



The bridge to possible

2023 Global Networking Trends Report

New Rules for a Multicloud World





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Adapting to the new rules

2022 has been another year of global change and uncertainty. The disruption the world has faced has both hastened the move to digital business and made it more challenging. For IT teams, the pressure is on like never before, as they strive to keep up with the ever-evolving demands on them.

Our recent Global Hybrid Cloud Trends report focused on how organizations are planning to accelerate cloud adoption to support business agility. In this Global Networking Trends Report, we examined how IT organizations are evolving their network technology, talent, and operations to drive their digital transformation and multicloud initiatives.

We found that as businesses adapt to the changing environment, IT priorities are shifting. For the first time, agility and business performance have overtaken cost and network management as the key concerns for IT teams, with 42% of respondents citing a more agile development environment as their top reason for moving to multiple clouds.

At the same time, organizations are grappling with unprecedented levels of complexity and uncertainty, which is fueling a search for simplicity and security. Solutions that offer end-to-end visibility, automation, and an easy on-ramp to a cloud-based operating model are in high demand.

We surveyed more than 2500 IT decision makers in 13 countries to gather their opinions on the role of the network in a successful cloud strategy. In Part 1, we identify trends and priorities in managing workloads across multiple private and public cloud and edge environments. Part 2 will focus on networking trends for providing hybrid workers with secure access to cloud-based applications.

We hope the data, perspectives, and guidance in this report will help you better understand the benefits and implications of networking in this fast-moving multicloud era, as you develop your own cloud networking strategies.

– Thomas Scheibe
 VP of Product Management
 Cisco Cloud Networking

Key findings

Business trend: Lines of business are making their voices heard



The rising influence of lines of business on network operations planning.

- Together with security, agility and business performance now trump cost and network management as the key concerns for respondents.
- **42% of cloud and networking professionals** say that more agile and scalable application development is a key motivation for moving to multiple private and public clouds.

Technology trend: Simplicity and security are the must-haves



Challenges and objectives related to network complexity in the multicloud world, and their key drivers.

- **56% of respondents** say that security is the top networking challenge they face when managing distributed and hybrid workloads.
- The complexity of end-to-end management isn't far behind—it's cited by 53% of respondents.

Technology priorities: The most-wanted tools offer visibility and automation



Key networking technologies for improving cloud application connectivity.

- **50% of IT teams** rate end-to-end visibility as a top priority.
- 48% say multicloud SDN is on their most-wanted list.

Operational trend: CloudOps and NetOps are finding more common ground



Greater alignment between the objectives of CloudOps and NetOps.

- **49% of CloudOps and 42% of NetOps** respondents say security is their top motivation for using multiple clouds.
- Both say business performance, security, and agility are top priorities.

Organizational trend: CloudOps and NetOps are working better, together



More cross-functional collaboration between CloudOps and NetOps, and a corresponding rise in benefits.

- **45% of respondents** say that improving cloud security is their main motivation for increasing collaboration.
- 41% say greater efficiency is driving the shift.

Deployment trend: Cloud takes off, but on-premises stands firm



On-premises infrastructure is still important for most companies, even in multicloud environments.

- Although cloud adoption continues apace, **50% of respondents** say that the majority of their workloads are still deployed on-premises.
- Even two years from now, 38% still expect most workloads to be deployed on-premises.



Introduction

In his groundbreaking book *The Black Swan*, Nassim Nicholas Taleb wrote, “History does not crawl. It jumps.”

In early 2020, COVID-19 forced the world to jump. With people confined to their homes, activities that once took place face to face—in stores, restaurants, offices, and schools—moved into the digital realm. People and businesses had to find ways to adapt to the new reality.

Close on the heels of the pandemic, geopolitical, supply chain, and economic disruptions created yet more uncertainty. Overnight, the ability to act quickly became the top priority. Businesses discovered that if they were going to thrive, or even just survive, they needed new tools and new ways of doing things.

In response to these changes, many organizations have accelerated their adoption of public cloud (infrastructure as a service [IaaS] and software as a service [SaaS]), with 56% deploying more than 20% of their workloads in the cloud to support new applications and keep their increasingly digital businesses going. Today, the network is both the tool for digital transformation and the main means of keeping the lights on.

In 2020, network operations professionals needed to find a new way to work in the increasingly multicloud world. For customers, partners, and employees, the network is the grand highway to a consistent and meaningful multicloud application experience. So it’s not surprising that connecting to and between

distributed cloud and edge workloads is still top of mind today and a key networking priority for 2023. If a company is to have a viable future, the network needs to be multicloud-enabled, ubiquitous, reliable, secure, and agile.

This report is designed to guide you in your journey toward a sustainable and scalable multicloud network infrastructure. Our research identifies actions and technologies that can help you not only survive the shift to a multicloud-centric model, but flourish as a result of it—now and into the future.

In it, we unearth data supporting “bridge” processes, strategies, and objectives that have become the emerging norm for network operations in a multicloud world. We uncover trends from early adopters and gain insights into future cloud networking technology objectives, management processes, and deployments.

This global networking trends report will be released in two parts.:

- **Part 1: Hybrid Cloud Network Trends**

A look at how networks are enabling the secure, fast, and reliable deployment and management of workloads, applications, and services across private clouds, public clouds, and networks.

- **Part 2: Secure Multicloud Access Trends**

Will explore how businesses are deploying networks to support the secure access of increasingly distributed workers, partners, and customers to increasingly distributed IaaS and SaaS applications.



Business trend: Lines of business are making their voices heard

For several years, analysts, vendors, and IT professionals have talked about the importance of business outcomes in guiding IT operations.

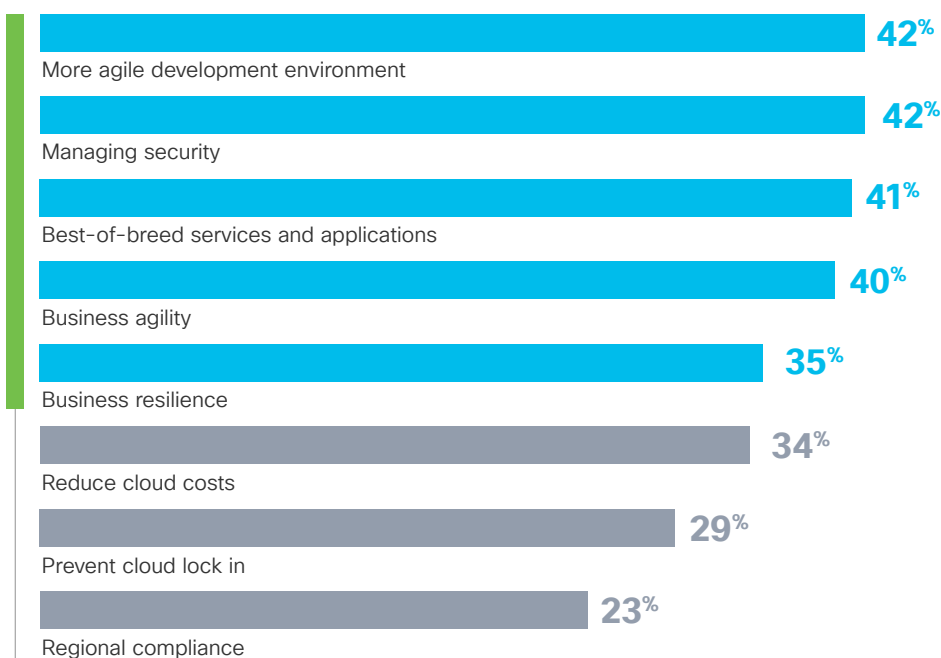
We've often highlighted how technology budgets controlled by the lines of business were growing at a substantially higher annual rate than those owned by the IT teams. While this trend should have meant that business units were having more influence on IT decisions, there hadn't been a great deal of

evidence that this was actually happening. However, survey respondents seem to indicate that line-of-business priorities are now influencing IT like never before.

When 2020 forced the shift from physical to digital engagement, cloud services and the associated network went from being a means of increasing productivity to the life support system of the business. Quite simply, the cloud and the cloud network kept businesses alive.



What are the most significant motivations for your organization to use multiple clouds?



Agility is a factor in the top three responses: faster problem resolution, faster changes, and proactive problem detection.

The paramount importance of business outcomes is made clear in the reasons network and cloud operations professionals give for moving more of their IT environment to multiple clouds.

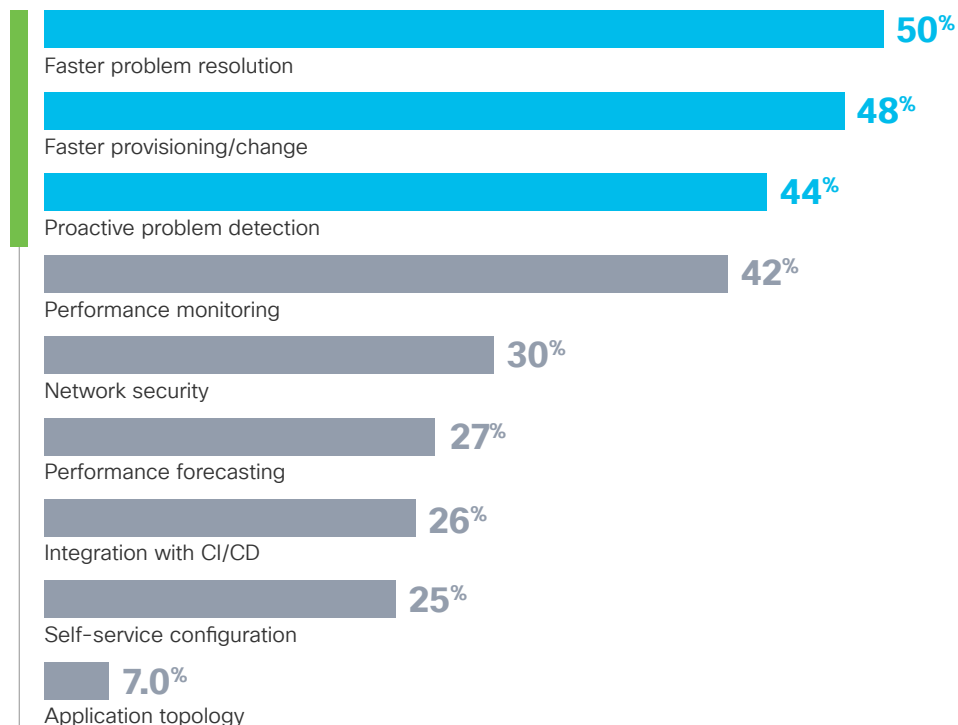
Agile development for business applications (42%), best-of-breed services and applications (41%), and business agility (40%) rank first, third, and fourth, respectively, in the top four tightly clustered responses, along with managing security.

In our 2020 and 2021 Global Networking Trends Reports, cost and network management were respondents' top

concerns. This year, the focus has switched to agility and performance—both of which have a direct impact on business outcomes.

As part of this year's survey, respondents also ranked what they saw as the most important benefits of hybrid cloud networking. Agility is a factor in the top three responses: faster problem resolution, faster changes, and proactive problem detection. Performance monitoring and performance forecasting also feature in the top responses.

What features or benefits of hybrid cloud networking are most in demand?





Executive Guidance

While cost and management will always be part of the network operations equation, there has been a huge shift toward creating new business applications and bringing them to market faster. Factors that impact these business outcomes and experience of the network and the applications now play a greater role in operations.

Network operations teams are being asked to focus on helping their organization deploy new applications faster, support native cloud applications, and create automation that accommodates rapidly changing business directions. Adopting an effective cloud operating model for internal IT, until now so effective with cloud providers, is increasingly the answer. When supported by unified platforms, it can create cross-functional consistency and cloudlike agility, and make it easier to deploy services across multiple clouds and networks.

– Fabio Gori, Cisco Vice President, Networking Product and Solutions

Bottom line: While the unpredictable world we live in challenges IT organizations, it also presents new opportunities for organizations that use technology to support dynamic business needs. IT needs to adopt an agile, cloudlike operations model for everything it does—including network operations.



Technology trend: Simplicity and security are the must-haves

As endpoints (users and things) and applications become more dispersed and distributed, network complexity multiplies. While adoption of public cloud is growing, 50% of workloads are still deployed on-premises. As a result, most environments will continue to be a mix of public cloud, hosted, private cloud, edge, and on-premises environments.

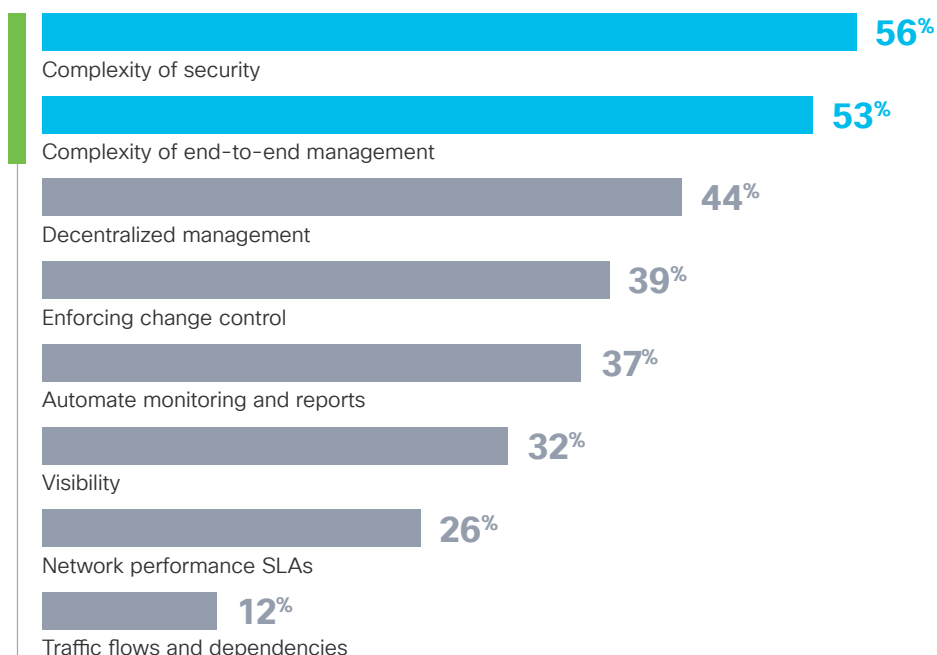
For any transaction, each hop in the journey (from cloud to network, user to workload, private cloud to public cloud, cloud microservice to edge microservice)

introduces new management, performance, and security considerations. Many of these elements are increasingly out of the direct control of the network operations team—even though the user experience is dependent on the end-to-end journey and is still very much the responsibility of IT.

So, it's understandable that complexity ranks highly in respondents' minds. Complexity of security (56%) and of end-to-end management (53%) are the top two networking challenges in managing the hybrid cloud and distributed workloads.



What are the most significant networking challenges you face when managing hybrid cloud and distributed workloads?

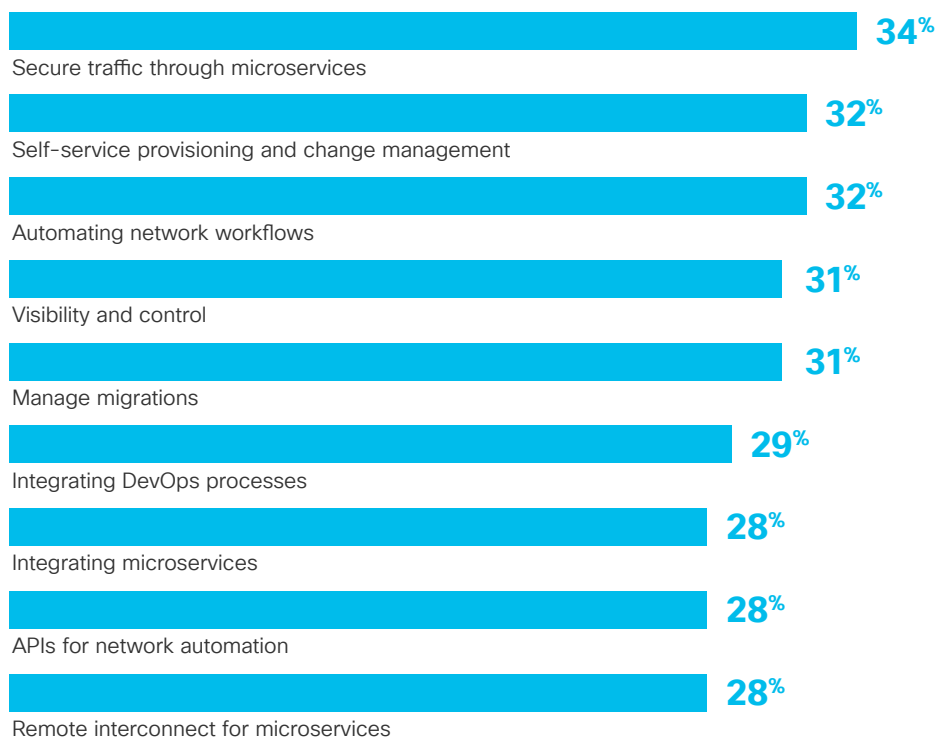


While adoption of public cloud is growing, 50% of workloads are still deployed on-premises.

Asked about networking specifically for cloud-native deployments, security was again respondents' top concern. The number one challenge was securing microservices traffic (34%). The high

ranking of automating network workflows (32%) and visibility and control (31%) also points to the pressing need to simplify network complexity for cloud-native environments.

Top difficulties of deploying networks that support cloud native



Bottom line: Hybrid cloud models and distributed application models are compounding network complexity, making traditional manual management and security models untenable.



Executive Guidance

Complexity is a function of the decentralized nature of the network, clouds, and internet. But as both security and management get spread over a wider and more complex landscape, it simply isn't possible to manage everything manually. Adding more technologies to the mix won't necessarily help; solutions must be the right ones. Adopting a platforms approach will allow organizations to automate management and visibility, simplify their ever-growing complex networks, and deliver a unified experience from end to end.

Platforms powered by AI and machine learning can support an effective cloud operating model that automates end-to-end policy for network and cloud management across different teams. By building more intelligence into common platforms, the network can work harder and take more of the administrative load. That means IT can spend more time focusing on the business experience and outcomes, where it's needed most.

– Fabio Gori, Cisco Vice President, Networking Product and Solutions



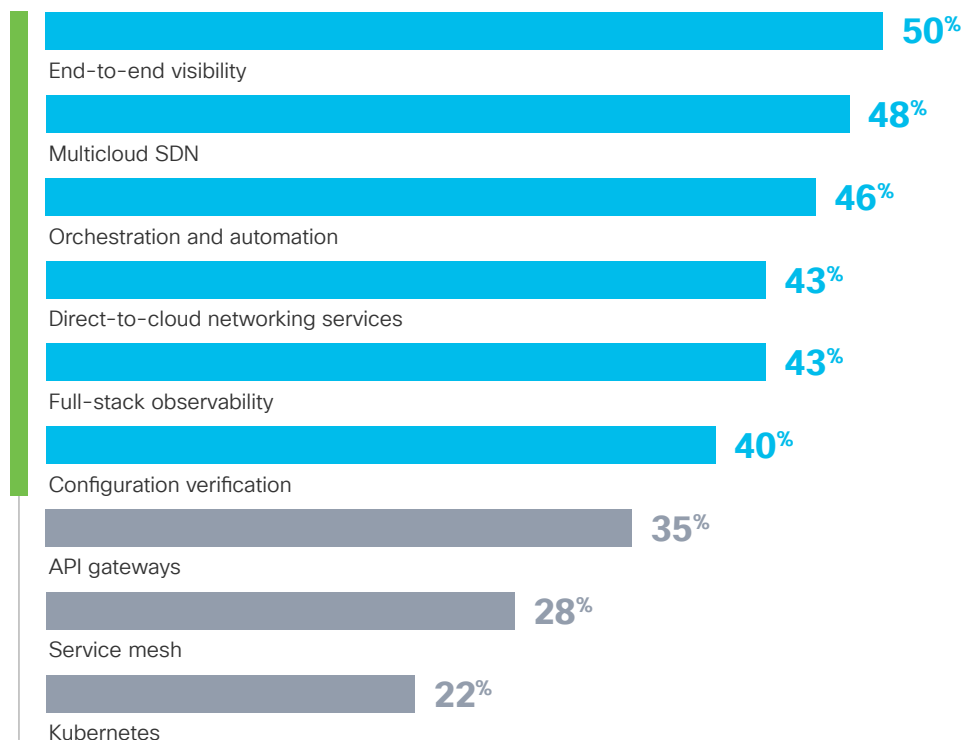
Technology priorities: The most-wanted tools offer visibility and automation

The complexity that has become such a challenge for hybrid cloud networking is having a clear impact on technology choices. Visibility is a recurring theme in much of our survey, and it represents two of the top five responses for network technology considerations. End-to-end visibility (50%) and full-stack observability (43%) are especially important in complex multicloud and cloud-native environments for ensuring the health of application performance and user experience.

Because of their ability to simplify complex operations, orchestration and automation rank in the top three of such technologies. Software-defined networking (SDN) can also provide network consistency and enjoys a similar role in the hybrid cloud. Interestingly, direct-to-cloud networking, which delivers faster middle-mile conduits to cloud providers, is one of the top networking technologies businesses are embracing for hybrid cloud networking.



Which of the following networking technologies are you considering or do you use to help manage distributed workloads?



Bottom line: A unified platform-based networking model simplifies network lifecycle management and offers the end-to-end visibility and automation that can help deliver the agility and security the business needs.



Operational trend: CloudOps and NetOps are finding more common ground

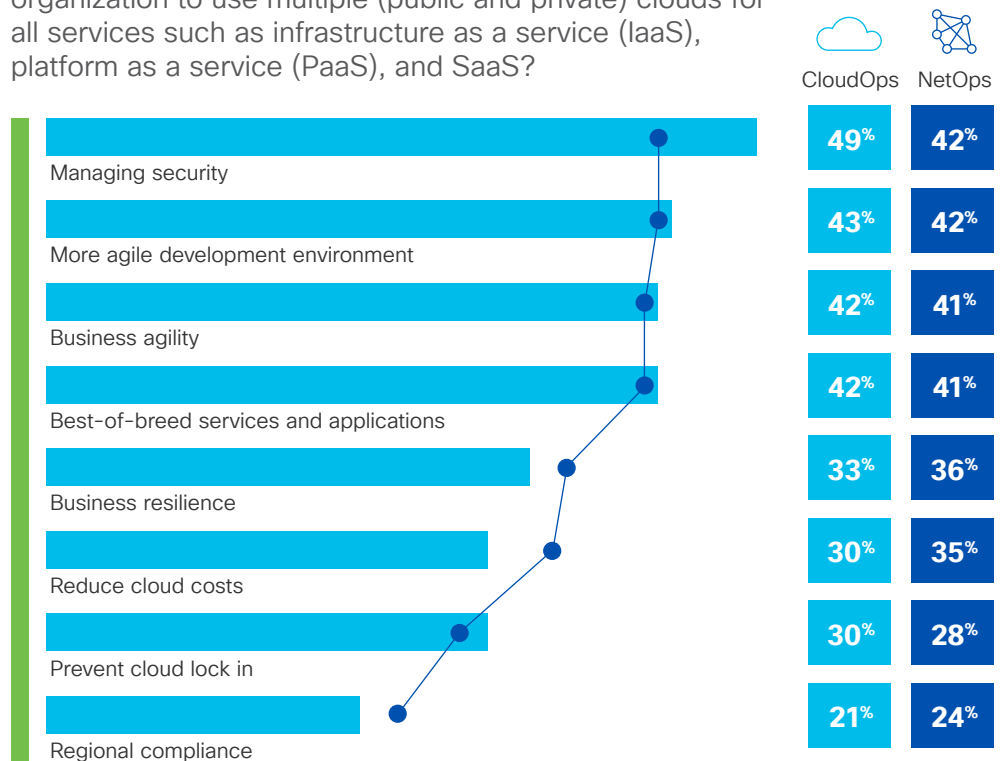
In earlier Global Network Trends Reports, there was a marked difference between the objectives and concerns expressed by network operations and cloud operations teams, reflecting a sense of distinct visions and separate identities.

But the current climate, and the shift toward the cloud, have made cross-functional collaboration essential. The focus on application experiences, and the resulting business outcomes, have demanded it.

In this survey, we've seen a marked convergence of the objectives expressed by both teams. Both rank agility and security near the top of their motivations for using multiple clouds. Interestingly, though, cloud teams are considerably more convinced of the benefits of multiple clouds (49%) for managing security than network teams are (42%).



What are the most significant motivations for your organization to use multiple (public and private) clouds for all services such as infrastructure as a service (IaaS), platform as a service (PaaS), and SaaS?

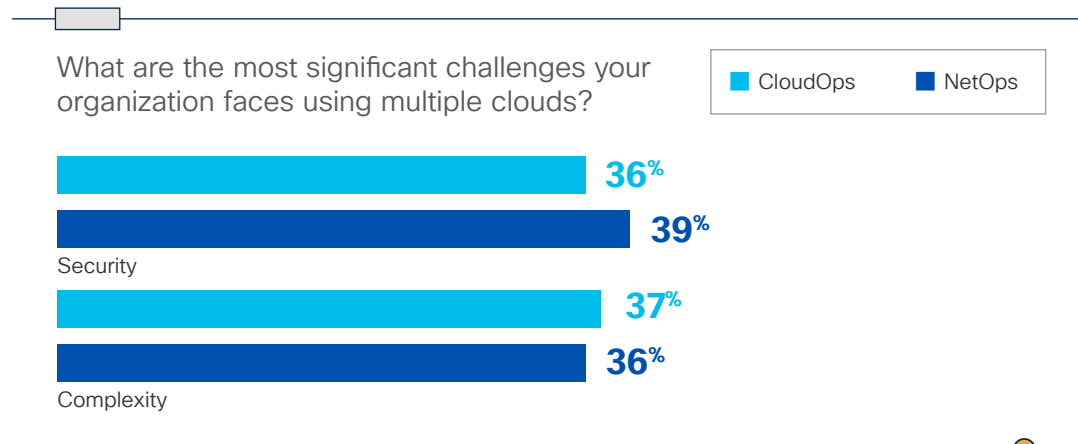


There is an accelerated move to edge, with an average of 53% planning to adopt edge in two years, compared with 41% today.

If we compare responses about which cloud strategies have been adopted to meet business objectives, the answers given by CloudOps and NetOps are generally within a few percentage points of each other—perhaps not surprising,

given the shared difficulties both face in this multicloud world. Both teams identify the same two top challenges: security and complexity, and they rank within a few percentage points of each other.

Bottom line: The objectives of CloudOps and NetOps are aligning, giving businesses the opportunity to break silos and share workflows, tools, and data to deliver better and more secure cloud services.



While CloudOps and NetOps are closely aligned on most things, they don't agree on the level of edge computing their organizations have adopted. It could be that NetOps teams aren't fully aware of businesses' edge computing deployments,

despite being responsible for delivering the connectivity they require. There is an accelerated move to edge, with an average of 53% planning to adopt edge in two years, compared with 41% today.



Executive Guidance

Because the two operational units now share common objectives, this is the ideal time to promote greater collaboration and cross-functional priorities. Although there seems to be a great deal of collaboration happening already, it's not as effective as it could be.

Team members need a common north star to guide them. It's the role of management to provide this. IT management—from NetOps, CloudOps, DevOps, and SecOps—needs to work together to spell out common priorities, objectives, and processes to shape collaboration across their teams in support of shared goals. Platforms, such as those that support an effective cloud operating model, can be invaluable for providing the consistency and guidance to govern these cross-functional efforts.

— Fabio Gori, Cisco Vice President, Networking Product and Solutions

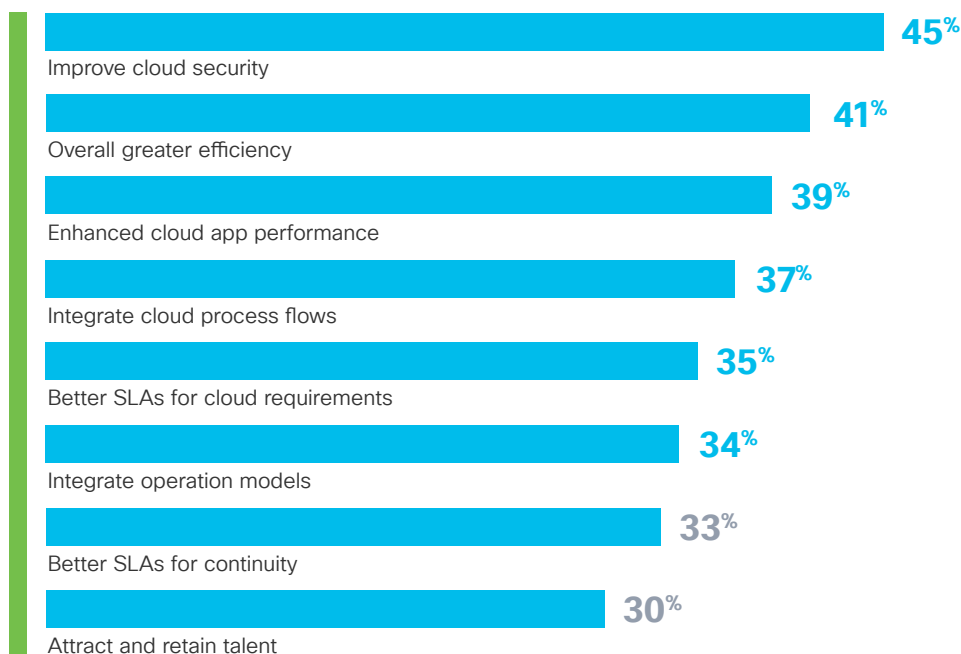


Organizational trend: CloudOps and NetOps are working better, together

As cross-functional objectives come into greater alignment, we would expect to see evidence of greater collaboration between cloud and network teams. And both CloudOps and NetOps do in fact identify greater cross-functional collaboration and a rise in corresponding benefits.

95% of NetOps professionals were optimistic about their collaboration with CloudOps—and CloudOps professionals expressed similar levels of satisfaction.

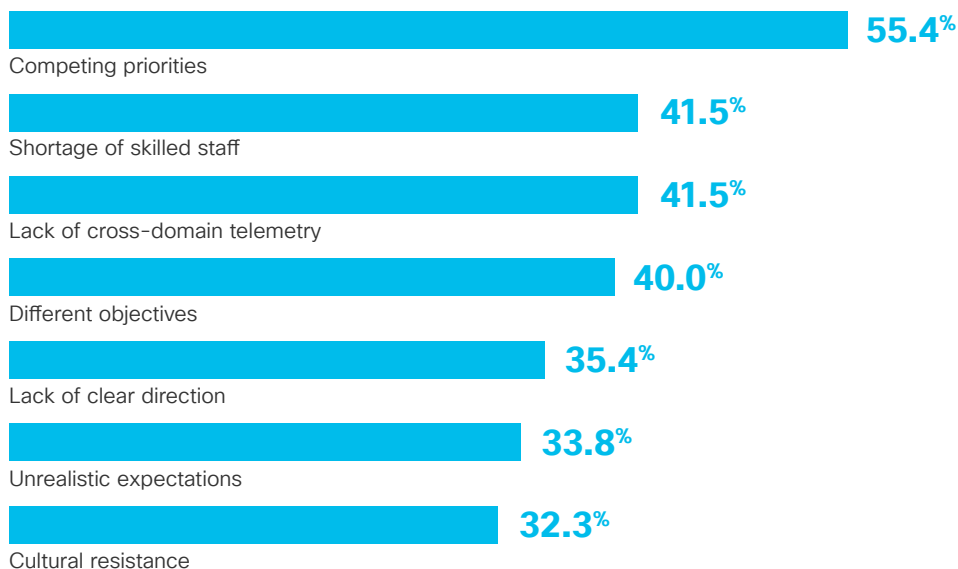
What are the key motivations for greater networking/cloud collaboration?



95% of NetOps professionals were optimistic about their collaboration with CloudOps—and CloudOps professionals...

But while teams share a desire to work together, some things get in the way. Competing priorities, lack of the right skills, cultural resistance, lack of direction, and unrealistic expectations all play a role in making collaboration less effective than it might be.

What are the top three roadblocks preventing more collaboration between teams?



Bottom line: The growing interdependence of cloud and networking is a given. IT management has the opportunity to deliver on the promise of better application performance and security, and to gain critical operational efficiencies, by helping NetOps and CloudOps teams to work more effectively together.



Deployment trend: Cloud takes off, but on-premises stands firm

There's no denying that cloud has come of age, with report after report highlighting its explosive growth. Our survey also shows high adoption rates, with NetOps respondents indicating that 94% of their networks support cloud-native deployments and 90% support distributed workloads across multiple clouds.

But cloud isn't the whole story. Even two years from now, 38% of NetOps and CloudOps respondents expect the majority of workloads will still be deployed on-premises. While this is slightly down from the 50% that currently deploy most of their workloads on-premises, it's still a substantial chunk. And interestingly, this trend isn't limited to network operations: CloudOps and DevOps agree on the ongoing need for on-premises infrastructure.



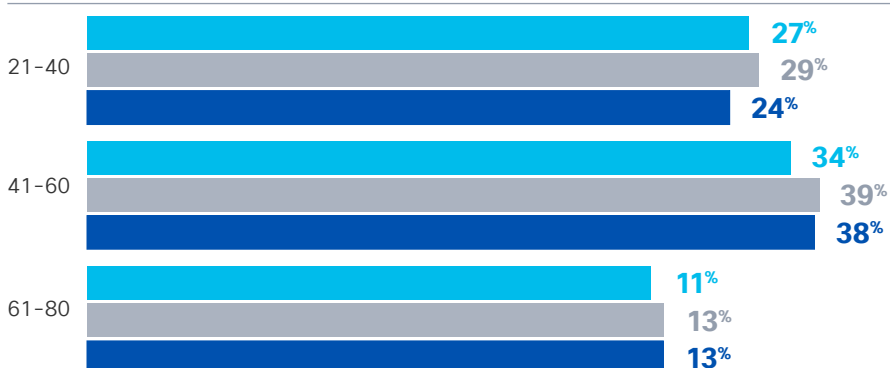
What % of workloads are currently deployed on-premises?
And in two years?



Current



In two years

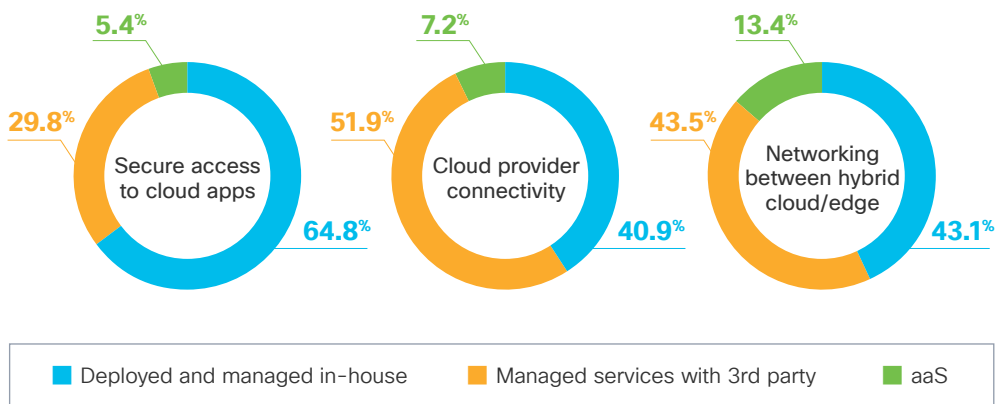


41% deploy and manage cloud provider connectivity in-house, and 43% deploy networking for hybrid cloud/edge in-house.

There's a similar trend toward moving network management to the cloud, with the growing adoption of SaaS and network-as-a-service models. But as with workloads, both CloudOps and NetOps still see a need for on-premises management for access and networking infrastructure. Nearly 65%

of network operations currently deploy and manage their cloud access networks for providing user access to cloud resources in-house. 41% deploy and manage cloud provider connectivity in-house, and 43% deploy networking for hybrid cloud/edge in-house.

What are your organization's preferred network consumption/deployment model for the following functions?



While a large percentage of enterprise networks are still managed in-house with on-premises systems, management platforms that support an end-to-end cloud operating model can provide cloudlike benefits to the on-premises

infrastructure. Since these platforms also offer easier lifecycle management and better integration possibilities between network and other IT platforms, we can expect their adoption to grow.

Bottom line: In the medium term at least, IT teams need to plan for both cloud and on-premises infrastructure. To provide greater operational consistency and the best possible user experience, NetOps and CloudOps teams should consider management platforms that support a pervasive cloud operating model across the entire cloud/network stack.



Executive Guidance

Because the hybrid and multicloud world can deliver more business value faster, cloud deployments continue to grow. But cloud alone isn't always the right solution. The best approach is to identify the organization's overall objectives and deploy the right technology to meet them.

Even as hybrid work allows remote workers to roam ever more freely, for many organizations there will always be a need for on-premises infrastructure at headquarters to support more video-rich collaboration. Some industries just can't be fully remote. And some data, due to privacy compliance or data security, is best located in company-owned data centers.

What's needed for the foreseeable future is a mix of cloud and on-premises infrastructure. Choose technology that's complementary, not exclusive. Cloud and on-premises should work together seamlessly to give a unified experience.

– Fabio Gori, Cisco Vice President, Networking Product and Solutions



Conclusion

The trends in this report provide fresh insights that can help guide your network and cloud decisions over the next five years. In themselves, many of the ideas aren't new: themes such as cross-functional collaboration, increased complexity, and business-driven network operations have been part of the conversation for several years. What is different this time around is that these issues are now having a real impact on day-to-day operations for technology leaders.

The last two years of uncertainty meant that network operations had to quickly adopt a model that could support increased network and business agility, better security, and improved application performance. This tipped the balance in favor of processes and objectives that many organizations planned to implement someday and made that day today.



Why we did what we did

To make sure the report was as forward-looking as possible, we chose our survey participants carefully:

We focused on network operations within organizations using cloud. Part 1 of the report, which focuses on hybrid cloud networking, is a sister report to Cisco's recent [Hybrid Cloud Trends Report](#).

According to Gartner, more than 80% of organizations have adopted multicloud environments for their IT needs. We built this survey to uncover how this multicloud environment impacts network operations. The 2023 Cisco Global Networking Trends Report is the result of a quantitative study of targeted technology topics and presents insights based on the results of that study. The survey data referenced in this report was commissioned by Cisco, collected by 451 Research, part of S&P Global Market Intelligence, and analyzed by Cisco as part of an independent web survey of over 2500 global IT decision makers and professionals in cloud computing, DevOps, and enterprise

networking roles. The data was segmented by functional role, region, and company size.

As much as possible, the survey participants are early adopters of cloud networking technology. Early adopters lead the way, trying and testing different tools and ways of doing things. That means they have much to teach us about which ones will reach broader acceptance.

After compiling our initial survey data, we compared the results with earlier Cisco Global Networking Trends Reports, to help us identify how the experiences and priorities of network operations professionals have changed since the pandemic.

The report was written between April 11 and September 30, 2022. The survey was conducted in 13 countries across North America, Latin America, Asia/Pacific, and Western Europe (US, Canada, Brazil, Mexico, Australia, China, Indonesia, South Korea, Japan, Singapore, UK, France, and Germany).

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