

Multi-cloud Application Deployment and Delivery Decision Making

Scott Sinclair, Practice Director

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Research Objectives

As organizations continue to adopt multiple public cloud providers, maintain multiple data centers, and scale their edge and colocation environments, IT decision makers must consider a wealth of locations to deploy new workloads and migrate existing workloads. Where an application is deployed depends on numerous factors, including the type of application, the needs of the application, the needs of the business, and the priorities of the organization.

To gain insight into the state of application deployment and migration decision making across distributed multi-cloud environments, TechTarget's Enterprise Strategy Group (ESG) surveyed 350 IT professionals at organizations in North America (US and Canada) responsible for application deployment decisions. The goal of this research was to understand who makes application deployment decisions and what logic they utilize in that decision making.

THIS STUDY SOUGHT TO:



Determine the strategy, process, personas, and considerations involved in multi-cloud application deployment and migration decisions.



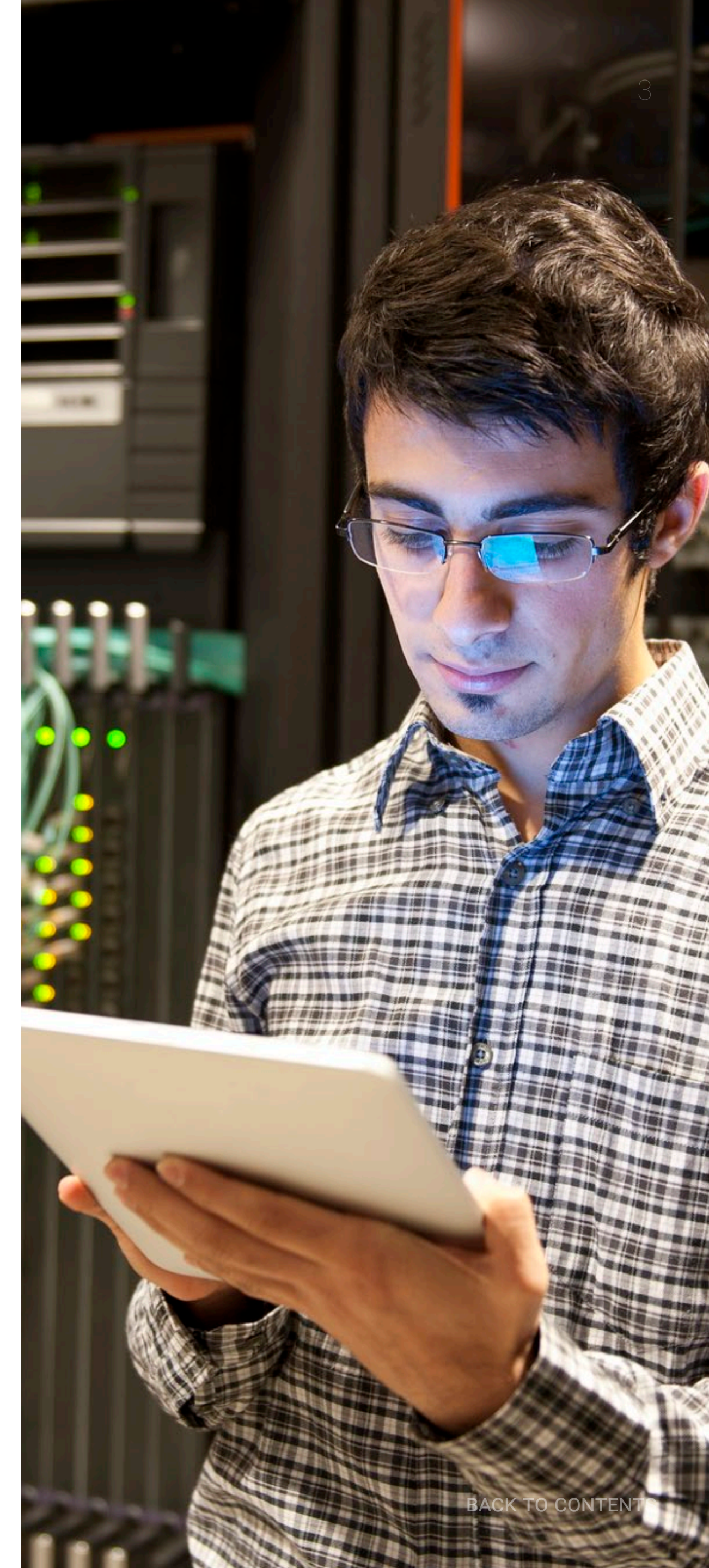
Identify how decision making is influenced by industry, location, and application.



Highlight the top considerations and factors that influence decision makers to shift away from their more common approach.



Help technology and cloud vendors better serve their customers with insights into their top priorities for their applications.



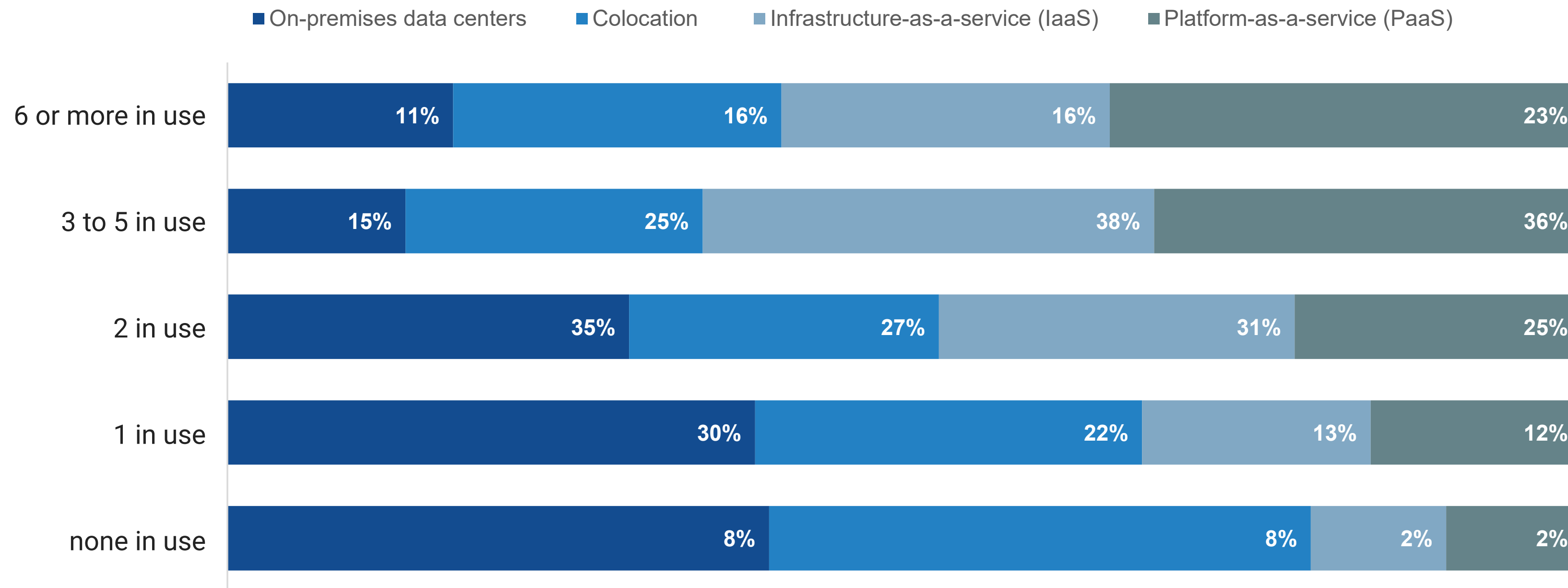
**Application
Environments
Are Poised to
Stay Distributed**



Distributed Application Environments Are Common

The majority of organizations deploy applications in two or more on-premises data centers, two or more colocation provider locations, three or more infrastructure-as-a-service (IaaS) providers, and three or more platform-as-a-service (PaaS) providers. Meanwhile, digital firms (those that spend more than 15% of their revenue on research and development of digital products/services) are highly distributed, as roughly a third of those organizations have six or more each of colocation, IaaS, and PaaS. This trend will continue, as 87% of organizations agree that their application environment will become distributed across more locations over the next two years.

| Number of application deployment locations currently in use.



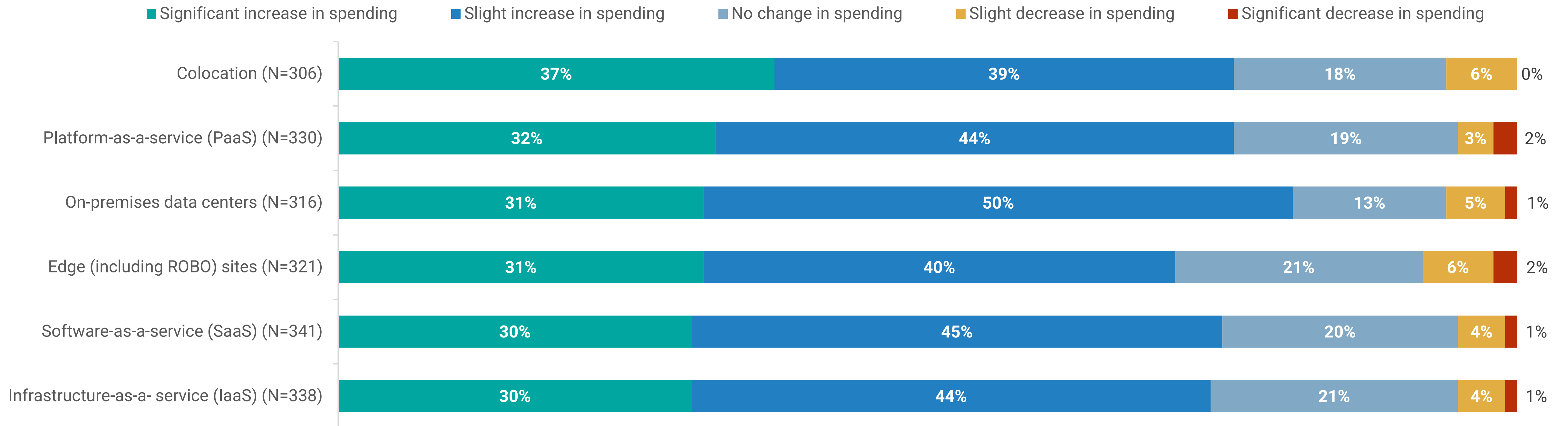
“**87% of organizations agree** that their application environment will become distributed across more locations.”

Growth in Spending Projected Across All Locations Over Next 24 Months

When asked to forecast how spending across locations was expected the change over the next 24 months, a vast majority of organizations expected to either increase or maintain spending levels across every location.

When organizations were asked to select the one location that would represent their greatest increase in spending over the next 24 months, responses varied across on- and off-premises locations, including IaaS (29%), SaaS (25%), data centers (20%), and PaaS (18%). Only 6% identified colocation providers, and only 2% identified edge locations, suggesting that while growth is expected, overall spending will be smaller in those areas.

| Expected spending change across application deployment locations over the next 24 months.





Movement across multi-cloud environments is common and increasingly complex.”

- Scott Sinclair, Practice Director



86%

of organizations **regularly migrate applications** and/or data from on-premises locations to the public cloud.



81%

of organizations **face challenges with application and data portability** across locations (including data center, public cloud, and edge).



83%

of organizations find that the cost/time associated with **refactoring/re-platforming applications adds significant cost, complexity, and risk** to cloud migrations.



82%

of organizations **struggle to properly size workloads** for the optimal infrastructure (on- or off-premises) environment.



77%

of organizations agree that application deployment **planning is hindered by a lack of visibility** into specifics on spending for public cloud services.

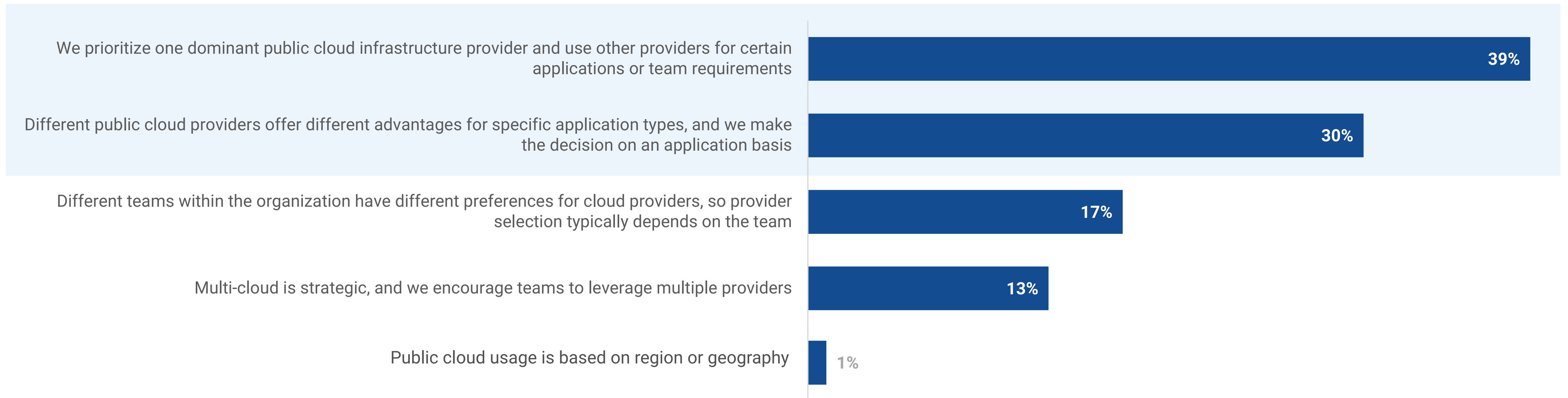
Multi-cloud Strategies Are Often Centralized and App-led



Multi-cloud Strategies Tend to Prioritize One Provider or Let the Application Drive the Decision

Despite the widespread adoption of multiple public cloud providers, a majority of organizations perceive their strategy as a centralized one to either prioritize one provider or to logically deploy workloads across providers based on the needs of the application. This data suggests that cloud decision making is more often centralized rather than delegated to individual teams.

| Perception of current multiple public cloud infrastructure providers in use.



Flexibility and Reliability Drive Multi-cloud Deployments

With nearly nine in ten (88%) organizations agreeing that using multiple public cloud providers delivers strategic benefits for their organization, objectives for multi-cloud adoption tend to focus on flexibility and reliability, supporting the common idea that leveraging the various strengths of the providers is valuable.

Meanwhile, 32% of organizations said that multi-cloud usage was the result of shadow IT, and 23% pointed to retaining preferences tied to mergers and acquisitions, suggesting that even though multi-cloud may be strategic, the adoption of particular clouds can be unplanned.

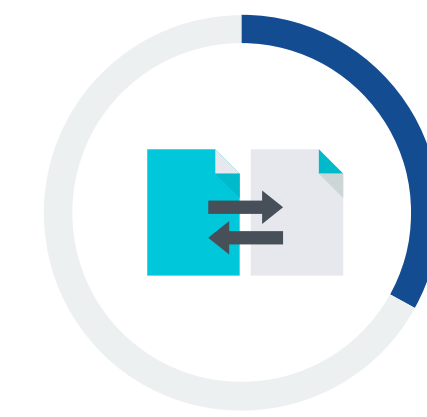
| Objectives for using more than one public cloud provider.



35%
Performance flexibility



34%
Reliability (e.g., backups on multiple providers)



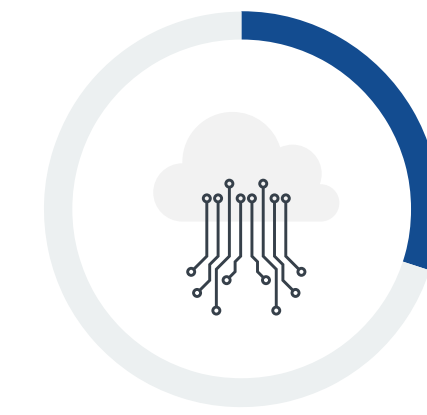
33%
Storage/capacity flexibility



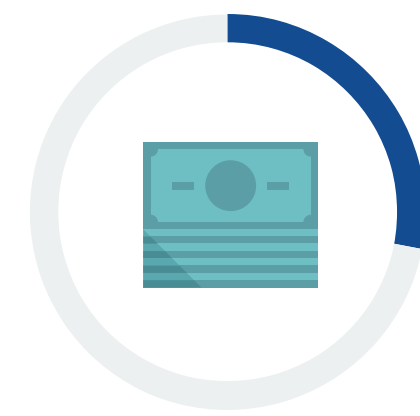
33%
Data compliance requirements



32%
Shadow IT led to multi-cloud usage



30%
Teams can use clouds they want



28%
Cost flexibility



23%
Retain merger/acquisition preference



23%
Avoid vendor lock-in



22%
Location/geographic requirements

“ 88% of organizations agree that using multiple public cloud providers delivers strategic benefits for their organization.”

Organizations Evaluate Deployment Locations Across a Variety of Metrics

When measuring the effectiveness of different application deployment locations, organizations use a variety of metrics. The two most common—count of application instances (41%) and user satisfaction (40%)—suggest prioritization of scalability and delivering on end-user (e.g., customer, employee, or developer) experience goals.

| KPIs used to measure location effectiveness.



41%

Count of application instances



40%

User satisfaction/Application Performance Index (APDEX)



36%

Average response time



36%

Security exposure



35%

Availability



33%

Request rates



28%

Error rates



26%

Latency

Strategies Vary in Deployment Decisions for New Applications



Public Cloud Selection Process for New Apps Varies Across Organizations

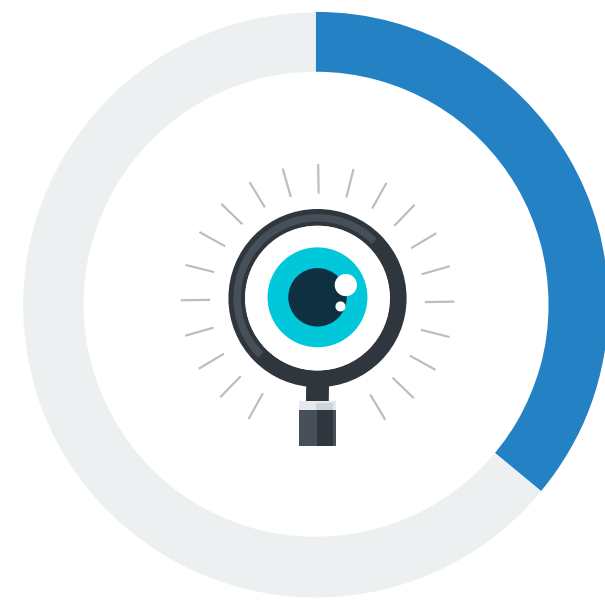
Organizations vary in their cloud selection process. While 36% rely on a centralized review process to make decisions, the remaining organizations are nearly equally divided between a variety of cloud selection processes ranging from prioritizing one preferred vendor to allowing developers to simply deploy where they see fit. While the centralized strategy is most common, vendors should prepare to address any of these given strategies.

| Selection process for public cloud providers used as application destination.



15%

Our organization has a preferred public cloud vendor that we default to for application development



36%

We have a centralized internal review process that spans multiple teams and looks at application characteristics and then selects the appropriate cloud provider based on the specific application



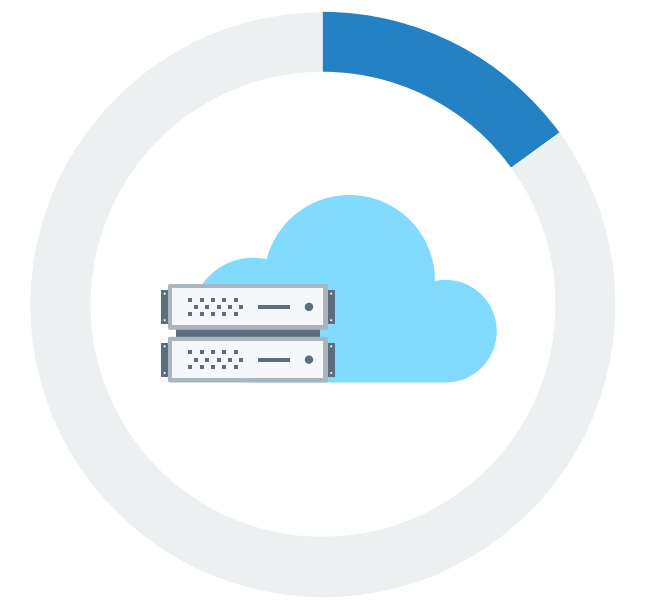
16%

We actively work to get cloud providers to compete and select the lowest cost option for our needs



18%

Developers/DevOps/application owners make the decision on the best public cloud location from an approved list of options

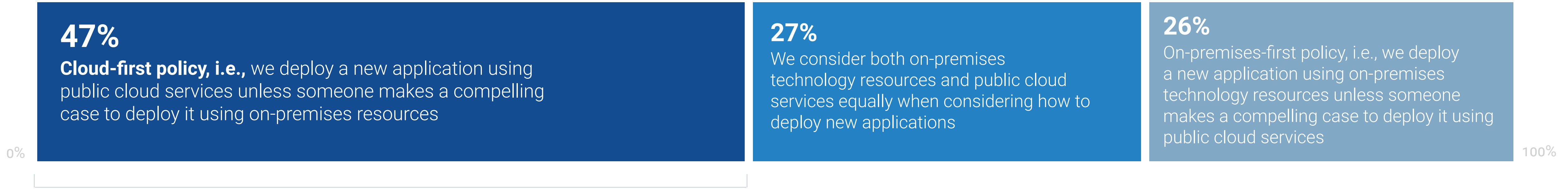


15%

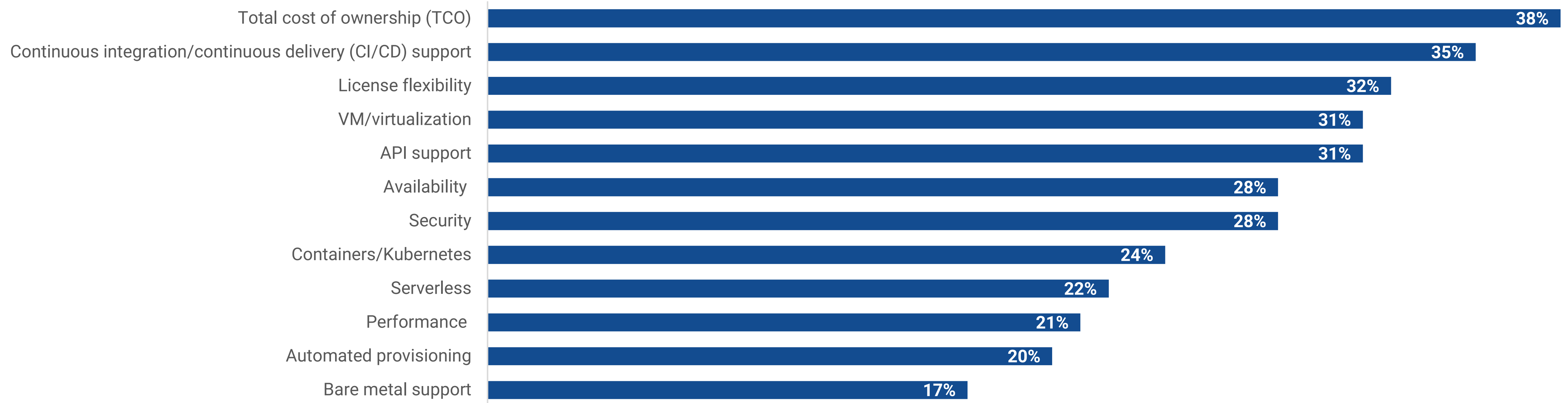
Developers/DevOps/application owners have full control to deploy where they see fit

Cloud-first Is the Dominant Policy for New Applications

| Preferred strategy when deploying new applications.



| Drivers of cloud-first application deployment strategy.



Developers and Application Owners Hold Sway Over On-premises Decisions

When cloud-first organizations choose to deploy applications on-premises, developers and application owners influence the decision at nearly half of organizations, reaffirming their role in the deployment decision-making process.

Other top considerations that lead to on-premises deployments include data governance (42%) and TCO (42%). This data highlights how organizations apply the effort to analyze these metrics in their deployment decisions.

Meanwhile, 40% of organizations said data already residing on premises serves as a driver for on-premises new application deployments, reaffirming the role that data gravity (particularly related to the cost and complexity of moving large data sets) plays in decision making.

| Exceptions among cloud-first organizations for deploying new applications on-premises.



45%
Application owner/
developer preference



42%
Data governance/
sovereignty
considerations



42%
Total cost of
ownership (TCO)



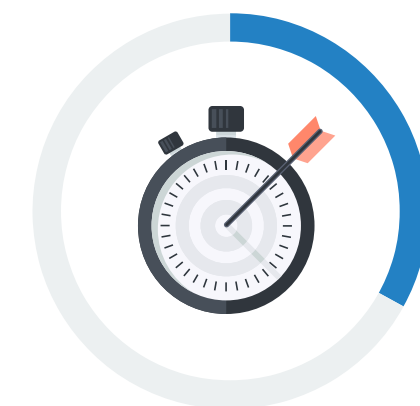
40%
Leveraged a data set that
was already on-premises



35%
Executive/corporate
mandate



34%
Security



33%
Performance
requirements



30%
Availability



2%
We have never made
an exception to our
cloud-first rule

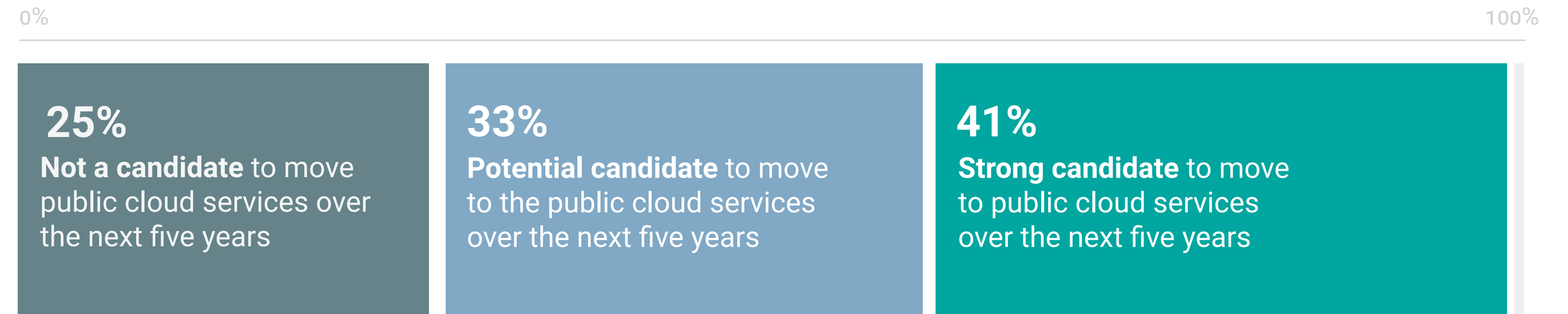
**For Existing Apps,
Migration Priorities
Are Shared, but
Outcomes Vary by
Industry and AppDev**



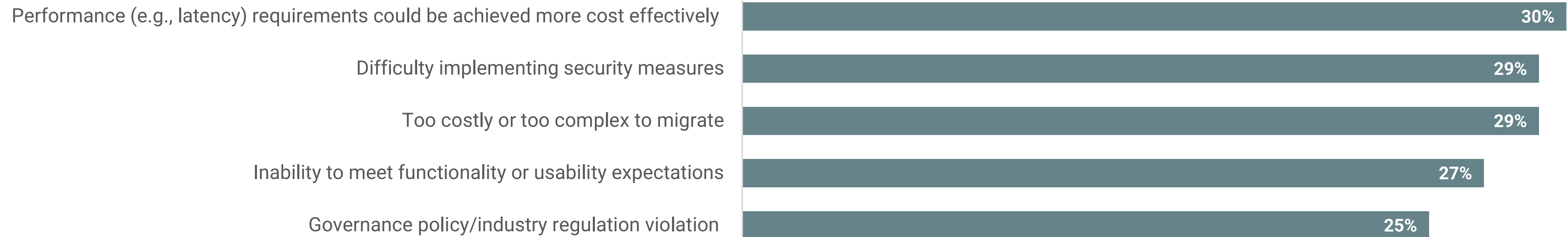
Most Existing On-premises Applications Are Cloud Migration Candidates

Multiple factors can lead workloads to be considered not suitable for public cloud deployment. The most commonly identified option—performance can be achieved more cost-effectively on premises—highlights the impact that the cost of low-latency cloud infrastructure has on cloud migration decisions.

On-premises applications: candidates for public cloud?



Reasons some applications are not public cloud candidates.



Data Access and APIs Are Most Likely to Influence Application Location Decisions

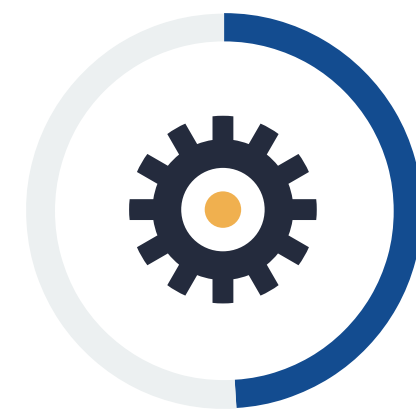
When selecting a deployment location for existing applications, data access and mobility was identified by more than half (54%) of organizations, reinforcing the critical role that data—and, in particular, the cost and complexity of moving data—plays in application migration decision making.

| Drivers influencing application deployment location.



54%

Data access and mobility
(e.g., ingress/egress)



49%

API calls required by
the workload



49%

Available location/
network bandwidth



48%

Budget impact/
costs



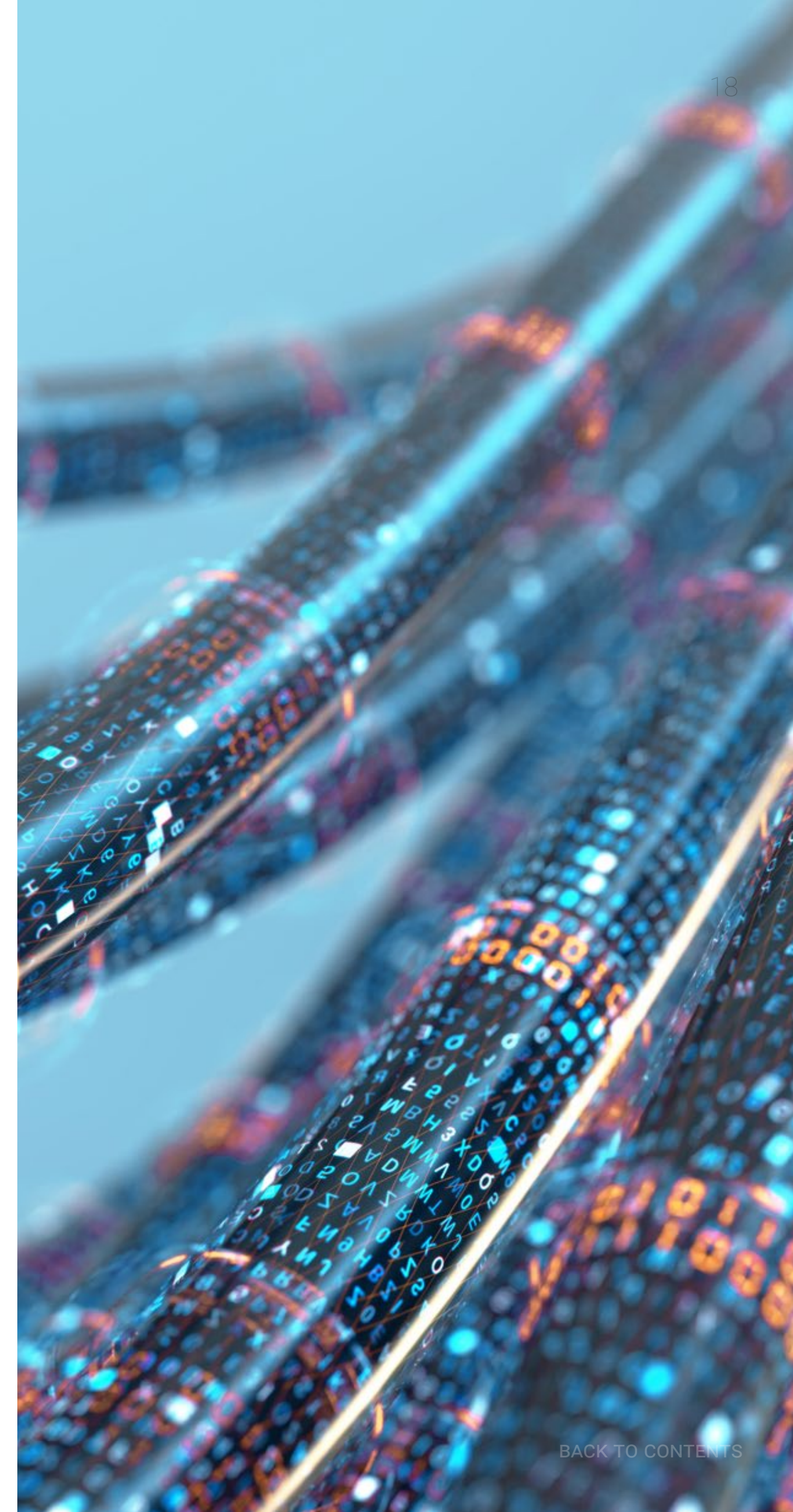
43%

Performance/
latency

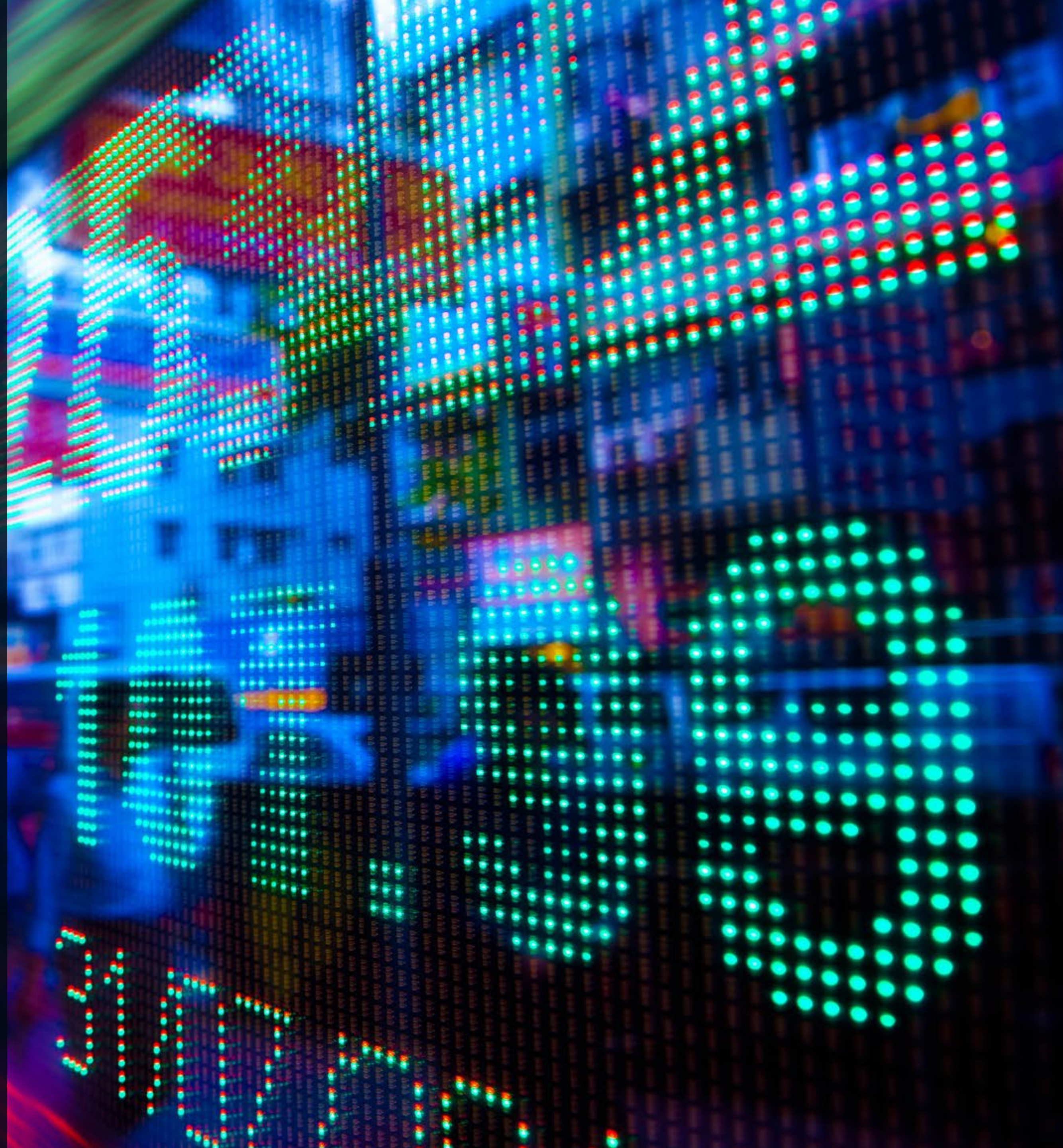


38%

Availability/
SLAs



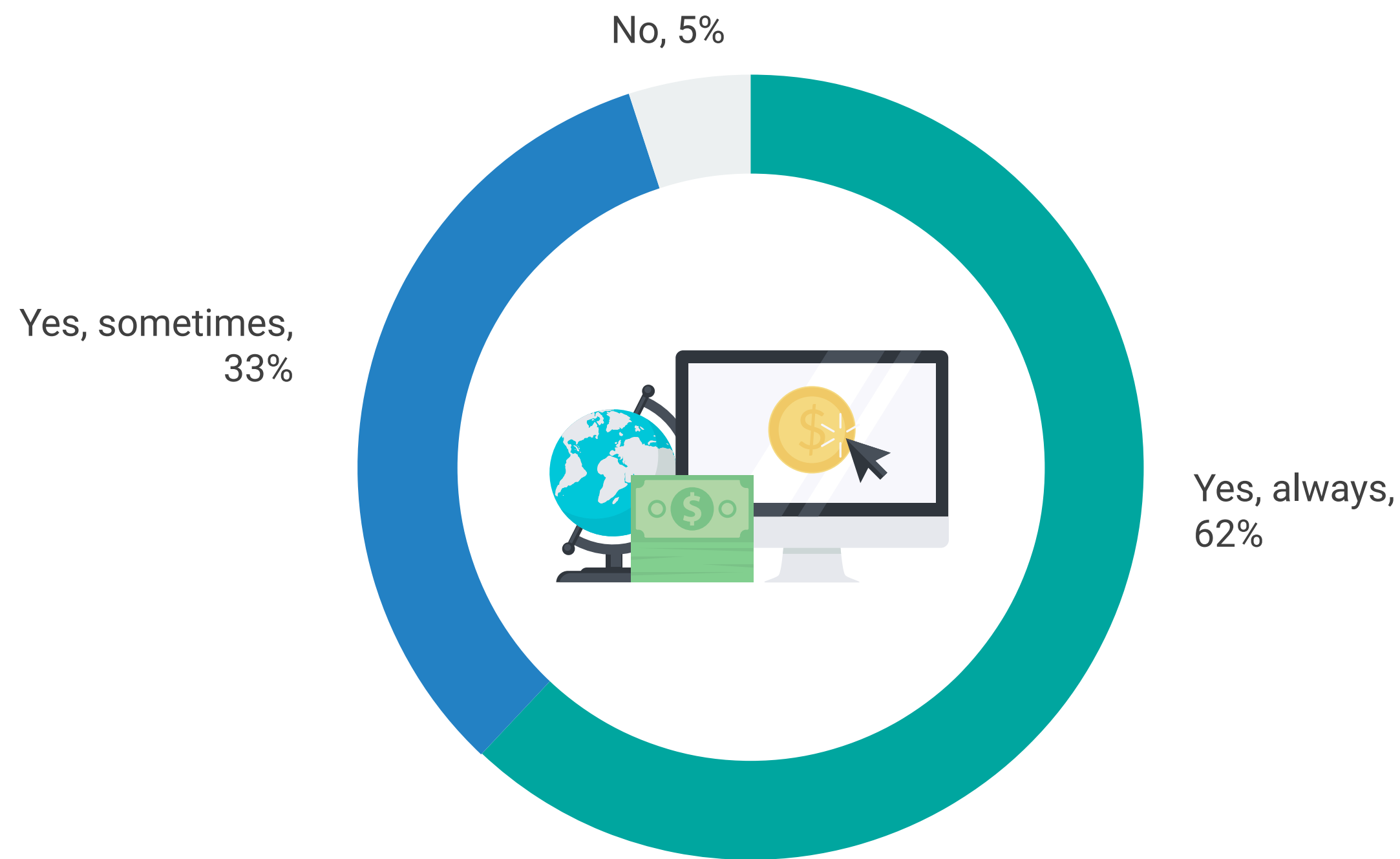
Cloud-cost Analysis Is Universal and Impactful



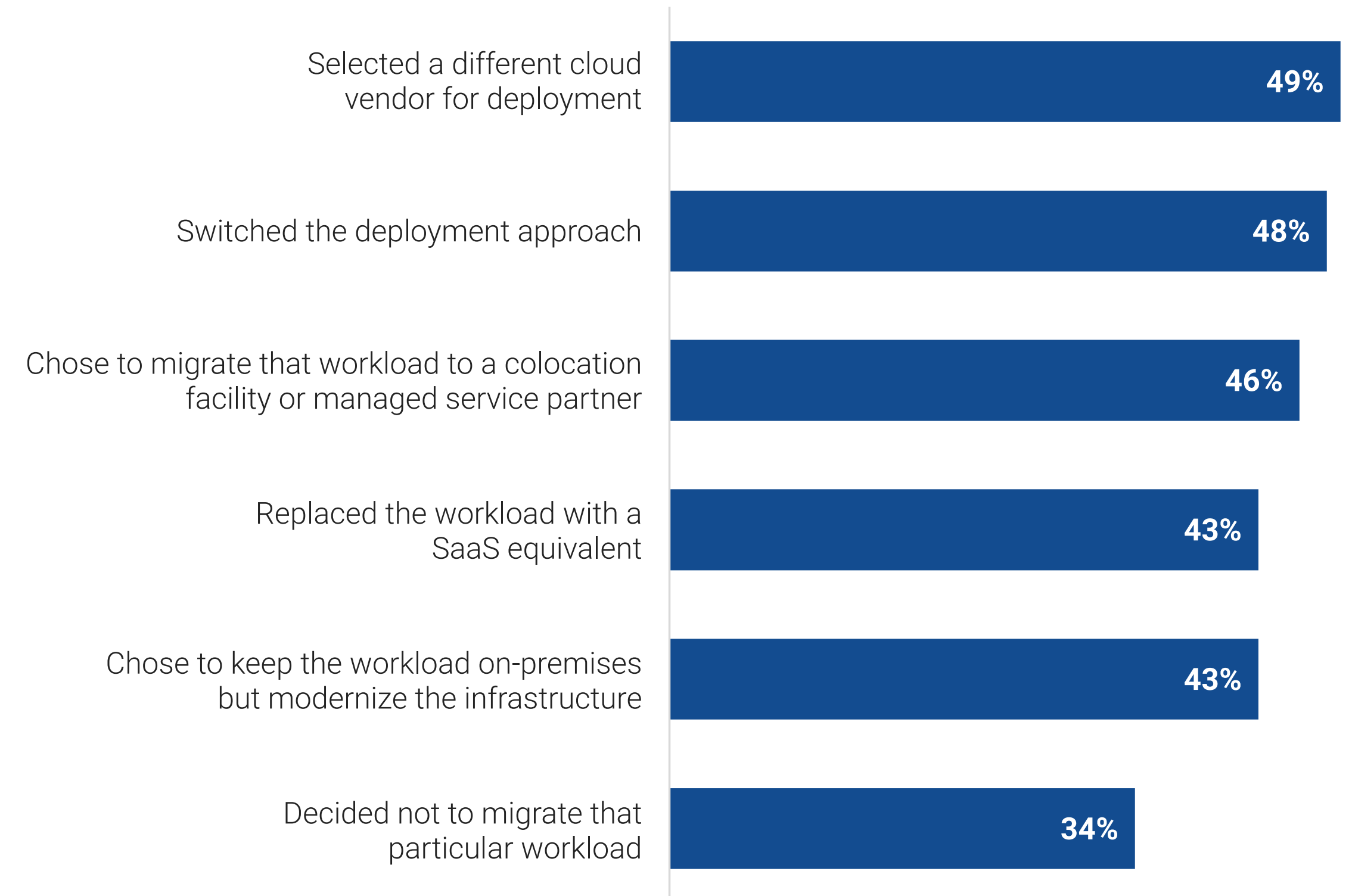
Cloud Cost Applications Are Pervasive—and Impactful

The adoption and usage of cloud-cost tools has been substantial in recent years, with 95% of organizations indicating they currently leverage these tools to compare different public cloud providers. Behind this surge in adoption are a wealth of impactful actions organizations are taking based on the data from these tools. These include changing cloud vendors, switching the deployment method, and selecting a colocation partner or on-premises facility instead of public cloud altogether.

Does your organization use cloud cost estimation tools to help model and compare costs of different public cloud providers and private clouds?



Actions taken based on use of cloud cost estimation tools.



**Cross-cloud Application
Migrations Are
Increasingly Common**



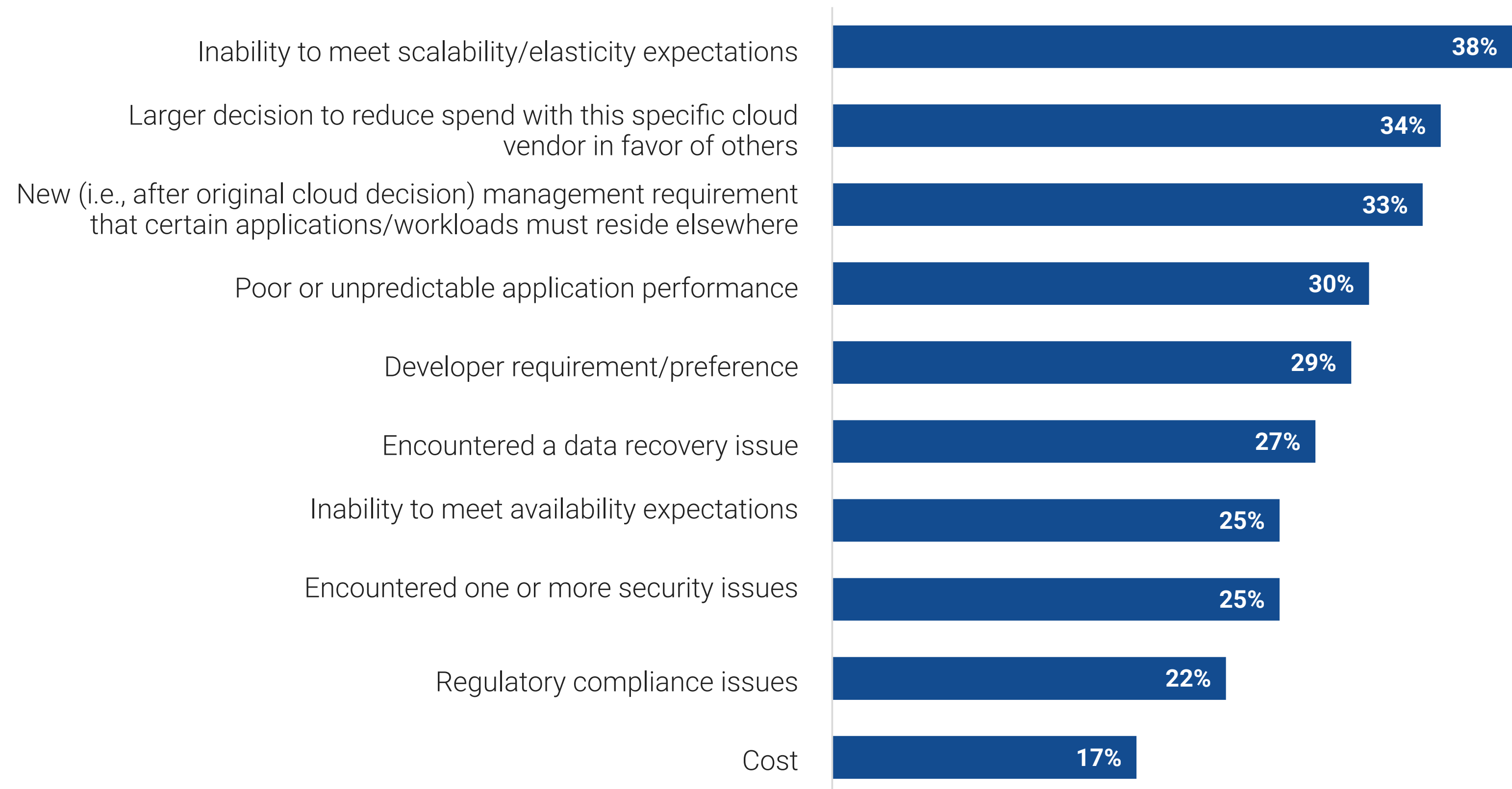
Shifting Applications to Another Cloud Service Is Common

Organizations are likely to move workloads from one public cloud provider to another, with only 11% indicating they did not move any workloads between providers in the last 24 months. A wide range of drivers push organizations to switch providers, led by unmet expectations for scalability/elasticity and larger decisions to spend more with a particular provider. In general, providers should be prepared to meet both technical and business expectations, as customers commonly evaluate cloud deployment locations from both angles.

| Has your organization moved a workload from one public cloud provider to another in last 24 months?



| Top reasons for moving workloads from one public cloud provider to another.



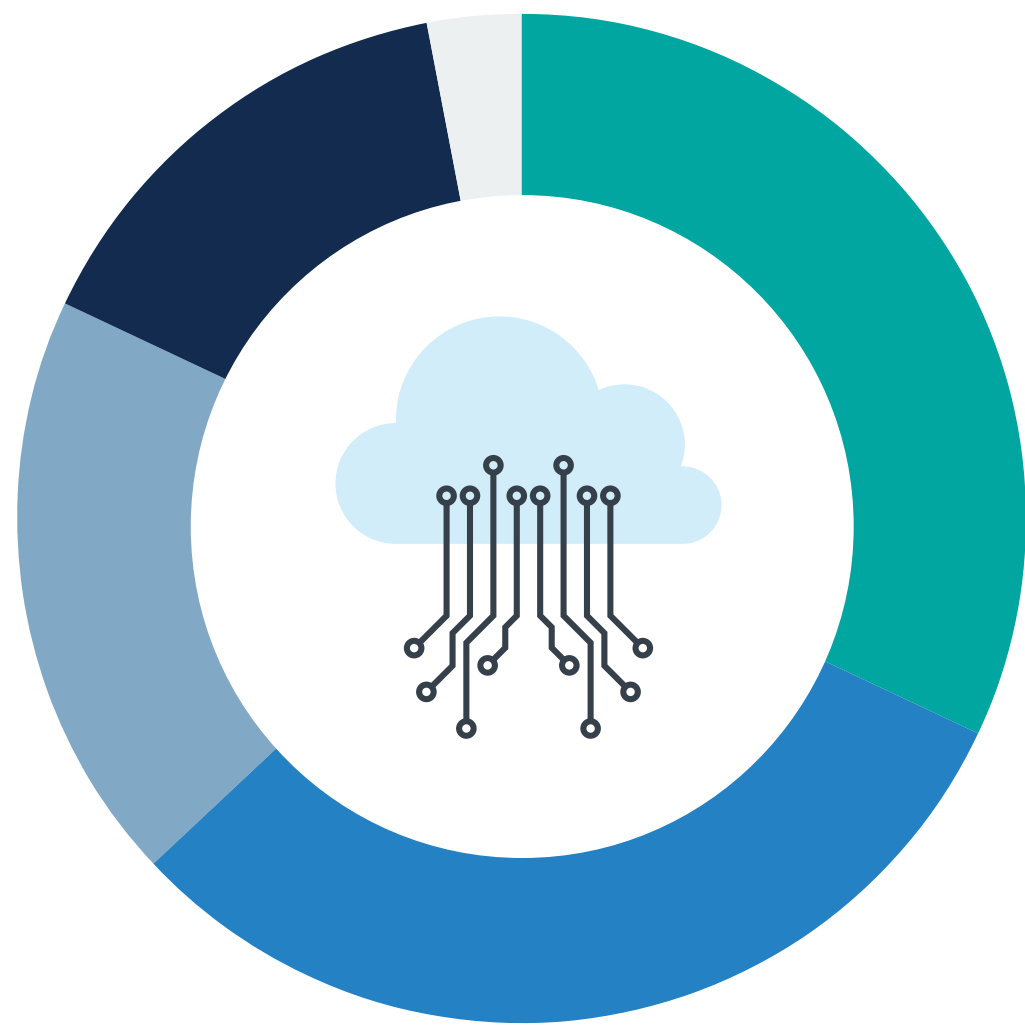
**Distributed Applications
Are Perceived as Valuable
but Breed Complexity**



Distributed Applications Serve Crucial Roles in IT Ecosystems

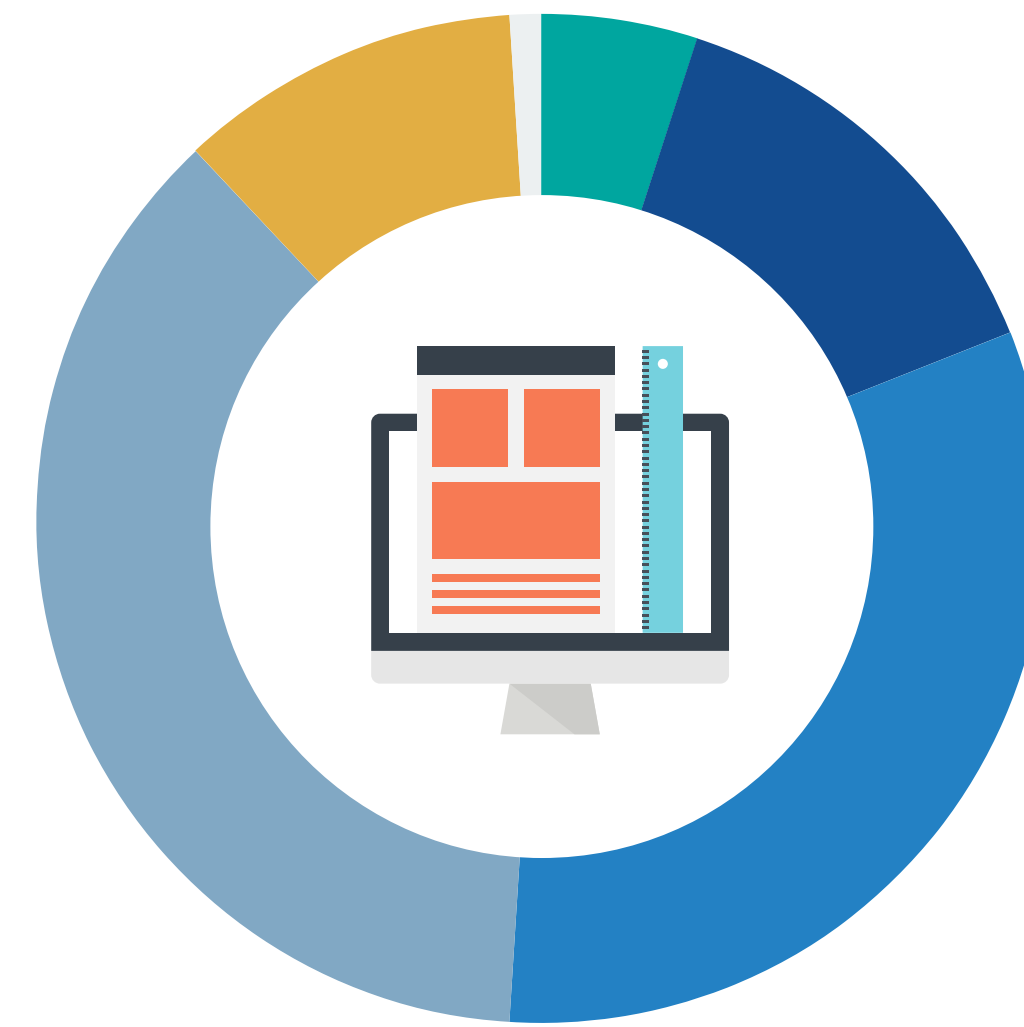
As application environments have become more distributed, applications too have become more distributed with components (e.g., the data, infrastructure, and microservices) residing across multiple cloud environments—and then combined to provide functionality. Most organizations view these distributed applications as beneficial, despite the complexity they present. Most environments support dozens of distributed application integrations.

| Perception of distributed applications



- **32%** Distributed application architectures offer strategic benefits and are encouraged
- **31%** Distributed application architectures are beneficial for several use cases and are employed in a material fashion
- **19%** Distributed application architectures have niche use cases and will be employed only sporadically
- **15%** Distributed application architectures are a necessary evil

Number of inter-cloud application integrations

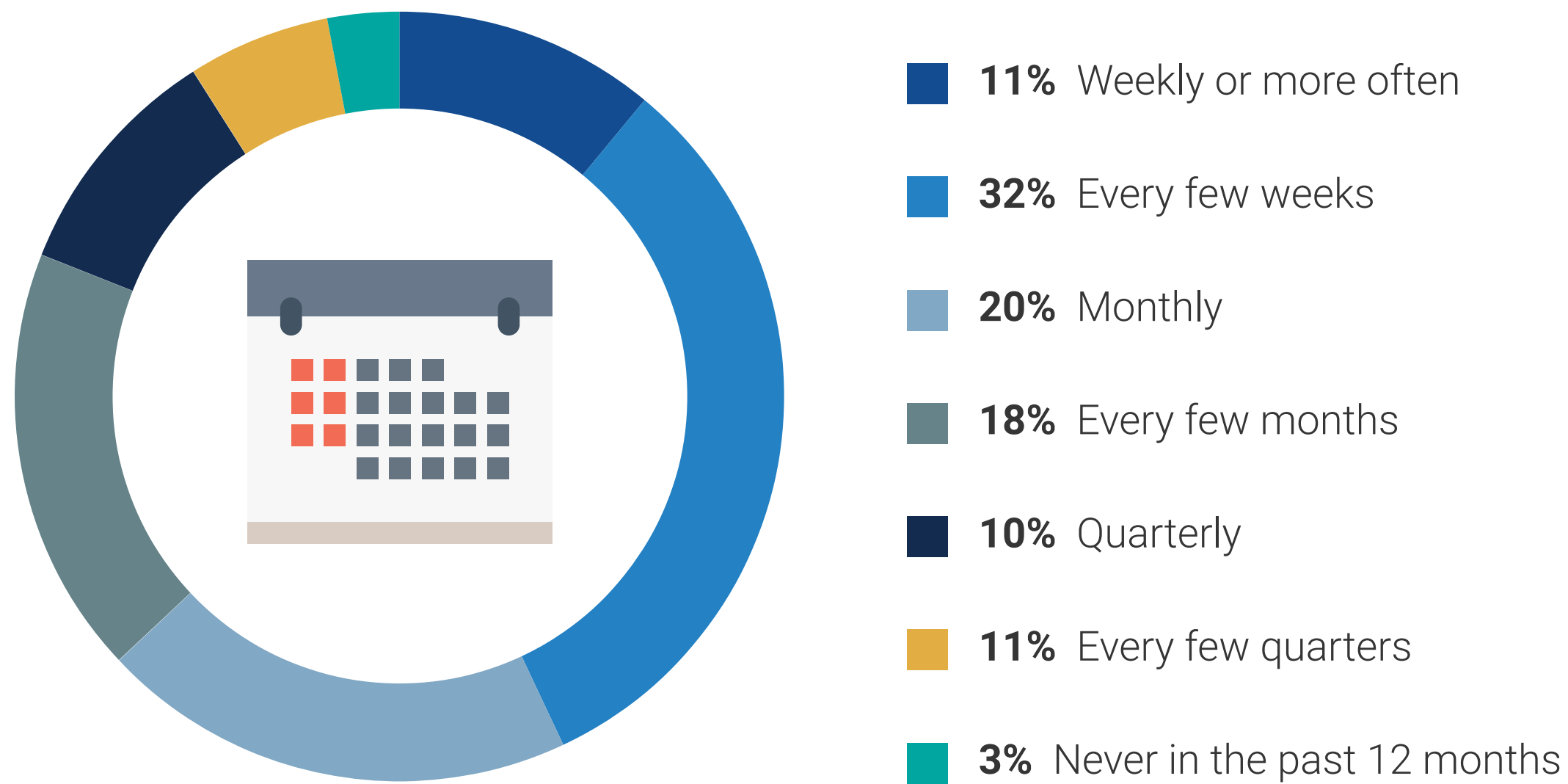


- **5%** One thousand or more
- **14%** Several hundred
- **32%** Around one hundred
- **37%** Dozens
- **11%** A few

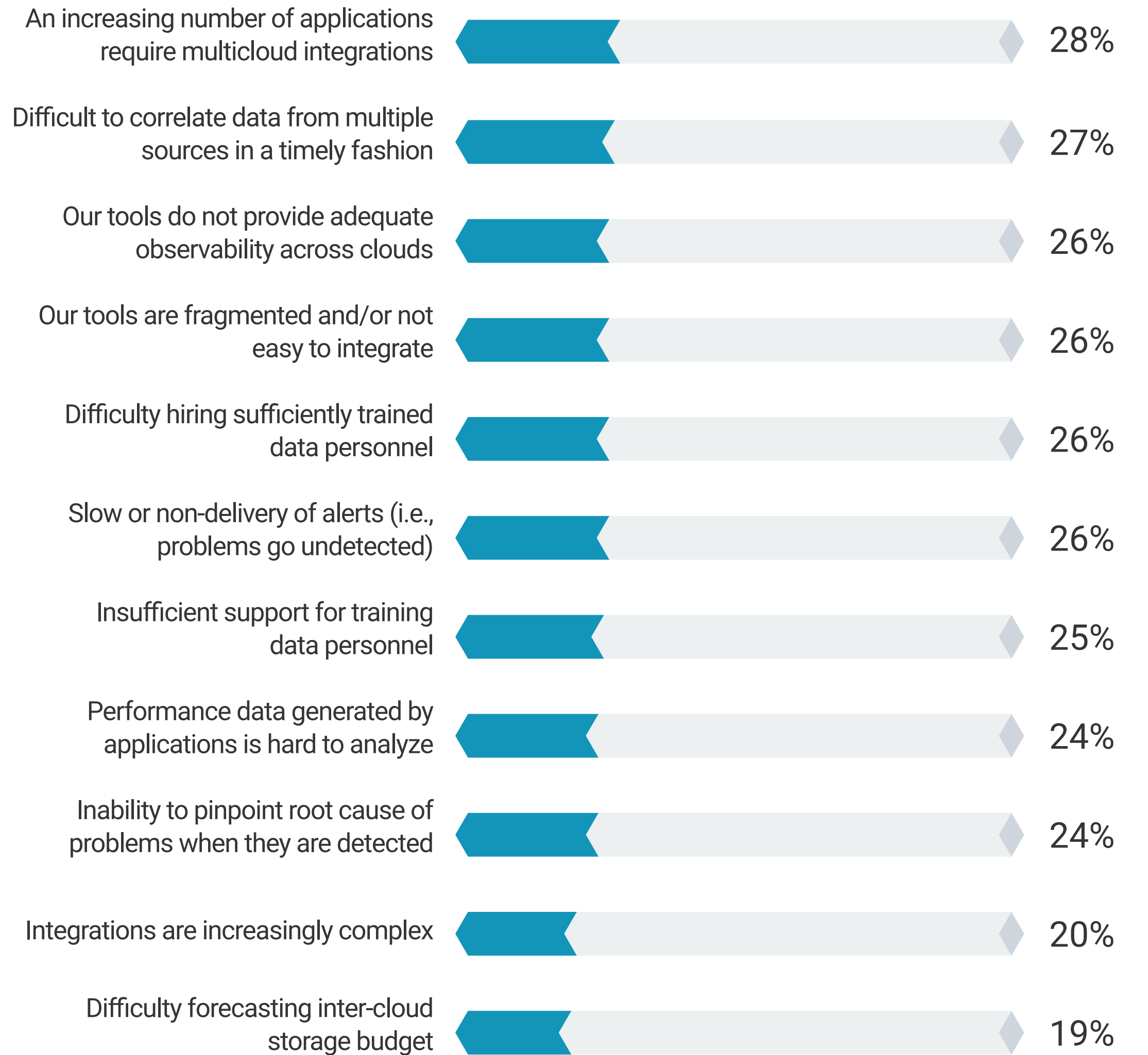
Inter-cloud Application Integration Failures Are Common

Despite organizations perceiving them as beneficial, distributed applications have a meaningful impact on complexity. Organizations report that the number of multi-cloud integrations continues to increase and has a negative impact on observability and integration, while skilled experience is scarce. Even more concerning, 63% of organizations report that they experience a service-impacting issue on a monthly or more frequent basis when an application change causes an inter-cloud application integration to fail.

Frequency of service-impacting issues due to an application change causing an inter-cloud application integration to fail in the past 12 months.



Top challenges when monitoring, measuring, and ensuring SLAs for apps that rely on inter-cloud integrations.



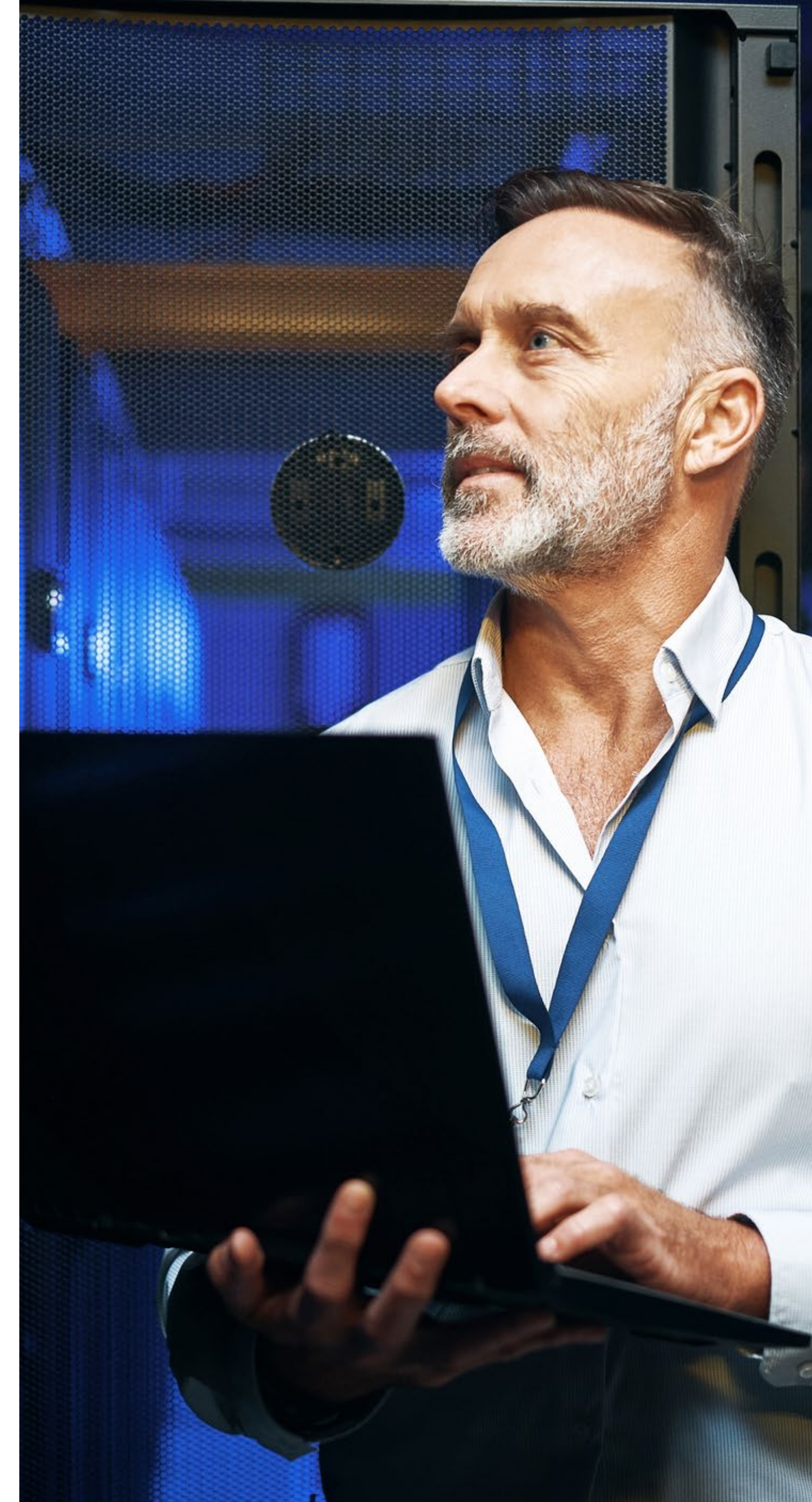


Dell Technologies APEX delivers multicloud by design – helping organizations overcome the complexities of multicloud, where dispersed workloads and data make it difficult to mitigate risk, manage performance, modernize applications and optimize costs. Dell Technologies collaborates with over 500 partners to simplify multicloud operations. APEX drives innovation and consistency while empowering organizations to efficiently and securely manage workloads across on-premises data centers, colocation facilities, public clouds and the edge. The APEX portfolio offers a versatile multicloud application and data fabric to support cloud-native and traditional workloads, ensuring IT teams can optimally place applications and move them if business priorities change. APEX also offers simplicity, agility and control of the cloud experience across environments while freeing IT staff to focus on innovation that adds business value. And for IT leaders worried about CAPEX costs, organizations can leverage APEX’s flexible consumption models, including as-a-Service and pay-as-you-go subscription models, so IT teams can better align investments with business needs.

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TechTarget’s Enterprise Strategy Group is an integrated technology analysis, research, and strategy firm providing market intelligence, actionable insight, and go-to-market content services to the global technology community.

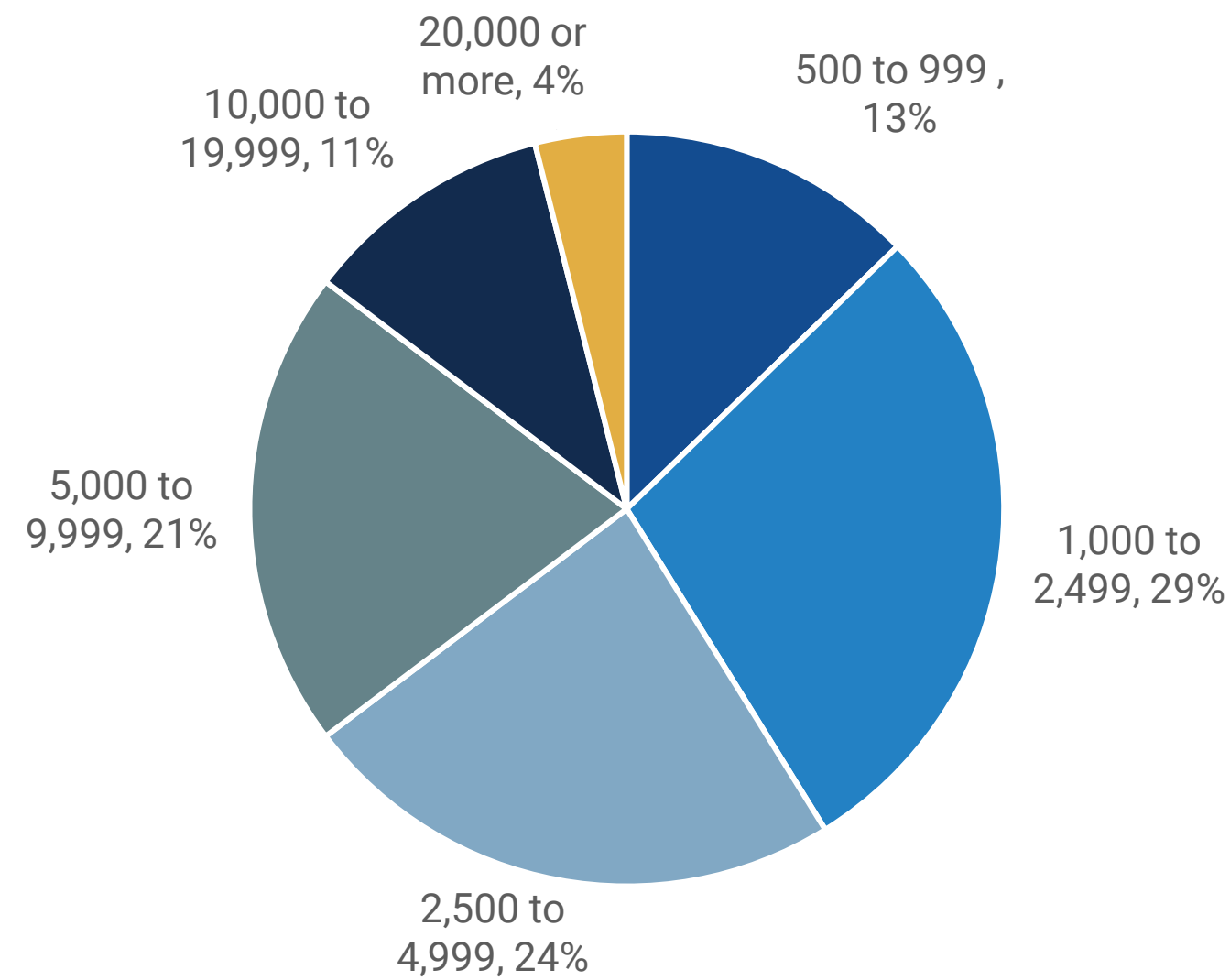


Research Methodology and Demographics

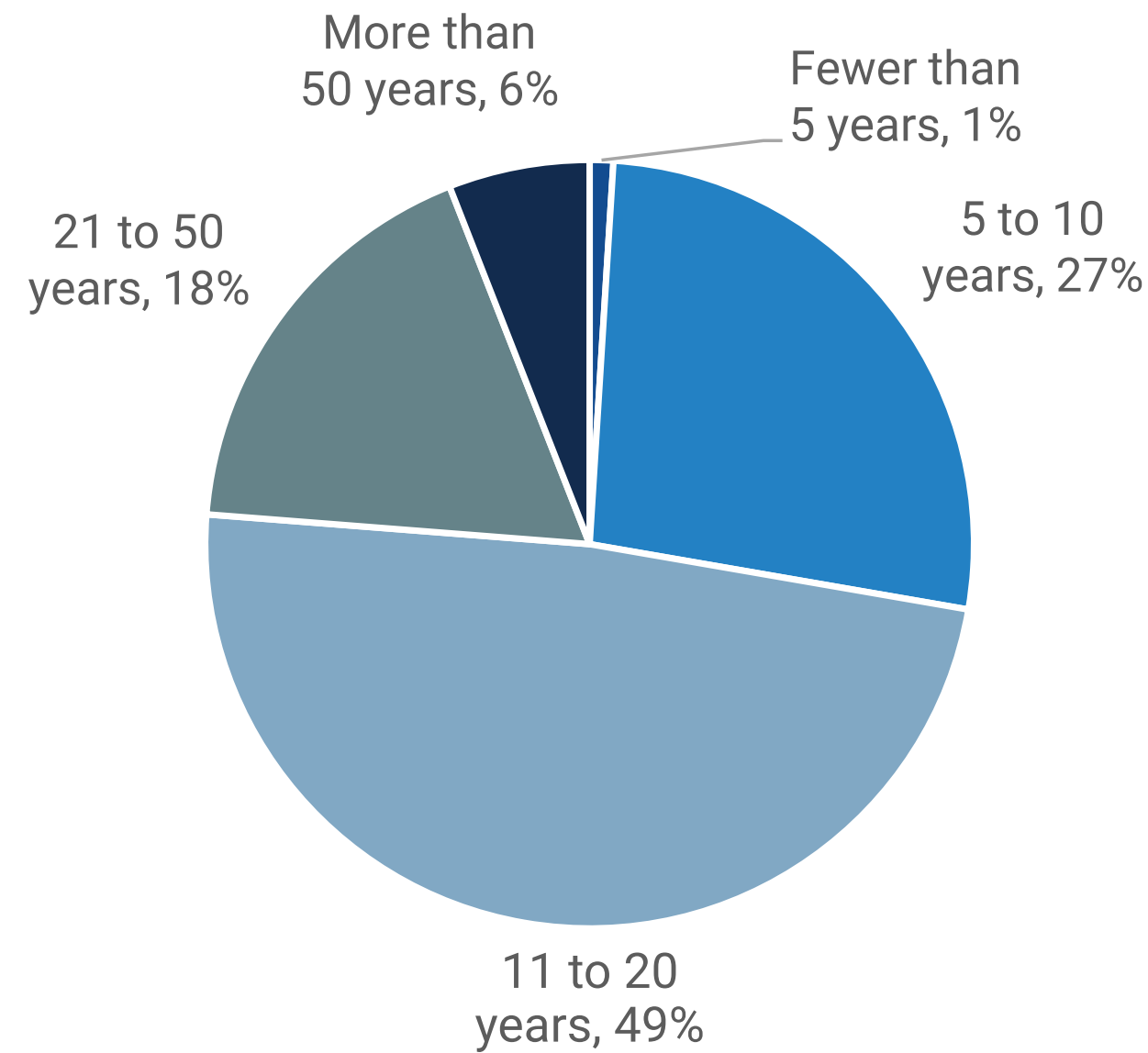
To gather data for this report, ESG conducted a comprehensive online survey of IT professionals from private- and public-sector organizations in North America (United States and Canada) between November 17, 2022 and December 4, 2022. To qualify for this survey, respondents were required to be IT professionals personally responsible for evaluating, purchasing, and managing applications for their organization. All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents.

After filtering out unqualified respondents, removing duplicate responses, and screening the remaining completed responses (on a number of criteria) for data integrity, we were left with a final total sample of 350 IT professionals.

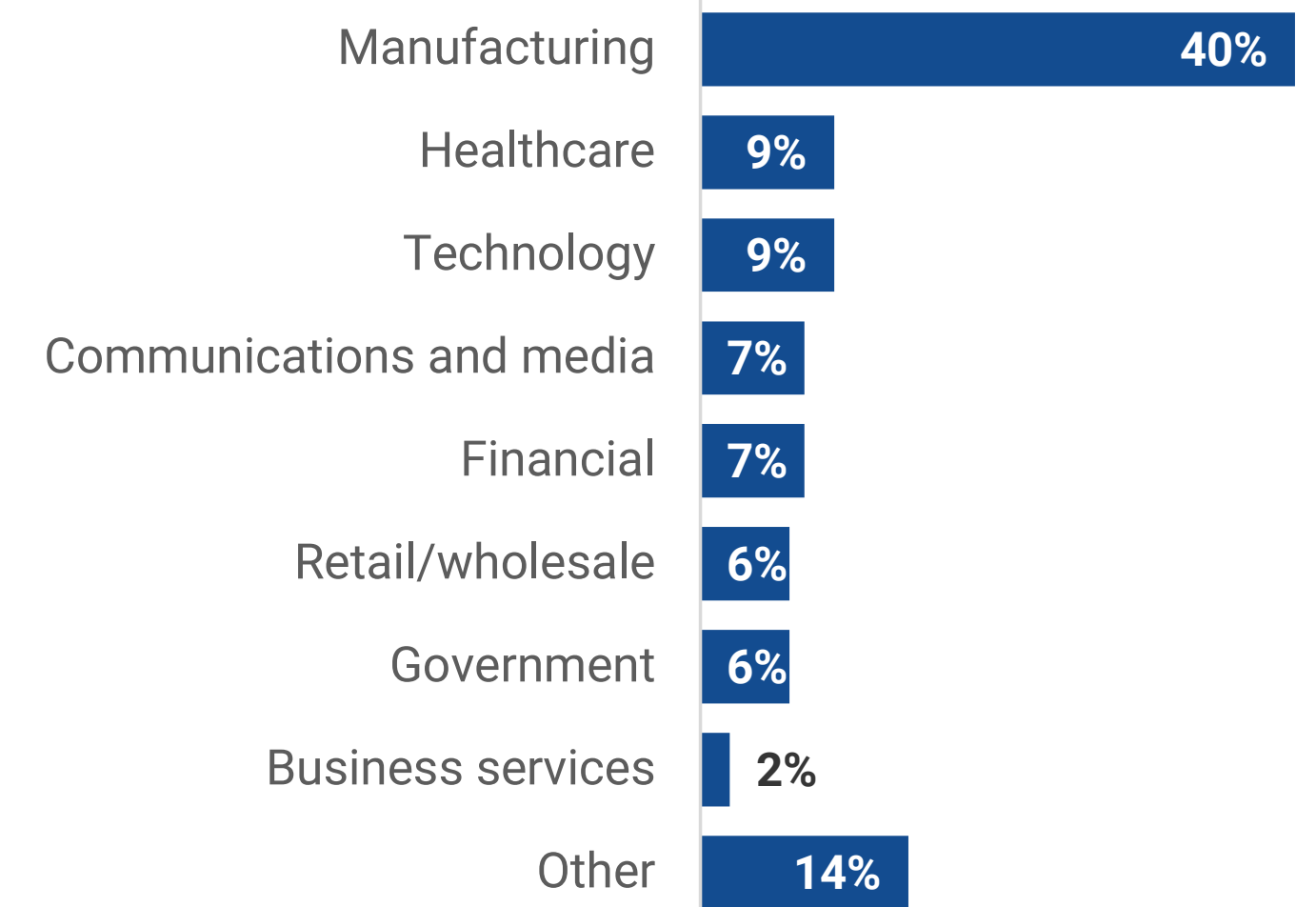
RESPONDENTS BY NUMBER OF EMPLOYEES



RESPONDENTS BY AGE OF ORGANIZATION



RESPONDENTS BY INDUSTRY



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