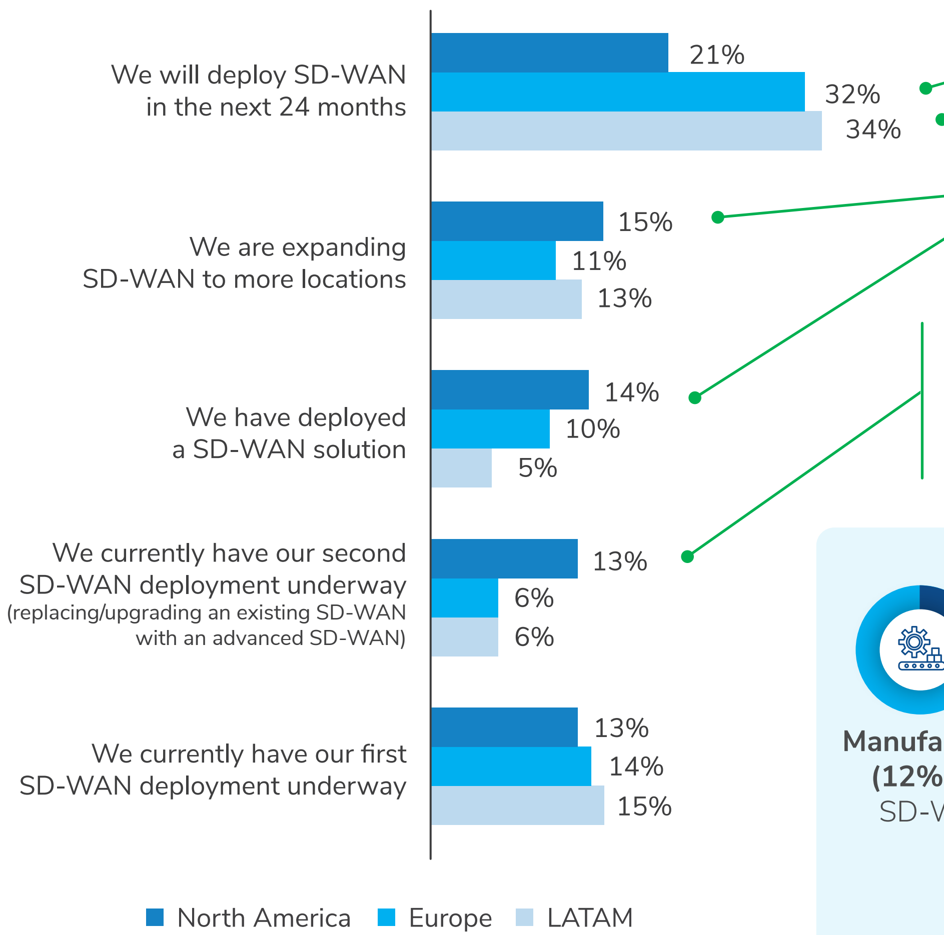
SD-WAN technology has set the stage for WAN virtualization with global organizations realizing the value of software defined networking. Businesses are now ready to virtualize more WAN functions and are turning to virtual network services.



Question: Please rank the following technology trends in order of priority for your organization in the next 24 months.

CHAPTER 2: SD-WAN ADOPTION TRENDS

SD-WAN Adoption Trends



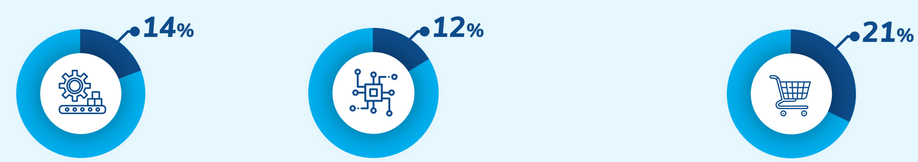
Europe and LATAM regions hold significant potential for growth.

North America leads the SD-WAN market adoption curve with 14% of the respondents stating they have deployed an SD-WAN solution, and another 15% stating they are expanding to more locations.

The North American market is ahead in terms of deployment. As SD-WAN vendor solutions have evolved since 2014, several organizations are upgrading to generation 2.0 SD-WAN solutions.

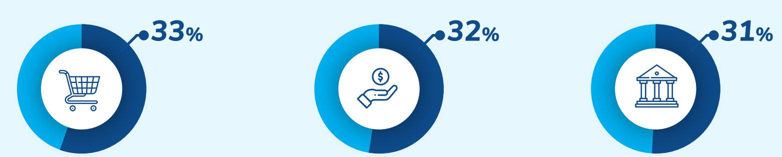
Base: Respondents who deployed an SD-WAN solution (n=216)

Question: Which of the following choices best reflects your organization's SD-WAN deployment?



Manufacturing (14%) and **Technology (12%)** verticals are top adopters of SD-WAN across all three regions.

Retail was an early adopter of SD-WAN. **21%** of the respondents from retail vertical indicate they are expanding SD-WAN to more locations.

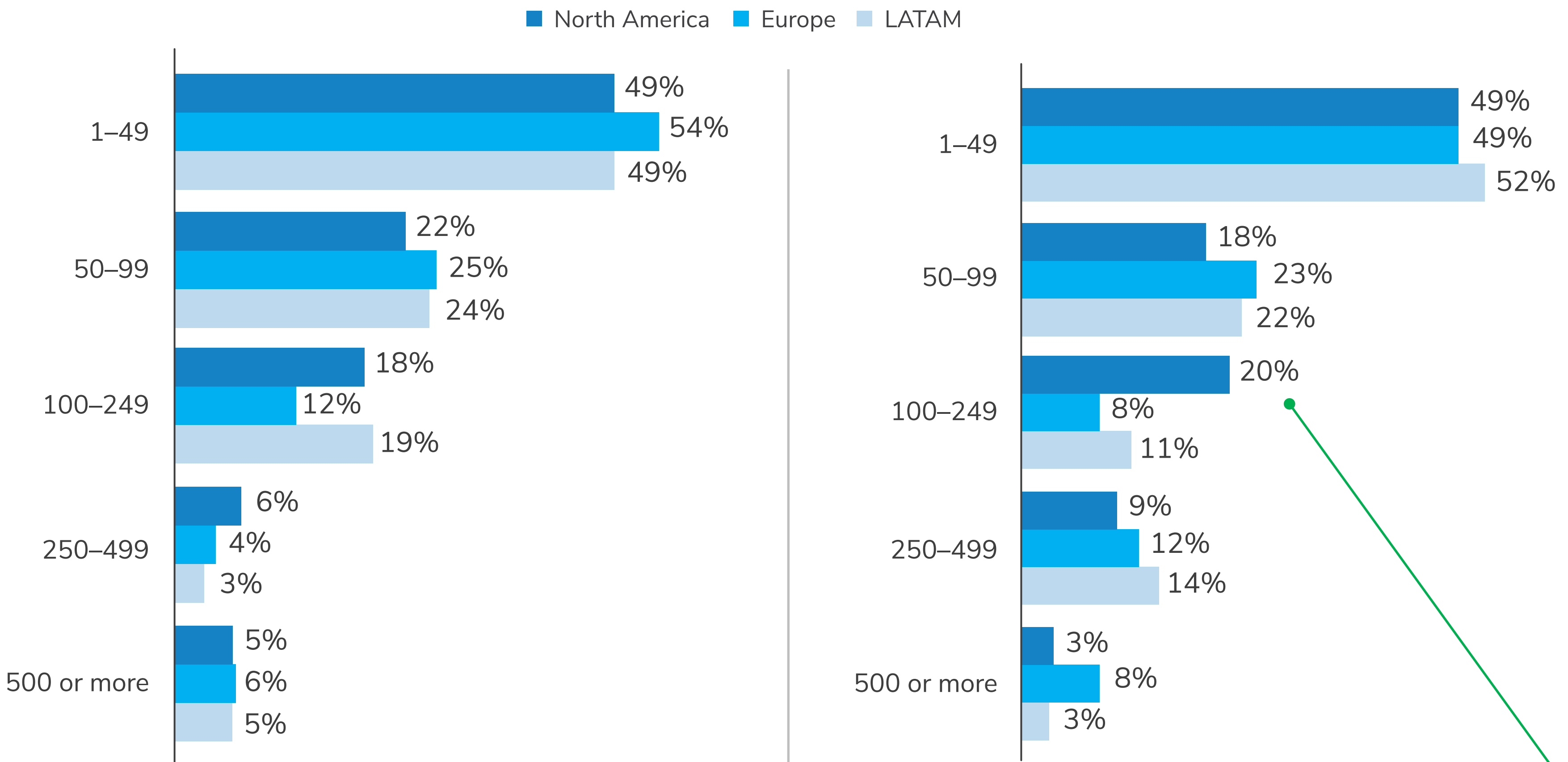


Retail (33%), Financial Services (32%) and **Government (31%)** verticals hold immense potential in the next 24 months as respondents indicate their plans to deploy SD-WAN in the next 2 years.

CHAPTER 2: SD-WAN ADOPTION TRENDS

Operational SD-WAN Sites at Branch and Remote/Home Office Locations

OPERATIONAL SD-WAN BRANCH LOCATIONS | **OPERATIONAL SD-WAN SITES AT REMOTE/HOME OFFICE LOCATIONS**

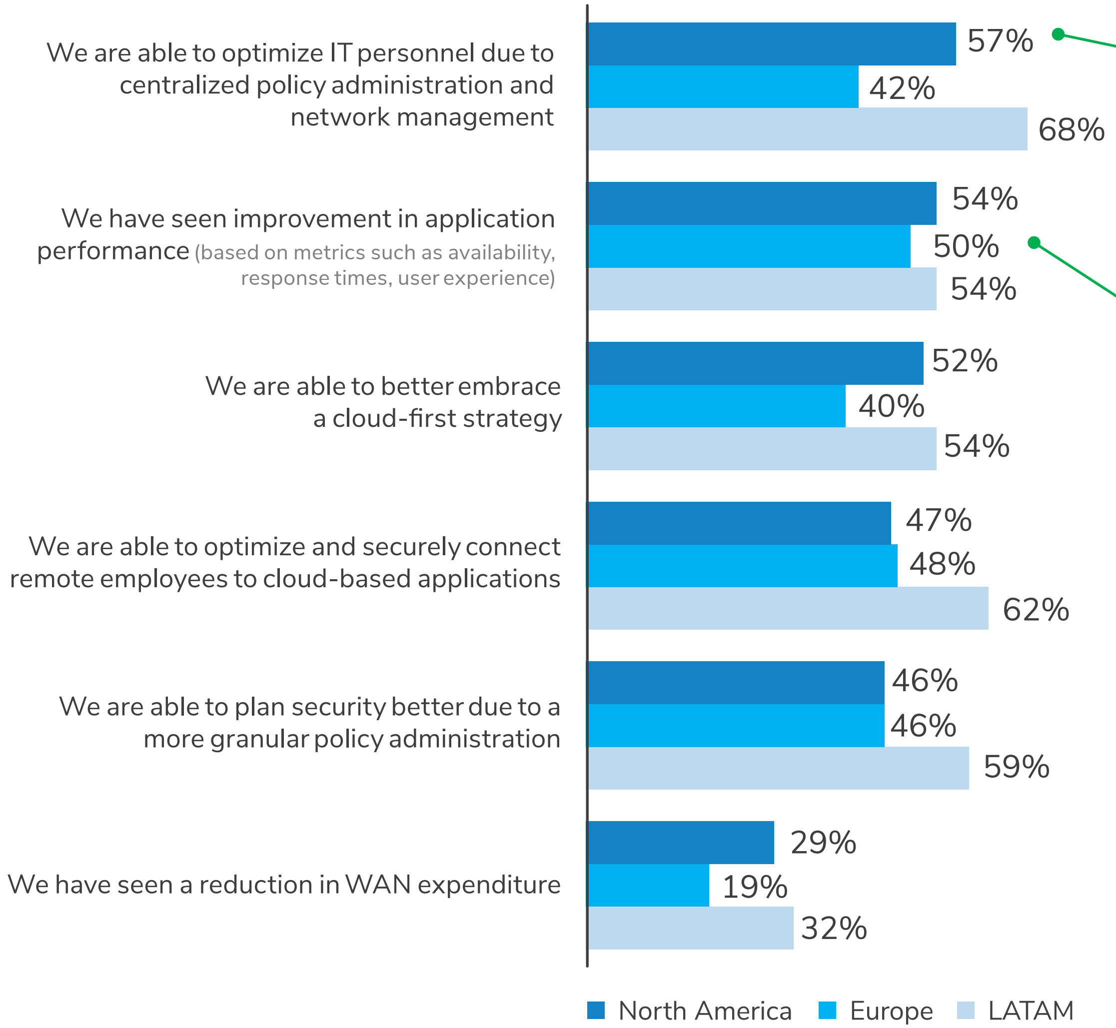


While global organizations embraced and extended SD-WAN solution to remote/home office locations, NA leads in terms of number of sites the technology is operational today—100 to 249 sites. As US businesses transitioned to remote working due to COVID-19, some verticals embraced SD-WAN for home faster than others. Healthcare, Technology and Contact Centers, for example.

Base: Respondents who deployed an SD-WAN solution (n=216)

Question: What is the approximate number of operational SD-WAN sites (branch and remote users) that your organization has in use?

Perceived Benefits of SD-WAN



IT decision makers of organizations that have deployed SD-WAN in US and LATAM, say the "**ability to optimize IT personnel due to centralized policy administration and management**" is the #1 benefit from SD-WAN.

European IT decision makers indicate, "**improvement in application performance**" as the #1 benefit.

Base: Respondents who deployed an SD-WAN solution (n=216)

Question: Which of the following statements apply to the benefits your organization has achieved from the SD-WAN deployment?

Perceived Benefits of SD-WAN (Continued)

VOICE AND UCaaS APPLICATION PERFORMANCE IMPROVEMENT

39% of the respondents across regions state they have seen **25–50% improvement**

IMPROVEMENT IN PERFORMANCE FOR CLOUD APPLICATIONS

48% of the respondents across regions state they have seen **25–50% improvement**

RESPONDENTS SAYING THEY HAVE SEEN 10–25% WAN EXPENDITURE REDUCTION

North America	Europe	LATAM
43%	60%	42%

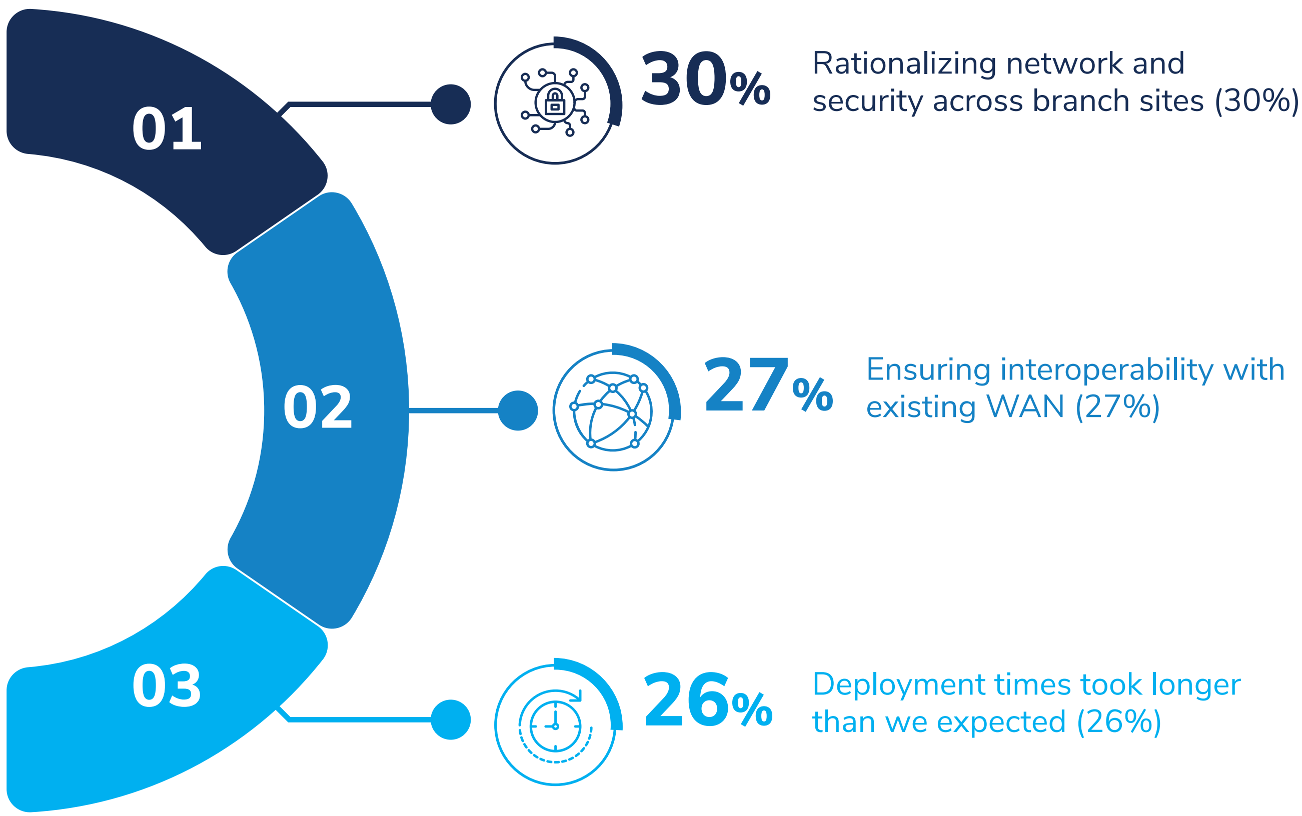
RESPONDENTS SAYING THEY HAVE SEEN 25–50% WAN EXPENDITURE REDUCTION

North America	Europe	LATAM
35%	10%	58%

Base: Respondents who deployed an SD-WAN solution (n=216)

Question: Which of the following statements apply to the benefits your organization has achieved from the SD-WAN deployment?

Challenges Faced While Deploying SD-WAN



Base: Respondents who deployed an SD-WAN solution (n=216)

Question: What do you see as the number one challenge your organization has encountered while deploying SD-WAN?

Question: ... and what do you see as the number two challenge your organization has encountered while deploying SD-WAN?

Question: ...and finally, what do you see as the number three challenge your organization has encountered while deploying SD-WAN?

Network Services Choice with SD-WAN

NORTH AMERICA

1. DIA + Wireless
2. Ethernet + Wireless
3. MPLS + Wireless
4. Dual MPLS
5. Dual Broadband

GLOBAL

1. DIA + Wireless
2. Ethernet + Wireless
3. MPLS + Wireless

EUROPE

1. Ethernet + Broadband
2. DIA + Wireless
3. Ethernet + Wireless
4. Dual Broadband
5. Dual Wireless

LATIN AMERICA

1. DIA + Wireless
2. Ethernet + Wireless
3. MPLS + Broadband
4. Ethernet + Broadband
5. Dual Broadband links

Base: Respondents who deployed an SD-WAN solution (n=216)

Question: Which of the following network service choices reflects your organization's current SD-WAN deployment?

Benefits Organizations Expect from SD-WAN

NORTH AMERICA

Improve application performance	47%
Better support bandwidth intensive applications	42%
Faster deployment of branch sites	39%
Support optimized and security connectivity to remote workers	35%
Better embrace our cloud-first strategy	35%

EUROPE

Simplify WAN management through centralized policy administration	44%
Improve application performance	40%
Faster deployment of branch sites	40%
Better embrace our cloud-first strategy	33%
Support optimized and security connectivity to remote workers	31%

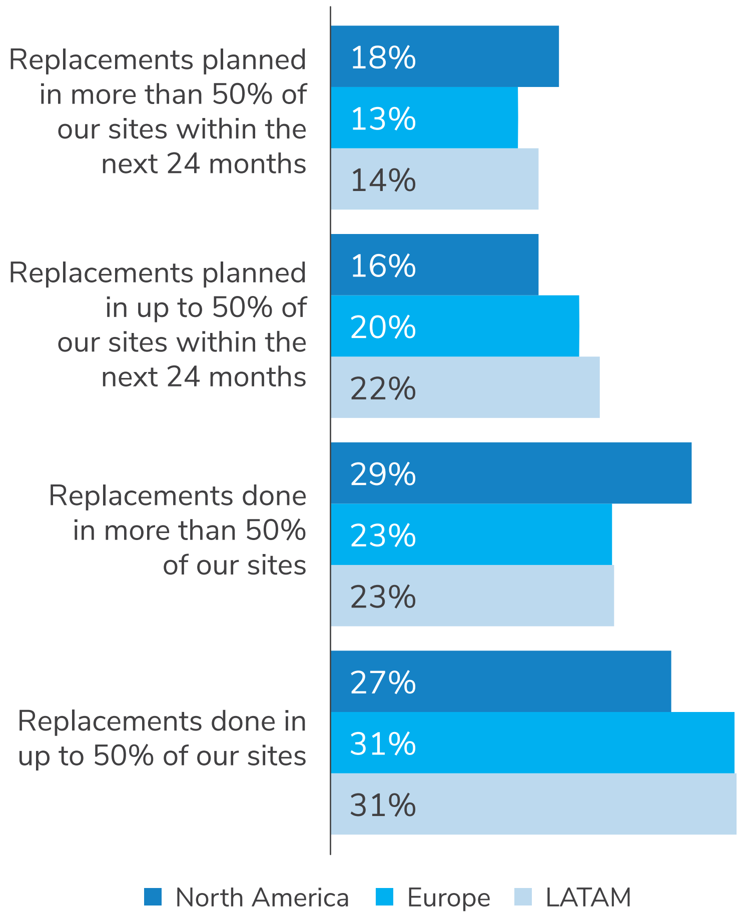
LATAM

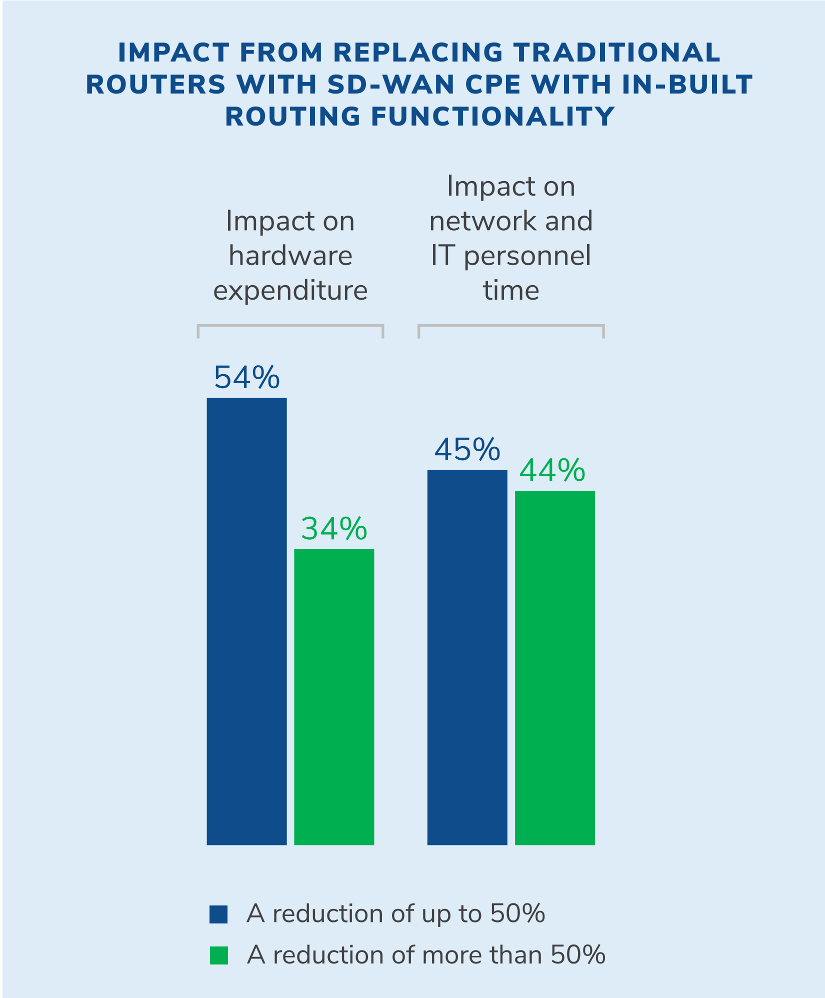
Faster deployment of branch sites	53%
Better support bandwidth intensive applications	49%
Improve application performance	49%
Better embrace our cloud-first strategy	43%
Support optimized and security connectivity to remote workers	43%

Base: Respondents for whom SD-WAN deployment in process or planned (n=267)

Question: Which benefits does your organization expect to achieve from the SD-WAN deployment?

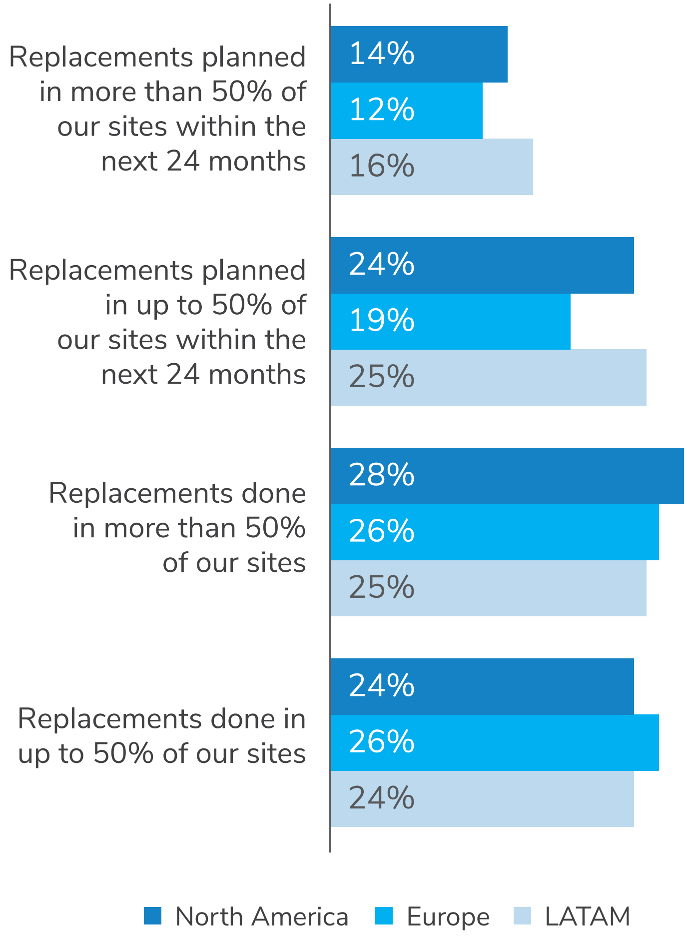
SD-WAN CPE Replacing Branch Routers

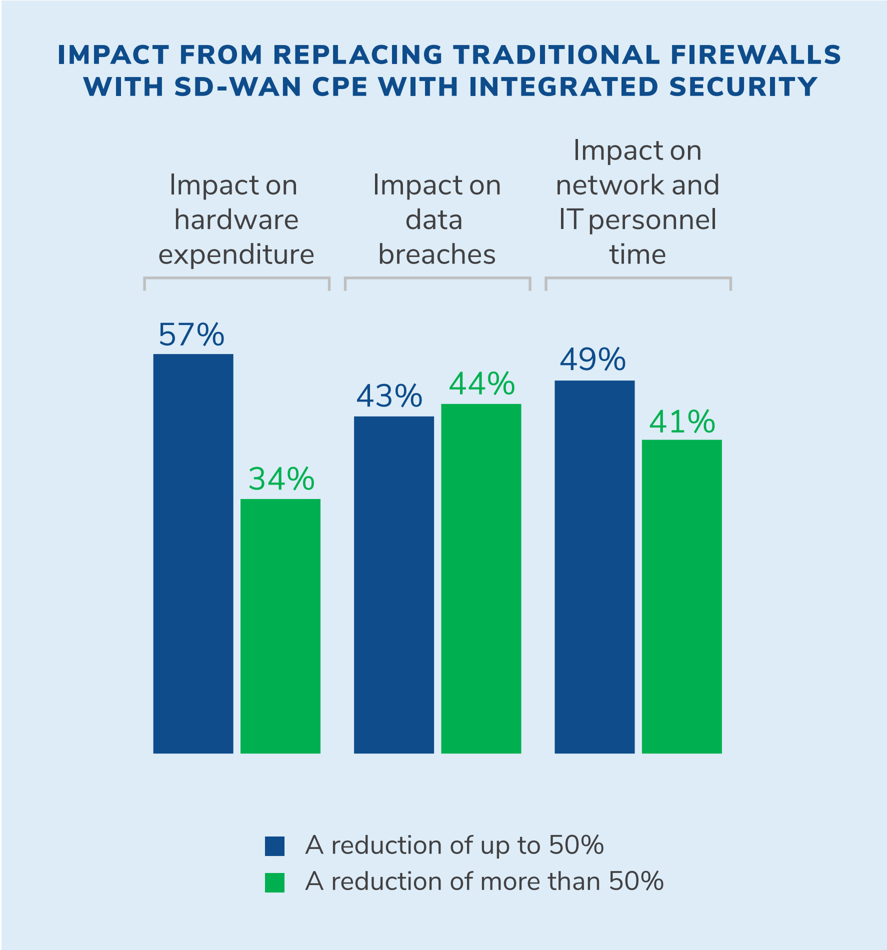




Question: SD-WAN Customer Premises Equipment (SD-WAN CPE) comes with integrated routing and security functionalities, and can enable businesses to replace dedicated, hardware-based branch routers and firewalls. Please indicate to what extent each of the following statements reflects your organization's perspective on router strategy in current and planned SD-WAN deployments.

SD-WAN CPE Replacing Branch Firewalls

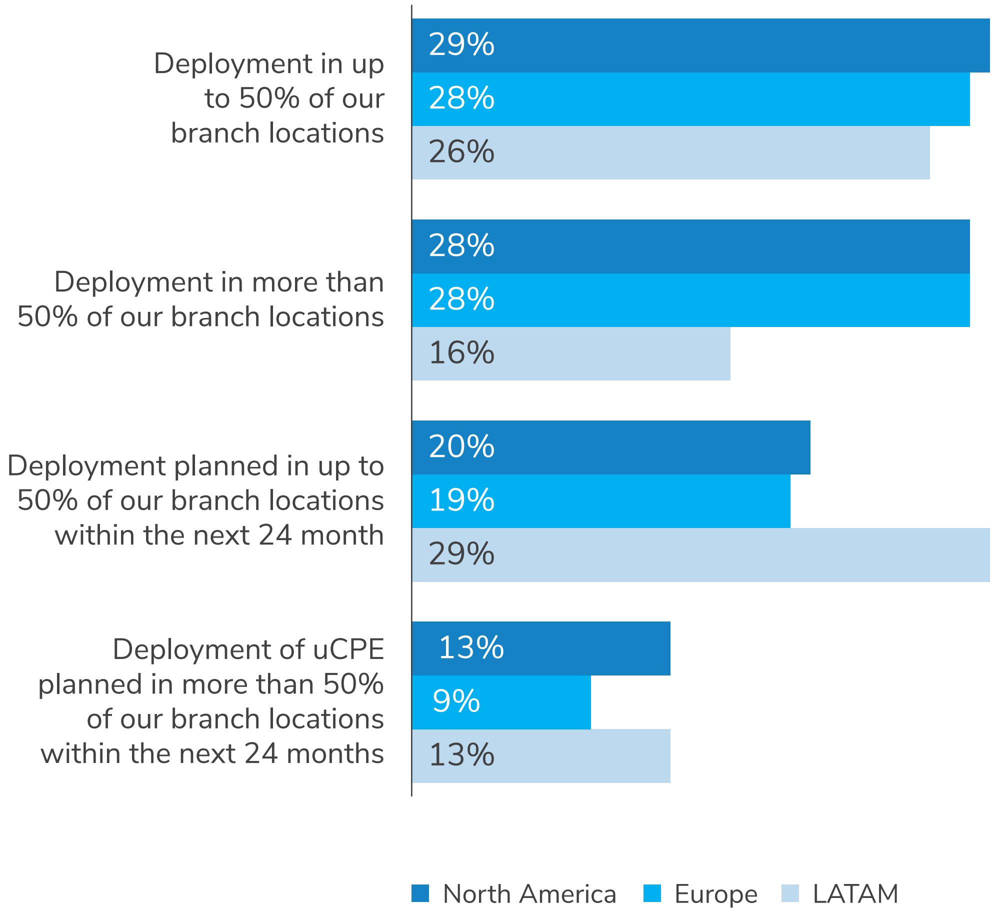


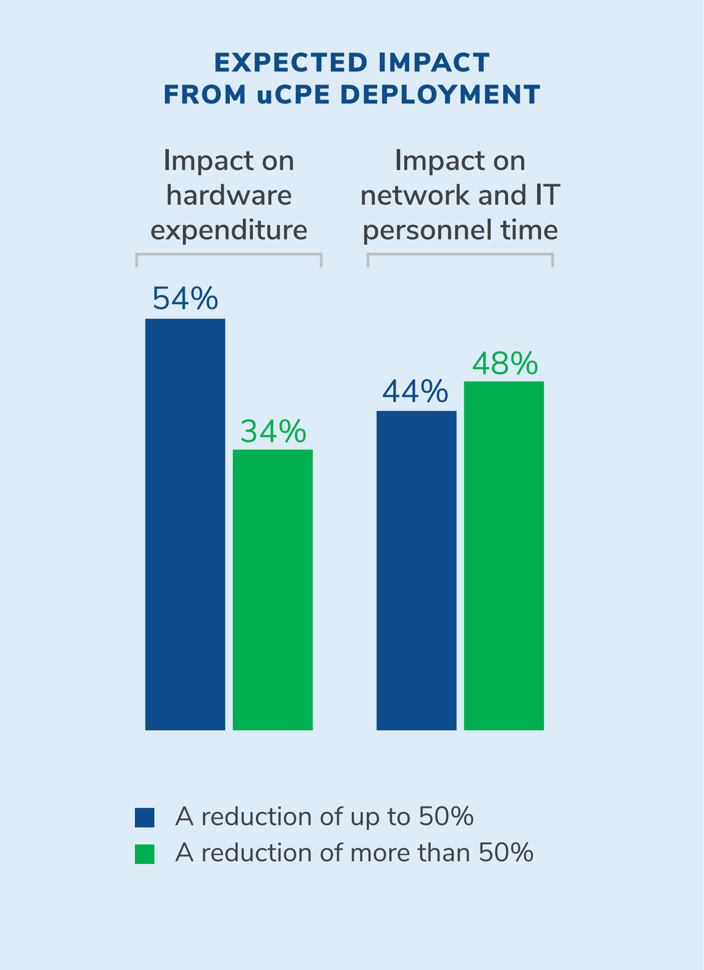


Base: All respondents (n=652)

Question: SD-WAN Customer Premises Equipment (SD-WAN CPE) comes with integrated routing and security functionalities, and can enable businesses to replace dedicated, hardware-based branch routers and firewalls. Please indicate to what extent each of the following statements reflects your organization's perspective on router strategy in current and planned SD-WAN deployments.

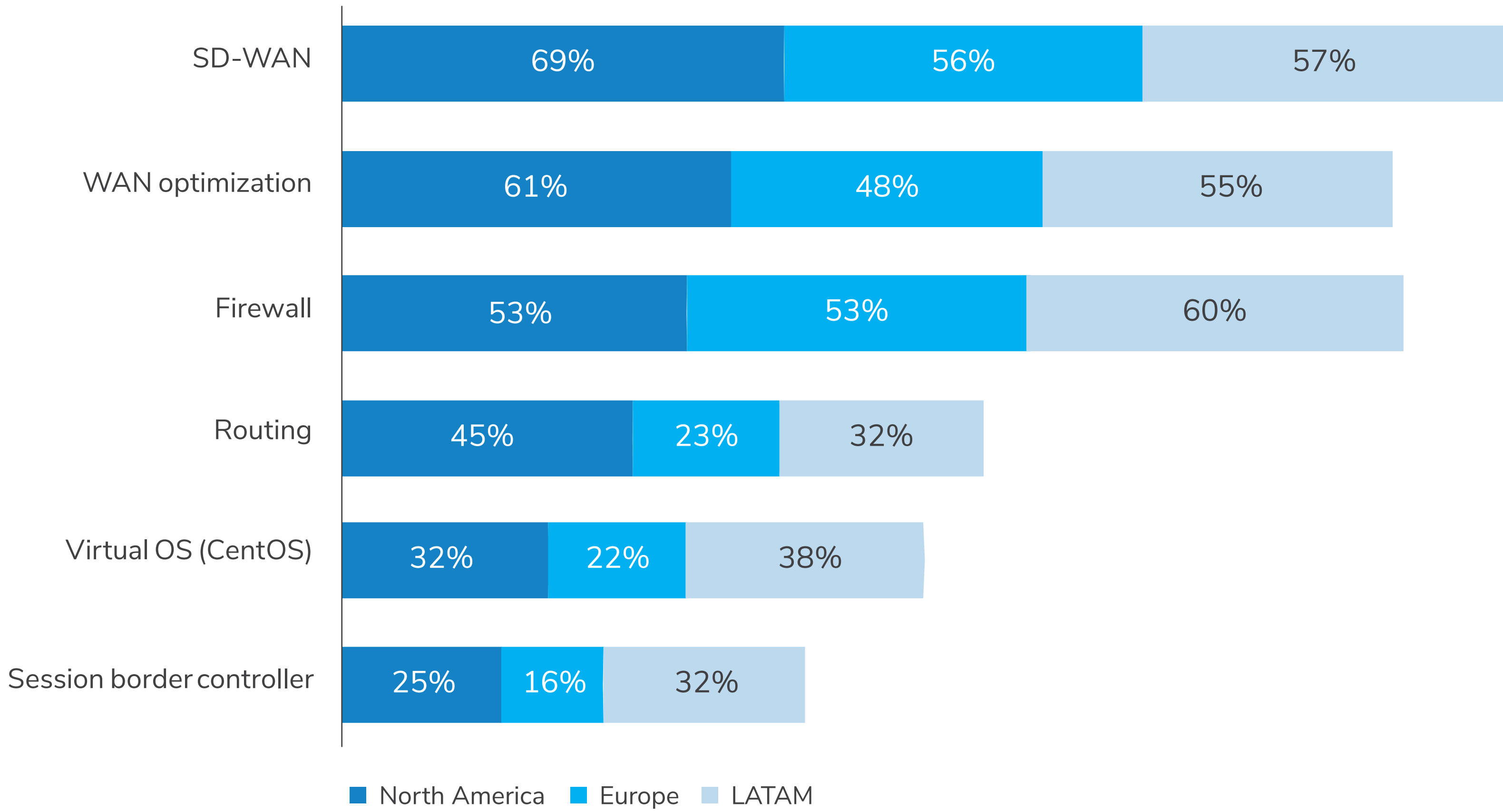
Perspective on Current and Planned uCPE Deployments





Question: Virtual Network Services based on network function virtualization offers enterprises the choice to mix and match, and deploy VNFs on an uCPE. Please indicate to what extent each of the following statements reflects your organization's perspective on your current and planned uCPE deployments.

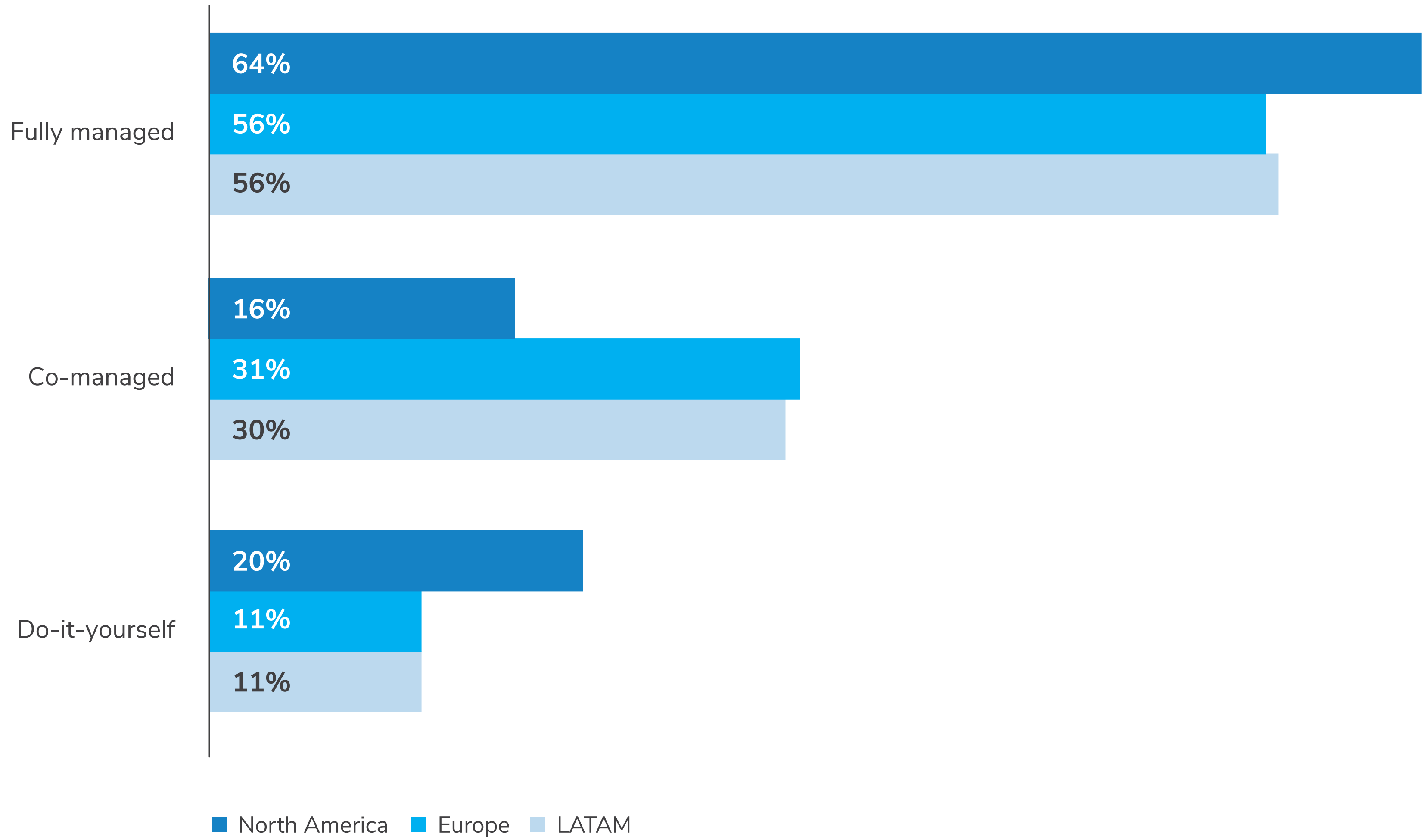
VNFs of Priority on uCPE



Base: Respondents who have done or planned deployment of uCPE (n=568)

Question: Which of the following VNFs are of priority to you in your current and planned uCPE deployments?

SD-WAN Buying Preferences



Base: All respondents (n=652)

Question: What is your organization's preference in buying and managing an SD-WAN solution?

Why Managed SD-WAN?

NORTH AMERICA

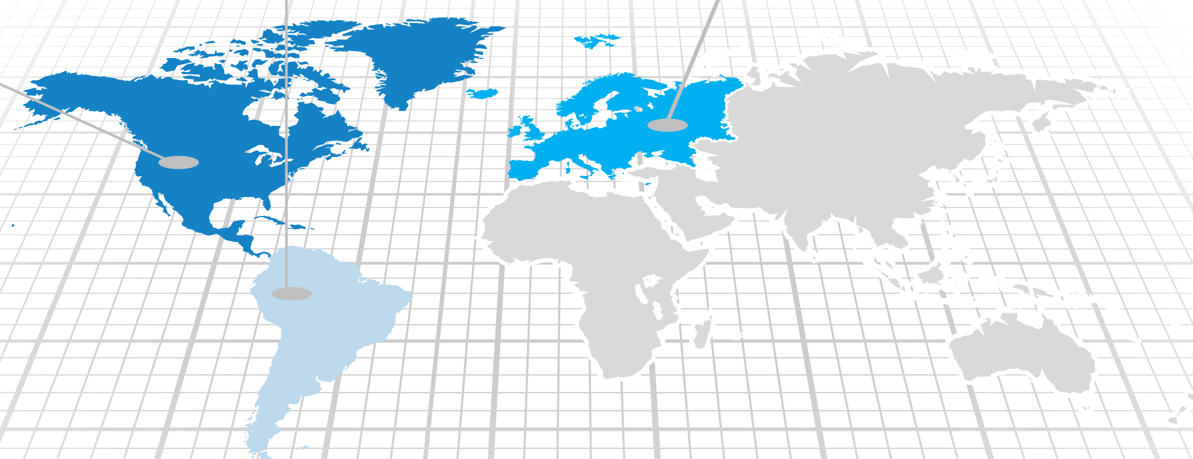
- Gives us the flexibility to buy and pay for the service in a subscription-based billing
- Simplified vendor management, unified billing and portal capabilities as the managed SD-WAN provider acts as the single point
- Unified management of all my network services—access, data, voice, security

LATAM

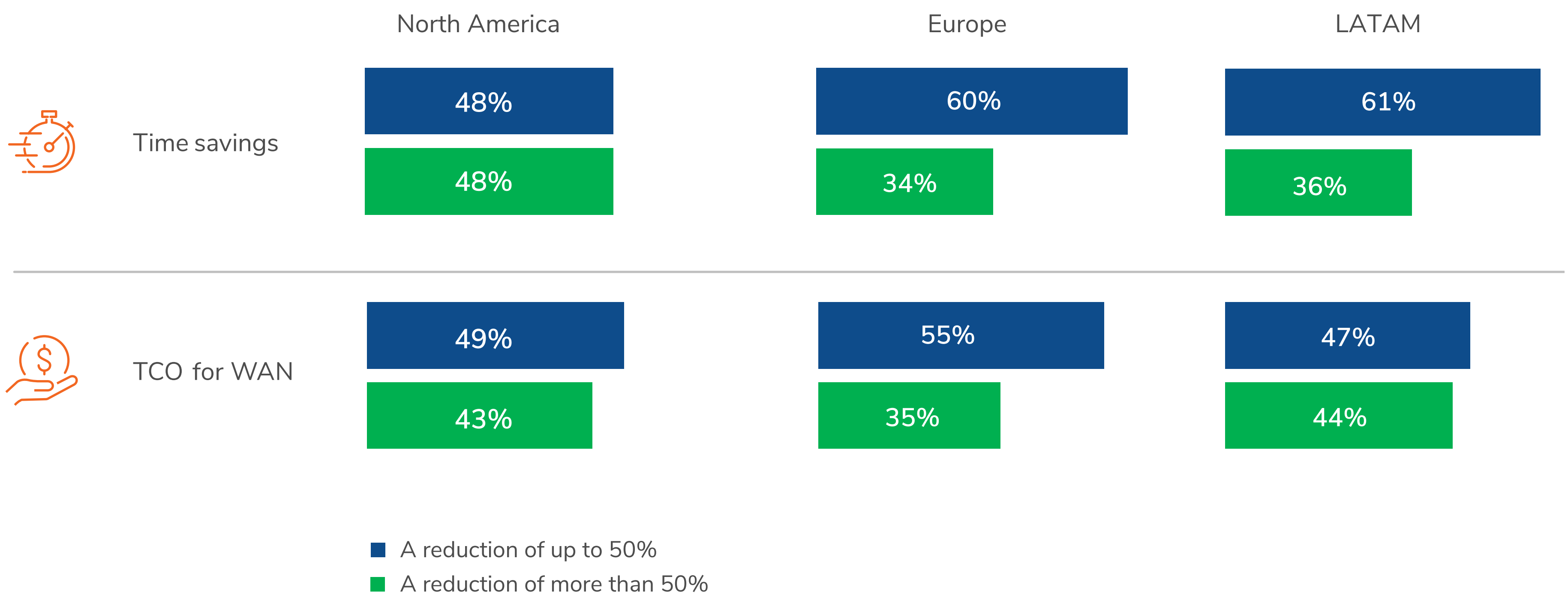
- Service Providers can troubleshoot and restore services quicker than our internal team
- Managed service provider provides a SLA for the SD-WAN service
- Gives us the flexibility to buy and pay for the service in a subscription-based billing

EUROPE

- Unified management of all my network services—access, data, voice, security
- Service providers have already vetted the providers making the decision process shorter
- Managed service provider provides a SLA for the SD-WAN service



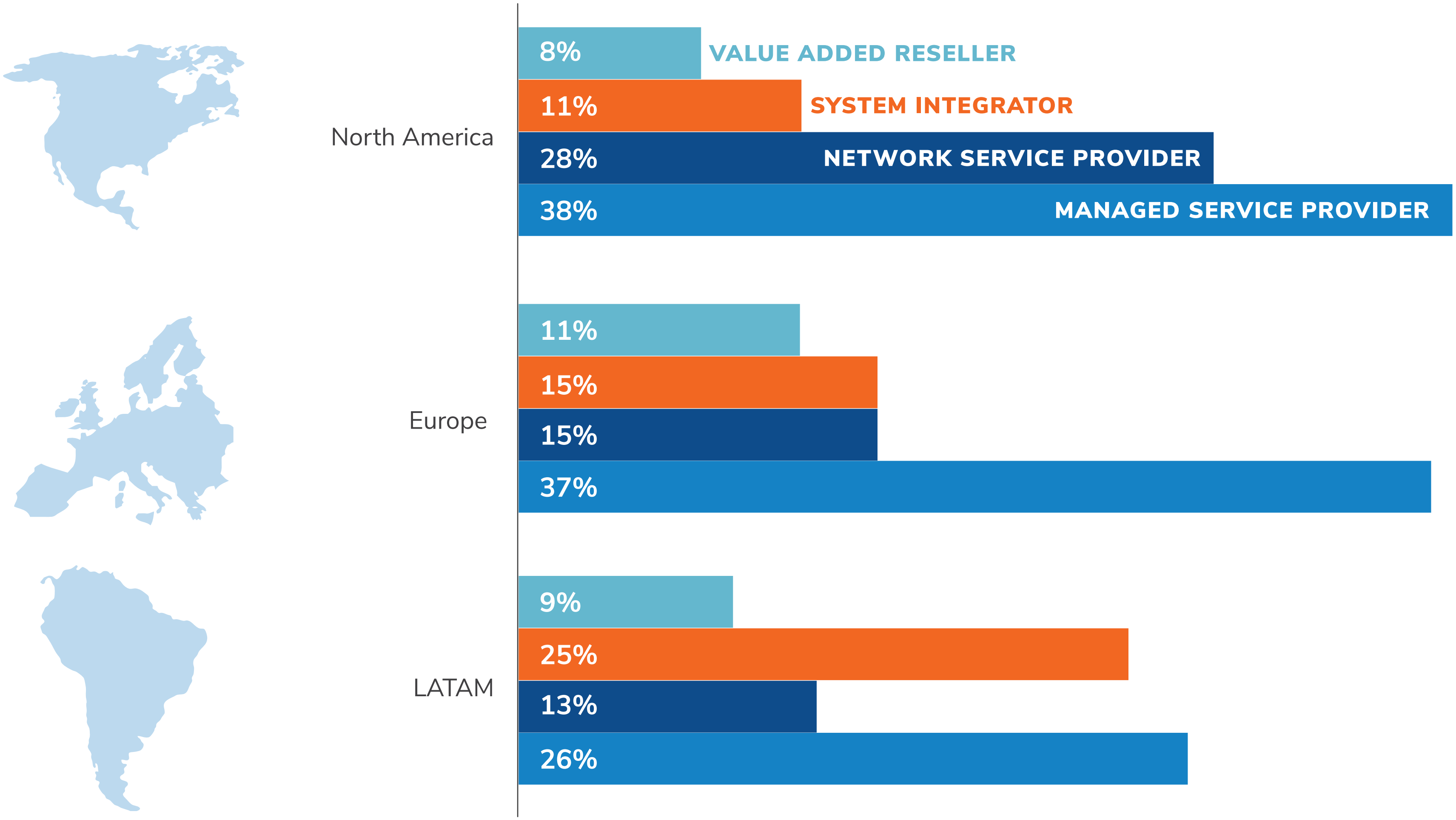
Expected Value of Working with a Managed Service Provider



Base: Respondents who are working with a managed service provider (n=371)

Question: Which value do you expect from working with a managed service provider?

Preferred Partner to Deploy Managed SD-WAN



Base: All respondents (n=652)

Question: If you had a choice, which type of partner would you prefer to deploy managed SD-WAN in your organization?

LUMEN

About Lumen

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Learn more about Lumen SD-WAN solutions

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