

REPORT | NOVEMBER 2019

MAPPING THE MULTI-CLOUD ENTERPRISE

NEXT STEPS IN OPTIMIZING
BUSINESS & IT AGILITY,
EFFICIENCY & SECURITY



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INTRODUCTION

There are a wide variety of opinions about when cloud computing first emerged as a force in global IT, but the year 2006 is a certainly a critical and formative milestone. That year, Amazon launched Amazon Web Services and Elastic Compute Cloud to provide flexible computing capacity to business customers on a large scale. Since that time, there has been an inexorable march into the cloud.

Other leading vendors followed suit. In 2008, Google introduced the Google App Engine, its Platform as a Service and cloud platform for developing and hosting web applications in Google-managed data centers. Microsoft introduced its cloud computing service, Microsoft Azure, in 2010.

Today, the growing embrace of the cloud as the critical platform for building, testing, deploying and managing applications, services and data — along with the rise of a significant number of major cloud platform providers, not to mention cloud application providers — has led many organizations to adopt new multi-cloud computing strategies.

The growing embrace of the cloud and availability of various public cloud platforms are driving multi-cloud strategies

The desire to accelerate digital transformation, improve compute and cost efficiencies, meet regulatory requirements and increase performance, scalability and reliability, has pushed organizations to distribute their cloud assets, software, applications and data across multiple cloud environments and vendors.

The U.S. Small Business Administration is moving rapidly toward a cloud-first strategy that embraces both private clouds via GovCloud and multiple public cloud providers. Deficiencies in the SBA's own data centers led the CIO, Maria Roat, to mandate that “nothing new goes into our data center” when she joined the agency in 2016. She expects to virtually close their primary data center in the next few months.

Franklin Templeton, a global company providing investment management solutions to retail, institutional and sovereign wealth clients in over 170 countries, has adopted a hybrid multi-cloud strategy embracing both private and public clouds. Currently, most of its public cloud workloads are with a single provider. However, the company will ultimately probably use at least one other major public cloud platform, according to Raja Mohan, senior strategic architect for cloud and platform services, and Doug Rheams, networks solutions architect.

The shift to multi-cloud is challenging organizations to rethink their IT practices and platforms to keep pace

Like many technology paradigm shifts before it, the move to multi-cloud is challenging IT organizations and businesses to keep pace and regain the necessary visibility, governance, security and control needed to optimize, manage, integrate and protect their infrastructures. They are striving to develop and adopt new “polynimbus” strategies, management practices and platforms that achieve those goals.

To better understand these issues, the Business Performance Innovation (BPI) Network has conducted a global survey of IT and business executives to understand their intentions, priorities and concerns about managing in a multi-cloud world. The study was conducted in partnership with A10 Networks, a leading provider of network and cloud security solutions to leading cloud providers, enterprises and telecommunications companies. The BPI Network surveyed some 127 technology and business leaders to gather the insights for this study.

Our survey findings make it clear that most organizations are moving rapidly into the multi-cloud world. And they expect this transformation to accelerate in the months and years ahead, as they move more of their core applications and data into the cloud.

But most survey respondents also believe they are far from realizing the full benefits of multi-cloud. They report facing major challenges in achieving the necessary control and expertise needed to effectively manage costs and complexity, improve visibility and integration, and ensure flexibility and best practices in their multi-cloud environments.

Security leads all challenges in multi-cloud environments

Security is, by far, the biggest challenge respondents face. They report that ensuring strong security across clouds, networks, applications and data is the number one issue that must be addressed as they assess the risks and rewards of multi-cloud, polynimbus computing. It is a challenge that is motivating IT organizations to reassess the solutions and vendors on which they depend.

KEY FINDINGS

ENTERPRISES ARE MOVING RAPIDLY TOWARD MULTI-CLOUD

A large majority of survey respondents report their organizations have increased their commitment to the cloud over the past two years, including some 52 percent who characterize their efforts as either “aggressively moving toward a cloud-first strategy” or “making significant progress” toward adopting the cloud as a key part of their IT strategy. Most others view themselves as making steady progress, or at least cautious adoption.

Some half of all respondents say they have already moved at least 30 percent of their enterprise applications to the cloud and 35 percent say they have moved more than half of all enterprise applications onto the cloud.

Two-thirds of respondents are using at least two public clouds

Almost two-thirds of respondents have already adopted a multi-cloud strategy and are using two or more public cloud platforms. What’s more, the vast majority (84 percent) of respondents say they will increase their use of public and private clouds over the next 24 months. Just 2 percent said they would decrease cloud usage in the future.

A majority (52 percent) of respondents say they expect to expand their infrastructure to include additional clouds in the future, while another 35 percent are uncertain and taking a wait-and-see approach. Just 13 percent do not expect to add additional clouds.

Both Raja Mohan of Franklin Templeton and Maria Roat of the SBA believe moving to multi- cloud requires a process of selecting the right cloud platforms for specific workloads and business requirements. “I have to understand what the business need is, what the mission is, and bring the right technology to the table,” says Roat. “We’re vigilant about which cloud providers we’re using because we don’t want cloud sprawl.”

PERCEIVED MULTI-CLOUD BENEFITS AND DRIVERS

Respondents point to a wide range of benefits for multi-cloud. Chief among them is the ability to protect against single-vendor failures, with 61 percent of respondents pointing to redundancy and disaster recovery as a top benefit. Cost optimization (50 percent) and performance optimization (47 percent) are also seen as top benefits. More than a third (34 percent) see the ability to select the best cloud environment for specific workloads as a key advantage.

Cost efficiency and desire to bring data and applications closer to users are top drivers for multi-cloud

When assessing what is driving their move to multi-cloud, respondents rank the top four drivers as the opportunity to improve efficiency and cut costs (47 percent), the need to move applications and data closer to users (43 percent), safeguards against failure (32 percent), and the desire to access new solutions and technologies (28 percent).

Roat identifies a wide variety of benefits for the SBA, from cost efficiency to improved redundancy and failover capabilities, to the ability to match different business, application and data requirements to the right cloud infrastructure. The cloud enables “immutable platforms.” If the agency’s website, which she describes as the SBA’s digital platform, should go down in an attack, “we can bring a whole new site up within 90 seconds.”

She also appreciates the business value of understanding detailed costs and thereby being able to charge back costs to various program offices and users of the services she provides.

Among other benefits, Mohan says moving to the cloud has enabled the company to provide new digital services faster, exploit new technologies without making significant capital investments, and tap into advanced software and technical expertise from cloud providers.

Nathan Borg, enterprise architect for Juliet Junior College, says the institution currently uses a combination of internal servers and one of the major cloud service providers. “We’re always striving for 24/7 availability and the cost of providing that on-premise can be prohibitive. But if it’s done as a cloud solution or a SaaS solution, that’s baked into the cost and the architecture. If we have applications in the cloud, we can do more innovation on processes and other technologies.”

THE RISE OF EDGE CLOUDS

The need to bring data and applications closer to users to improve performance and reduce latency will likely be a significant driver for further multi-cloud adoption. The rollout of 5G wireless networks, with their massive boost in throughput and reduced latency, will provide the network infrastructure needed to create new micro data centers at the edge the network, enabling improved application performance and new business models and services.

5G-enabled edge clouds will increase multi-cloud adoption

Indeed, 40 percent of all respondents already anticipate the use of smaller network edge clouds as part of their cloud strategy, with another 41 percent saying they may deploy edge clouds in the future.

FORM FACTORS – THE GROWING USE OF CONTAINERS

As companies move forward with digital transformation and multi-cloud computing, there also has been a steady uptake in the use of virtual systems to improve cost efficiencies and flexibility in the development and deployment of applications. The next step in this process is the use of containers to both speed development and improve portability across clouds.

Respondents point to cloud provider-specific appliances and software and virtualization as the two most important server form factors used to deploy applications and services in the public cloud, followed by containers. Many cloud providers, of course, are using both virtualization and containers within their environments.

Containers are rapidly rising development and deployment solution for companies. Some 53 percent of respondents view containers as either very important or important to their public and private cloud application deployments. Some 48 percent of respondents say they are either using containers or planning to use them within the next 12 months. Another 12 percent are currently studying the use of containers.

Multi-cloud is a key driver for increased usage of containers

The move to multi-cloud, with its requirement for application portability, is a major factor driving companies toward the use of containers. The mandate to improve cost efficiencies across staffing, infrastructure and software resources is seen as the top driver for container adoption (46 percent), followed by increasing use of multi-clouds (42 percent), the need to improve the portability of applications and services (41 percent), and the growing use of micro-services architectures (36 percent).

Respondents say the top benefits of containers are: flexibility and portability of applications (57 percent), improved scalability (47 percent), better compute resource efficiency (41 percent) and operational simplicity (38 percent).

Both the SBA and Franklin Templeton are using containers for development and deployment of applications and micro-services.

“Containers are going to play an important role in data mobility in multi-cloud, especially application mobility,” said Mohan. “But that being said, that’s not going to be the only solution. For us, container orchestration is just another evolution that’s required for multi-cloud adoption.”

SECURITY LEADS TOP CHALLENGES

Companies globally are clearly moving toward a new cloud-based approach to IT and multi-cloud strategies, but are just as clearly dissatisfied with where they are in this journey. Only 11 percent of respondents believe they have been highly successful in realizing the benefits of multi-cloud computing, and a majority (51 percent) rate themselves as only somewhat successful or unsuccessful to date.

Only 11 percent say they have been highly successful in realizing the benefits of multi-cloud

Undoubtedly, many companies have moved into multi-cloud as much because of unplanned circumstances and expediencies as because of a clearly delineated and executed strategy. Forces and factors like mergers and acquisitions and the adoption of different cloud platforms by different development teams and organizations within an enterprise are also leading companies into a new multi-cloud reality. Now IT needs to catch up and bring order, control, governance and integrated management to this new environment.

Centralized security across multiple clouds is far and away the biggest concern identified by respondents. Some 63 percent of respondents said that ensuring security across all clouds, networks, applications and data is one of their top challenges. Other leading concerns include gaining the necessary skills and expertise to manage these environments (37 percent), centralized visibility and management (33 percent), and dealing with increased infrastructure and application management complexity (33 percent).

Centralized visibility, management and automation are critical needs for improving security and performance

Respondents believe centralized visibility and management and automation will be essential to improving and ensuring the security, reliability and performance of their new environments. They point to centralized visibility and analytics into security and performance (56 percent), automated tools to speed response times and reduce costs (54 percent), and centralized management from a single point of control (50 percent) as their most important requirements. Greater scale and performance of security solutions to handle increased traffic is also identified as an important need (38 percent).

When assessing the specific security solutions and practices needed in multi-cloud environments, centralized authentication leads the list (62 percent). Ensuring centralized control over which users, administrators and systems can access different applications, software components and data across multiple clouds is a non-trivial issue. Other top needs include centralized security policies (46 percent), robust web application firewalls (40 percent), and DDoS protection (33 percent).

Centralized authentication is the top solution requirement for multi-cloud

As a financial services company, Franklin Templeton always places security as a top priority, according to Mohan. “How do we deliver highly secure applications in a way in which it doesn’t matter where they reside? How do we provide seamless, secure services? That’s the goal.”

“At this juncture, we’re taking advantage of security solutions from our public cloud providers augmented with our existing toolset, but we are continuing to evolve in that space,” Mohan said. IT leaders from Franklin Templeton, the SBA and Juliet Junior College all concur that new skills and expertise is a major challenge in making the move to the cloud. “Our people have been running IT systems for many years, and they’re good at it. But it’s all new. It requires new training for everyone, even our experts,” says Mohan.

Says Roat, “Some of our teams had to stop hugging those racks because they we’re going away. Making the change to a multi-cloud environment requires significant training for the workforce and significant changes to IT and DevSecOps processes. “You can’t just plug in a new technology and not change anything else,” she says.

THE NEED TO RE-EVALUATE VENDORS AND SOLUTIONS

The challenges organization face in bringing greater security, control and performance optimization to their new multi-cloud environment are leading IT organizations and enterprises to reassess the solutions and vendors with which they work. Only 9 percent of survey respondent are extremely satisfied with their current security solutions for multi-cloud, while 38 percent believe they need to make significant improvements.

Many respondents are now re-evaluating their security and load balancing solutions to meet new multi-cloud requirements

Approximately 38 percent of all respondents say the challenges of multi-cloud have already triggered a reassessment of their current load balancer and security suppliers, while most others are either considering a re-evaluation or are uncertain of whether such a reassessment is necessary. Only 18 percent believe they do not need to re-evaluate their suppliers.

Juliet Junior College is one example of an enterprise that has recently reevaluated its load balancer solution in light of the demand for greater cost efficiency, resilience and centralized control. Borg says he made the change because his previous load balancer would have required multiple servers and additional staff training to handle the load balancing and security demands across multiple networks and clouds. The new supplier provides a more cost-efficient, single point of control with the ability to provide security analytics and traffic inspections when they are needed.

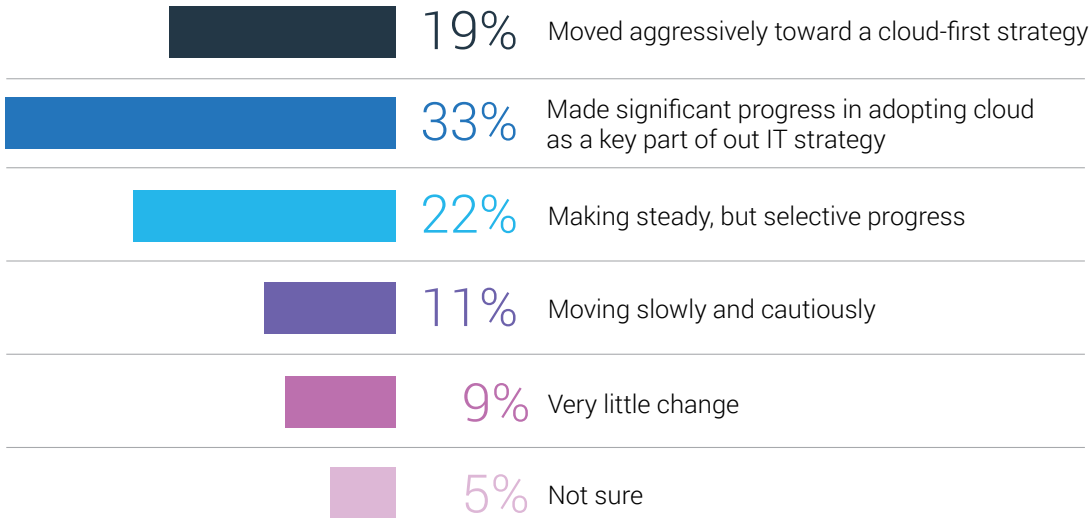
Roat, the CIO of the SBA, says that ultimately making the move to multi-cloud is a creative process. “Part of my message to others: Don’t be afraid to try new things. We built out our initial cloud architecture, learned from it and then rebuilt it. It’s also very important to pay attention to usage, how much you’re spending and how you can optimize the environment.”

DETAILED FINDINGS

1. ENTERPRISES ARE MOVING RAPIDLY TOWARD MULTI-CLOUD

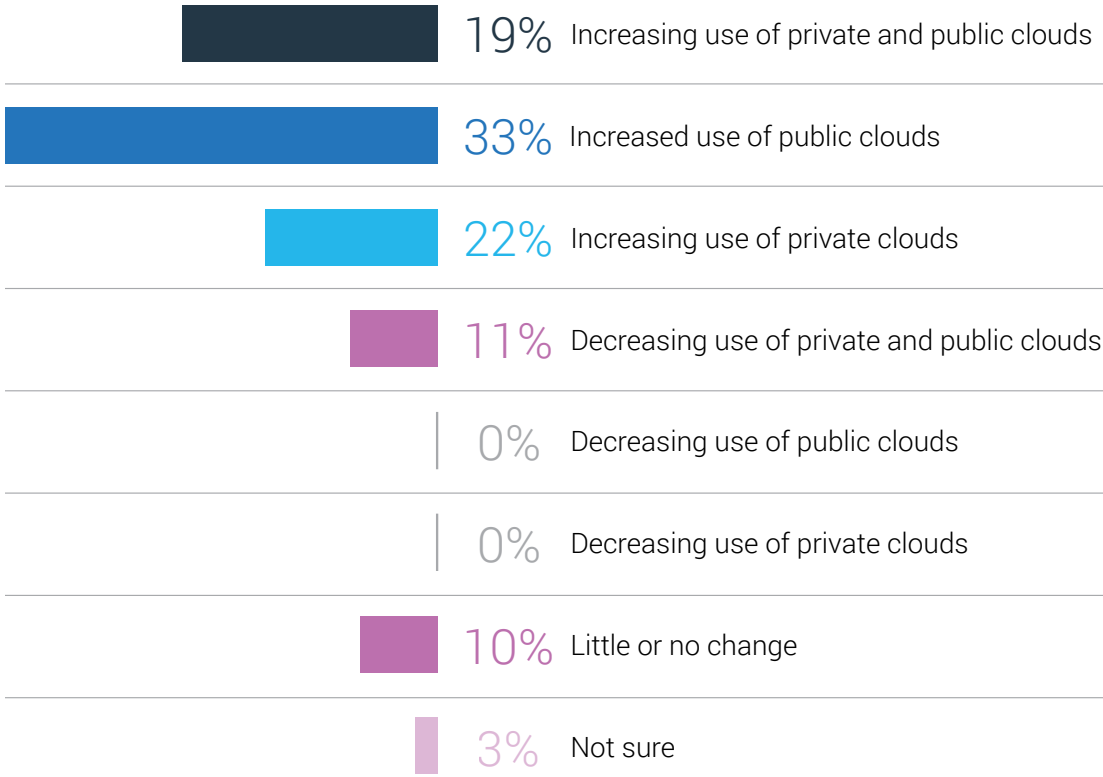
How would you characterize how your company's commitment has changed in the past two years?

Respondents report making significant strides toward cloud adoption over the past two years, including some 52 percent who characterize their efforts as either “aggressively moving toward a cloud-first strategy” or making “significant progress” toward adopting the cloud as a key part of their IT strategy. Most others view themselves as making steady progress, or at least cautious adoption.



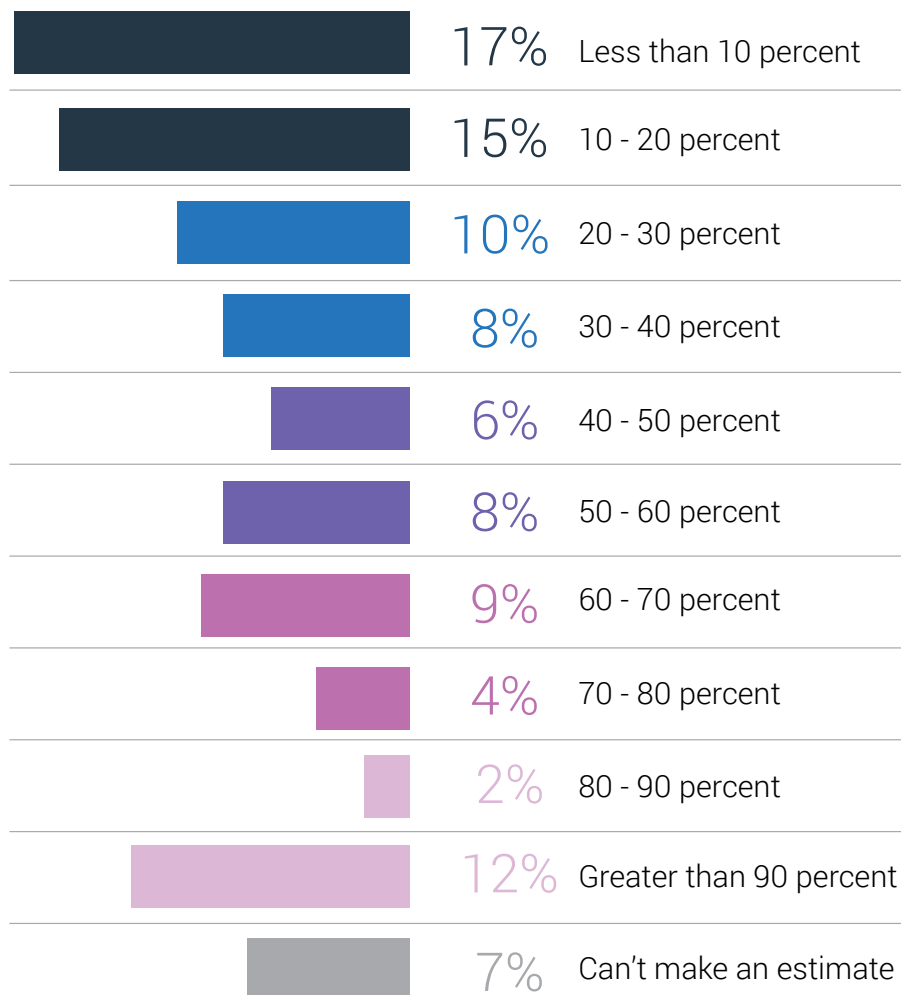
How do you expect your company's use of clouds to change over the next two years?

The move to cloud computing will only increase in the next two years. The vast majority (84 percent) of respondents say they will increase their use of either public or private clouds, or both, over the next 24 months. Just 2 percent said they would decrease cloud usage in the future.



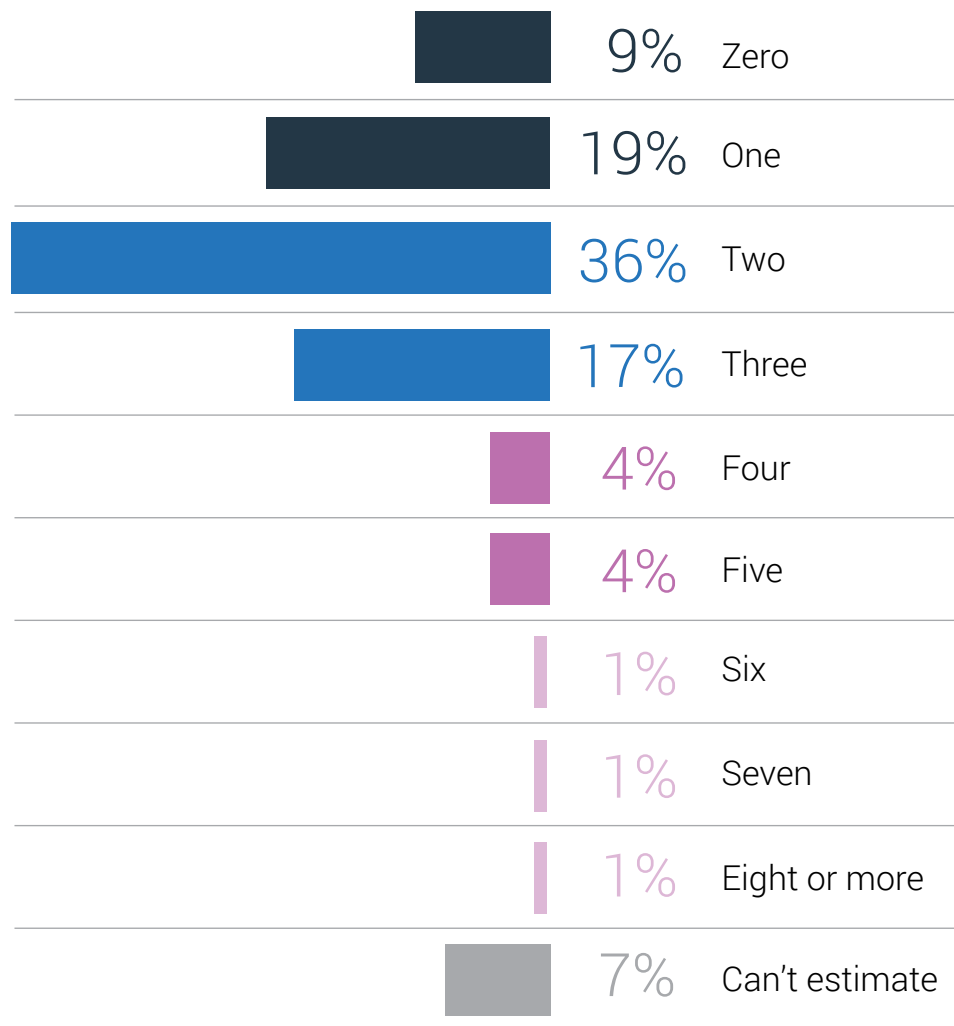
What percentage of your company's enterprise applications do you estimate have moved to the cloud?

Cloud dependence has become a reality for the vast majority of enterprises. Half of all respondents have already moved at least 30 percent of their enterprise applications to the cloud, and 35 percent say they have moved more than half of all enterprise applications to the cloud.



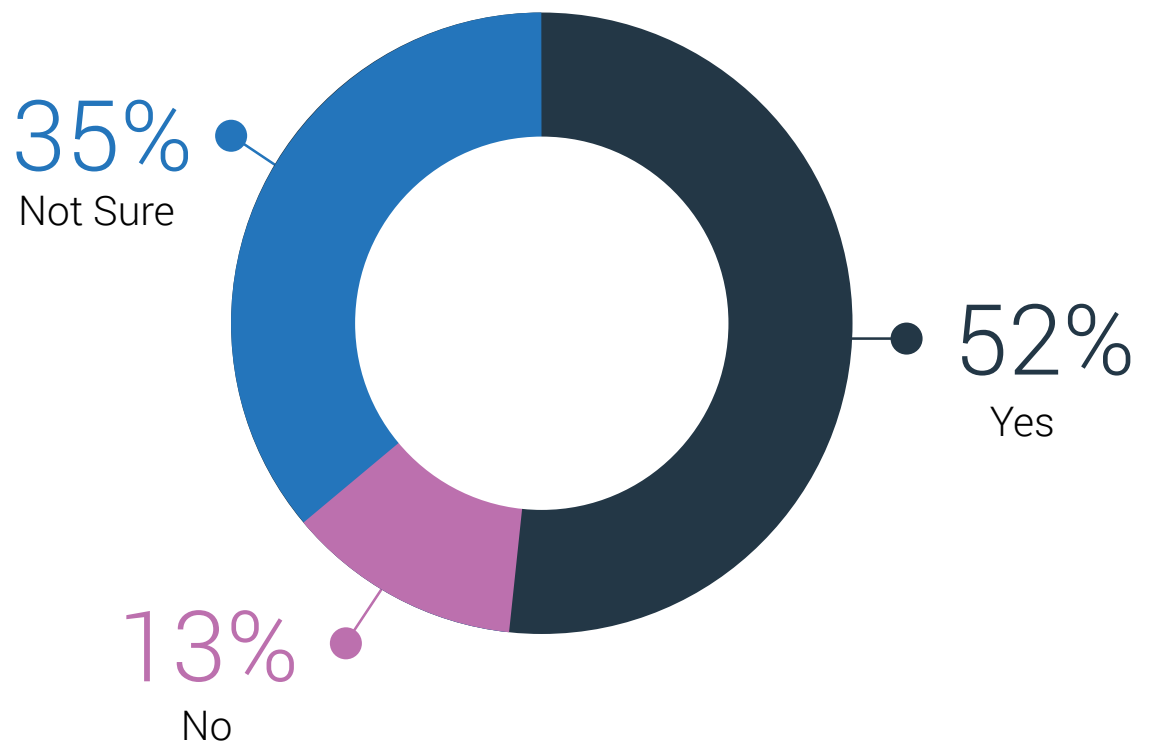
How many public clouds (Microsoft Azure, AWS, Google Cloud, IBM Cloud, Oracle Cloud, etc.) do you estimate your enterprise uses?

Multi-cloud is the new reality for most companies today. Almost two-thirds of respondents say their companies have already embarked on a multi-cloud approach and are using two or more public cloud platforms.



Do you anticipate expanding your infrastructure to include more cloud platforms?

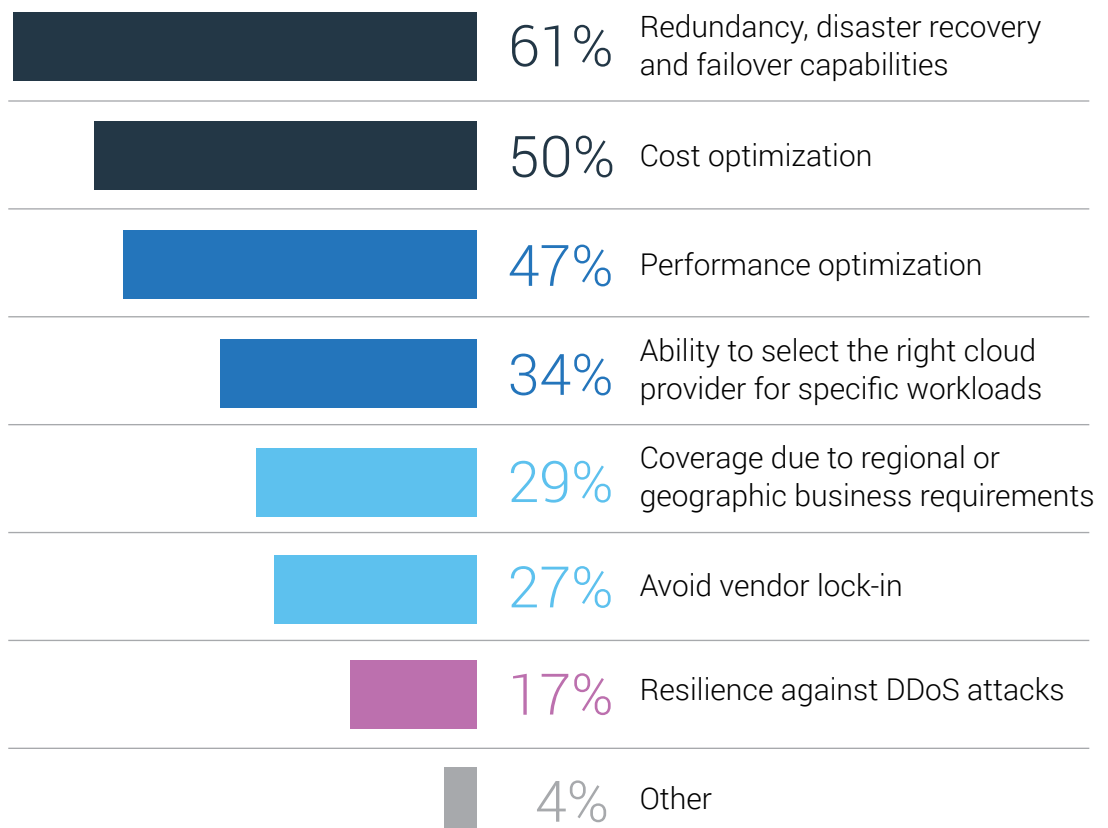
A majority (52 percent) of respondents say they expect to expand to additional cloud platforms in the future, while another 35 percent are uncertain and taking a wait-and-see approach. Just 13 percent do not expect to add additional clouds.



2. PERCEIVED MULTI-CLOUD BENEFITS AND DRIVERS

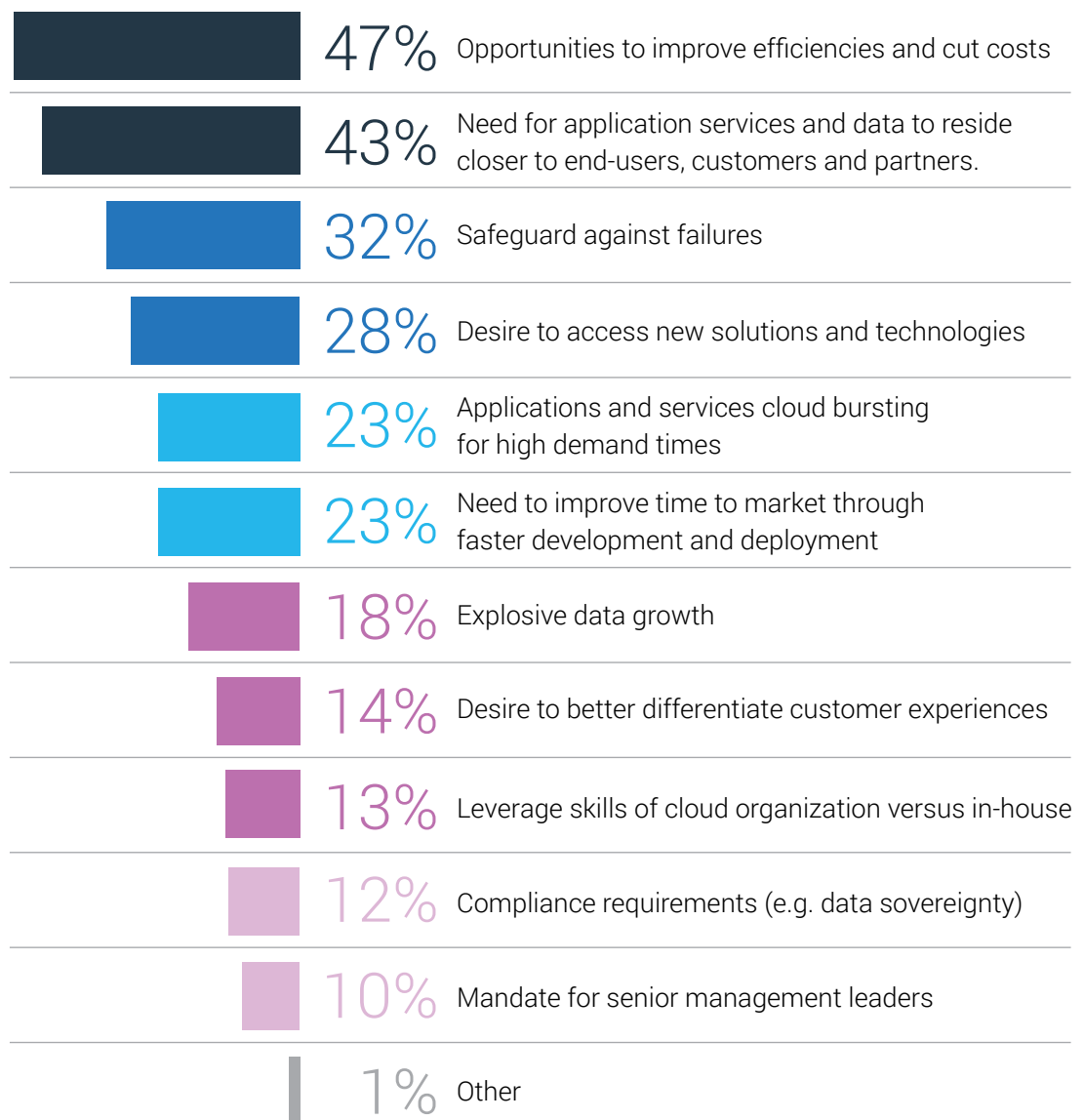
What do you see as the primary benefits of a multi-cloud strategy?

Centralized security across multiple clouds is far and away the biggest concern respondents have about their new multi-cloud environments. Some 63 percent of respondents said that ensuring security across all clouds, networks, applications and data is one of their top challenges. Other leading concerns include gaining the necessary skills and expertise to manage these environments (37 percent), centralized visibility and management (33 percent), and dealing with increased infrastructure and application management complexity (33 percent).



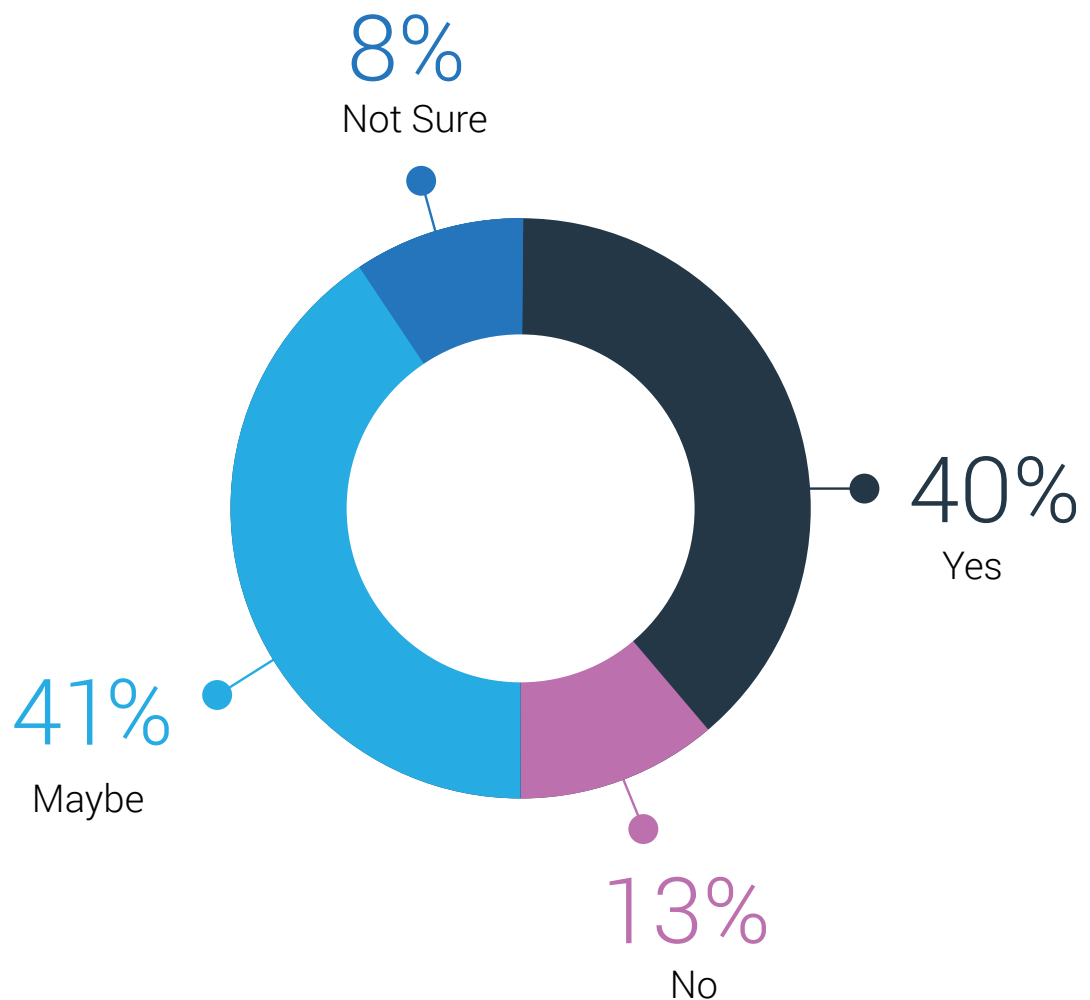
What forces and factors are driving the use of clouds in your company?

A variety of market and technology factors are driving the adoption of cloud and multi-cloud deployments. Respondents rank the top four drivers as the opportunity to improve efficiency and cut costs (47 percent), the need to move applications and data closer to users (43 percent), safeguards against failure (32 percent), and the desire to access to solutions and technologies (28 percent).



Do you anticipate the coming of 5G networks to increase your use of clouds, particularly smaller network edge clouds that bring applications, services and data closer to users?

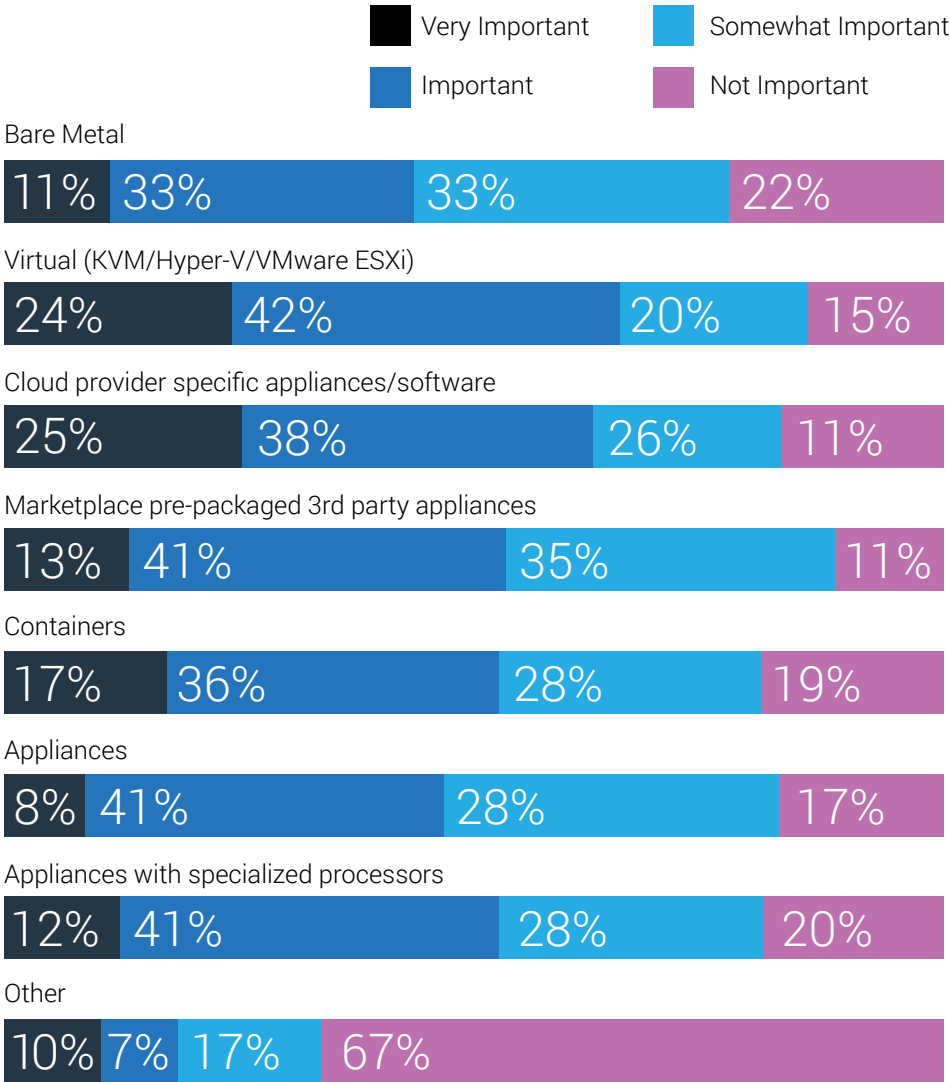
The need to bring data and applications closer to users to improve performance and reduce latency will likely be a significant driver for further multi-cloud adoption. The rollout of 5G wireless networks, with their massive boost in throughput and reduced latency, will provide the network infrastructure needed to create new micro data centers at the edge the network. 40 percent of respondents already anticipate the use of network edge clouds as part of their cloud strategy, with another 41 percent saying they may deploy edge clouds in the future.



3. FORM FACTORS—THE GROWING USE OF CONTAINERS

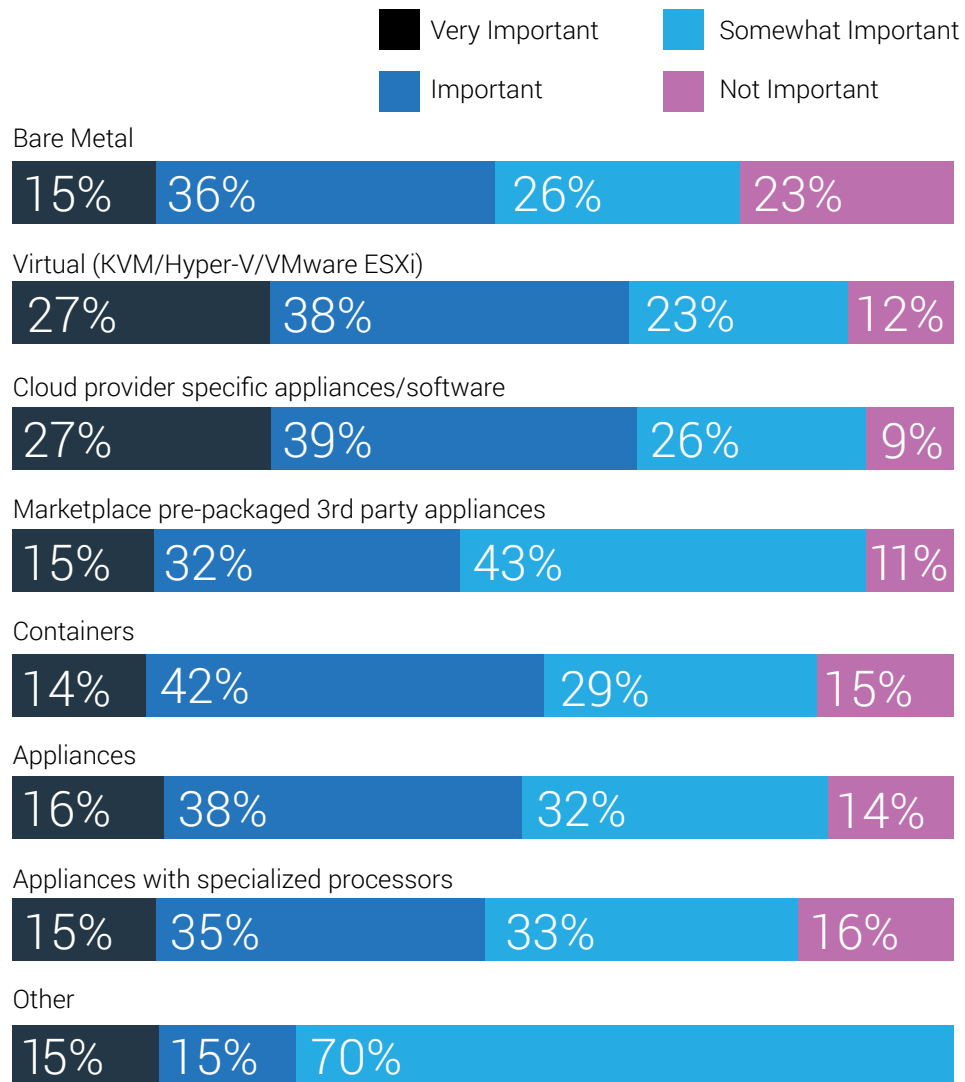
Rank the usage of the following form factors in your current deployment of applications and services in public clouds.

Respondents point to cloud provider-specific appliances and software and virtualization as the two most important server form factor used to deploy applications and services in public cloud, followed by containers. Many cloud providers, of course, are using both virtualization and containers within their environments.



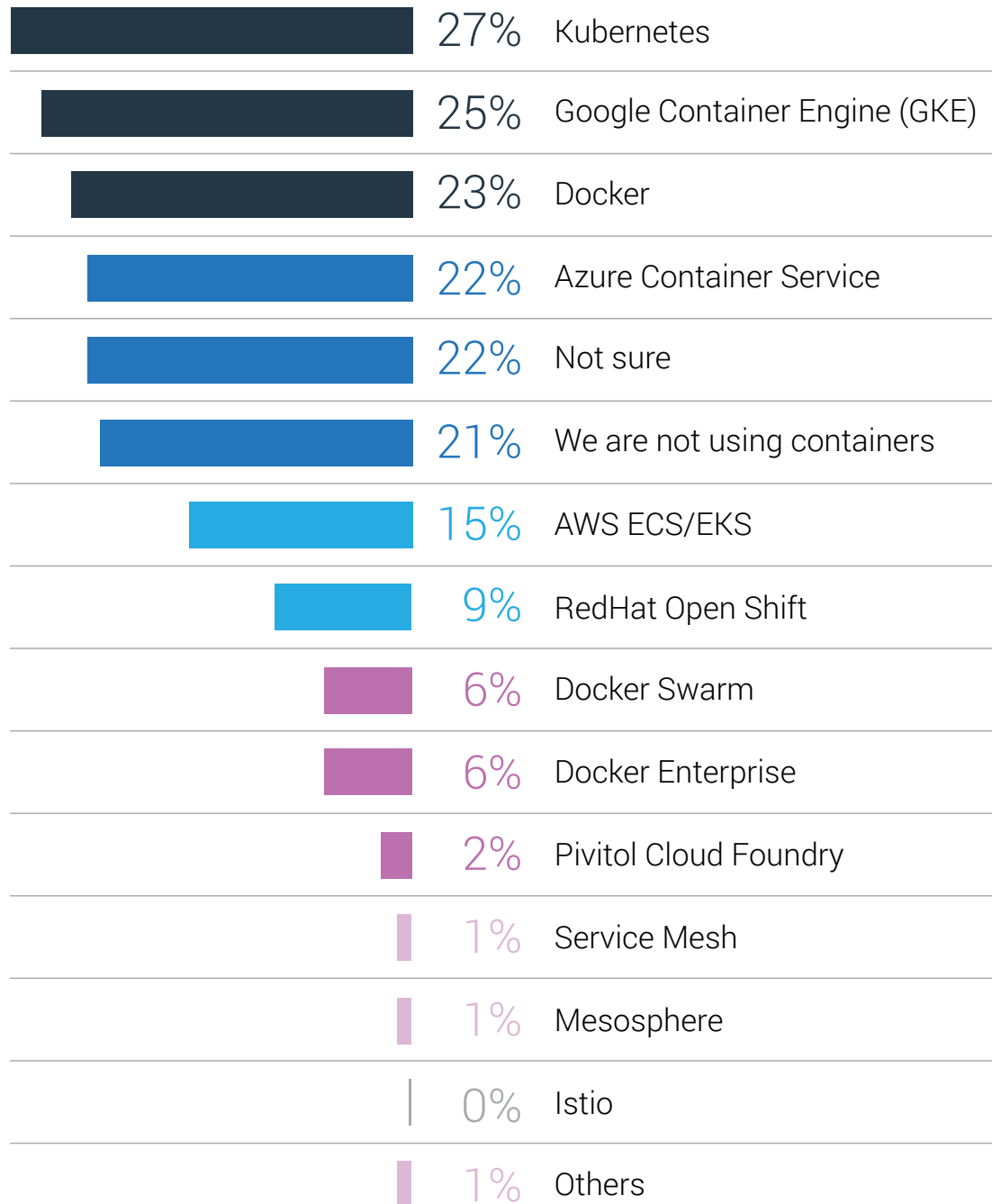
Rank the usage of the following form factors in your current deployment of applications and services in private clouds?

In private clouds, virtualized systems, provider-specific appliances and software, and bare metal are currently the most important. Containers are quickly gaining acceptance and usage in both public and private clouds, however. Some 56 percent of respondents view containers as either important or very important to their private cloud application deployments.



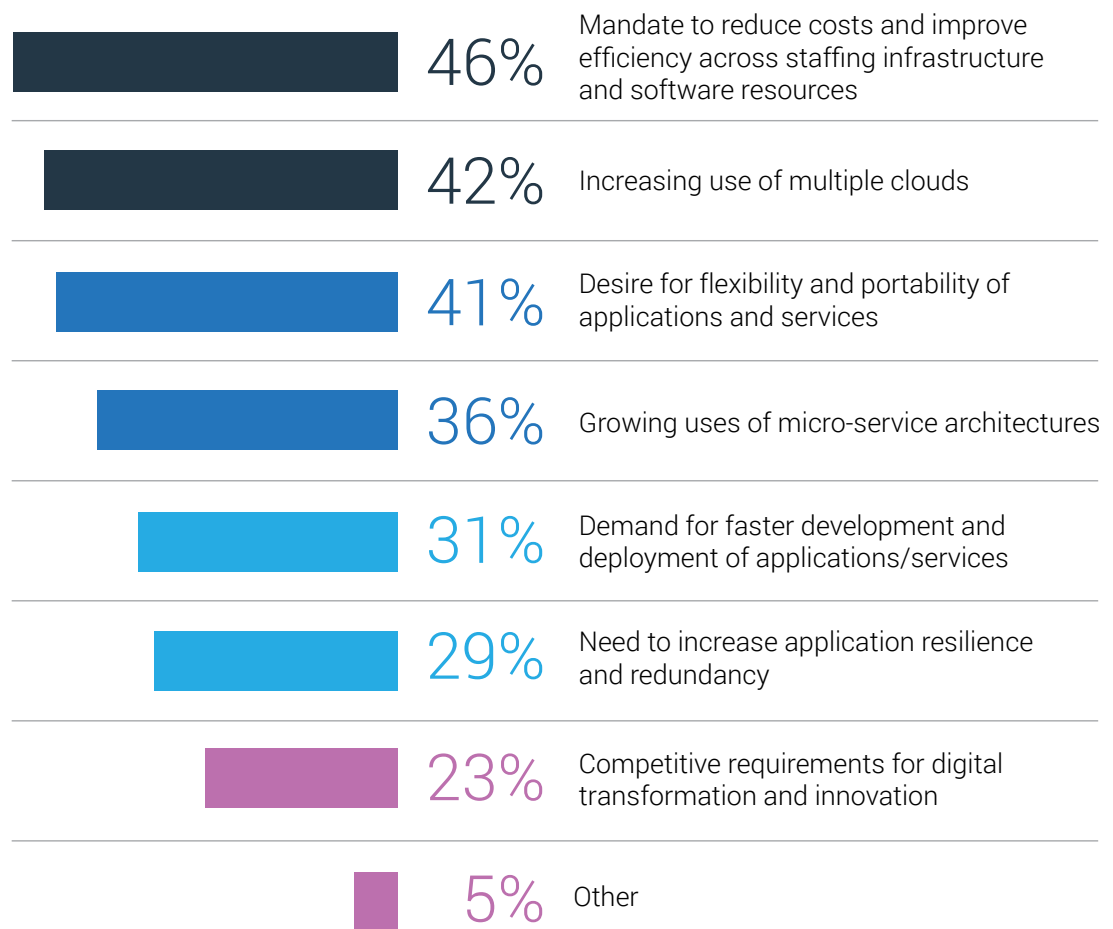
What container tools or services are you currently using or planning to use?

Respondents point to Kubernetes and the Google Container Engine as top container solutions that they are most likely to use, followed by GKE, Docker and Azure Container Service.



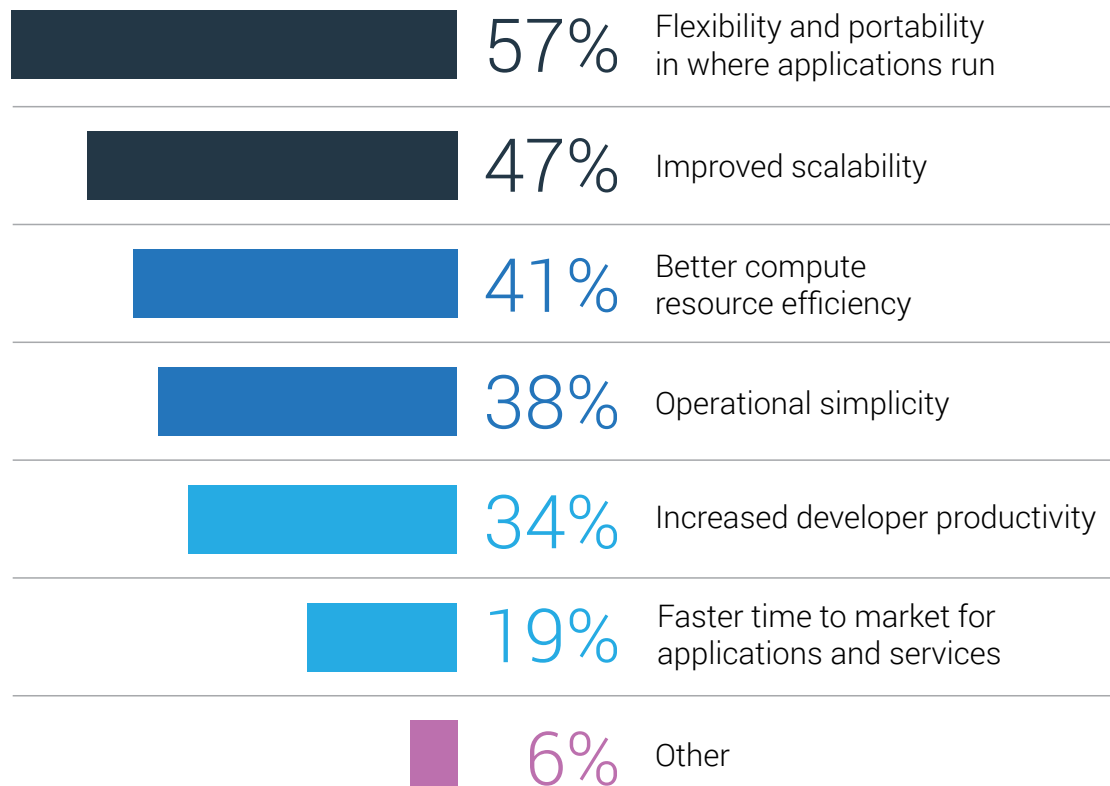
What factors and forces are driving your use or interest in containers?

The move to multi-cloud, with its requirement for application portability, is a major factor driving companies toward the use of containers. The mandate to improve cost efficiencies across staffing, infrastructure and software resources is seen as the top driver for container adoption (46 percent), followed by increasing use of multi-clouds (42 percent), the need to improve the portability of applications and services (41 percent), and the growing use of micro-services architectures (36 percent).



What benefit are you realizing or expecting to realize from the use of containers in the cloud?

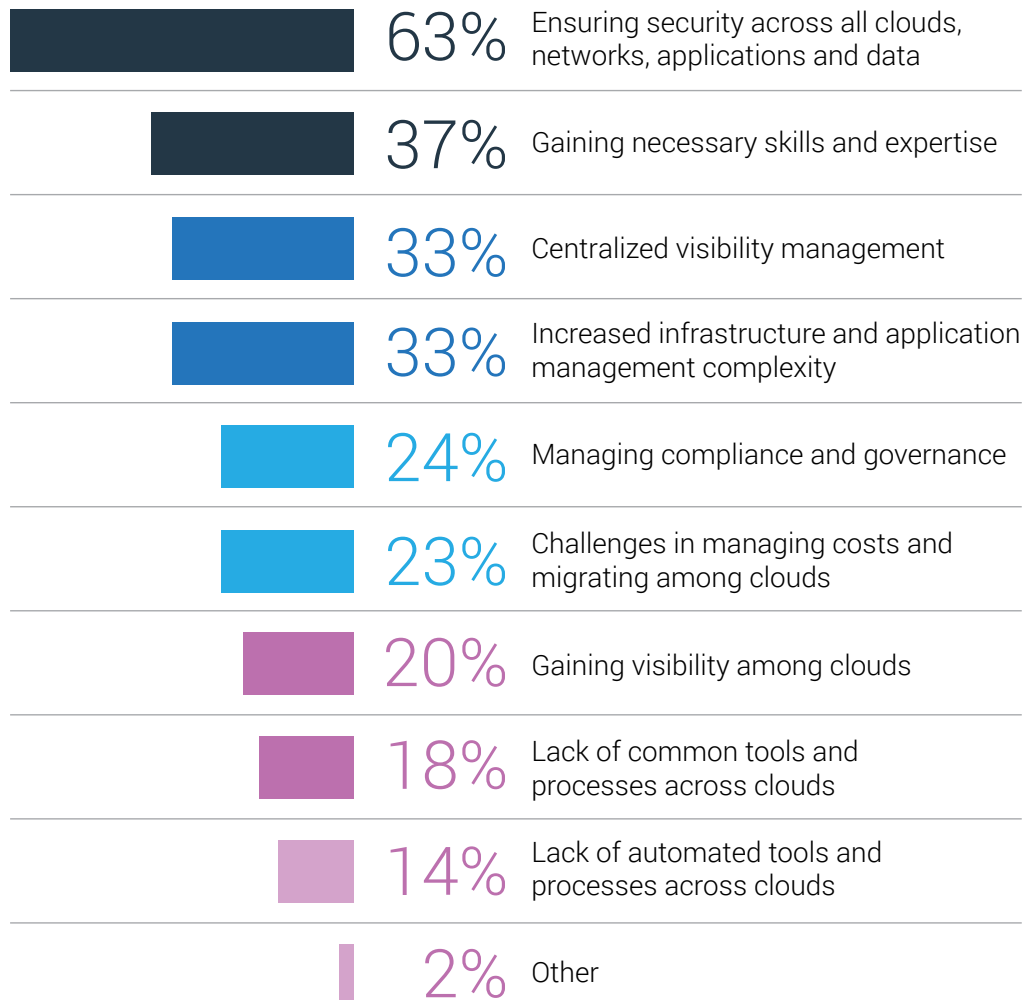
Respondents say the top benefits of containers are: flexibility and portability of applications (57 percent), improved scalability (47 percent), better compute resource efficiency (41 percent) and operational simplicity (38 percent).



4. SECURITY LEADS TOP CHALLENGES

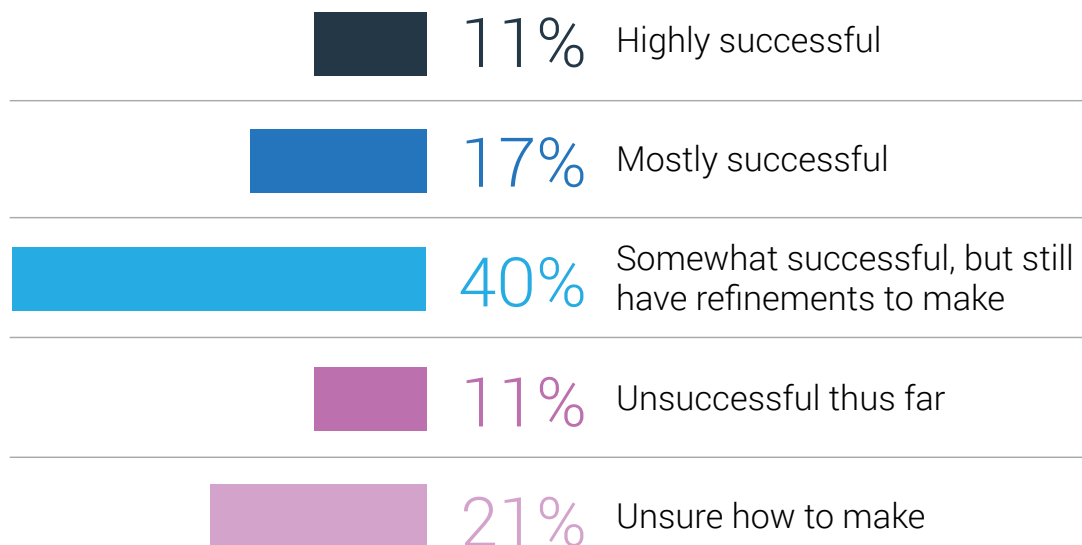
What challenges do you think multi-cloud environments pose for your organizations?

Improving security across multiple clouds is by far the biggest concern identified by respondents. Some 63 percent said that ensuring security across all clouds, networks, applications and data is one of their top challenges. Other leading concerns include gaining the necessary skills and expertise to manage these environments (37 percent), dealing with increased management complexity (33 percent), and achieving centralized visibility and management across clouds (33 percent).



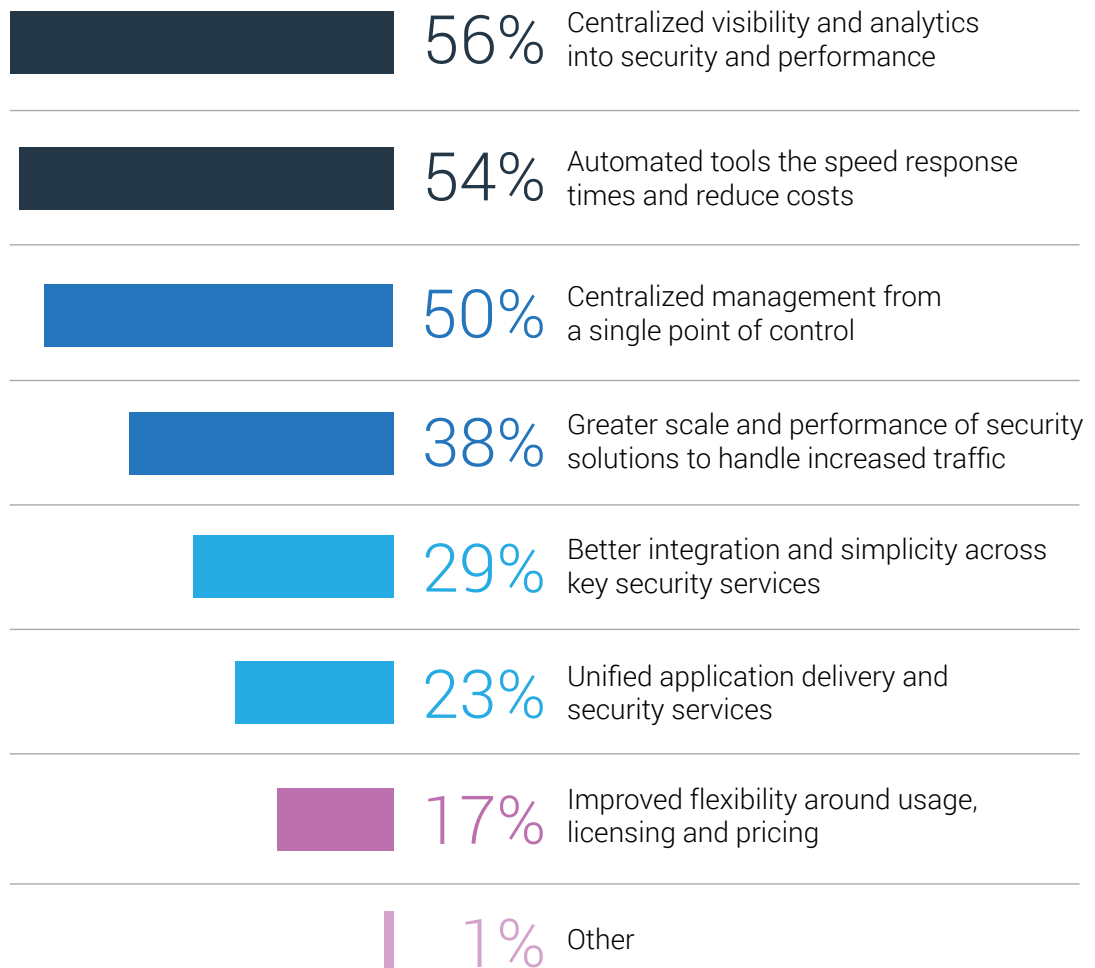
How successful has your organization been in realizing the benefits of multi-cloud computing?

The aforementioned challenges are holding companies back from attaining the full benefits of multi-cloud computing, with most respondents giving their companies less than stellar marks for realizing the true potential of multi-cloud. Only 11 percent of respondents believe they have been highly successful in realizing the benefits of multi-cloud computing, while most rate their organizations as only somewhat successful or unsuccessful to date.



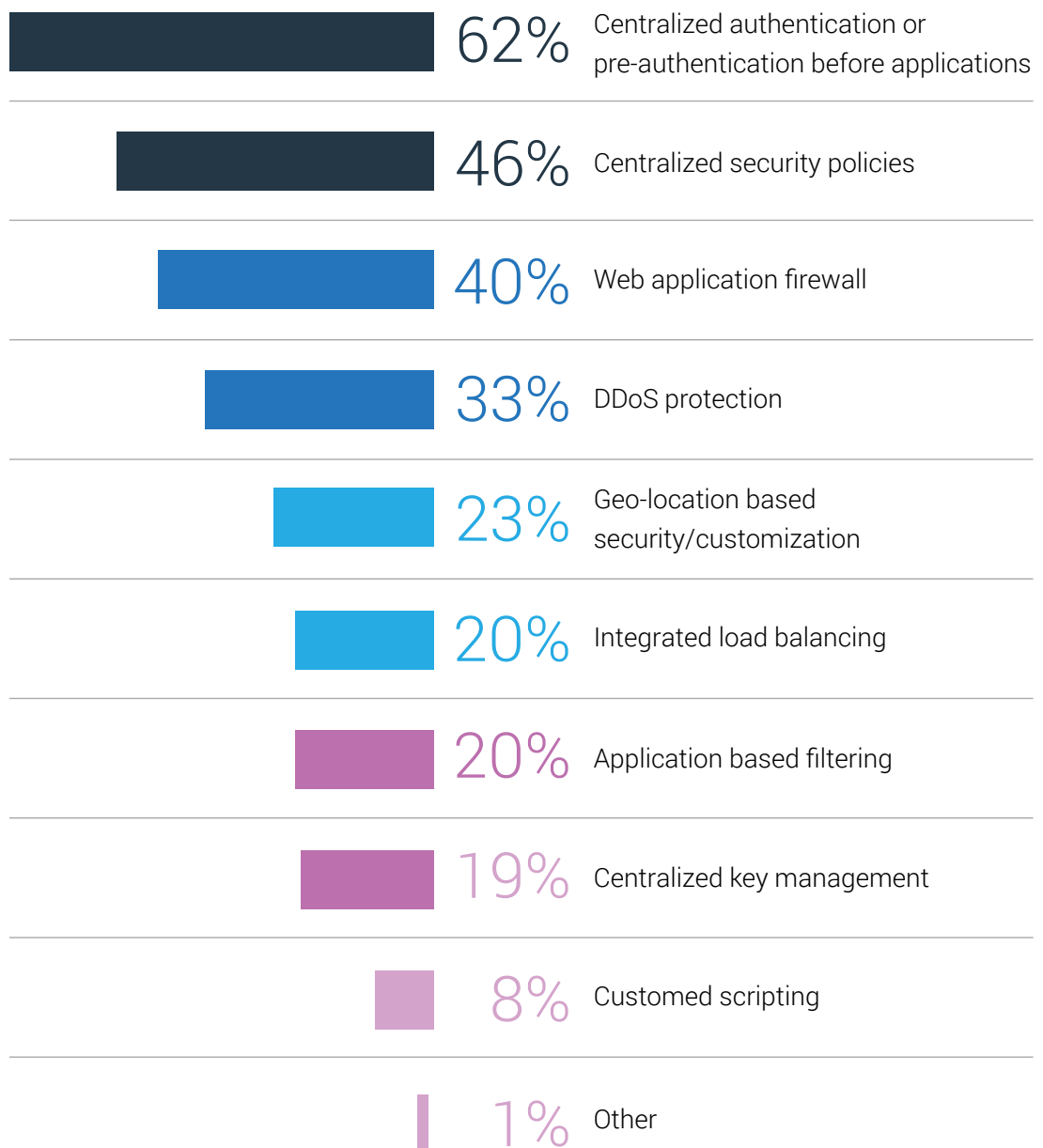
What capabilities do you believe are most important to improving security, reliability and performance in multi-cloud environments?

Respondents point to centralized visibility and analytics into security and performance as the most important requirement (56 percent) for improving their management capabilities in multi-cloud, followed closely by the need for greater automation to speed up response times and reduce costs (54 percent), and centralized management from a single point of control (50 percent). Greater scale and performance of security solutions to handle increased traffic is also identified as an important requirement (38 percent).



What do you consider to be the most important considerations in protecting the security and reliability of multi-cloud?

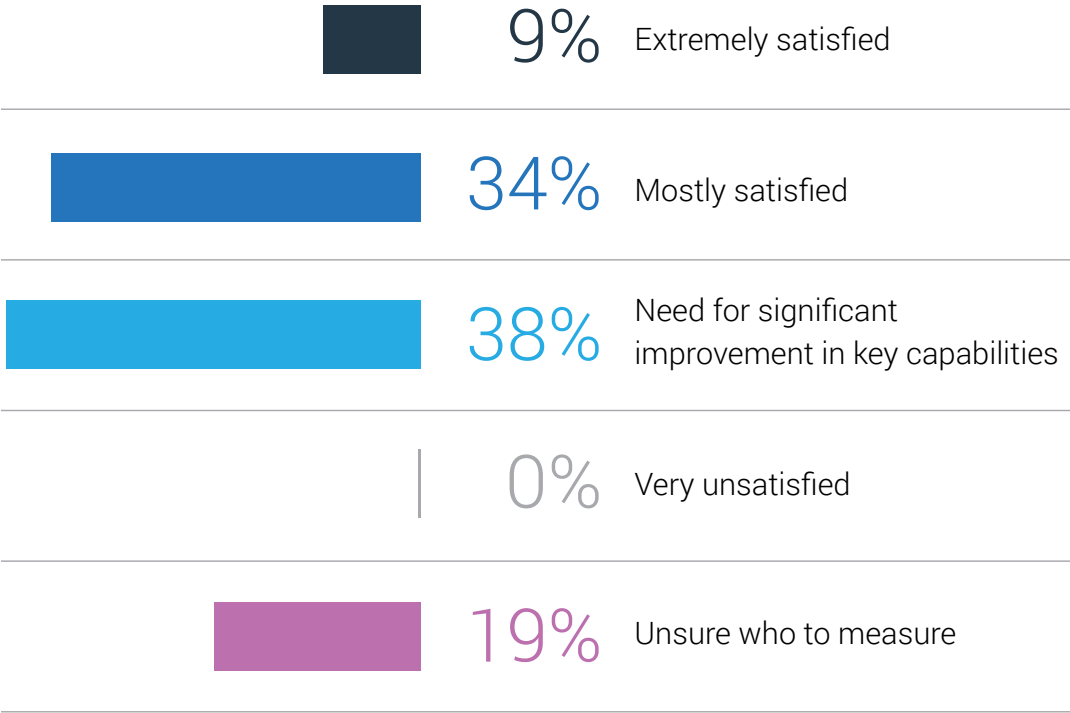
By far, centralized authentication leads the list of specific security solutions and practices needed in multi-cloud environments (62 percent). Other top needs include centralized security policies (46 percent), robust web application firewalls (40 percent), and DDoS protection (33 percent).



5. THE NEED TO RE-EVALUATE VENDORS AND SOLUTIONS

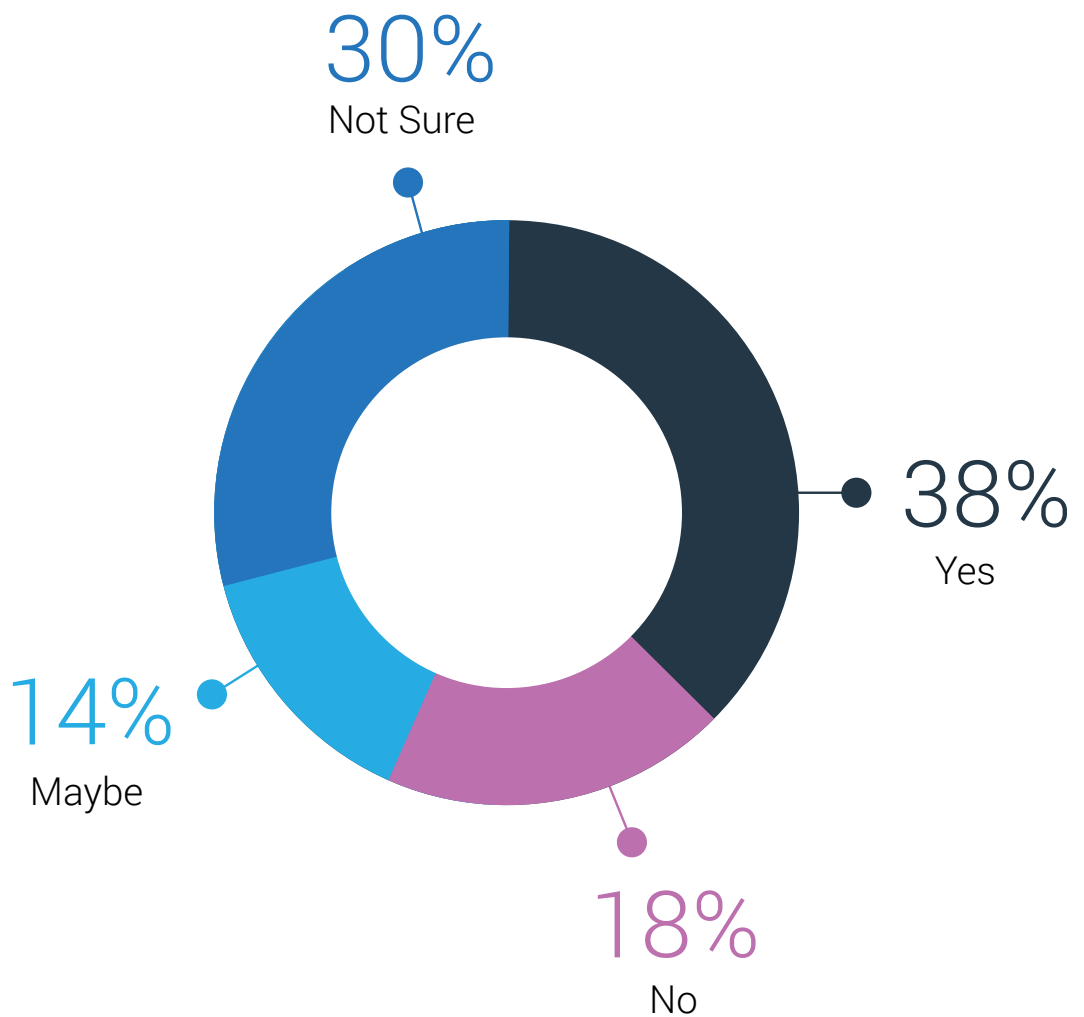
How satisfied are you with the capability of your current security solutions within multi-cloud environments?

The challenges and shortcomings of their current multi-cloud environments are leading a large number of IT organizations and enterprises to reassess the solutions and vendors with which they work. In fact, only 9 percent of survey respondent are extremely satisfied with their current security solutions for multi-cloud, while 38 percent believe they need to make significant improvements.



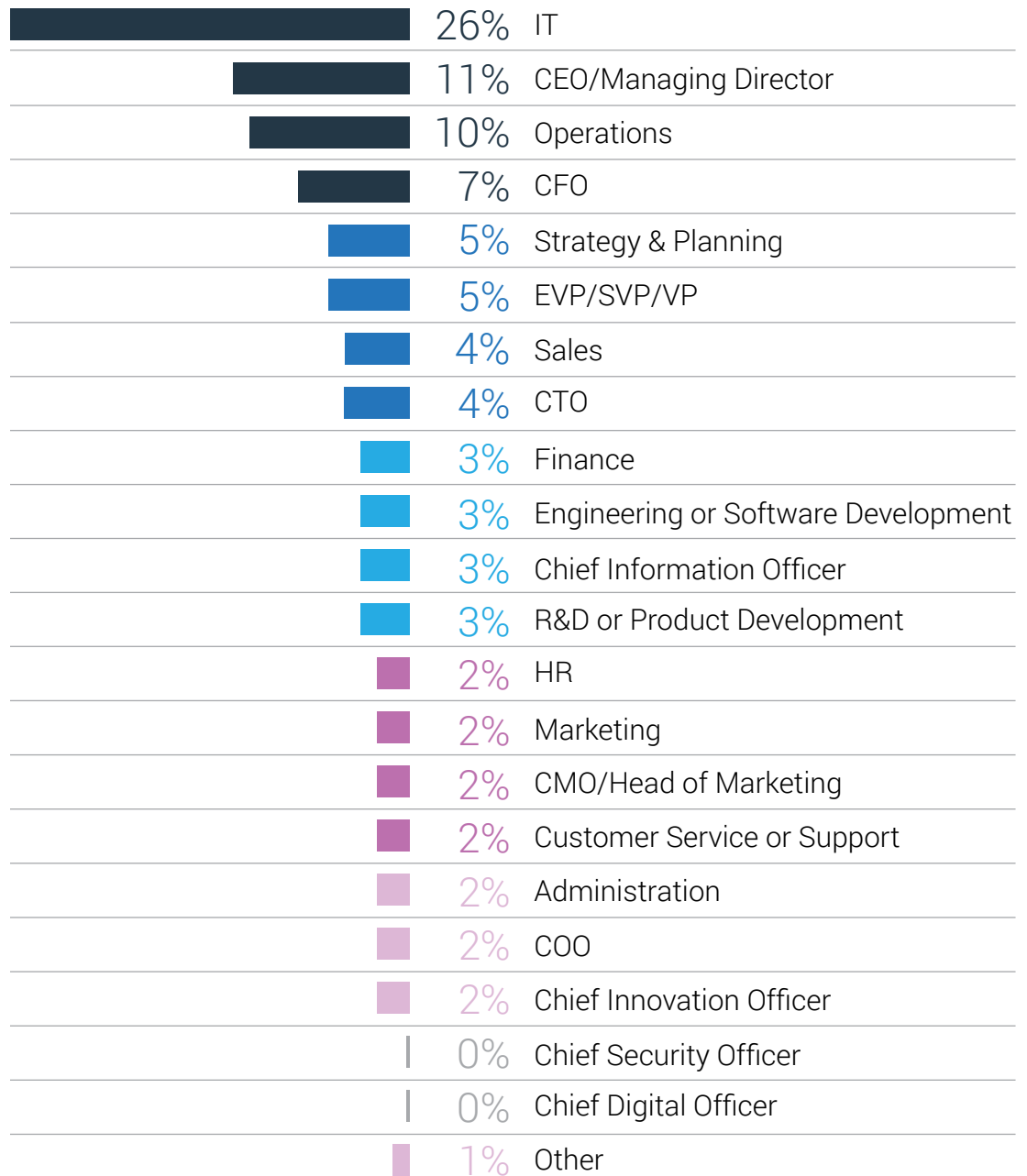
Has the adoption of a multi-cloud strategy triggered an evaluation of your current load balancer and security solutions?

Approximately 38 percent of all respondents say the challenges of multi-cloud have already triggered a reassessment of their current load balancer and security suppliers, while most others are either considering a re-evaluation or are still uncertain of whether such a reassessment is necessary. Only 18 percent believe they do not need to re-evaluate their suppliers.

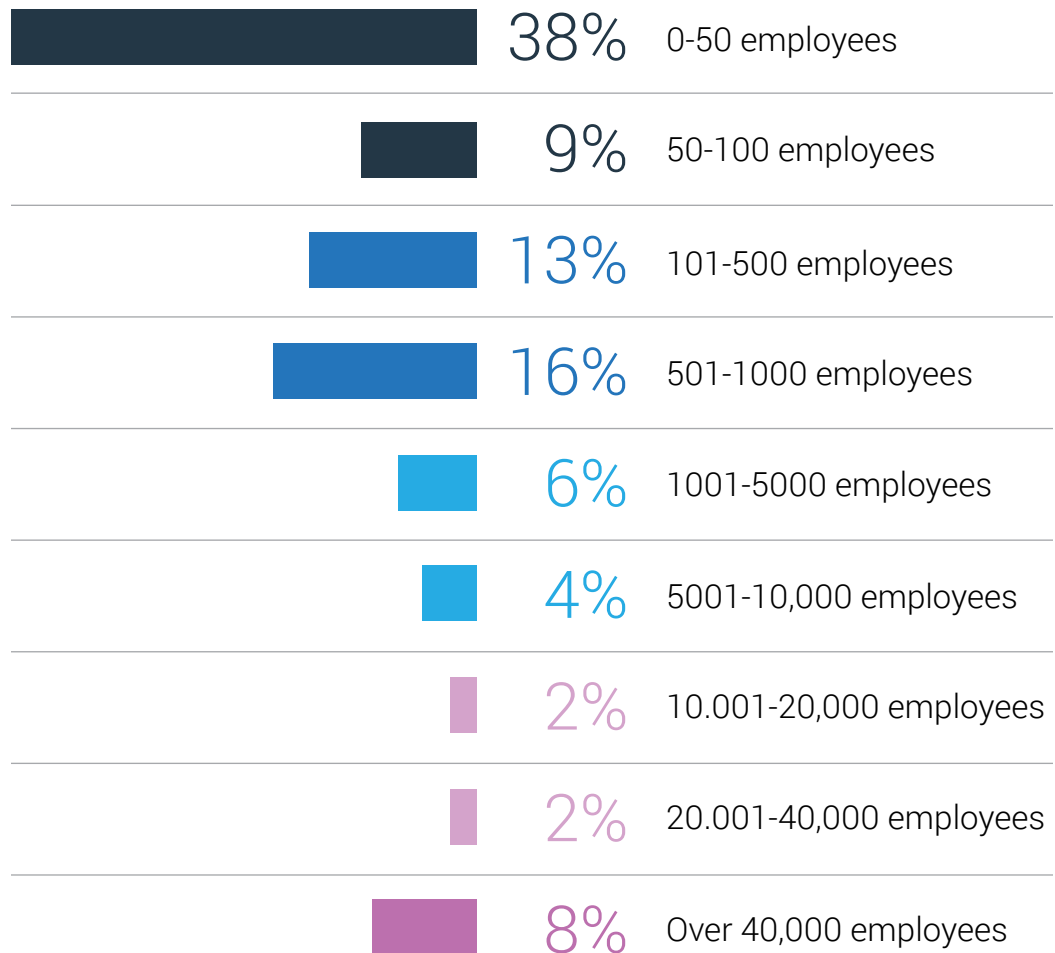


DEMOGRAPHICS

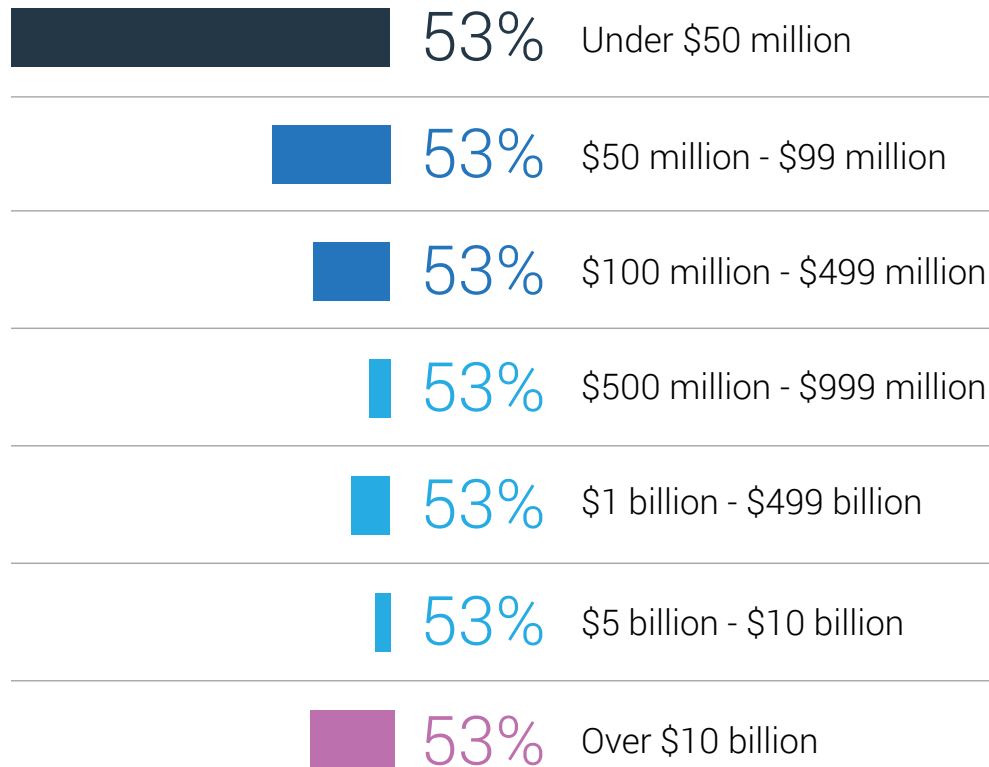
What most closely describes your position?
(Select one)



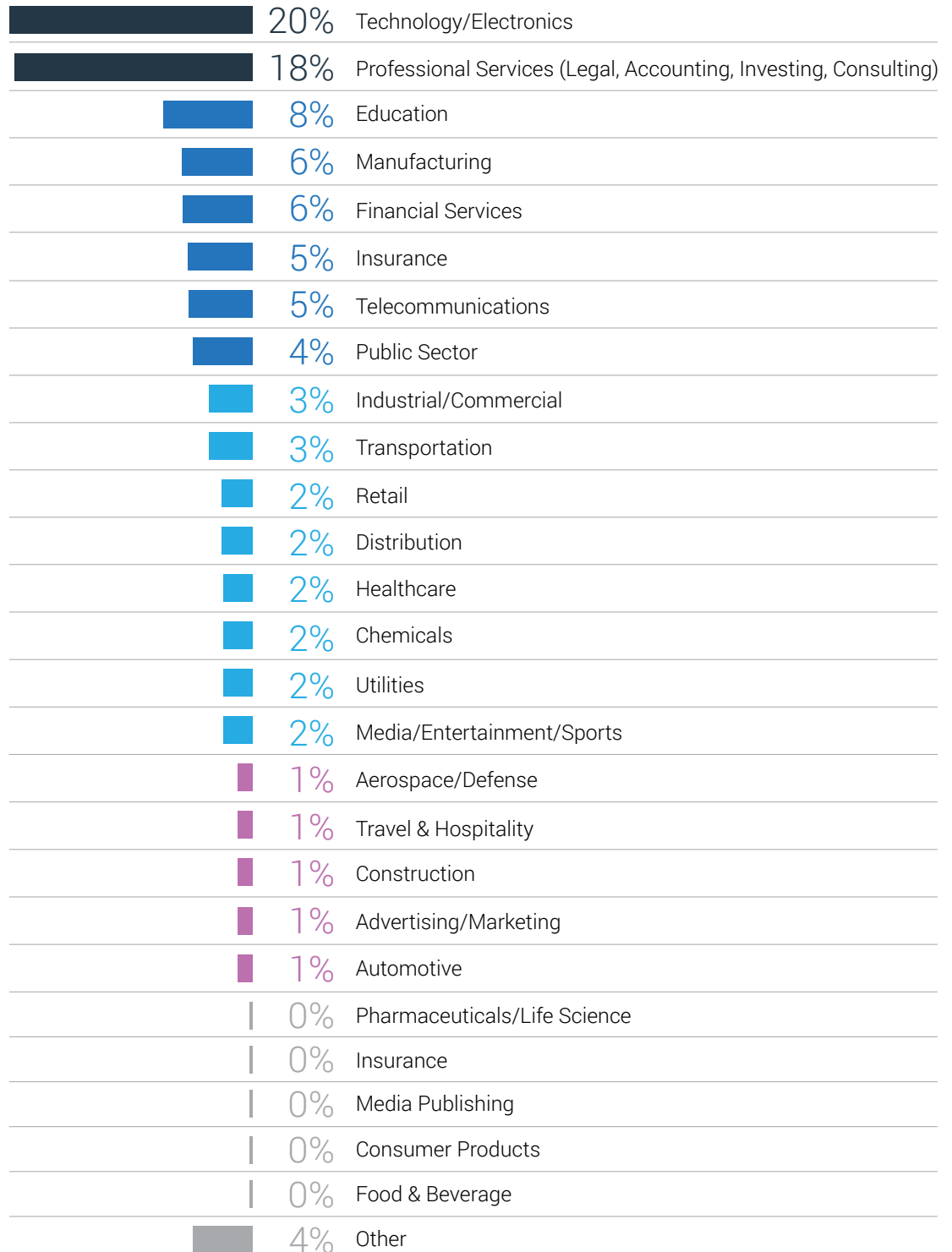
About how many employees does your company have?



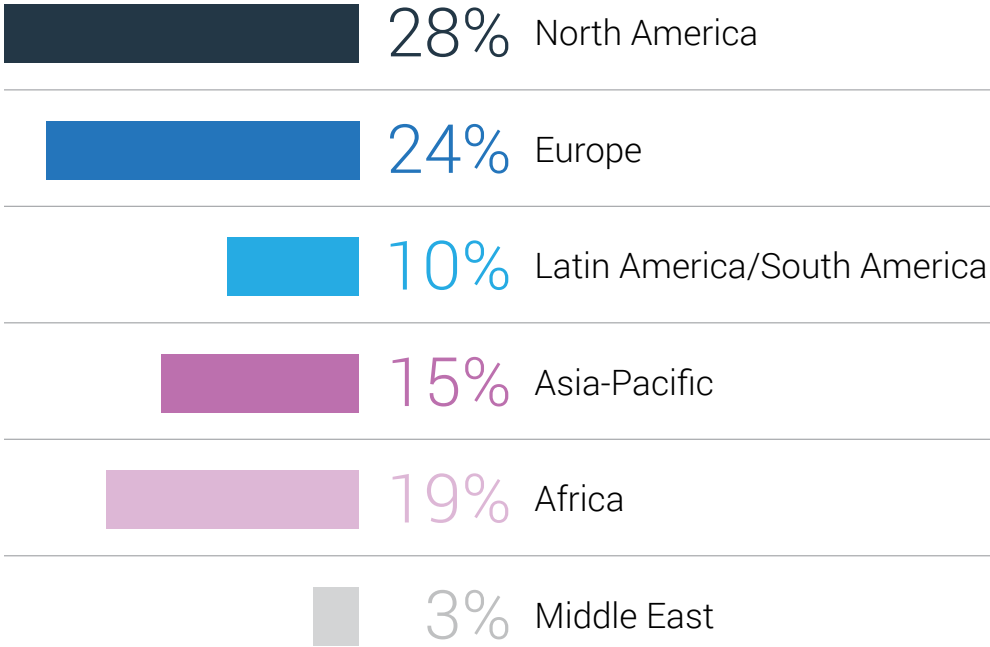
Please estimate your company's revenue (USD)?



What best describes your company's industry sector?



In which region is most of your team located?





ABOUT A10 NETWORKS

A10 Networks was founded in 2004 with a mission to provide innovative networking and security solutions. A10 Networks makes high-performance products that help organizations accelerate, optimize and secure their applications. A10 Networks is headquartered in Silicon Valley, with offices in 23 countries including the United States, United Kingdom, France, The Netherlands, Germany, Spain, Brazil, Japan, China, Korea, Taiwan, Hong Kong and Australia. For more information, visit www.a10networks.com.



ABOUT BPI NETWORK

The Business Performance Innovation (BPI) Network is a peer-driven thought leadership and professional networking organization reaching some 50,000 heads IT transformation, change management, business re-engineering, process improvement, and strategic planning. It is dedicated to advancing the emerging roles of the Chief Innovation Officer and Innovation Strategist within today's enterprise. The BPI Network brings together global executives who are champions of change within their organizations through ongoing research, authoritative content and peer-to-peer conversations. These functional area heads (operations, IT, finance, procurement, sales, marketing, product development, etc.) and line-of-business leaders are advocates for Innovation as a fundamental discipline and function within 21st Century organizations. They seek to demonstrate where and how new inventive solutions and approaches can advance business value, gratify customers, ensure sustainability and create competitive advantage for companies worldwide. For more information, visit www.bpinetwork.org.

PARTNERS & AFFILIATES



QUALTRICS

Qualtrics is a leading global provider of enterprise data collection and analysis products for market research, voice of customer, employee performance, and academic research. Through an intuitive, easy-to-use interface and award-winning services and support, Qualtrics products enable both professional and DIY researchers to conduct quantitative research at a lower cost and in less time than competing alternatives. Founded in 2002, Qualtrics has more than 5,000 clients worldwide, including half of the Fortune 100, more than 1,300 colleges and universities, and 95 of the top 100 business schools. For more information and a free trial, visit www.qualtrics.com.



ADESTRA

company's industry-leading email platform provides a powerful infrastructure for one-to-one, contextual messaging and marketing automation, helping marketers communicate more effectively with their customers and subscribers. Robust reporting features allow marketers to efficiently evaluate and optimize their campaign results. The flexible structure and open integration architecture allow businesses to connect disparate technology platforms to create a seamless customer journey. Along with a best-of-breed platform that drives customer engagement and boosts ROI, Adestra was founded on the principle that marketing success takes more than technology, which is why customer service is at the heart of its business. For more information visit www.adestra.com.

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