



NTT Ltd. | Insights driven by data

# 2022-23 Global Network Report

Enable the connected future through  
smarter networks



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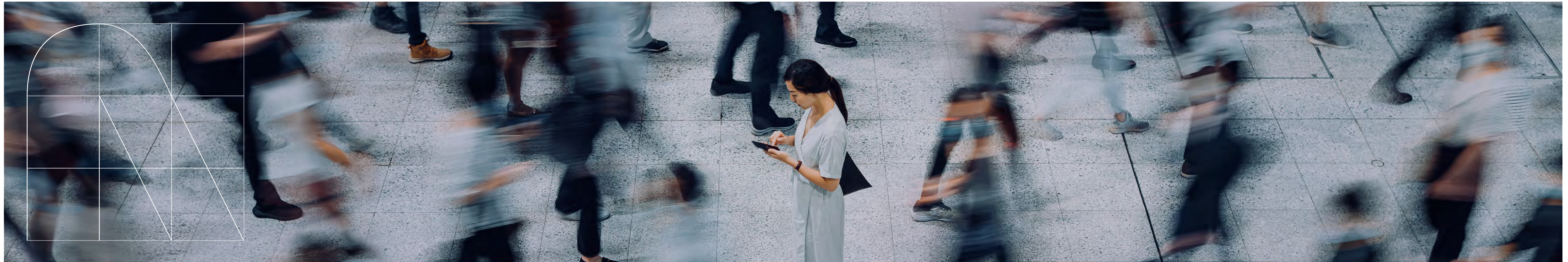
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Introduction

# Introduction to the 2022–23 Global Network Report



The network is the platform of digital transformation that enables an organization’s business and future growth

An agile, ubiquitous and secure network lets you adapt easily to business change, while increasing the maturity of your support environment.



Uncover NTT’s latest data-driven insights to find out what’s changing and how you can enable your organization

Our research, based on extensive interviews (1,378 participants; 21 countries), investigates the critical challenges faced by organizations today in preparation for a resilient future tomorrow.



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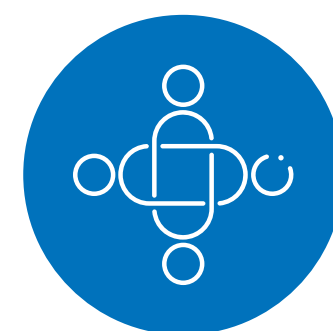
# Report highlights

## Top 5 insights



### 1 Network and digital transformation

**93%** recognize the organization's **most pressing business and digital transformation challenges** can be linked to and directly affected by the network; **9 in 10 top performers** are **increasing network investment** to support digital transformation.



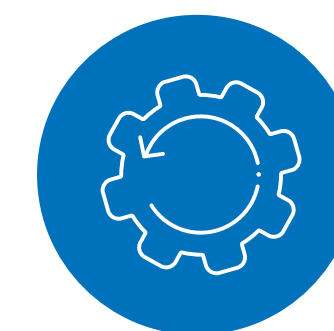
### 2 Business and network strategy

94% agree **cloud-based workloads demand greater availability, scale and performance** from the network – yet about **50% are still to align their technology/network strategy** with their business goals.



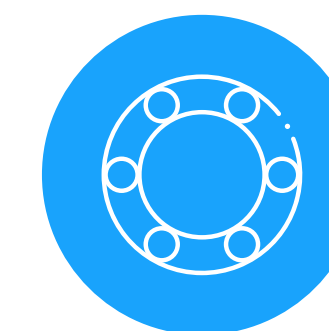
### 3 Technology trends driving change

>80% are embracing enabling new technologies, of which **cloud-based network management, AIOps and private 5G** are the top three investment priorities for the next two years, yet **7 in 10** struggle to keep up with the pace due to rising technical debt and lack of expertise.



### 4 Network management

89% of IT executives have operational concerns about running complex, intelligent networks while complying with security and regulatory requirements; **90% prefer to outsource to a single strategic partner.**



### 5 Future of the network

>90% of senior executives believe ICT innovations like AIOps, automation and predictive analytics will have a huge impact on network delivery and **need to be invested in now for the network of 2025 and beyond.**



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## Foreword

# Welcome to a new world of network opportunities



**The COVID-19 pandemic brought lasting change to the workplace globally. Hybrid and distributed working have changed the future of network architecture, security and technology irrevocably, forcing organizations to scale up and invest in new skills.**

We launched our 2022–23 Global Network Report to take stock of how networks are evolving, how well organizations are prepared for these changes, and the degree to which CEOs and other senior executives plan to make their networks robust and agile enough to adapt to new demands.

We found that nearly all executives (98%) agree that the network is a critical part of driving business growth. However, 72% believe that low levels of network maturity are negatively affecting their delivery and goals.

It is not a mystery why this discrepancy exists – and top-performing organizations\* have solved it. These high achievers have clear practices that help them outperform other organizations in the areas of:

- **Strategic alignment:** Almost 9 in 10 top-performing organizations have aligned their technology strategy and their business goals; similarly, approaching 8 in 10 have aligned their network and business strategies, compared with only about 40% of underperformers\* on both counts.

- **Investment in digital transformation and the network:** Nearly 9 in 10 top performers strongly agree that they are accelerating their investment in digital transformation compared with less than half of underperformers. About three-quarters of these industry leaders also strongly agree that their most pressing business and digital transformation challenges are directly affected by the network, but only 42% of underperformers share this sentiment. Also, almost 9 in 10 top performers spend more than 2% of their revenue on the network, yet that is true for just over 4 in 10 other organizations.
- **Adoption of new technologies:** Almost 8 in 10 top performers have implemented leading technologies such as multicloud networking, edge computing, SD-WAN and 5G.
- **A preference for outsourcing:** Among top-performing organizations, more than 7 in 10 already outsource most of their network management, with more than half also believing that their future network information technology needs will be fully outsourced and managed, compared with just over a quarter of underperformers.

\* See definitions on page 9



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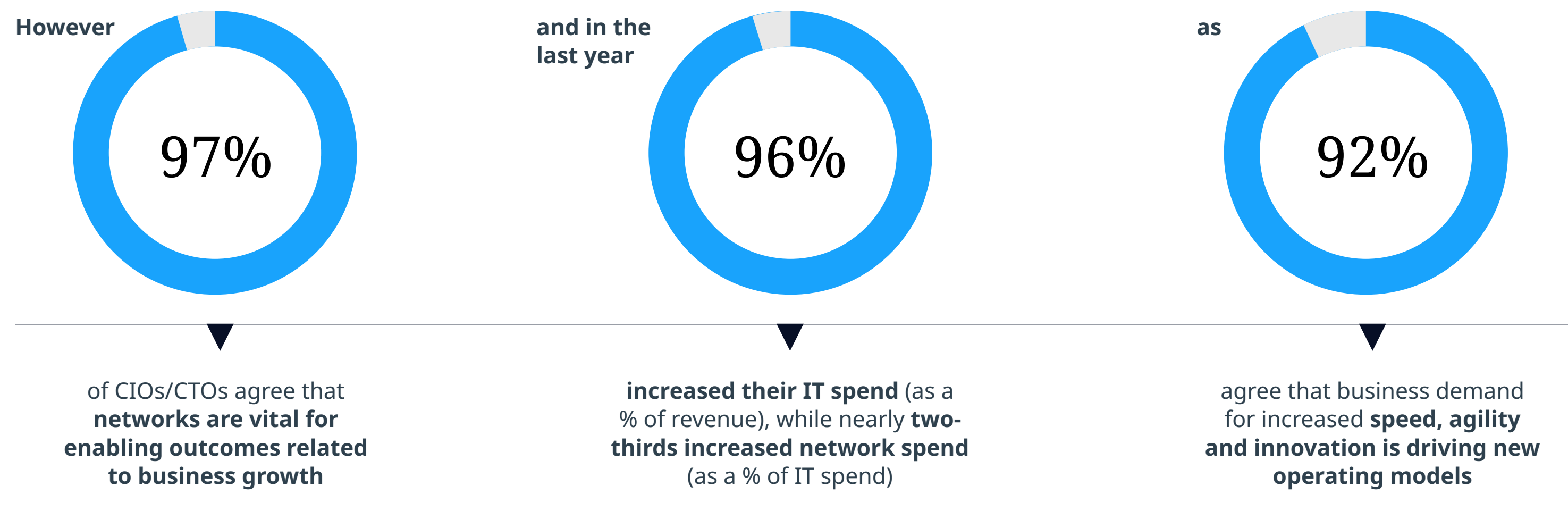
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### Most executives are not fully satisfied with their current network capability

**Satisfaction levels wane in line with role levels.** At the C-suite level, 48% are fully satisfied with network capabilities. This drops to just 32% at the senior manager/specialist level. Only 39% of network-specific decision-makers are very satisfied.



Clearly, organizations that lack an end-to-end understanding of their network are unlikely to achieve their business outcomes – and our findings show that just 2 in 5 say they are very satisfied with their current network capabilities. **A particular issue seems to be the strategic alignment of priorities, with 71% citing a lack of collaboration between their information technology (IT) and business functions as a key challenge.**

Therefore, most organizations now want to upgrade their network infrastructure to enable digitalization, innovation and

sustainable growth in their business. The network landscape is changing, and many solutions that are now in play for a minority will become standard within the next two years. Our report explores why the network is a growing focus area for organizations, with rising levels of investment driven by the need to innovate.

**In terms of technology, top performers rank cellular 5G as their main investment priority, with network management, performance and analytics (including AIOps) in second place, ahead of software-defined networks and**

**infrastructure. They also rank private 5G, cloud-based network management and integrated platforms and technologies highly.**

Additionally, security continues to be of supreme importance in network architecture thinking. More than 90% of organizations agree (42% strongly) that ever-increasing security and compliance risks are a challenge throughout their IT and network operations.

Most organizations cite a lack of expertise in these focus areas as the reason they are now almost overwhelmingly leaning toward key partners and managed services solutions for their network requirements. **To drive security and gain access to the skills that can optimize their capabilities and accelerate innovation, 98% of organizations are open to the concept of network as a service.**

However, most of these organizations struggle to find the right partner, and our survey indicates a level of disgruntlement with their current arrangements. Apart from budget constraints, vendor capability and rigidity are cited as the top challenge in pursuing network success (most organizations say they default to their incumbent service provider when new managed service needs arise). **Ultimately, executives are less concerned about the underlying technology and associated costs, and more focused on an outcome-based commitment driven by a service level agreement.**



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Finally, **sustainability has moved up the business agenda**. Organizations that have aligned their network strategy with their business needs are almost three times as likely to reduce their environmental footprint via network technologies as those that have not. Top performers are nearly 90% more likely than underperformers to focus on sustainability and environmental, social and governance (ESG) goals.

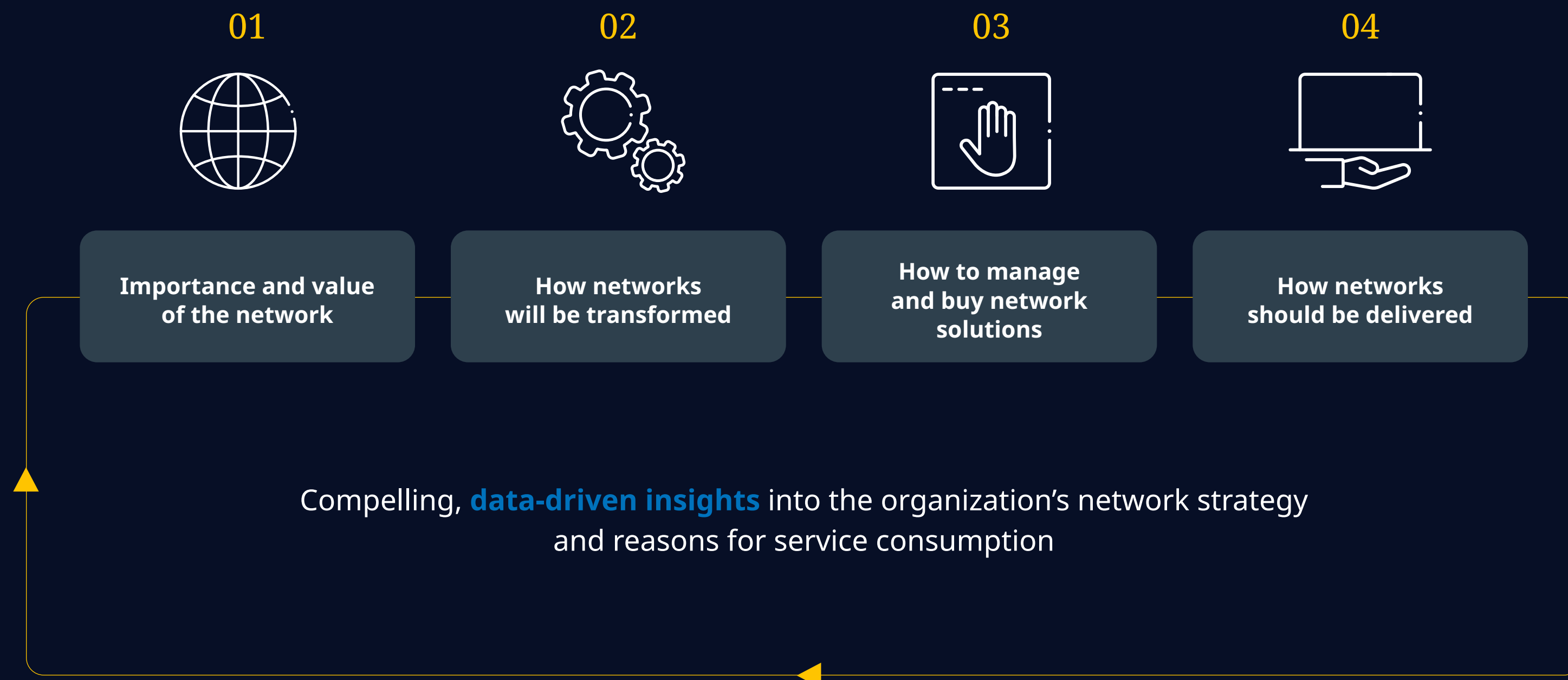
The impact of the pandemic, combined with environmental, political and economic instability, will increase the pressure on organizations to adapt – and adapt more rapidly than before. This will be underpinned by a renewed focus on modernizing the network and making it less vulnerable to disruption.

In the following chapters, we will explain how these trends are playing out in four focus areas: the importance of the network; network transformation; network buying and management; and network delivery. And we'll show how top-performing organizations are rising to the challenge.

We hope our report will help you determine the next step in the evolution of your organization's network.

**Amit Dhingra**  
Executive Vice President, Enterprise Network Services,  
NTT

## Our research identified 4 pillars for enabling the connected future through smarter networks



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# The top-performers perspective

Top-performing organizations\* have not only executed most of these priorities effectively but are also ahead of the curve when compared to the rest

**89%**  
 have **aligned their technology strategy** with their business goals, compared with only 49% of others

**79%**  
 have **aligned their network strategy** with their business goals, compared with only 48% of others

Top performers are **33%** more likely to have implemented leading technologies

- 61%** private 5G
- 61%** virtual private LAN
- 70%** edge

**Less than half of underperformers say the same**

**>89%** are accelerating investment in digital transformation; under half of underperformers are doing the same

**76%** are outsourcing their network management and/or plan to fully outsource to a managed service provider in the next two years

\*Top-performing organizations are categorized as having >10% year-on-year revenue growth and >15% operating margin in the last financial year



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# The future is now

The evolving landscape demands a richer strategy

## Top performers versus underperformers

From the organizations whose responses were included in this report, top performers have been categorized as having:

- Higher revenue growth (increased by >10% in the last fiscal year)
- A stronger operating profit as a percentage of revenue (>15% in the last fiscal year)

Underperforming organizations have been categorized as having:

- Poor revenue growth (0% or less in the last fiscal year)
- A weaker operating profit as a percentage of revenue (<5% in the last fiscal year)

Beyond these two categories, the middle of the pack is categorized as having:

- Revenue growth of 0%–10% in the last fiscal year
- Operating profit as a percentage of revenue of 5%–14.9% in the last fiscal year

## Top 3 trends toward smarter networks

01



### IT trends driving network modernization

- Cybersecurity mesh
- Cloud-native platforms
- Hybrid workplace

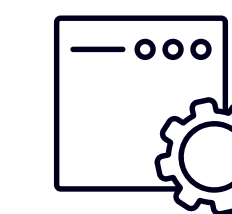
02



### Network investment priorities for the next two years

- Cloud-based network management
- Network management, performance and analytics (including AIOps)
- Private 5G

03



### Impact of digital acceleration on network architecture requirements

- Greater support for IoT connectivity technologies
- Increased importance of remote management capabilities
- Increased need for greater network automation

## Browse our 2022–23 Global Network Report data

Visit our [Global Data and Benchmarking Portal](#) to browse and filter the full data sets from our global survey.



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Section 1

# The importance of the network



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# Importance of the network

Digital transformation, innovation and the need to drive growth are causing significant changes in network requirements, availability and demand

Organizations agree that networks are vital for enabling outcomes related to:



Growth

98%



Cost management

93%



CX and EX

93% & 94%

>90%

need greater availability, scale and performance

95%

agree that technology investment and progress will be instrumental to future success

>90%

are accelerating their investment in digital transformation

71%

say low network maturity is negatively impacting business delivery



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The network is critical to any organization. More than 9 in 10 senior executives globally say it is vital in bringing business outcomes to life, including growth, cost management, innovation and agility. Yet more than 7 in 10 believe their low level of network maturity holds back their business delivery.

This has a clear impact on financial performance. Top-performing organizations are more than three times as likely as underperformers to be in an advanced state of network maturity, and organizations with high network maturity are more than twice as likely to be in an advanced state of digital optimization.

#### Network dependency will grow in the next two years

More than 9 in 10 executives agree – most very strongly – that network dependency will grow in the next two years. Cloud-based network management tops their list of network investment priorities in the next two years, followed by network management, performance and analytics improvements (including AIOps).

For those with advanced network maturity, cellular and private 5G are next on the list, while those with developing network maturity also rank software-defined networks and infrastructure among their top four priorities.

Despite a rising dependency on the network, only 2 in 5 organizations strongly agree that their current network objectives are being met, and just 42% are fully satisfied with their current capabilities.

“Increasingly, networks have moved away from being just a hygiene factor to actually being true differentiators, and the businesses that recognize this outperform their peers.”



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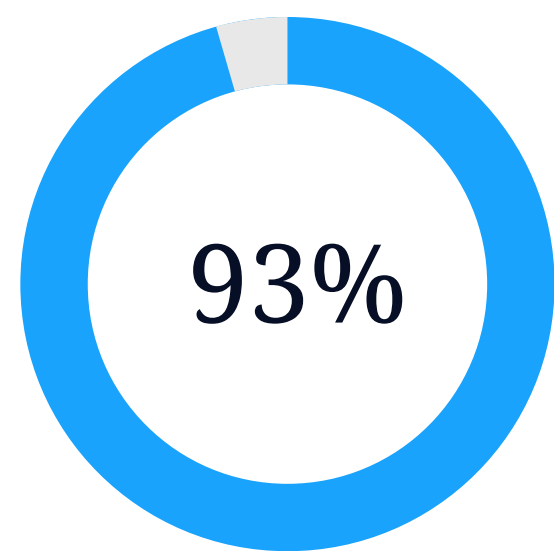
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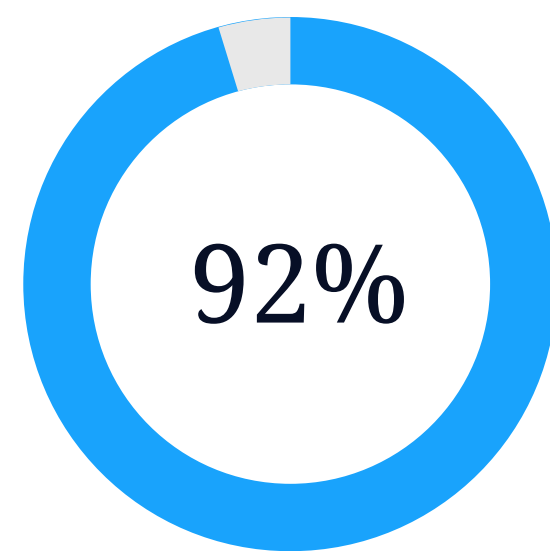
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**Dependency on the network is rising**

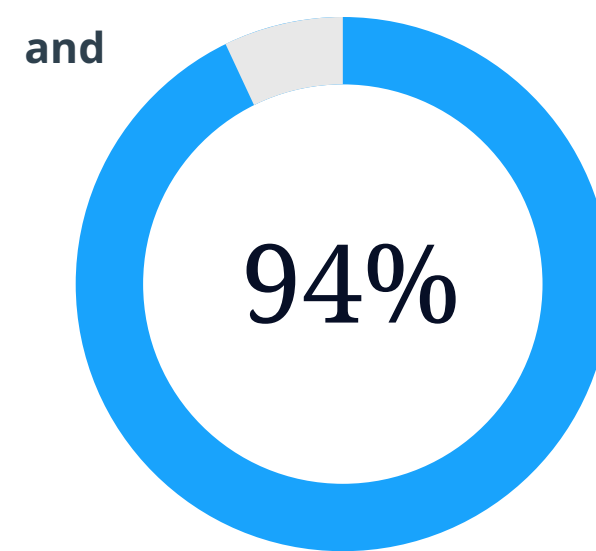
But only 2 in 5 strongly agree that their current network objectives are being met; 95% say that evolving work and employee engagement models are driving new technology demands.



of organizations agree (the majority very strongly) that **network dependency is expected to grow in the coming two years**



of organizations agree (42% strongly) that **network functions will be moving to the cloud** (firewalls, routers, etc.)



and agree cloud-based workloads demand **greater availability, scale and performance from the network**

“ Many organizations have not invested sufficiently in their networks and carry technical debt. **During COVID-19, they made some quick fixes to enable hybrid work, but now is the time for them to take the whole end-to-end network architecture into the next generation and bring all the aspects together.** ”

**Business imperatives affecting the network**

At the same time, we see multiple business imperatives affecting our need for networks:

- **A rising need for connectivity across a multitude of devices, with an increase in the volume of video streaming:** This ranges from employees' and customers' mobile devices and laptops to edge computing and the Internet of Things (IoT).
- **A fast rate of cloud adoption:** More than 9 in 10 organizations agree that most network functions will move to the cloud.
- **Adoption of 5G (cellular and private):** More than 8 in 10 organizations are embracing enabling technologies, including private 5G, within the next two years.
- **Hybrid and distributed working:** A top-three trend driving network modernization, alongside security and the cloud.
- **Security threats and breaches:** Distributed hybrid work models present far more attack opportunities for malicious actors. Organizations must therefore move to more centralized, cloud-based security solutions, such as secure access service edge (SASE), and a managed endpoint security model.
- **An emphasis on sustainability:** Benefits listed by senior executives include reducing environmental impact, empowering employees, support for operational efficiency and improving customers' quality of life.
- **An increased focus on employee and client experience:** More than 6 in 10 top performers with high levels of network maturity report high employee satisfaction levels compared with only 7% of underperformers, who have limited network maturity. Network enablement also improves customer experience (CX): nearly 7 in 10 top performers have increased their customer satisfaction levels, but only about 1 in 10 underperformers say the same.



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### What organizations need from the network

These imperatives are changing organizations' network needs. They now require:

- **High speed and low latency** in their networks (a feature of edge computing)
- **Flexibility and agility, with a shift to cloud-based models** – a need driven by hybrid working (about 95% of executives agree that evolving work models are driving demand in this context)
- **Integrated security (SASE)** – 95% of organizations are investing in their cybersecurity capabilities; 91% plan to move to identity-based security and 93% believe new threats will drive increased security demands
- **Ease of consumption with as-a-service models** – more than 9 in 10 CIOs/CTOs agree (more than half agree strongly) that they would look for a specialist partner for a network-as-a-service solution

### Network investment priorities

**Cloud-based management, performance and analytics, and 5G networks (private 5G and cellular) are the key network investment priorities in the next two years.** Organizations that significantly increased operating profits as a percentage of revenue have focused on cloud-based network management, private 5G and cellular 5G. Proactive organizations are prioritizing private 5G ahead of everything else.

### Investment priorities for the network in the next two years

Top network investment priorities in the next two years	Top performers	All others
Cellular 5G	1	4 ↓
Network management, performance and analytics (i.e., AIOps)	2	2 ↔
Software-defined networks/infrastructure	3	5 ↓
Cloud-based network management	4=	1 ↓
Private 5G	4=	3 ↑
Integrating platforms/technologies	4=	8 ↓
OT/IT network convergence	7	12 ↓
Automation (including SecDevOps)	8=	9= ↓
Application development, modernization and containers	8=	7 ↑
Edge networking	10=	9= ↑
Secure access service edge (SASE)	10=	13 ↓

What are your organization's top three investment priorities for the network in the next two years?

Base: All highly technical/technical respondents (n=1,102)

“**The cloud is changing the networking paradigm. Both applications and network functions are now moving to the cloud. This helps organizations scale up and down, but managing the network as a cloud function is a very different skill. Not every organization can evolve from their current skill base to these new requirements.**”



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**Not investing is not an option: multiple risks exist from underinvestment in the network**

**Top risks vary by vertical:** For the automotive and mining, and natural resources industries, lack of competitiveness (against companies in same industry) is a top risk, in banking/investment it's inconsistent security policies/increased risk

Greatest risks from underinvestment in the network Top 10	Top 10
Inflated IT operations/support costs	1
Limited availability of new services required for digital transformation	2
Inconsistent security policies and increased security risk	3
Process/technology inefficiency	4
Lack of automation/agility slows adoption of new network technology	5
Difficulties in managing complex/disparate environments	6
Inability to support changing business needs	7
Ability to support a hybrid work model	8
Lack of competitiveness	9
Lack of centralized intelligence/analytics to validate decision-making	10

What do you believe are the three greatest business risks that result from underinvestment in the network? (Select top three)

Base: All respondents (n=1,378)

Think about your network in terms of how it supports the flow of information, which is critical to all organizations. **For example, the network manages the information flow all the way from sales orders right down to manufacturing, enables feedback to product teams and supports decision-making through big data and analytics.**



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### Deep disconnect on strategy alignment

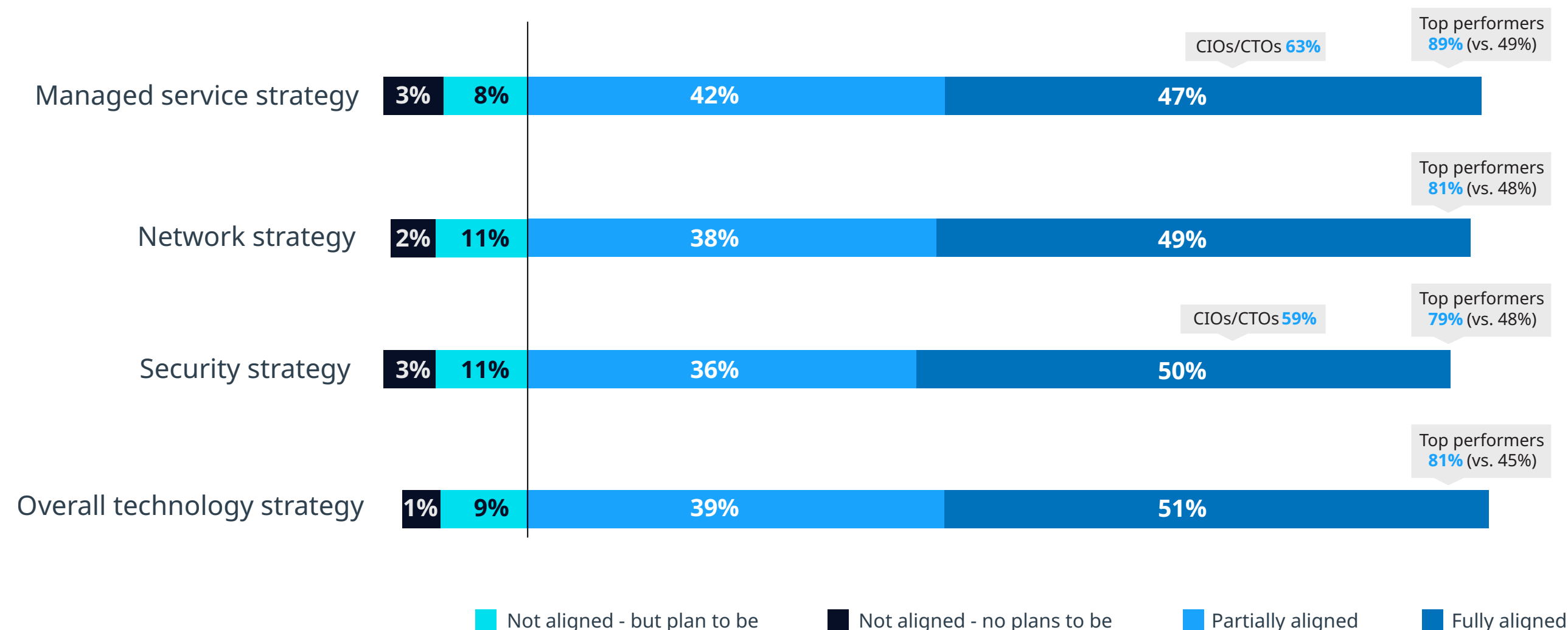
Overall, only half of organizations fully align their business and network strategies, and most underinvest or struggle to tangibly define their network competence in a way that produces measurable results. Again, it's the top performers that seem to be getting it right: 83% strongly agree that they have fully aligned their overall technology and business strategies; nearly 9 in 10 believe networks are vital for enabling business growth; and 81% strongly agree that technological investment will be instrumental to their success.

### Resourcing and skill challenges also hold back network progress

Our findings show that:

- 71% of organizations say they lack the in-house skills to operate modern networks and/or that they lack the skills and resources to drive network and business-as-usual development initiatives.
- Access to skilled resources and management of modern network technologies emerged as a top motivator for IT and C-suite executives when considering a managed service provider.

### Alignment of business strategy with technology strategies



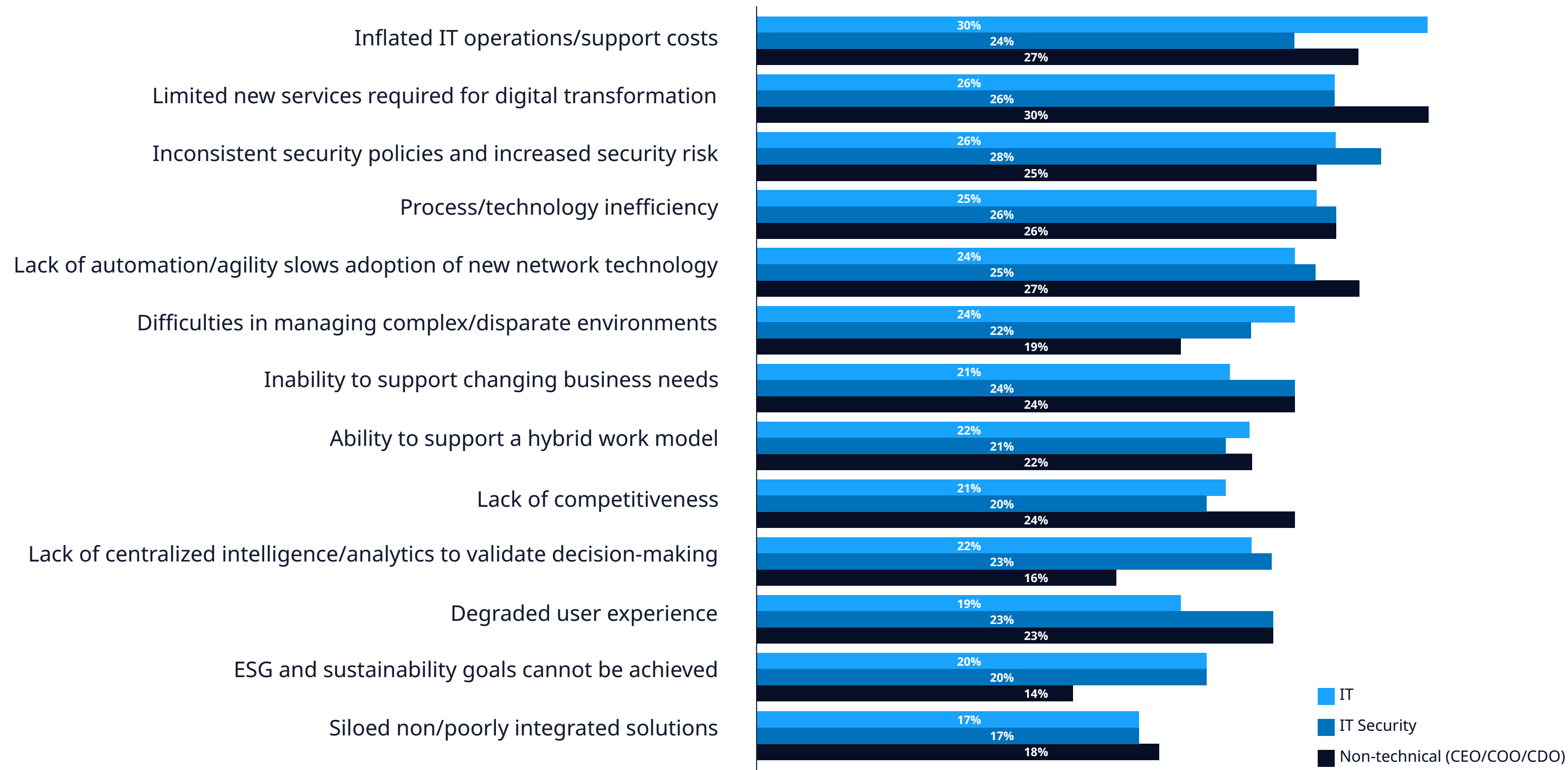
### Underinvesting in the network is a business risk

**Not taking any action is the biggest risk:** IT costs may remain inflated, digital transformation initiatives may be limited in scope and impact, security policies may remain inconsistent (and pose reputational, financial and compliance risks), and there may be major process inefficiencies involving customers and employees.

**But, a top-performing network can spark digital transformation and innovation while raising productivity and saving time and money.** According to more than 9 in 10 executives, investing in network technology will be instrumental to their success, while more than 90% say they are accelerating their investment in digital transformation.

“ Don't think of the network as IT spend. Truly consider **what the return on investment in networks would be for your organization in terms of the business outcomes you see as critical.** ”

### Business risks from underinvestment in the network



What do you believe are the three greatest business risks that result from underinvestment in the network? (Select top three)

Base: All respondents (n=1,378)



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# How the network will be transformed



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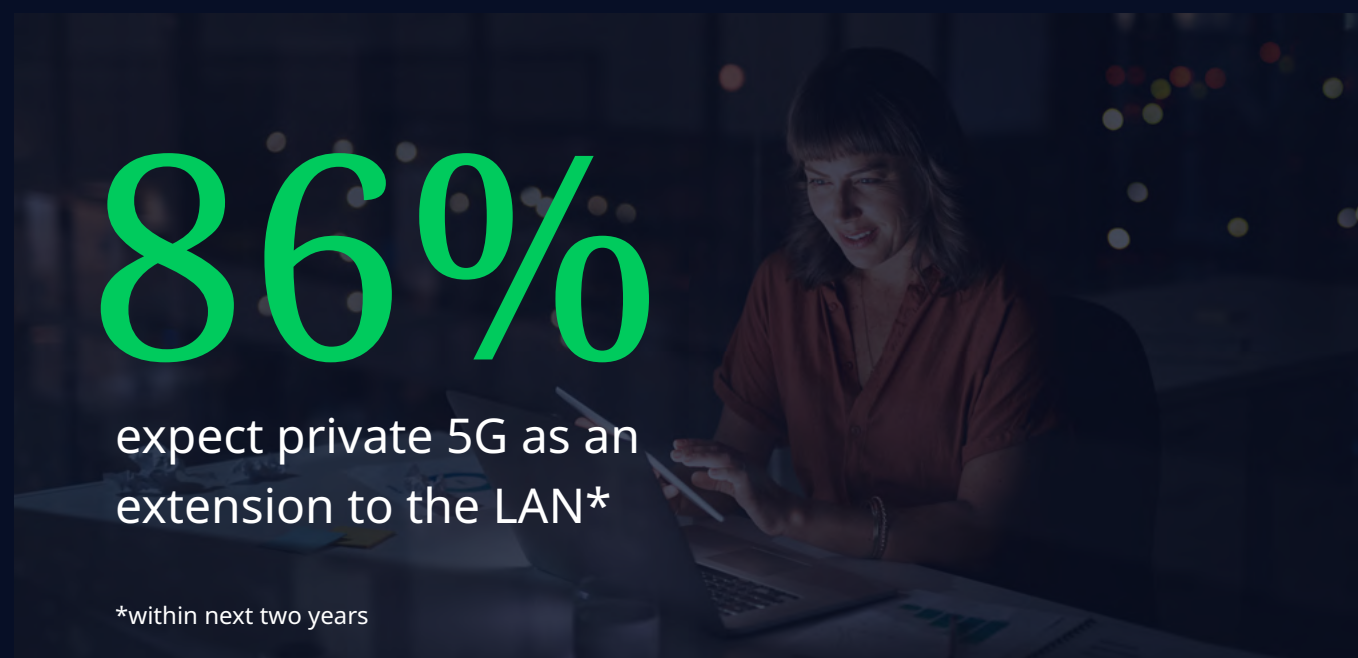
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# How networks will be transformed

More than 9 in 10 organizations expect that the convergence of the technology and physical worlds will introduce new requirements (network/security convergence, OT/IT convergence, OT security)



**93%**  
believe new threats will drive increased security demands, requiring a deeper level of access control and inspection



**86%**  
expect private 5G as an extension to the LAN\*  
\*within next two years



**92%**  
expect to adopt cloud-first solutions and/or move network functions to the cloud



**95%**  
are investing in cybersecurity capabilities



**89%**  
expect the campus to be a critical element that will enable hybrid working



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Organizations cannot recognize the importance of the network without also investing in its ongoing evolution. The COVID-19 pandemic has had a significant long-term impact on network architecture and technology. The rapid deployment of remote and hybrid working models was surprisingly successful, and both employers and employees have realized how effective these models are.

While 8 in 10 top-performing organizations believe technological investment will be instrumental to their success, only about 4 in 10 underperformers share this belief. More than three-quarters of top performers are already in an advanced stage of modernizing and digitally optimizing their businesses, compared with less than a quarter of underperformers.

#### Technology trends driving change

In the evolving network landscape, many solutions now adopted by a minority of organizations will soon become standard. Organizations will therefore need to keep pace to stay relevant.

“ The network architecture needs to support the move to digital acceleration by enabling an organization to move quickly.



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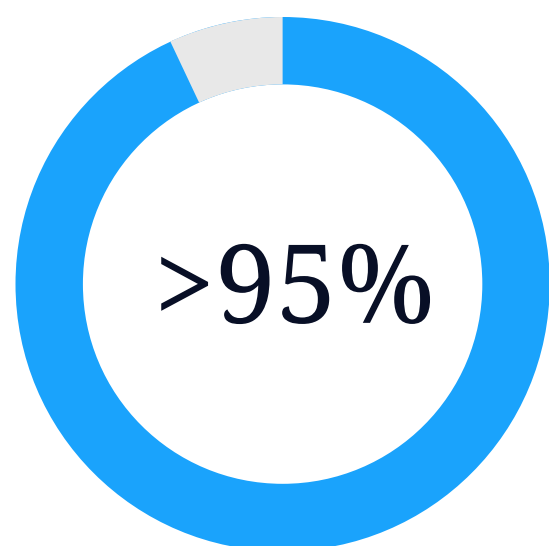
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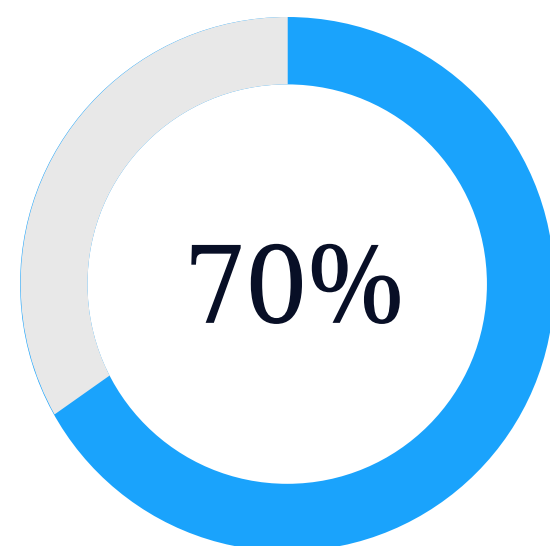
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**Technology trends driving change**

Organizations need to keep pace to stay relevant



but



of the C-suite confirm they will be investing in **modernizing their network**, with 6 in 10 already using leading technologies\*

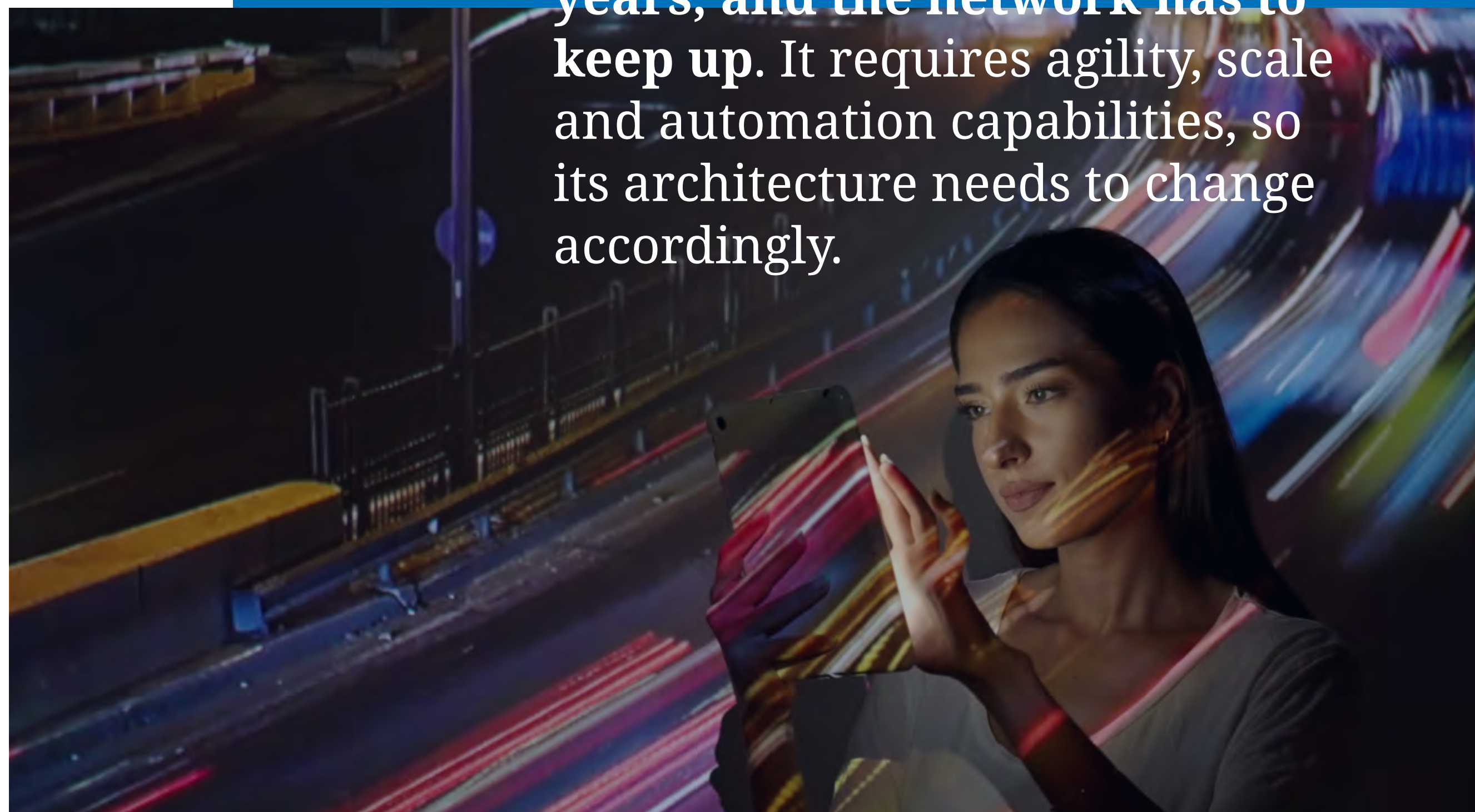
**are struggling to keep pace** with business demands for increased speed and innovation, citing **technical debt and lack of expertise** as the main reasons for this

Leading technologies include local data centers, cloud-managed networks, 5G networks, AI/ML, etc.

**Top performers are using advanced network technologies**

The network technology used by top performers also differs markedly from that used by all other survey respondents. For example, almost 8 in 10 top performers say their operations include 5G technologies, compared with only 55% of all other organizations. Similarly, local data center networks, multicloud networking, container networking, SD-LAN, SD-WAN Cloud Interconnect and edge computing were all in play among more than 7 in 10 top performers, but in only just over 4 in 10 of all other organizations.

“ The pace of digital acceleration has increased over the past few years, and the network has to keep up. It requires agility, scale and automation capabilities, so its architecture needs to change accordingly.



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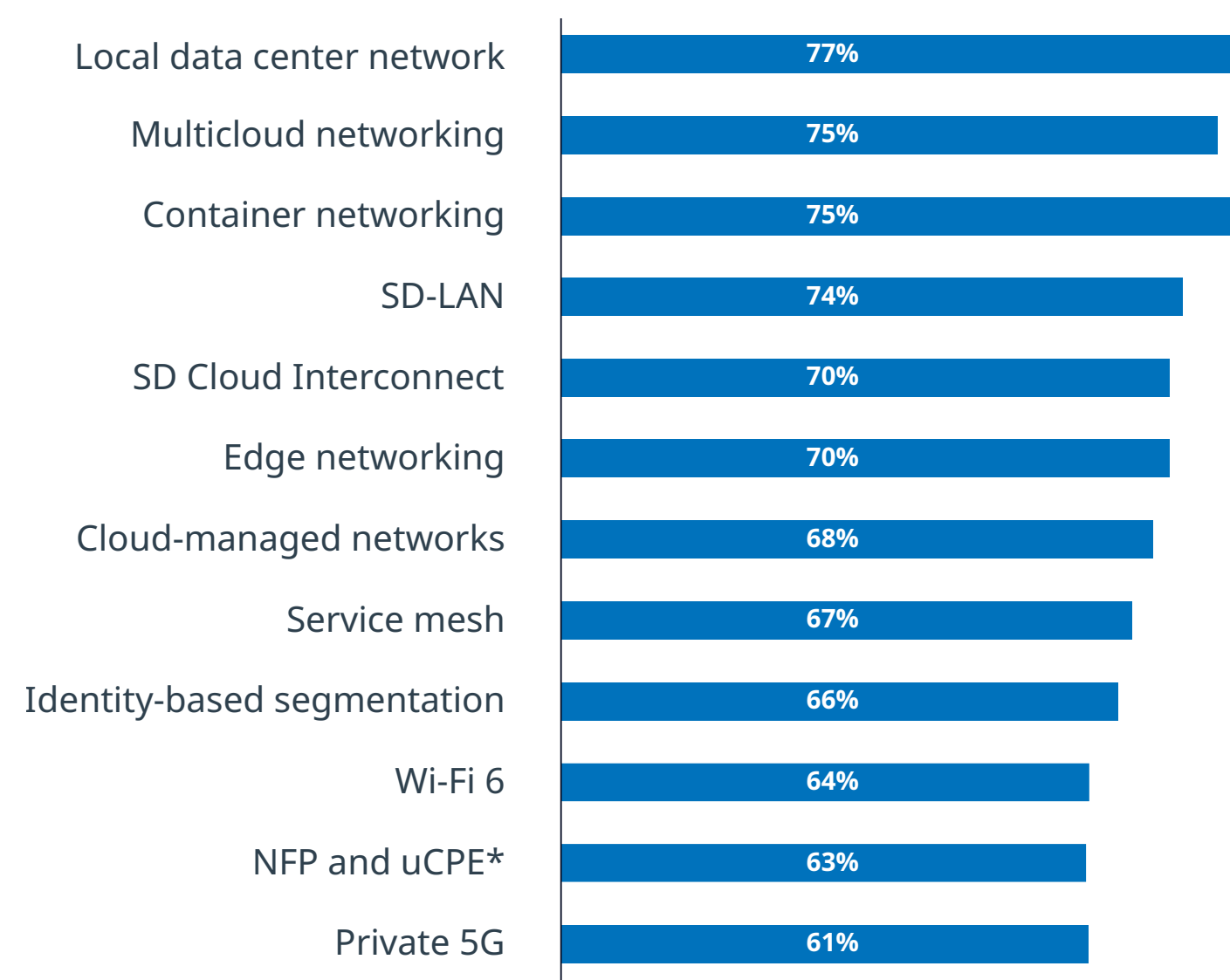
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### Network infrastructure technologies being operated

The network landscape is changing. Many solutions that are currently in play for just a few organizations will become standard within just two years.

Top performers are significantly ahead of all others and are now focusing on SD-WAN, private 5G and Wi-Fi 6.

#### Top performers currently operate the following technologies:



\* network functions virtualization and universal customer premises equipment

Which of the following types of network infrastructure technologies does your company currently operate, or plan to deploy, within the next 2 years? (One answer per row)

Base: All highly technical/technical respondents, excluding decision-makers (n=1,020–1,079)

Top performers' investment priorities in the next two years	Top 10
SD-WAN	1
Private 5G	2
Wi-Fi 6	3
Virtual private LAN services	4
Identity-based segmentation	5
SD Cloud Interconnect	6
Cloud-managed networks	7=
Service mesh	7=
NFV and uCPE*	7=
Edge networking	10

### Multicloud and software-based: the changing network landscape

With multicloud, the network forms the foundation of a hybrid, distributed work environment that has multiple connected devices and rising bandwidth needs (think video streaming). Among top performers, 75% have implemented multicloud networking compared with about 40% of underperformers.

And while the network used to be a legacy issue for many organizations, with little need for interference beyond keeping it stable, there is now a rising need to innovate. Software-based networking allows organizations to embrace network innovation while remaining agile, adding technology to the network or swapping technologies as needed. This is also driving the modernization of the network, alongside trends such as automation and AIOps, all in a multicloud environment and with tighter security.

Hardware as a network technology has stagnated. There's not much innovation in hardware. All the innovation is now in the software that runs on top of the hardware.



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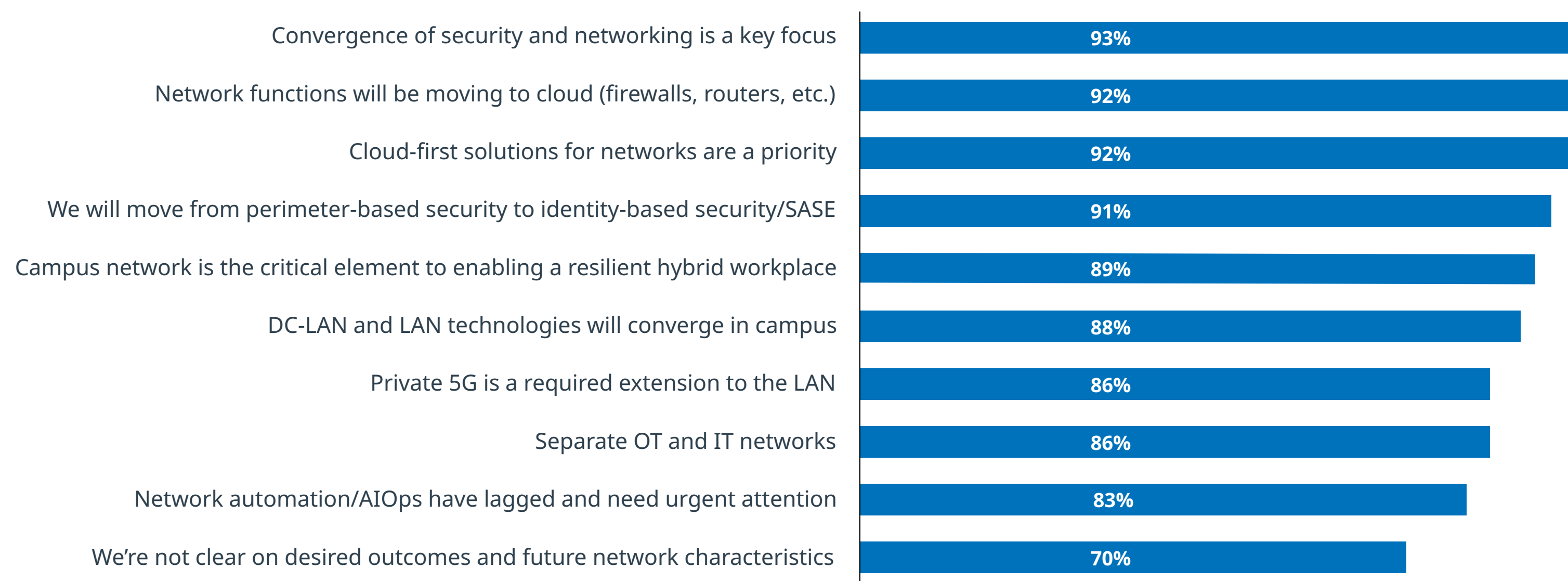
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### Expected changes to future network characteristics

73% of CIOs/CTOs agree that network assets are already aging and/or obsolete, but 7 in 10 organizations admit to a level of uncertainty about desired outcomes and future network characteristics.

Organizations are clear that the convergence of security and networking, along with cloud-first solutions and a move to identity-based security, will all be key.

### Top performers currently operate the following technologies:



To what extent do you agree or disagree that the characteristics of the network will be changing in future? (Choose one answer per row)

Base: All highly technical/technical respondents, excluding decision-makers (n=1,037-1,084)



So, what is the future of the network? The network now has to support a new way of working and the increased adoption of multicloud. We're seeing a big focus on observability and visibility of what's happening on the network, and a big shift to more intelligent networks.

### Convergence of technologies makes network management more complex

The convergence of technologies (for example, IT/OT – information technology and operational technology) is also creating new network requirements, such as running voice over a cloud network. Add to that the demands of multicloud adoption, private 5G where applicable, automation and IoT, and the complexity of network management soars.



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### Top IT trends driving network modernization

Top 7 IT trends driving network modernization (perspective by function)	CIOs/CTOs	IT	IT security
Cybersecurity mesh	1	1 ↔	1= ↔
Cloud-native platforms (including cloud compute)	2	2 ↔	3= ↓
AI (including generative AI)	3	6 ↓	- ↓
Customer experience	4	5 ↓	3= ↑
Hybrid workplace	5	3 ↑	1= ↓
Vertical IoT solutions	6	- ↓	- ↓
Employee experience	7	4 ↑	5 ↓

What are the top IT trends driving modernization to your organization's network? (Select all that apply)

Base: All highly technical/technical respondents(n=1,102)

“Many things are converging, and this is having an impact on network requirements because organizations are addressing these holistically. They are not saying, OK, I’ll first invest in the network, then in the security, and then in IT and OT. They are taking a step back to think about what their network will look like 10 to 15 years down the line, and then they make decisions accordingly.”



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“**Your branches, factories and premises may remain, but your employees are now on the move in a hybrid workplace. Your network must provide a secure connection without affecting their productivity.**

#### Network security is growing in importance

In the hybrid workplace, security threats can come from anywhere. Now, 87% of top-performing organizations are investing in their cybersecurity capabilities, compared with just 41% of underperformers. A key focus in this area is the move from perimeter-based security to identity-based security.

**Network security has increased in importance as a major network architecture component.** The struggle for most organizations is to find the right partner with the right capabilities – especially as vendor capabilities and rigidity are cited as a top challenge in attaining network success, apart from budget constraints.

**Nearly 90% of organizations agree – about 40% strongly – that increasing security and compliance risks are hard to address throughout their IT and network operations.** The need to improve security and compliance is one of the top three network-requirement motivators for CEOs in the coming two years.

**The survey results show that most organizations' cybersecurity teams are only partly involved in network-vendor selection decisions.** However, the propensity to include these teams rises significantly among top performers and more than doubles for those deemed to have an advanced network maturity and alignment between their business and network strategies.



“**Security threats now come from everywhere, thanks to hybrid working – on-premises, in the cloud, from the IoT sensors you're adding to your network. Every new device brings a new security threat. This is increasing the criticality of network security and will require higher levels of access control.**



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**“Without innovation, you do not have any progress, and without investing in your network, you’ll never keep up with competitive trends. Innovation is the way to drive the competitive edge and the competitive advantage.”**

#### Investing in network modernization to support innovation

What the organization of 2025 and beyond will look like has also changed. Those that lack a digitalization strategy will struggle to survive as more and more consumers go online as opposed to visiting brick-and-mortar facilities. As the vision of the metaverse is realized, a virtual business presence will be essential.

It’s no surprise, then, that 96% of executives are investing in modernizing their networks – both in terms of the technology itself and by adopting new operating models such as SecDevOps, which depends on a network that allows people to collaborate and access tools from anywhere.

#### Steps to transform your network

To transform your network into an agile, scalable framework that offers greater support for IoT connectivity, increased visibility and control, remote management and automation:

1. Get the right hardware in place as a solid foundation.
2. Implement a comprehensive software layer on top (this is a fast-growing area rich in innovation).
3. Add an operations layer, including analytics, automation and AIOps, to ensure speed and agility (in this area, it’s valuable to work with an experienced managed service partner).

#### This is where an experienced service partner will:

- Contribute expertise
- Ensure security
- Make the most of network intelligence (more than 9 in 10 executives expect a greater need for AIOps)
- Give you a framework that lets you be agile and sustainable while scaling as needed

**“Build your network to be agile so you can add new technology to it or swap technologies. Without an agile network, you’ll be stuck with what you have. An agile network helps you to keep up with the ever-changing technology landscape.”**



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Section 3

# How organizations will manage and buy networks



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# How organizations will manage and buy networks

The struggle for most is how to find the right partner. The results indicate a level of disgruntlement with current arrangements.

**94%**

are increasingly looking to partner with managed service providers, and ideally a single provider

## Top factors when selecting a managed service provider

-  Security
-  Full-solution suite of services

**88%**

would prefer to outsource their end-to-end network to a single (strategic) partner than to multiple vendors

**91%**

prefer a NaaS model, largely because of flexibility

**but 86%**

currently buy in silos and/or default to buying from an incumbent



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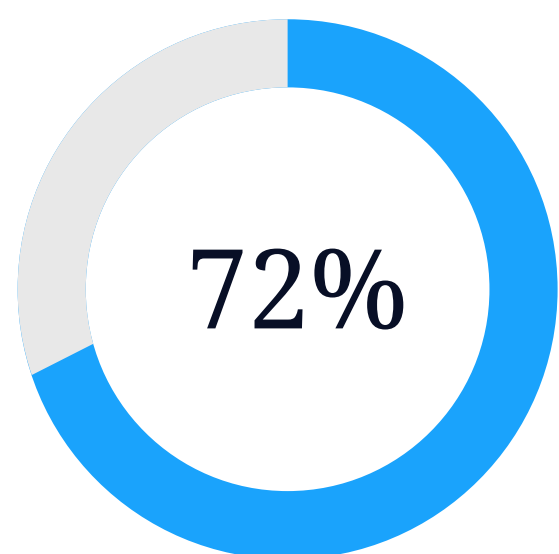
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The likelihood and depth of outsourcing increase as digital optimization capabilities advance



of top performers already **outsource more than half of their network** infrastructure



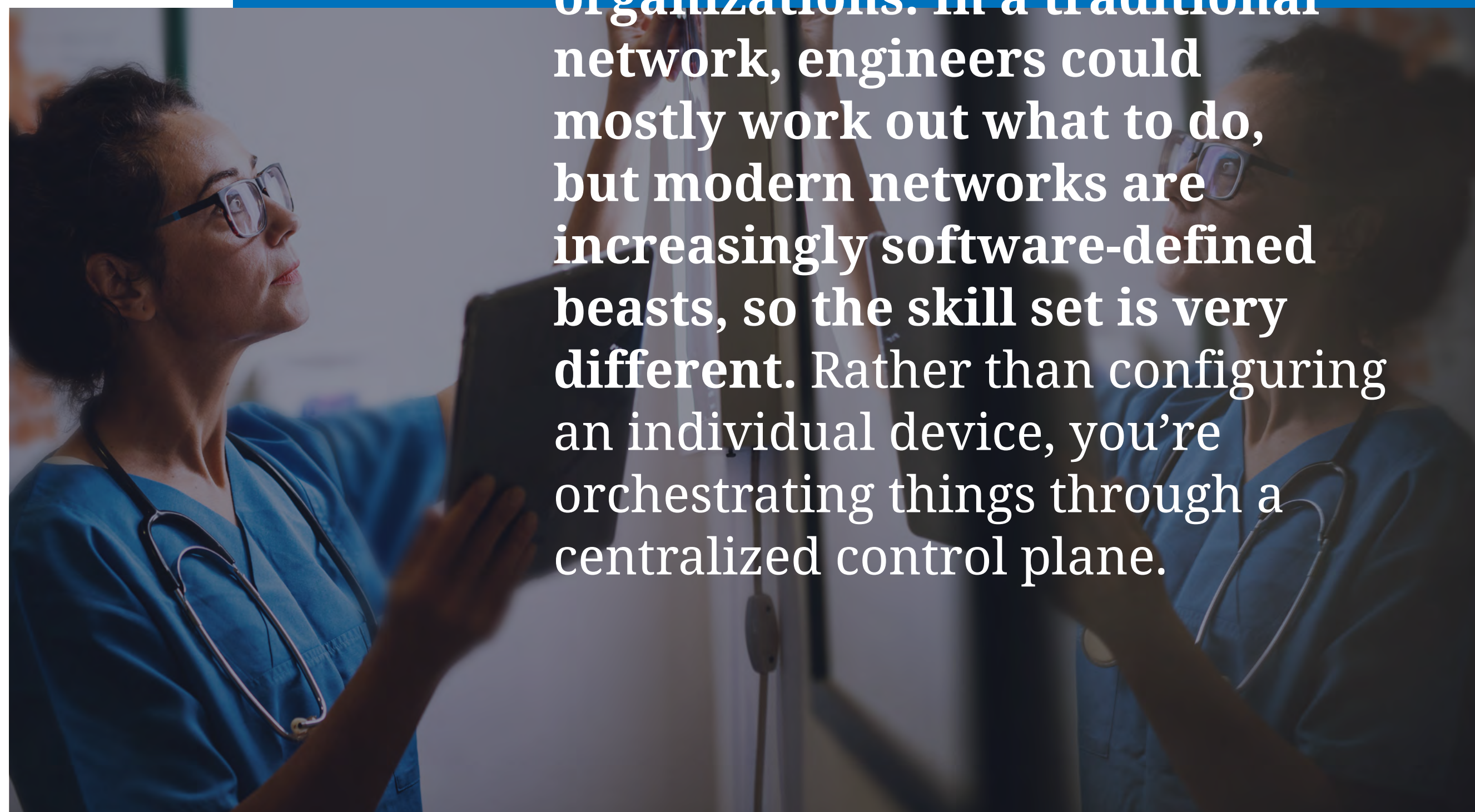
organizations are **outsourcing or will outsource each network** technology within the next two years

Those at an advanced state of digital optimization are nearly twice as likely to outsource all of their network as those in a less mature state.

In terms of managing the network, senior executives identify real-time analytics as their most critical need, followed by the ability of network managers to drill down fast and efficiently to deal with problems while reducing downtime - which points to a need for AIOps and automation.

Although more than 9 in 10 senior executives now claim their network is self-managed to some extent, 71% feel they lack the skill to operate a modern network.

“ Access to the right network skills is a major challenge for organizations. In a traditional network, engineers could mostly work out what to do, but modern networks are increasingly software-defined beasts, so the skill set is very different. Rather than configuring an individual device, you’re orchestrating things through a centralized control plane.



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### Outsourced network management

Even though 86% of organizations still buy networks in silos and/or default to buying from an incumbent service provider, there is a change coming: nearly 9 in 10 say they would prefer to outsource their network to a single managed service provider, such as NTT, which offers end-to-end solutions across industries.

Some have already made the leap: organizations with fully aligned technology and business strategies are nearly twice as likely as the rest to be looking to partner with a specialist managed service provider, because it can be complex to make the leap from strategizing to buying and managing the network.

“If you have outsourced your IT and network together and realize that they require very different skills, and you can no longer manage them in that fashion, that is when you go to a network-specific managed service provider. They invest in the technologies required for managing the end-to-end network.

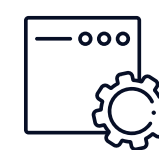
### Top 4 factors in selecting a managed service provider

01



Security – threat detection and managed cybersecurity services

02



Full-solution suite of required services

03



Cost savings

04



Leading innovation (unique private 5G service, AIOps)

### Finding the right outsourcing partner

Senior executives list a networking service provider’s range of **skills, track record, operational support, flexibility and scalability, and coverage** as their key considerations beyond price when they evaluate possible vendors. They rank cost savings behind network security (their main concern) and having access to a **full suite of network services**.

To make their outsourcing decision a success, organizations need to apply careful thought when selecting the right solution and partner to address their business needs. Best practices in this regard include:

1. Finding a service provider that can manage both the **current state of the network and its ongoing evolution**, while incorporating the latest network technology, including improved security, analytics and AIOps, to support business outcomes. Such a partnership ensures best practice and circumvents any lack of in-house skills in this area.
2. Engaging with a **single vendor**. This can minimize contract complexities and eliminate a lack of interoperability between vendors and the need to maintain multiple software versions, among other challenges. For example, the **convergence of networking and security** is leading organizations away from having separate network and security vendors.
3. Considering a **network-as-a-service model**, which can save time and money. More than 90% of senior executives prefer this model, citing the flexibility to scale up and down as a major benefit, followed by supply-chain certainty, a single consumable model, and a balance between operational and capital expenditure. **Top performers are almost twice as likely to strongly prefer this model as underperformers.**



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“Increasingly, the topics of networking and security are converging. They are almost one and the same now, and security is becoming decentralized and cloud based. In terms of buying decisions, where clients would previously buy one network vendor and one security vendor, that is also now converging.”

### Motivators for considering a managed service provider

**Cost is still a top-three factor for CXOs.** Top performers deem cost to be the last consideration when considering a managed service provider; low performers cite it as the top factor.

Top 8 motivators for considering a managed service provider for technology solutions (by function)	C-suite (non-IT)	IT	IT security
Access to skilled resources in management of modern network technologies	1	1 ↔	6 ↓
Improved security	2	2 ↔	1 ↓
Reduced costs (including more for less)	3	7 ↓	- ↓
Access to best practice technical/industry/co innovation expertise	4	3 ↑	5 ↓
Improved service delivery (enhanced performance/SLAs)	5	6 ↓	3 ↑
More flexibility/scalability	6	4 ↑	2 ↑
Access to improved global/local support footprint	7	5 ↑	- ↓
Part of our cloud migration strategy	8	8 ↔	6 ↑

What are the top three motivators to your organization's consideration of a managed service provider (MSP) for its technology solutions? (Select top three)

Base: All respondents (n=1,378)

### Complex, intelligent networks introduce operational challenges

While outsourcing is key, in-house IT teams remain critical in organizations – and there are still operational concerns when it comes to more complex and intelligent networks.

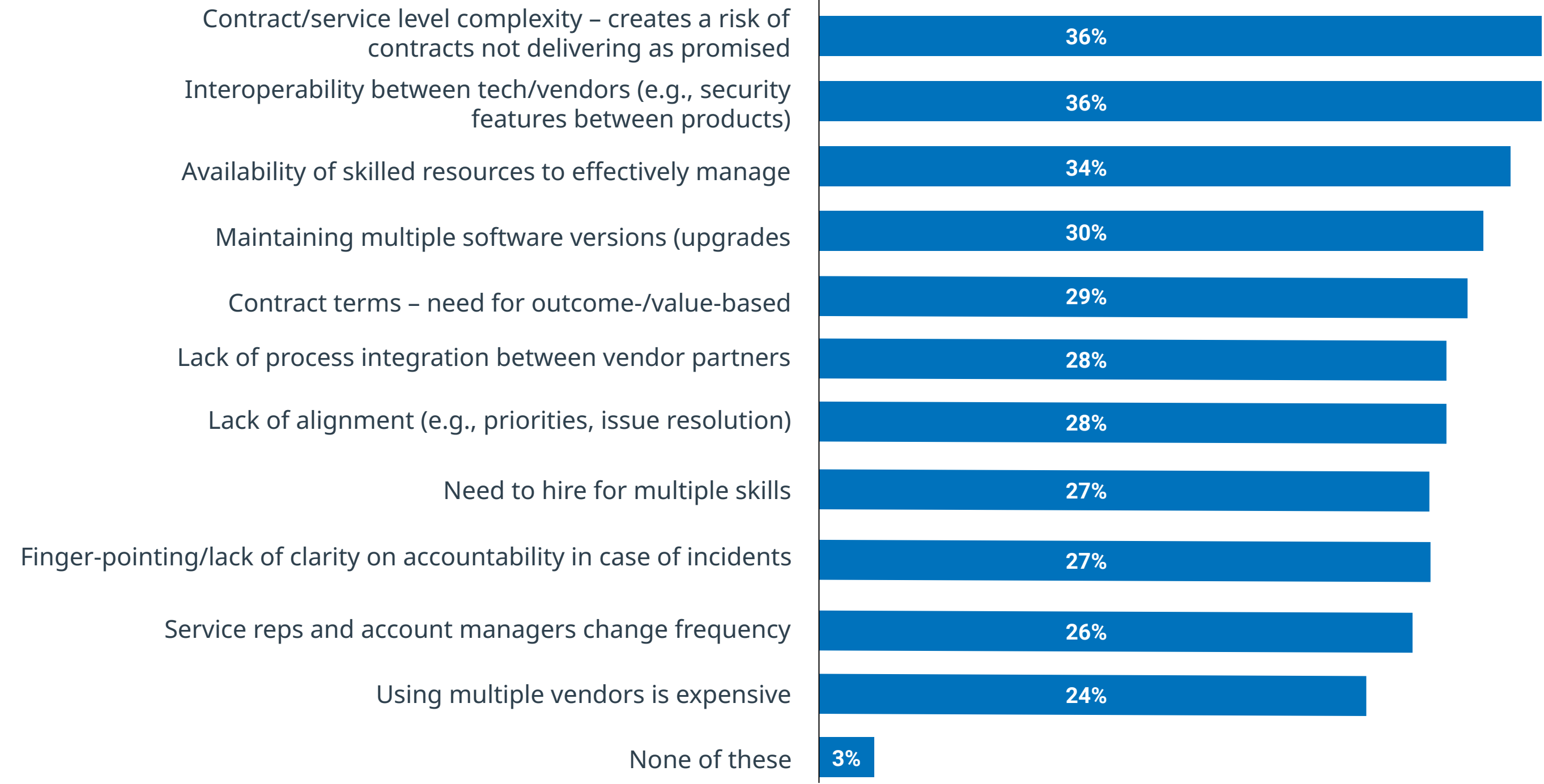
#### These include:

- A lack of programming skills in their internal operations team, meaning they do not take full advantage of programmable networks
- Difficulty in deploying effective AIOps and automation solutions, which simplify ongoing network operations but are complex to configure initially
- Managing legacy and transformed environments, which is simplified by the adoption of automation and orchestration



**Preference for single vendors increasing as there are many challenges in managing multiple vendors**

**Contract and service level complexity, interoperability and the availability of skilled resource are seen as the key challenges.** More than a quarter cite accountability and a lack of alignment on priorities/issue resolution as a significant barrier.



What do you see as the key challenges when managing multiple technology/network vendors in support of your IT solutions? (Select all that apply)

Base: All respondents (n=1,378)



“**There is a trade-off between picking and integrating technology solutions for specific use cases and picking a vendor that has a broad portfolio but might be suboptimal in terms of the fit for your business.** Pick what’s best for your organization. Do certain point solutions better serve your requirements or do you need a single broad-based vendor to manage it all?

**Network as a service is a drawcard**

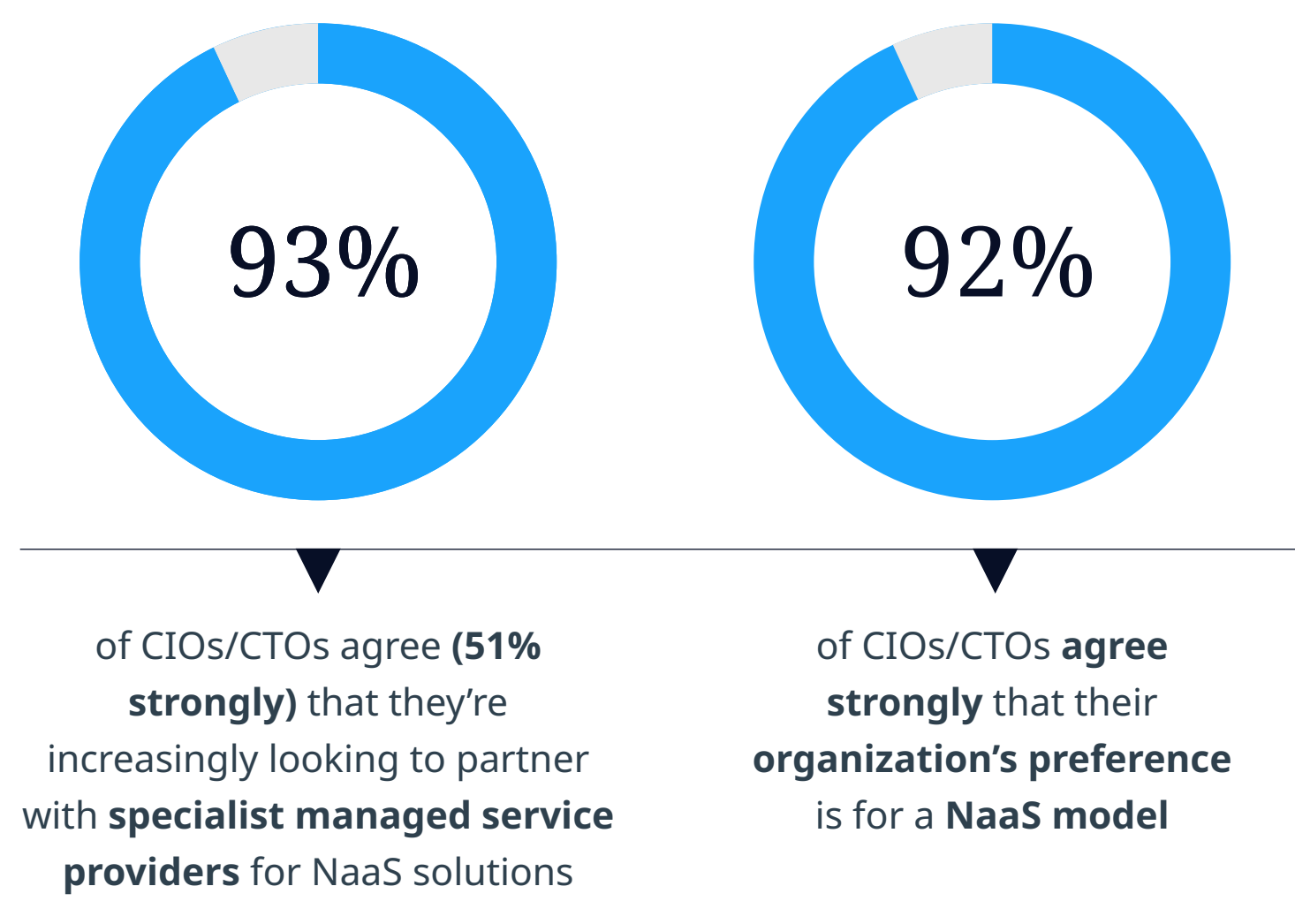
As we look ahead, the flexibility of the network-as-a-service model is a drawcard for business leaders, as they want to focus more on achieving their business outcomes than on the underlying network technology. More than 9 in 10 CIOs/CTOs have a preference for this model.

Organizations are increasingly looking to partner with specialist managed service providers, a sentiment shared by nearly 95% of the C-suite.

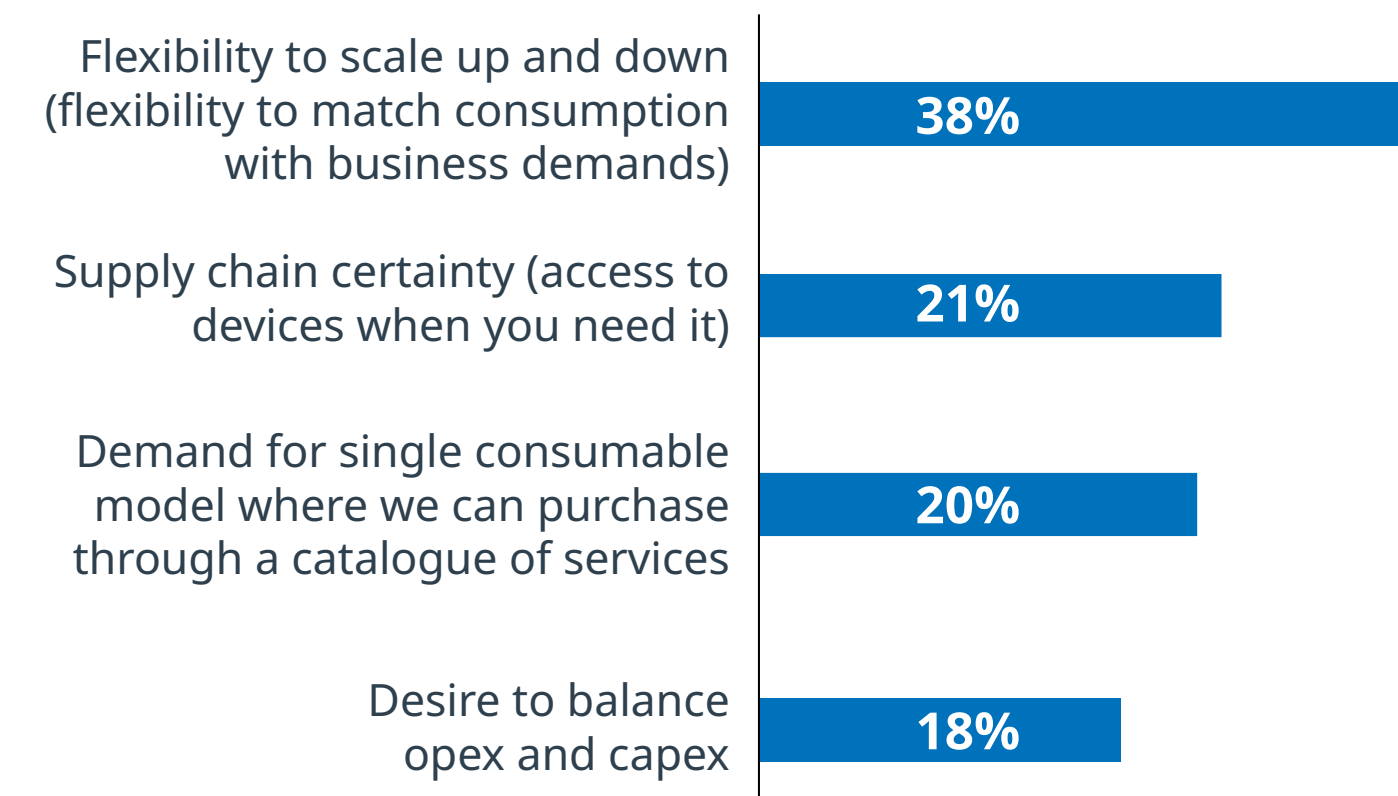
**Network as a service allows organizations more agility to more easily adopt innovative and leading-edge technology without the need for specialist skills to operate and monitor that technology.**

**Network-as-a-service (NaaS) model emerging**

4 in 5 CIOs/CTOs say they’re less concerned with the underlying technology of NaaS and more focused on an outcome-based (SLA-driven) commitment. The flexibility to scale up and down is a key consideration.



**Key motivators for considering a NaaS model**



Section 4

# How networks will be delivered



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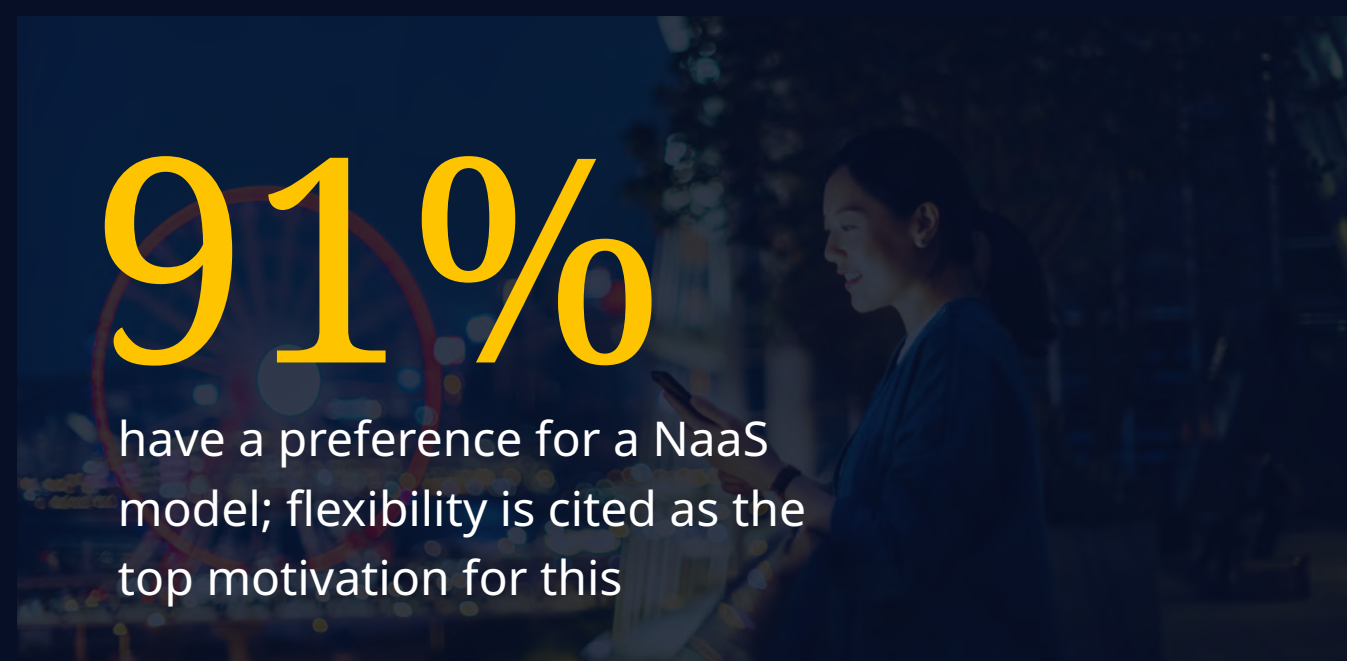
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# How networks will be delivered

Security outranks capability as the top factor when considering a network solution or managed service provider



**90%**  
agree that increasing security and compliance risks are challenging every area of their network



**91%**  
have a preference for a NaaS model; flexibility is cited as the top motivation for this



**Top 3**  
network management enablers

-  Network performance analytics
-  Software assessment/ deployment automation
-  Capacity optimization (including forecasts)



**90%**  
require AIOps, automation and improved analytics to further optimize network operations



**92%**  
are comfortable that platform-based services will meet their future business needs



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As new technologies are adopted and become mainstream, they have a significant impact on the way organizations build, manage and operate their networks – 72% of executives say they will outsource most of their network management within the next two years and 95% are willing to move to a centrally managed network (offshore or nearshore).

And when it comes to delivery, security and compliance risks (including data privacy) are top of mind for 92% of executives around the world.

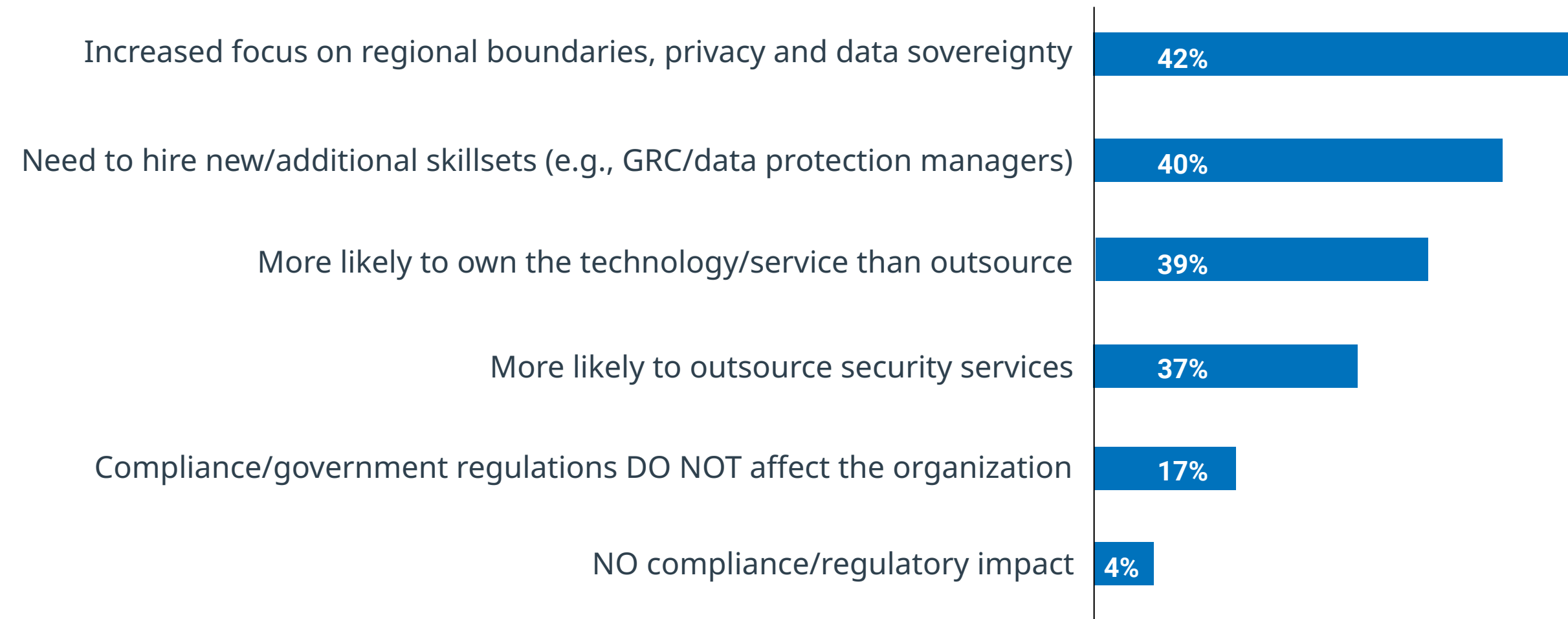
“For compliance, sometimes data is resident in a particular location but accessed from anywhere, although access may also be constrained at times.”

### Compliance focus affects network management

Top areas affected include an increased focus on regional boundaries, privacy and data sovereignty, and the need to hire new or additional skills.

### Effect of compliance requirements on network management

#### Impact of increasing compliance requirements/government regulations



How, if at all, do increasing compliance requirements and/or government regulations affect your organization's IT approach and management of the network? (Select all that apply)

Base: All respondents (n=1378)

**Network management is also being affected by an increased focus on regional boundaries, privacy and data sovereignty, and a need for related skills** – almost 4 in 5 executives say their organizations struggle to meet compliance obligations on data storage and processing, as these vary across geographies.



### Analytics, AIOps, automation: what organizations need from the network

Network delivery is the result of aligning an organization's business outcomes and its network selection and management strategy.

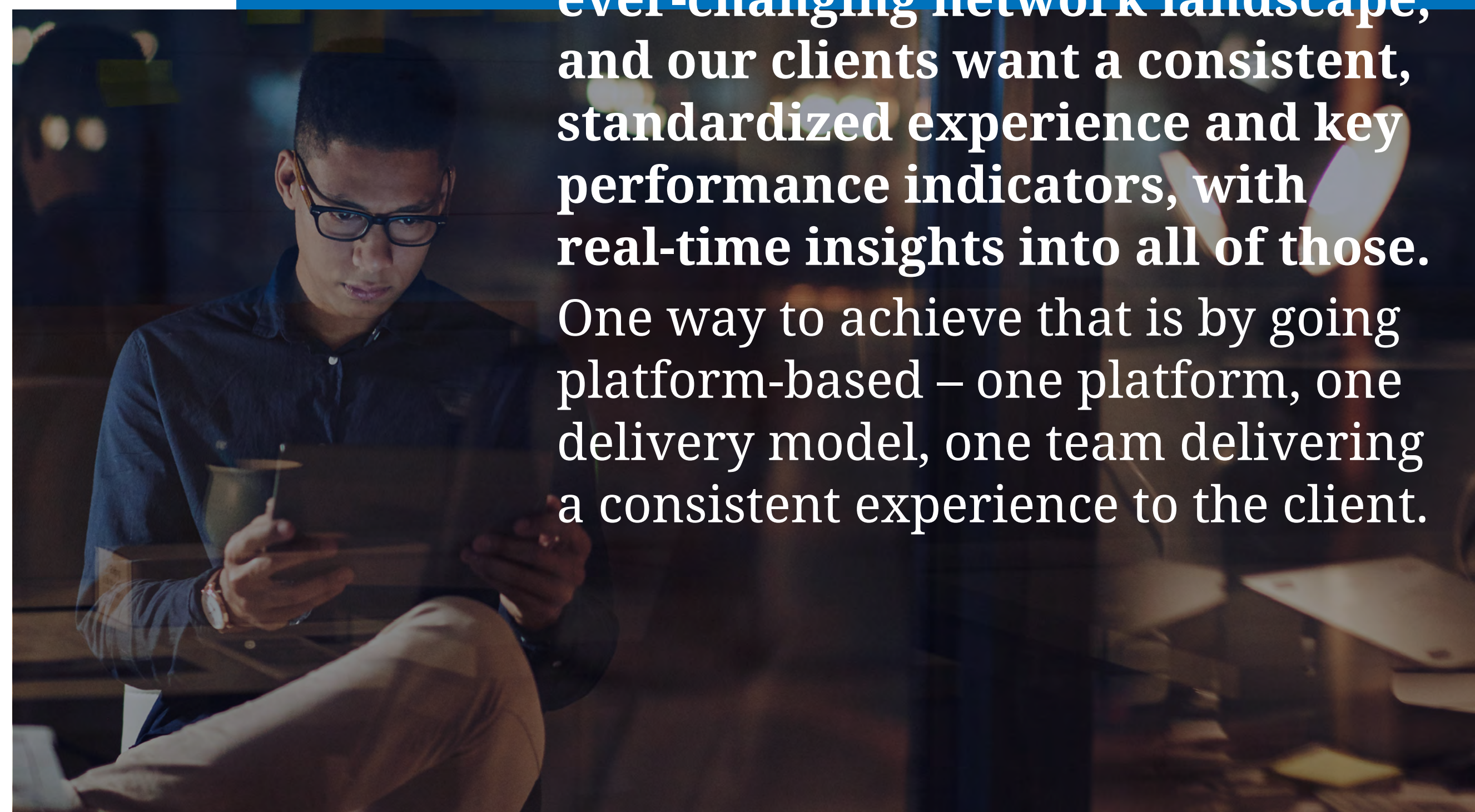
Organizations now require granular analytics for every aspect of their network. Then, once they have derived insights from their analytics, they want to cue certain actions. Beyond analytics (including automated monitoring and reporting), AIOps clusters large volumes of data across multiple domains and sources to detect patterns and make recommendations.

Real-time analytics and the ability to drill down into issues that require attention are seen as the most important area of network management, and nearly **9 in 10 CIOs/CTOs agree that they need AIOps, automation and improved analytics to optimize their network operations.**

Automation can also cover software patching, security postures, inventory management and change and configuration management, among others.

While 91% of organizations agree that predictive analytics is critical to operational insight and a proactive approach, 85% say a lack of visibility across their network architectures currently restricts their operational insight and causes reactive firefighting.

“ We want to deliver managed services more efficiently for the ever-changing network landscape, and our clients want a consistent, standardized experience and key performance indicators, with real-time insights into all of those. One way to achieve that is by going platform-based – one platform, one delivery model, one team delivering a consistent experience to the client.



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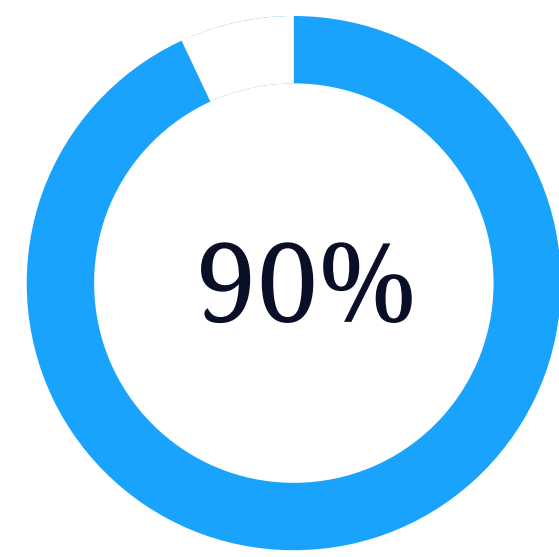
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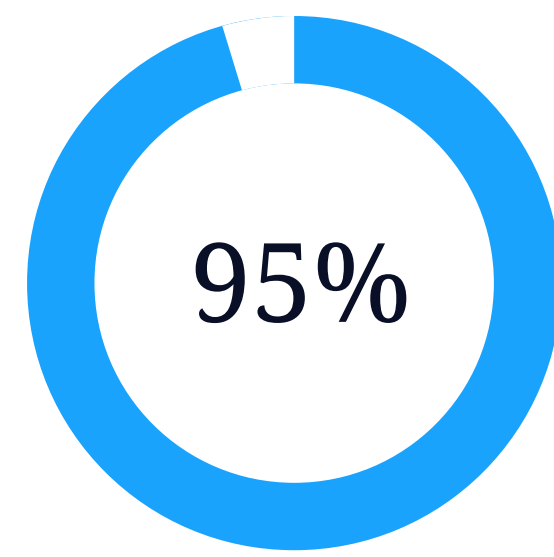


### New models for managing smarter networks

Network dependency is expected to grow and shift to new trends for smarter networks in the coming two years  
 Top 3 enablers: Performance analytics, software automation and capacity optimization will have a big impact on network delivery in 2025 and beyond



with



require investment in **AIOps, automation and improved analytics to further optimize network operations**

willing to move to a centrally **managed network (offshore/nearshore solution)** and 92% comfortable with platform-based services



Even the most stubborn of organizations are realizing they need AIOps, automation and analytics. **The technology is getting highly disaggregated and the number of endpoints and ways to manage them are transforming quite drastically.** It's humanly impossible not to have analytics and act on it in an automated manner."



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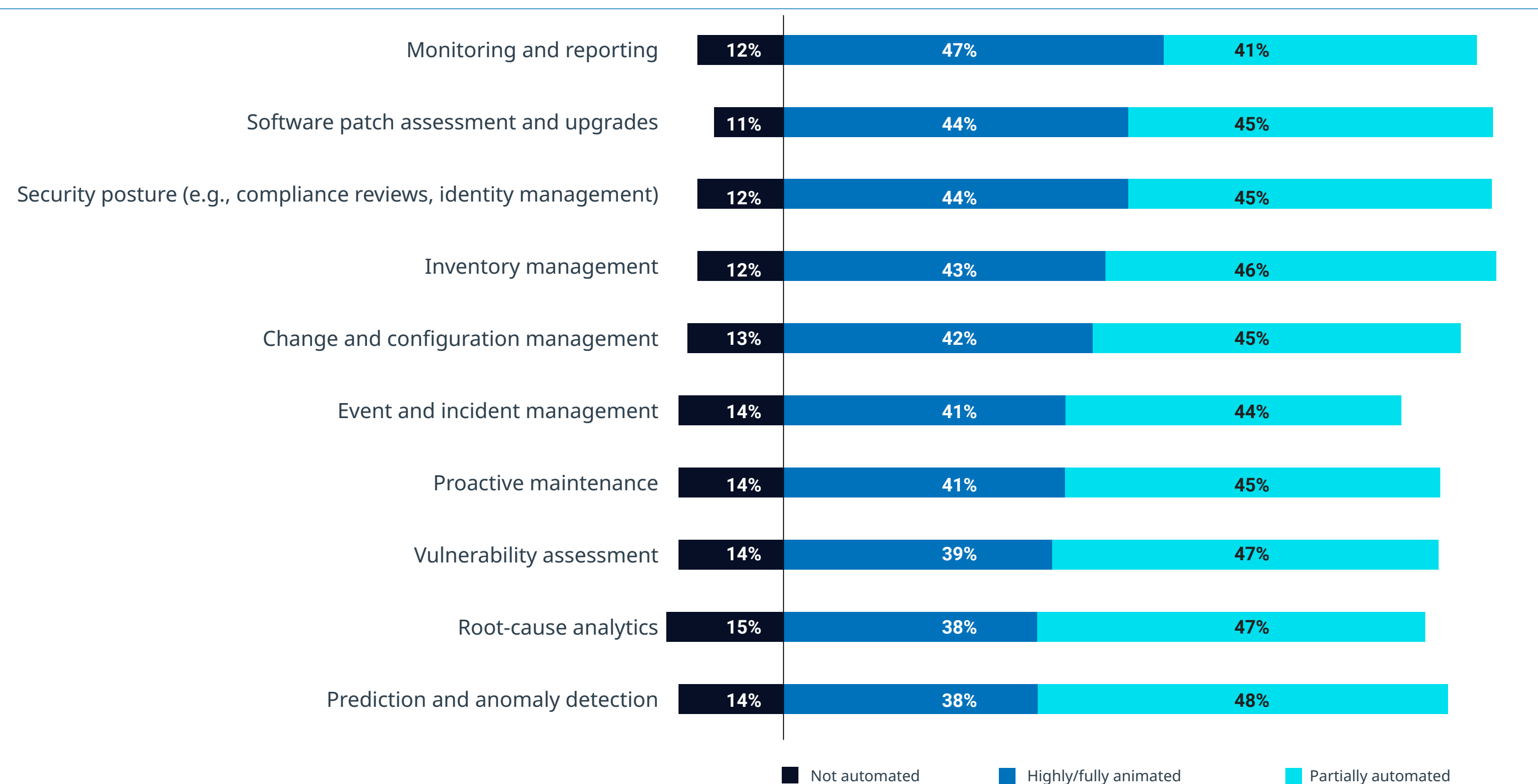
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Monitoring and reporting are most likely to be fully automated, followed by software patch assessments and upgrades, and security posture (such as compliance reviews).

### Current network automation



Which, if any, of the following is already automated in your network? (Choose one answer per row)

Base: All Highly technical respondents, excluding decision-makers (n=564–573)

To bridge in-house skill gaps and keep pace with the need to innovate, organizations are looking to managed service providers such as NTT for help in moving to a centrally managed network, which 97% of executives say they are willing to do. Findings show that a vast majority of respondents agree that a platform-based service will meet their future business needs.

“ Let’s be provocative: clients should never care about analytics, AIOps and automation. **They should care about the end outcome and hold their managed service provider accountable for that outcome.** ”



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“ With just analytics and automation, you can make a dent. But adding AIOps allows organizations to differentiate themselves far beyond human capabilities. **It can look at tons of historical data across multiple points in time, across devices, endpoints and locations, and detect patterns just by looking at the data.** ”

**Tools and technologies for advancing network maturity**

The tools to achieve these outcomes are, for more than half of all organizations, nearly equally divided between vendor-provided and in-house proprietary tools, while managed service provider platforms and tools feature in nearly 50% of organizations.

**Tools available in the current network management platform**

Top 6 tools available in the current network platform	Advanced network maturity	All
Secure identity, access and privilege management	1	1 ↔
Secure connectivity	2	2 ↔
Advanced analytics (and data engine)	3	5 ↓
Service management	4	3 ↑
User management portal and live dashboards	5	6 ↓
Inventory management	6	4 ↑

Which, if any, of the following tools are available as part of your current network management platform? (Select all that apply)

Base: All highly technical/technical respondents(n=1,102)



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## Network technology, sustainability and ESG

Sustainability is now a top-four business objective for IT executives. Organizations that have aligned their network strategy with their business needs are almost three times more likely to reduce their environmental impact with their network technology, than those which have not aligned at all. More than double of those organizations also say it reduces their energy usage.

## The top-performer perspective

The top three ways that network technology benefits an organization's sustainability and ESG agenda are:

- 01 Contributing to a sustainability policy that supports sales
- 02 Contributing to the publication of a sustainability and ESG report for external stakeholders
- 03 Helping to drive new and ethical ways of doing business

## Technologies on the rise



### Blockchain and cryptocurrency

Blockchain plays a role not only in financial transactions but also in cybersecurity, IoT sensor and device authentication, and communications (email, voice calling). Establishing the right network foundation to take advantage of this technology and its benefits will become a far wider requirement.



### Augmented reality (AR), virtual reality (VR) and 8K video in the immersive metaverse

Immersive technologies that could become mainstream and that use bandwidth-hungry applications, such as 4K, 8K and AR or VR video, will have an incredible impact both on the internet backbone and on organizations that start making internal use of metaverse applications.



### Quantum networking

This is associated with the need to balance compute processing and carbon-footprint requirements.



### Photonic computing and networking

The explosion in data and applications leads to ever-increasing power demands. There are severe technical challenges ahead in balancing sustainability and energy consumption.



### AI on networking

The ability of AI-driven solutions to identify and respond to network events much more rapidly will forever change the shape of network operations.



### Beyond 5G

6G is already in development, and what comes after 5G and 6G will be an important factor in designing and deploying new network architectures.



### Network as a service

This makes organizations more agile as they can more easily adopt innovative and leading-edge technology without the need for specialist skills to operate and monitor that technology.



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In conclusion

# To future-proof your network, you need to act fast

**NTT can help you transform to reach new frontiers and build resilience for the future**

We're able to adapt quickly to business demands. Our networking capabilities can complement your existing infrastructure services and technologies to help sharpen your competitive edge.



Align business and IT goals to achieve your desired return on investment



Invest in a partner that moves you away from legacy network assets and helps you stay ahead



Move to a NaaS model for greater flexibility



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“**You cannot achieve your business outcomes without your network to provide the experience that your employees and customers are looking for.** So, your network must meet all those requirements, whether it’s hybrid working or cloudification. And to manage all those aspects, you have to rely on someone to advise you on how your network is evolving, where you should invest in it and how best to architect it. At NTT, we do this for tens of thousands of clients every day.

### End-to-end expertise is key to network management and security

Large organizations can often hire many of the network skills they need but may have plenty of technical debt across the technologies they have implemented. Also, they may bundle their IT and the network together with a single IT provider that doesn’t have the requisite network expertise, relegating the network to a secondary function when they should be getting the best of both worlds.

A managed service partner like NTT can help these organizations align their technology and the associated costs with their business requirements and optimize their network management and security – and, importantly, its agility and ongoing evolution, because innovation drives progress.

### Top-performing organizations are 55% more likely than all others to strongly agree that innovation is driving new requirements and a move toward modern, more agile networks.

Small and medium-sized organizations, on the other hand, may need more help with their digital transformation. A managed service provider can offer the skills they need to take them from network planning and design to full operation, maintenance and optimization – even if they work with multiple vendors.

Then, organizations also have to consider the ever-accelerating move to multicloud and edge computing – including how the two come together – and the convergence of IT and operational technology. Again, this points to the

need to understand and support the network end to end within the context of the hybrid work environment. Managed service providers invest in the technologies – including analytics, automation and AIOps – that organizations can benefit from without having to care about the implementation or operation of these tools.

**Managed services involve a long-term relationship based on trust, and an organization has to understand both the skills and scale of their managed service provider.** NTT believes strongly in that partnership with our clients – we care about their business outcomes, not just about the contract, and our key partnerships with the likes of Cisco support us in that regard.



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# 7 steps to future-proof your network

Security outranks capability as the top factor when considering a network solution or managed service provider

01

**Think of your organization first, then think about your network.** Break down silos and unite your business and IT teams behind your business goals to achieve your desired return on investment.

02

**Invest in a technology partner that can move you away from legacy network assets.** This will help you obtain greater network availability, scalability and performance. Legacy network assets create technical debt (which affects two-thirds of organizations) and require significant manual network support. Find a technology partner that can help you deliver and maintain a fast, secure and agile new network that's supported by new cloud operational models (voted a top investment priority by senior executives) – and keep innovating and evolving your network to make it future-proof.

03

**Consider the network-as-a-service model.** To move your organization forward, look to the network-as-a-service model to consume and pay just for what you need while allowing you to access the latest trends in technology. This is a strategy worth considering at a time when global corporate network spending is rising, with 95% of executives now accelerating their investment in digital transformation.

04

**Embrace new tools like AIOps in the pursuit of an agile network** – but make this the responsibility of your managed service provider. Organizations now use various sources in this regard, including tools from independent vendors, in-house tools, managed service provider tools and partial automation.

05

**Work with a partner that can help you evolve and manage your network and improve its output.** Your network and operational technology must work together in an end-to-end approach. This is a complicated model for which you may not have the in-house expertise, so work with a partner that can advise you on the evolution of and investment in your network, and then manage the current state of your network while driving its transformation and improving its output. Nearly 9 in 10 organizations say they need a third party to fulfill their network needs and stay ahead of change, network innovation and internal skills gaps.

06

**Factor in security.** Consider how changing security and regulatory requirements (specifically regarding data privacy) will affect your network.

07

**Understand the costs.** Some managed service providers may seem to be priced more competitively but could offer fewer services and have hidden costs. A managed service provider's capabilities, track record, client relationships and governance are all important factors to consider.



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# Accelerate your network ambitions

Register for a complimentary **Network Assessment** and get recommendations from our experts on network operations models, platform-delivered service operations and next steps to advancing your digital initiatives.

[Click here to book your assessment](#)



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Designed to provide a single point of reference on all aspects affecting the network infrastructure, its evolution and effective management, the 2022-23 Global Network Report considers four key research hypothesis components:

- 01** The importance and value of the network
- 02** How networks will be transformed
- 03** How organizations manage and buy networks
- 04** How networks will be delivered

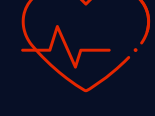
The report aims to establish organizational purpose toward enabling the connected future through smarter networks.

# The research in numbers

Conducted on behalf of NTT Ltd. by Jigsaw Research from end-July to mid-August 2022

**1,378 interviews** from across 16 sectors, including:

<p><b>Role levels</b></p> <p>C-suite: <b>54%</b></p> <p>VP/Head of/ Director: <b>34%</b></p> <p>Senior manager/ Specialist: <b>12%</b></p> <hr/> <p><b>Includes</b></p> <p>CIO/CTIO: <b>25%</b></p> <p>CEO: <b>9%</b></p> <p>CISO: <b>6%</b></p>	<p><b>Technical expertise</b></p> <p>Highly technical: <b>42%</b></p> <p>Technical: <b>38%</b></p> <p>Non-technical: <b>20%</b></p> <hr/> <p><b>Includes</b></p> <p>Primary decision-maker: <b>59%</b></p> <p>Joint decision-maker: <b>35%</b></p> <p>Influencer: <b>6%</b></p>	<p><b>Organization size</b></p> <p>1,000-2,500: <b>31%</b></p> <p>2,501-5,000: <b>25%</b></p> <p>5,001-10,000: <b>22%</b></p> <p>10,001-50,000: <b>12%</b></p> <p>50,001+: <b>11%</b></p> <hr/> <p><b>Includes</b></p> <p>\$1bn-\$9.99bn: <b>43%</b></p> <p>\$10bn or more: <b>20%</b></p>
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-  Retail and wholesale: **8%**
-  Manufacturing and automotive: **9% and 4%**
-  Financial services: **17%**
-  Technology: **11%**
-  Health: **9%**



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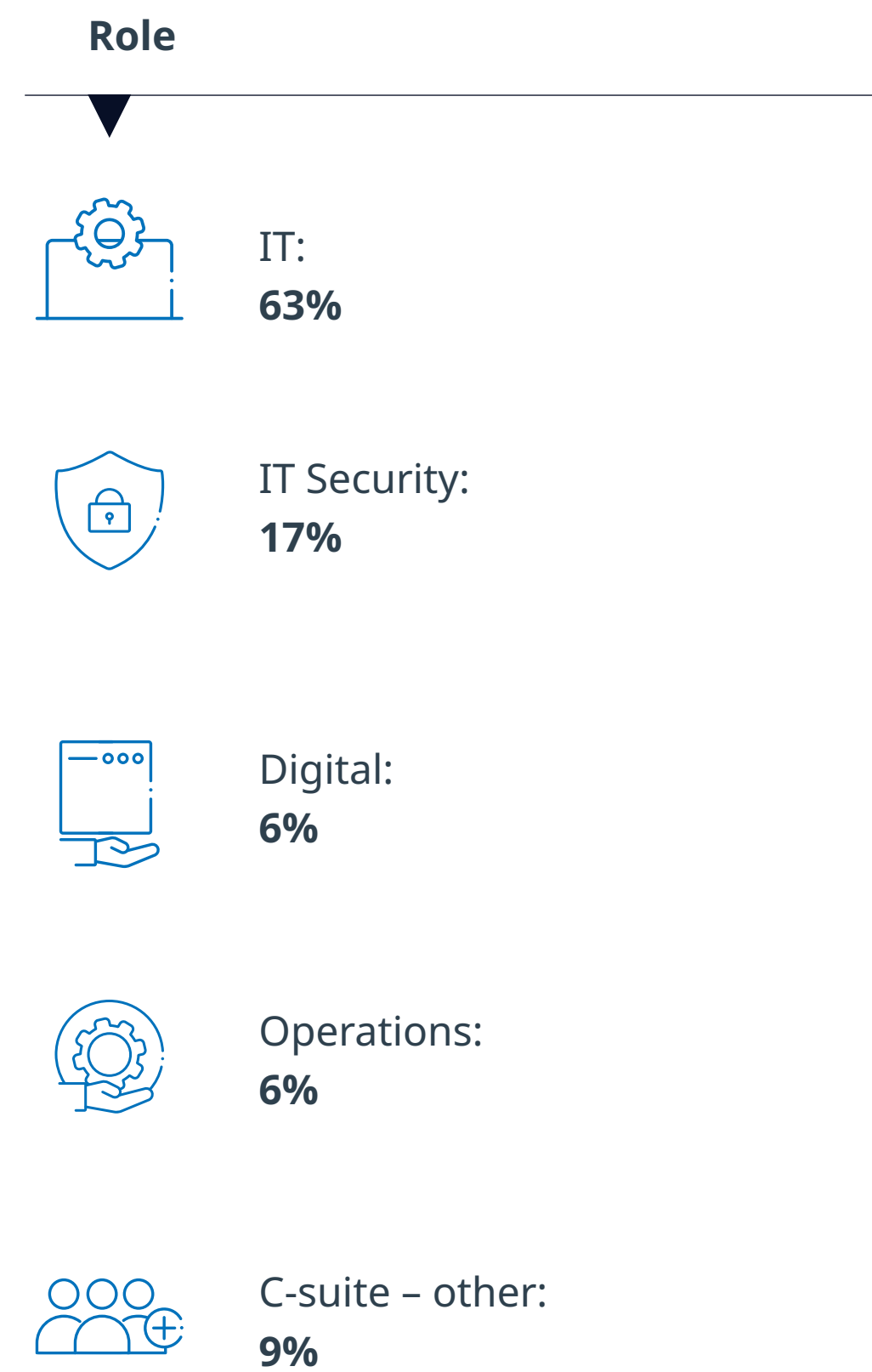
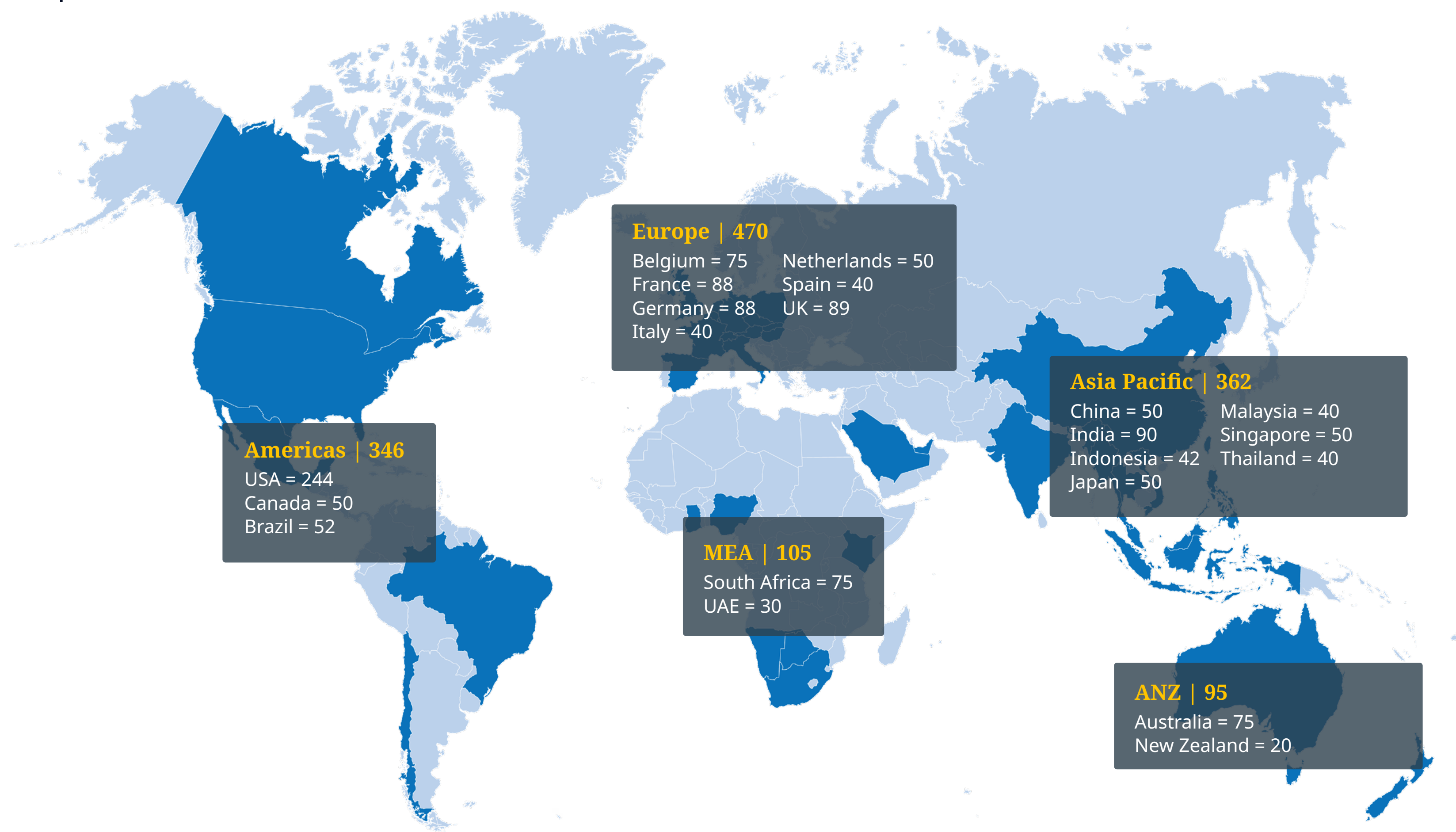
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# Research spans 21 countries in 5 regions

Participants are network decision-makers/influencers in IT and wider business roles



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### Research methodology

The Global Network Report is based on independently sourced research data. Participants were selected via random sampling on the basis that they had a direct or indirect influence on their organization’s network requirements, or decision-making authority in that regard.

The research data was gathered via an online questionnaire that ran during July and August 2022. Research was conducted for NTT Ltd. by Jigsaw Research, an international strategic-insight agency with an exclusively senior team.

Data integrity, validation and analysis were performed by NTT Ltd.’s specialist in-house Primary Research and Benchmarking Team in conjunction with Jigsaw Research. Data and outliers were validated in accordance with standard research industry rules, disciplines and best-practice approaches. The data is being presented at a 95% confidence level with a 3% margin of error.

### Research approach

Performance trends and key observations are combined with data correlations to provide further insight into strategic network trajectories.

We offer context on the results as well as subject-matter insights and recommendations on best practices from people who work in the industry. These experts have a first-hand view of how the industry is changing, where it’s headed and what this means for organizations.

### Top performers and underperformers: assessment criteria

From the organizations whose responses were included in this report, top performers have been categorized as having:

- Higher revenue growth (increased by >10% in the last fiscal year)
- A stronger operating profit as a percentage of revenue (>15% in the last fiscal year)

Underperforming organizations have been categorized as having:


- Poor revenue growth (0% or less in the last fiscal year)
- A weaker operating profit as a percentage of revenue (<5% in the last fiscal year)

Beyond these two categories, the middle of the pack is categorized as having:

- Revenue growth of 0%–10% in the last fiscal year
- Operating profit as a percentage of revenue of 5%–14.9% in the last fiscal year

### Additional segmentation

Using a combination of free-text and a 3 – 5 point scale indicating categorization with certain enterprise segments, alongside business performance metrics, participants were invited to submit their organizational performance, market positioning and financial criteria on areas including:

-  Digital optimization
-  Network maturity
-  Employee satisfaction
-  Customer satisfaction
-  Strategy to business goal alignment
-  Security posture
-  Innovation
-  Market disruption
-  Profitability and revenues
-  Technology spend



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As part of NTT DATA, a USD 30 billion IT services provider, NTT Ltd. is a leading IT infrastructure and services company serving 65% of the Fortune Global 500 and more than 75% of the Fortune Global 100. We lay the foundation for organizations' edge-to-cloud networking ecosystems, simplify the complexity of their workloads across multicloud environments, and innovate at the edge of their IT environments where networks, cloud and applications converge. We offer tailored infrastructure and ensure consistent best practices in design and operations across all our secure, scalable and customizable data centers. On the journey toward a software-defined future, we support organizations with our platform-delivered infrastructure services. We enable a connected future.

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