ESG RESEARCH INSIGHTS REPORT

How Hybrid Cloud Environments Are Changing IT Architecture Priorities

NetApp Delivers the Multi-cloud-level Flexibility IT Organizations Require

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Executive Summary

The complexities and challenges faced by modern IT organizations often relate to infrastructures that are increasingly diverse and distributed as a result of IT's rapid adoption of hybrid and multi-cloud environments. As these businesses evaluate how to move forward, two essential decision criteria for storage architecture frequently emerge, centered on:

- Simplifying cloud mobility.
- Reducing overall operational costs of IT.

ESG research indicates that [NetApp](#)'s unified architecture for building a data fabric can offer a valuable, differentiated approach to addressing these needs tied to modern multi-cloud environments.

Research Objectives

ESG's research encompassed 350 IT professionals working in organizations of more than 500 employees who are responsible for and knowledgeable about their organizations' current and future data storage and cloud environments. The project focused on:

- Understanding the state of multi-cloud operations and methods of optimizing cloud workloads.

- Investigating the challenges, costs, and risks associated with cloud-based data migrations.

- Understanding the role and importance of storage architectures in optimizing cloud IT.

Summary of Research Conclusions

- **Multi-cloud environments are becoming even more diverse.** Eighty percent of surveyed IaaS users are multi-cloud users today. And during the next three years, ESG expects the average number of cloud providers they leverage to increase from 2.2 to 3.1 per organization.

- **Simplifying hybrid and multi-cloud application migration is a top priority.** Providing a consolidated and simplified approach to cloud data migration was the data center technology evaluation criterion most commonly identified by the respondents—it was considered to be either very essential or important by 92%. A related finding revealed that 85% of organizations view enabling workload placement flexibility as a top-five technology priority.

- **Simplifying how hybrid clouds are used should be just one component of a larger initiative to improve simplicity and reduce operational costs.** Fifty-nine percent of the respondent IT organizations prioritized operational cost savings over the capital cost of infrastructure. Ease of deployment and ease of use were two of their top-three decision criteria for new infrastructure purchases.

Modern Enterprise Is Built on a Multi-cloud Foundation

ESG research confirms the essential role that public cloud infrastructure plays in modern IT organizations and showcases the ubiquity of enterprises' public cloud adoption. Ninety-seven percent of organizations surveyed use IaaS today, and 80% of surveyed IaaS users use multi-cloud. This is a trend that is still accelerating.

The research also supports the conclusion that IT ecosystems are not heading toward consolidation, but rather will continue to become more dispersed over time:
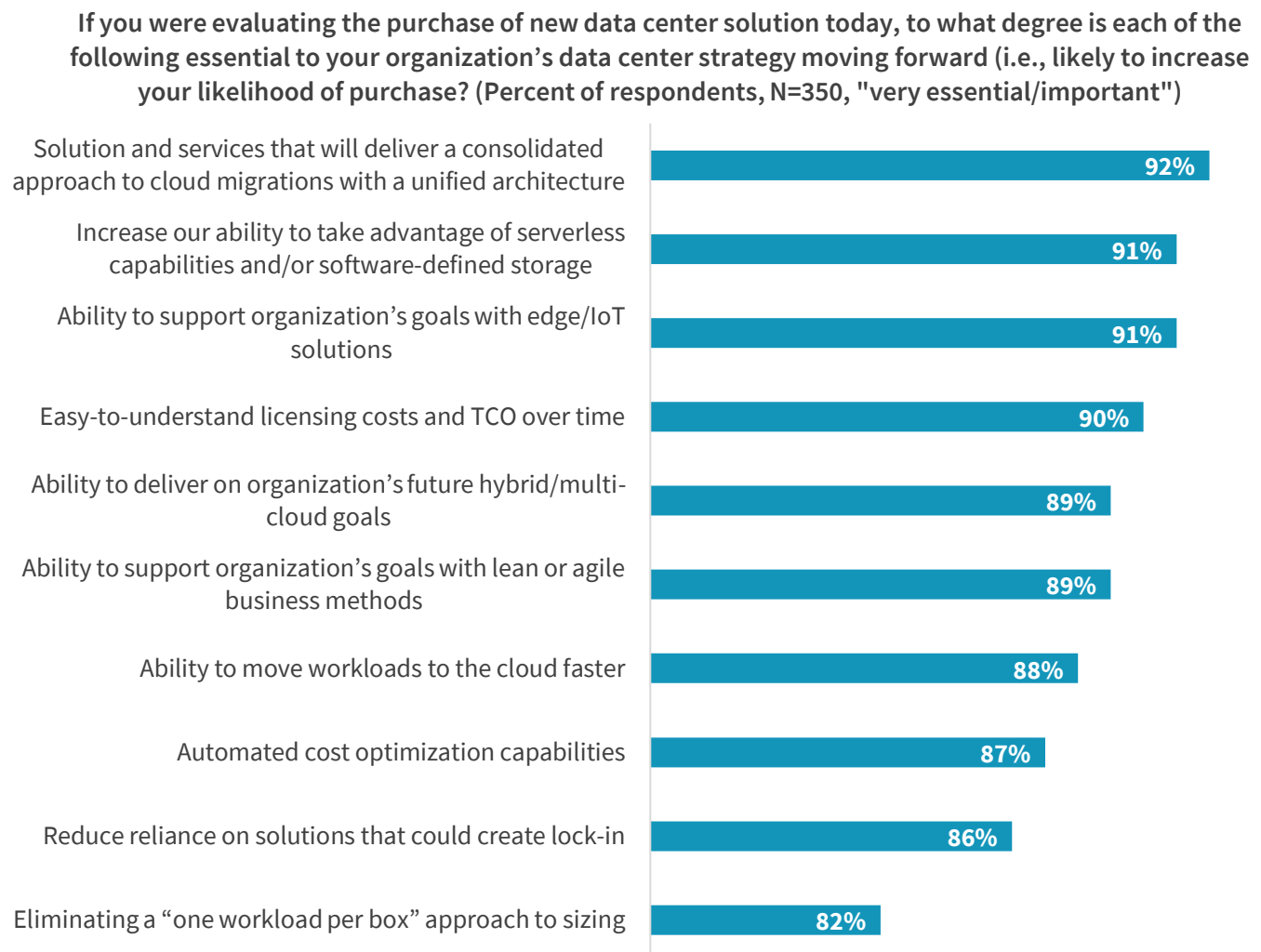
- The average number of public cloud providers in use today is 2.2 per organization. ESG expects that average to increase to 3.1 in three years. In other words, the average enterprise is expected to add almost one additional cloud provider to its environment over the next three years.

- Additionally, the percentage of organizations using three or more cloud providers is expected to more than double over that same three-year timeframe, from 31% to 68%.

The use of multi-cloud IT has now become one of the most important considerations for decision makers who are planning the future of their IT infrastructures.

In the Era of Multi-cloud, Flexibility Is a Top Data Center Priority

ESG research into organizations' criteria for evaluating modern data center technology highlights their essential and/or important priorities moving forward. As the data in Figure 1 shows, five of the top six evaluation criteria focus on flexibility and portability. The most commonly reported answer was the need to consolidate (i.e., simplify) cloud migrations under a unified architecture. Nearly every participant in the study (92%) identified this criterion.

Figure 1. Evaluation Criteria for Modern Data Center Technology

If you were evaluating the purchase of new data center solution today, to what degree is each of the following essential to your organization's data center strategy moving forward (i.e., likely to increase your likelihood of purchase? (Percent of respondents, N=350, "very essential/important")

Solution and services that will deliver a consolidated approach to cloud migrations with a unified architecture — 92%
Increase our ability to take advantage of serverless capabilities and/or software-defined storage — 91%
Ability to support organization's goals with edge/IoT solutions — 91%
Easy-to-understand licensing costs and TCO over time — 90%
Ability to deliver on organization's future hybrid/multi-cloud goals — 89%
Ability to support organization's goals with lean or agile business methods — 89%
Ability to move workloads to the cloud faster — 88%
Automated cost optimization capabilities — 87%
Reduce reliance on solutions that could create lock-in — 86%
Eliminating a "one workload per box" approach to sizing — 82%

Source: Enterprise Strategy Group

Notably, a vast majority of respondents (88%) also said they need to move workloads to the cloud faster. This finding again highlights the need for simplification to ensure costs remain under control while the cloud initiatives are accelerating.

Additionally, nine in ten surveyed organizations identified the need for easy-to-understand licensing costs and good TCO over time. Multi-cloud environments can be complex to manage. They may even complicate other architecture optimization activities if the cost trade-offs are not well understood.

Workload Flexibility Is a Must for Multi-cloud Organizations

Especially in a multi-cloud environment, workload flexibility will help organizations to navigate dynamic conditions more effectively and efficiently. Eighty-eight percent of respondents say it is essential or important to move workloads faster, and 85% view enabling workload placement flexibility as a top-five priority. Perhaps even more compelling is that 99% of the surveyed organizations—essentially all of them—view workload placement flexibility as a top-ten priority.

Why does everyone consider application portability and simplifying cloud migration to be such high priorities? Because traditional cloud migrations are so difficult, costly, and risky. ESG found that:

- Organizations represented have had an average of **3.6** over-budget and over-timeline application re-architecture projects in just the past 12 months.

- **79%** of organizations have had to repatriate workloads from the cloud due to unforeseen issues.

- **93%** of respondents say cloud migration processes within their organizations could be meaningfully improved.

Better workload flexibility will offset the difficulty, cost, and risk inherent in cloud migrations.

Focusing on Controlling Operational Costs

As IT decision makers ponder the challenges and costs associated with cloud migrations, they are wisely shifting toward prioritizing operational cost savings over time—and moving away from focusing predominantly on initial capital cost. As Figure 2 shows, more than half of respondents (59%) recognize that over the duration of a solution's lifecycle, operational costs do represent a larger monetary amount than purchasing costs.

Figure 2. Organizations Are Prioritizing Operational Cost Savings

Thinking broadly of major data center infrastructure solutions, when you think of TCO over the full lifecycle, which category of cost is bigger? (Percent of respondents, N=350)

Capital costs at purchase, 41%

Operational costs over time, 59%
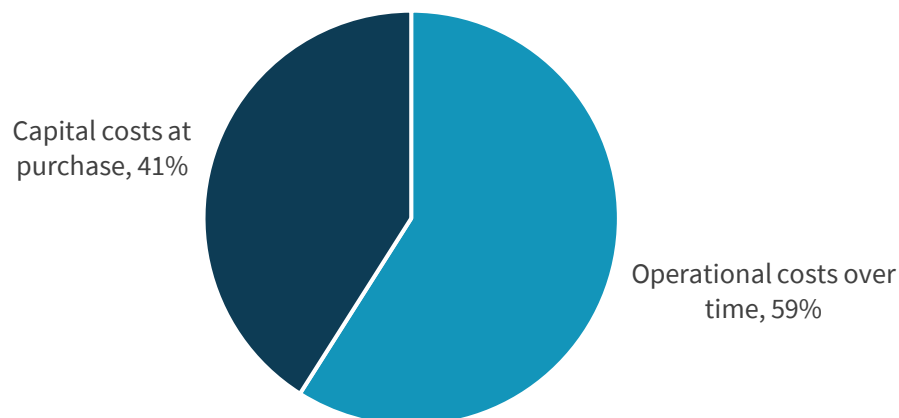
Source: Enterprise Strategy Group

This astute shift in priorities reflects the increasing complexity of multi-cloud environments and the opportunity costs associated with technical personnel. In other words, the increased cost of managing a complex environment can burden organizations by slowing down their digital initiatives, hindering their competitiveness, and introducing risk. Personnel may even have to be reallocated away from more valuable tasks to assist in managing the environment, which can stifle the growth of the whole business. Fortunately, decision makers understand the rewards of optimizing for operational costs.
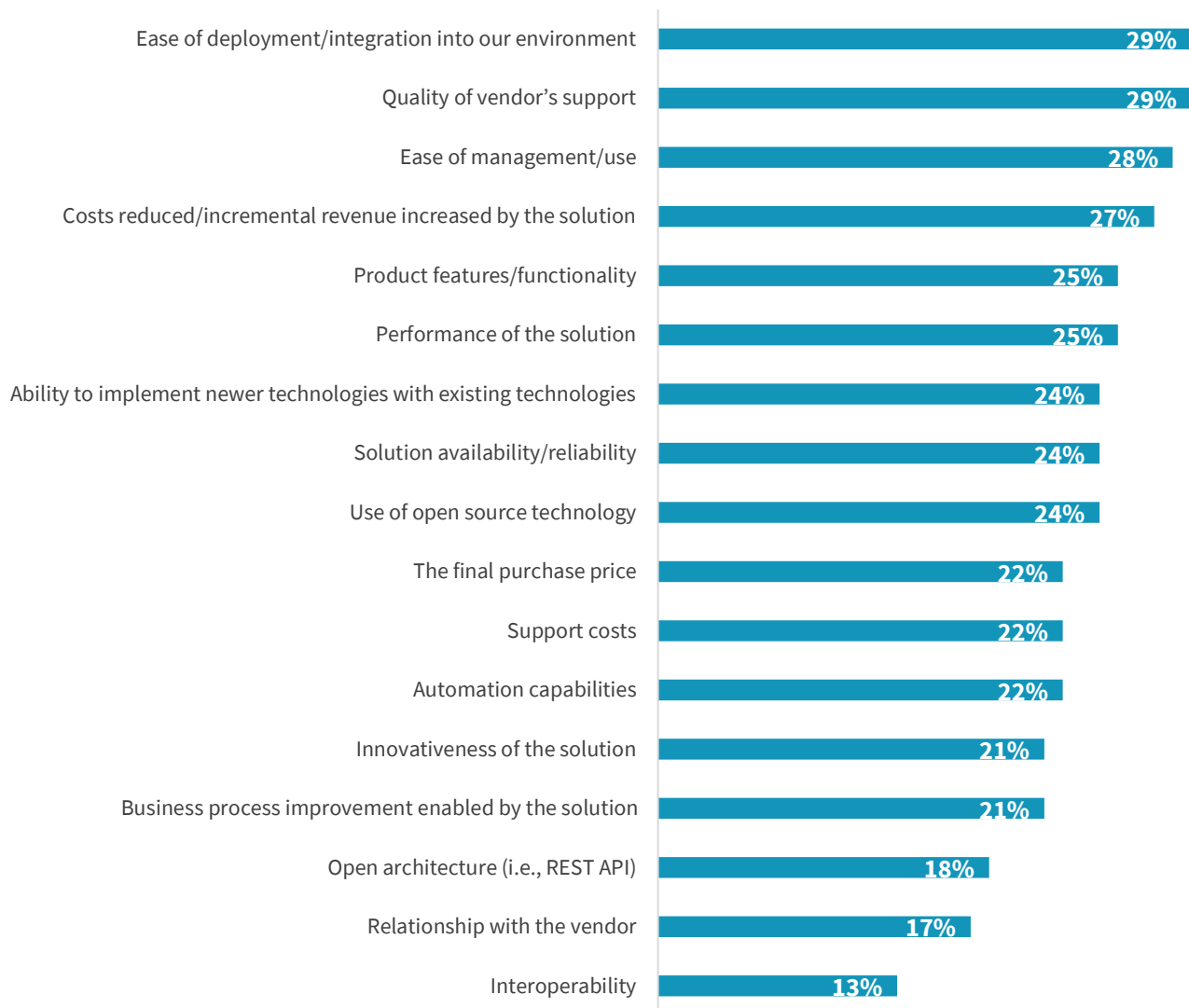
How Data Center Priorities Influence Infrastructure Purchase Criteria

The priorities already discussed, along with the shift in focus from initial CapEx to long-term OpEx, directly affect infrastructure purchasing decisions. Figure 3 shows that respondents' top-three purchase criteria all relate to "ease" in some way—simplicity in deployment, high-quality vendor support, and ease of ongoing management and use.

And all three of those purchase priorities again tie back to the need to optimize operational costs. The fact that a solution's final purchase price ranks only tenth on this list is more proof of the need for simplicity and operational savings.

Figure 3. New Infrastructure Purchase Priorities

What does your organization care most about when evaluating/making a major data center infrastructure purchase? (Percent of respondents, N=350)

Criterion	Percent
Ease of deployment/integration into our environment	29%
Quality of vendor's support	29%
Ease of management/use	28%
Costs reduced/incremental revenue increased by the solution	27%
Product features/functionality	25%
Performance of the solution	25%
Ability to implement newer technologies with existing technologies	24%
Solution availability/reliability	24%
Use of open source technology	24%
The final purchase price	22%
Support costs	22%
Automation capabilities	22%
Innovativeness of the solution	21%
Business process improvement enabled by the solution	21%
Open architecture (i.e., REST API)	18%
Relationship with the vendor	17%
Interoperability	13%

Source: Enterprise Strategy Group

The priorities organizations care about most point once again to the need for workload flexibility in multi-cloud environments. Ease of use, for example, must extend to the hybrid/distributed cloud environment, and storage architecture solutions must be capable of supporting a consolidated approach to cloud migration through a unified architecture.

Debunking Arguments Against the Need for Multi-cloud Flexibility

Some viewpoints oppose the need for multi-cloud flexibility, but they conflict with the macro-IT trends and evolving architectural priorities described in this report. In the long run, it's inadvisable to resist change, believe that data center strategies won't need to adapt, and disregard objective research. Table 1 presents opposing viewpoints and rebuttals.

Table 1. Myths and Realities Related to the Need for Multi-cloud Flexibility

Myth	Reality
Multi-cloud workload flexibility is not necessary because we have no plans to leverage the cloud.	Cloud adoption, which is at 97% today, helps to reduce the operational burden on IT resources. Technologies that offer flexibility today will also reduce IT risk in future years (when needs inevitably change).
It is only needed for cloud-native or new workloads, but not for workload environments that will always stay on premises.	Nearly nine out of ten IT decision makers (89%) identified the ability to deliver on the organization's future hybrid/multi-cloud goals as an essential or very important buying criteria for data center hardware. When evaluating data center solutions even for applications that are currently planned to remain on premises, multi-cloud flexibility reduces risk and provides options if and when needs change, providing significant time and cost savings in the future.
It's not necessary because we are repatriating our workloads back on-prem.	Repatriation does occur. But typically, it is only a few workloads (an average of 3.3 per year), and often, it is the result of insufficient upfront planning prior to the initial offsite migration. Organizations that repatriate workloads still anticipate cloud growth. Repatriation actually reinforces the need for workload flexibility. Repatriation also raises two other questions: How common it is to inaccurately forecast future application needs? And how can organizations reduce the cost and complexity of getting back on track after their forecasts prove to be inaccurate or when their needs change?

It's not necessary because we need only one public cloud provider.	Eighty percent of organizations leverage more than one cloud service. That percentage is growing. As businesses continue to evolve and as cloud providers augment their offerings, investing in flexibility *now* will provide benefits today and reduce future business risk.

Source: Enterprise Strategy Group

Why NetApp

NetApp's unified architecture for building a data fabric solution offers an innovative approach to help modern IT organizations address complexity challenges. NetApp solutions simplify and accelerate cloud migrations, while reducing migration-related costs and repatriation-related risks. IT can move data where it needs to be, enabling the entire business to become more data-centric and agile. Additional benefits include:

- Application and workload mobility and flexibility across hybrid and multi-cloud environments.

- Easy-to-use cloud management services that improve productivity, data protection, and compliance.

- Comprehensive visibility that enables monitoring and optimization of cloud resources.

- Enhanced control through integration and automation capabilities.

- Independent compute and storage scalability that increases efficiency and lowers TCO.

The Bigger Truth

Public cloud services are established and foundational pieces for modern IT environments, and the number and variety of cloud services are poised to become even more diverse and even more disaggregated in the future. In other words, multi-cloud is not only here to stay, but it will also continue to get more complex. Organizations should stop treating the cloud as a silo separate from core operations. Cloud services should be tightly integrated into everything IT does.

Given this new state of IT infrastructure and operations, multi-cloud agility must be a top IT priority. If organizations do not invest in accelerating their ability to deploy and migrate applications across hybrid and multi-cloud environments, they will be placing themselves at a massive disadvantage competitively. Even if multi-cloud is not in an organization's immediate plans, ensuring the flexibility is in place upfront reduces risk and helps prevent costly re-architecture projects in the future.

As businesses become ever more digital, IT operational efficiency offers new value as a competitive differentiator. Simplifying application agility across multi-cloud environments reduces the cost and complexity of IT, reduces the burden on IT personnel, accelerates digital initiatives, and reduces the risk of both IT and digital business initiatives.

NetApp is a leader in simplifying the connections that bridge hybrid and multi-cloud sites together. Technology, such as that which NetApp delivers, should be made a priority. The challenge of multi-cloud agility will only get more costly and more complex if left untouched. It is best to work with a partner, such as NetApp, rather than going it alone.
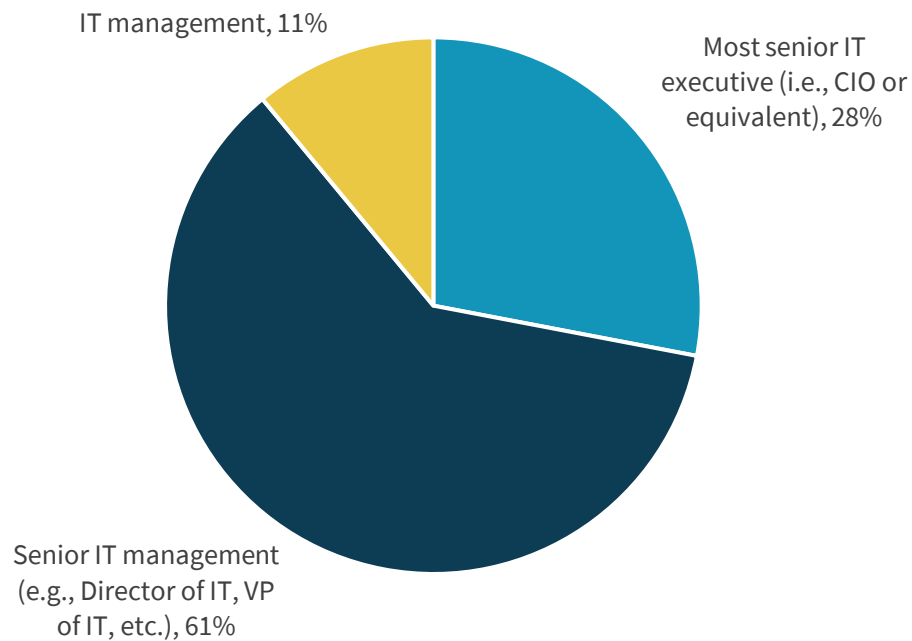
Methodology and Demographics

To gather data for this report, ESG conducted a comprehensive survey of IT professionals knowledgeable about both their organizations' long-term cloud and data storage strategies. All respondents were based in North America and working at organizations with 500 or more employees. The survey was fielded between November 18, 2020 and December 5, 2020. All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents.

After applying data quality control best practices and screening the remaining completed responses (on several criteria) for data integrity, a final sample of 350 respondents remained. The margin of error for a sample size of 350 is + or – 5 percentage points. Figures 4 - 7 detail the demographics and firmographics of the respondent base.

Note: Totals in figures and tables throughout this report may not add up to 100% due to rounding.

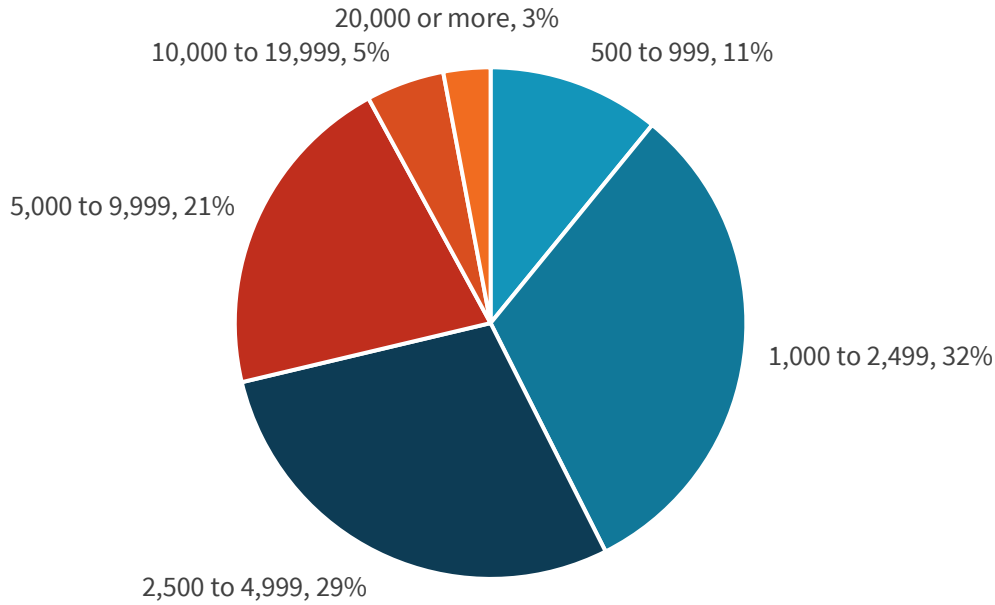### Figure 4. Respondents' Responsibility Level

Which of the following best describes your current responsibility within your organization? (Percent of respondents, N=350)

- IT management, 11%
- Most senior IT executive (i.e., CIO or equivalent), 28%
- Senior IT management (e.g., Director of IT, VP of IT, etc.), 61%

Source: Enterprise Strategy Group

Figure 5. Company Size (Number of Employees)

How many total employees does your organization have worldwide? (Percent of respondents, N=350)

- 20,000 or more, 3%
- 10,000 to 19,999, 5%
- 500 to 999, 11%
- 5,000 to 9,999, 21%
- 1,000 to 2,499, 32%
- 2,500 to 4,999, 29%
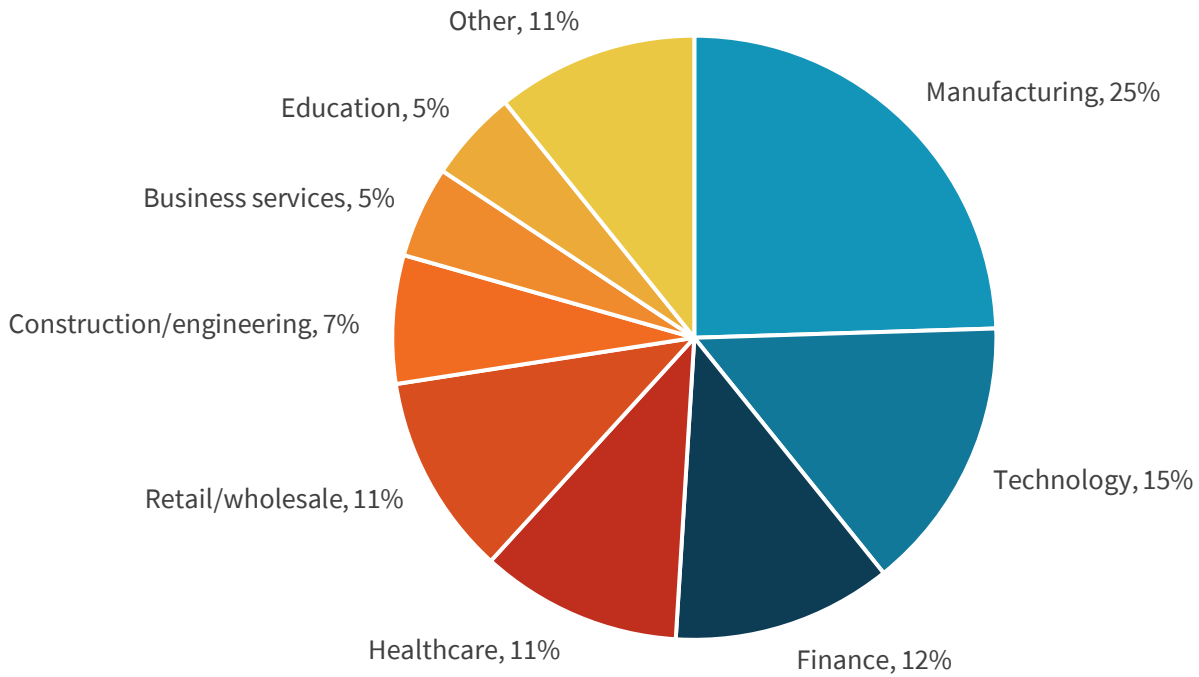
Source: Enterprise Strategy Group

Figure 6. Respondents' Span of Influence

Think of the technology purchase decisions for which you are responsible. How many total employees are directly impacted by the decisions you make? (Percent of respondents, N=350)

Less than 100	100 to 249	250 to 499	500 to 999	1,000 to 2,499	2,500 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more
3%	15%	25%	24%	17%	8%	4%	3%	2%
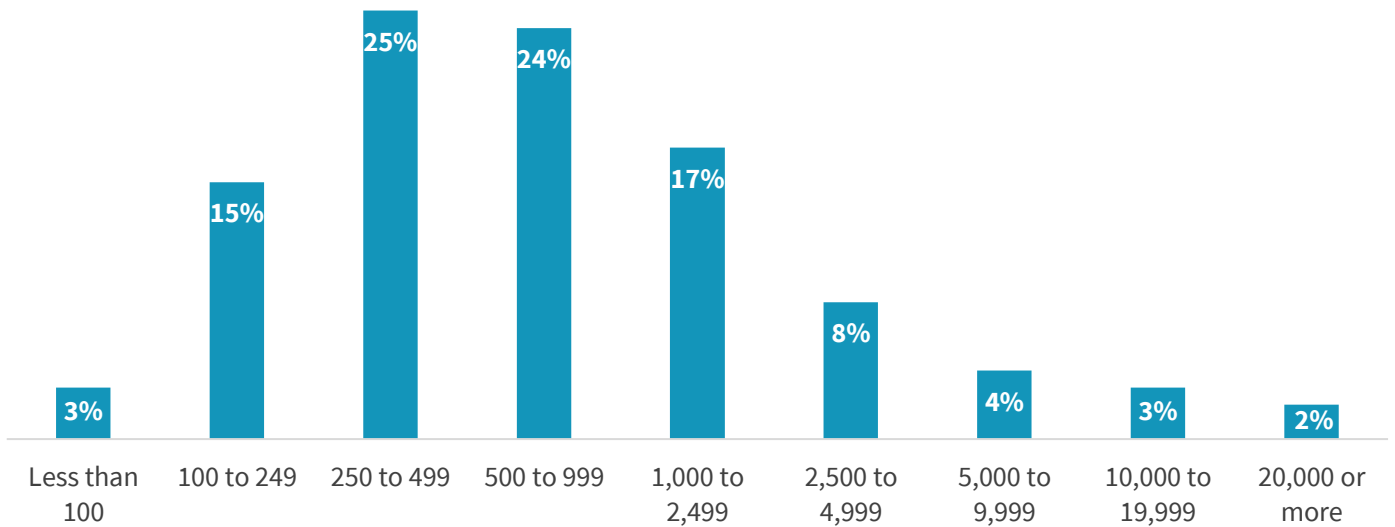
Source: Enterprise Strategy Group

Figure 7. Respondents by Industry

What is your organization's primary industry? (Percent of respondents, N=350)

Other, 11%
Education, 5%
Business services, 5%
Construction/engineering, 7%
Retail/wholesale, 11%
Healthcare, 11%
Finance, 12%
Technology, 15%
Manufacturing, 25%

Source: Enterprise Strategy Group

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