



ESG RESEARCH INSIGHT PAPER

The Evolving On-premises Infrastructure

Considerations and Drawbacks of Infrastructure Modernization

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Executive Summary

The IT environment of today is riddled with complexity. ESG research shows that 64% of organizations say IT is more complex today compared to two years ago.¹ Between growing data volumes, an evolving security/regulations landscape, the rise of modern applications, and the need to incorporate next-generation technology like AI/ML, the last thing IT wants to deal with is integrating yet another piece of technology that might negatively impact operational efficiency. IT is looking to refocus on the fundamentals: effective and reliable service delivery, ubiquitous data accessibility, and a consistent customer experience. And with a high level of macroeconomic uncertainty, organizations are more closely scrutinizing costs.

Applications are driving IT infrastructure modernization. How can organizations minimize risk while modernizing IT to support compute-intensive, data-centric applications? Is long-term value more important than short-term savings? What impact does introducing a new infrastructure component vendor have on project success and savings? When it comes to capital expenditures (CapEx) and operational expenditures (OpEx), what matters more to organizations that are altering and modernizing their existing IT infrastructures?

ESG recently performed research to identify how organizations are prioritizing spending to support infrastructure investments, to mitigate the challenges they already encounter (or expect to), and to help them achieve the ideal business goals and outcomes of said investments.² ESG sought to identify links between evolving/modernizing infrastructure and how vendor heterogeneity and consistency impact IT progress. The research consisted of a survey of 300 senior IT decision makers from large midmarket and enterprise organizations with good knowledge of their organization's compute and storage infrastructure decision-making strategies. Respondents were based in North America (US), employed at organizations with 500 or more employees and \$50M+ in annual revenue. Organizations represented in the sample included a broad cross-section of industries, such as financial services, manufacturing, healthcare, and business services.

Key Findings

ESG research found that consistency and higher levels of operational efficiency matter the most when measuring the success of an evolving on-premises infrastructure. Being able to adapt quickly and optimize workloads based on the needs of the business is paramount. And when cost is a consideration, OpEx matters more than CapEx. Key findings include:

- 46% of organizations indicate that the biggest organizational driver for on-premises infrastructure modernization and change is enabling better business continuity, ensuring remote worker productivity, and enabling a positive end-user experience.
- The top five areas where organizations measure success of modernizing their IT infrastructure include improvements to performance, reliability, scalability, productivity, and agility. Cost savings was cited the least.
- More than three-quarters of respondents say purchasing decisions based on lower CapEx have led to higher OpEx.
- When refreshing compute infrastructure, organizations maintaining vendor consistency see a 38% increase in likelihood of completing compute deployments ahead of schedule and an 83% increase in likelihood of rating the ROI of an infrastructure investment as "excellent," when compared with organizations that changed vendors.
- When modernizing compute infrastructure and turning to a new vendor, there was a higher likelihood (by 24 percentage points) that organizations would report that the hardware simply did not support their application requirements.

¹ Source: ESG Master Survey Results, [2020 Technology Spending Intentions Survey](#), January 2020.

² All ESG research references in this research insights paper come from custom research conducted by ESG on behalf of Intel, unless otherwise noted.

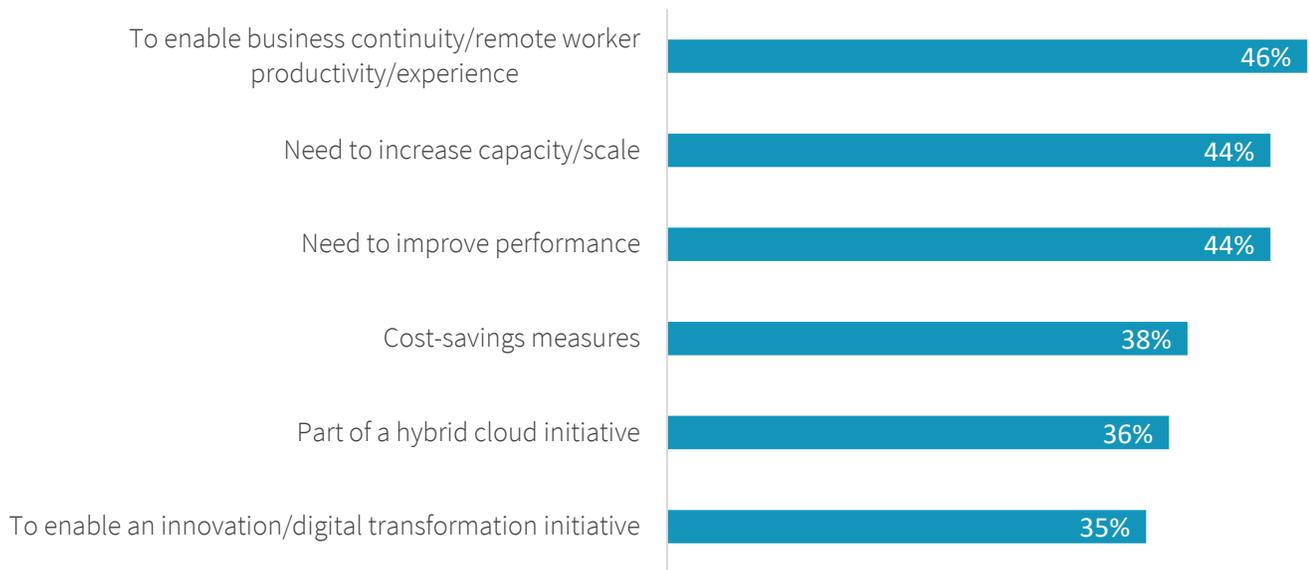
What’s Driving IT Modernization?

ESG asked organizations to share what is driving their IT modernization initiatives. All the responses were clearly aligned to supporting next-generation applications heavily rooted in collaboration and data. The findings made it clear that as organizations focused on data-driven initiatives, they required the right architectures and infrastructures to support the size, scale, and speed of data-centric workloads, as well as the increased demand from end-users to access, process, and analyze that data. The top driver cited by respondents was enabling better business continuity, ensuring remote worker productivity, and enabling a positive end-user experience, at 46%. Organizations want to ensure that their employees in work-from-home (WFH) environments, for example, have access to what they need when they need it. And to deliver on the experience end-users require, increasing capacity/scale and improving performance of the supporting IT infrastructure round out the top three drivers.

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Figure 1. Leading Drivers for On-premises Infrastructure Changes

Looking ahead over the next 12 months, what are the biggest organizational drivers for future/potential on-premises infrastructure changes? (Percent of respondents, N=301, multiple responses accepted)

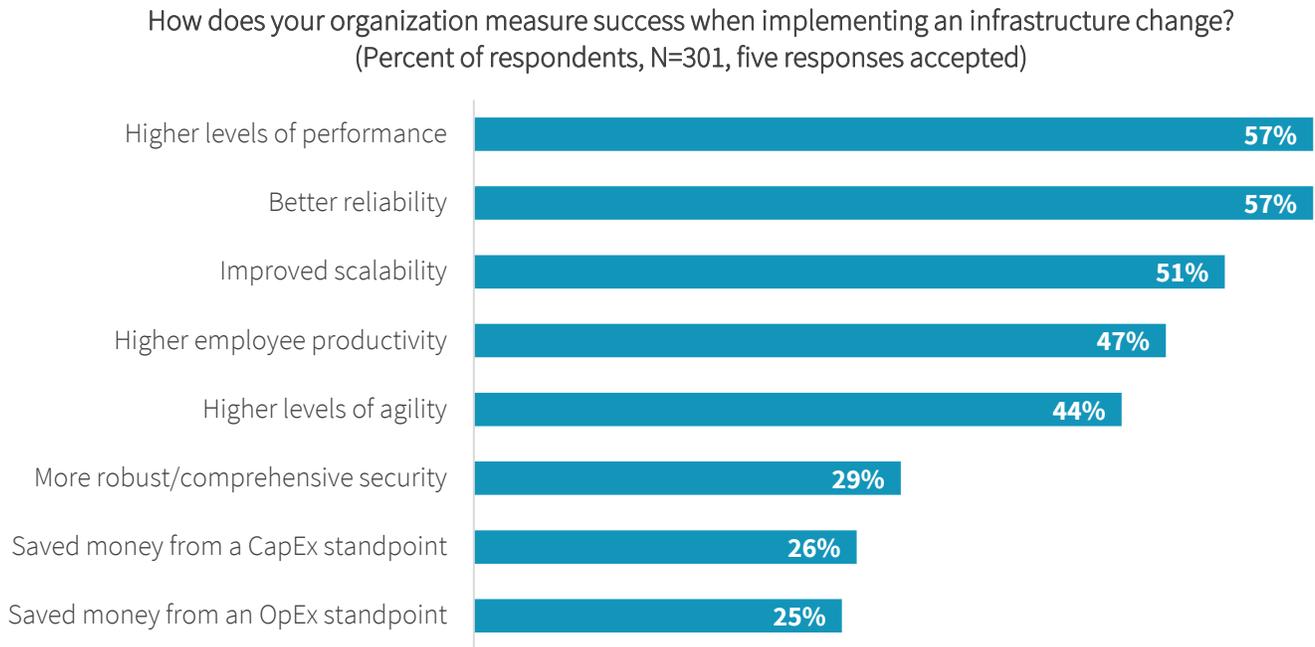


Source: Enterprise Strategy Group

As collaboration within organizations continues to be prioritized and analytics workloads become larger and more complex, a modern infrastructure must be in lockstep with the workloads being serviced. For on-premises infrastructure specifically, it’s about the ability and capability to host several mission-critical applications anchored in data. According to the research, 41% of respondents cited collaboration tools as one of the top application types impacted by infrastructure modernization, 39% cited business intelligence or data visualization, and 38% cited enterprise resource planning (ERP) or supply chain management (SCM). As businesses traverse the new WFH landscape, it is important that first, they emphasize accessibility, communication, and collaboration, then prioritize the workloads that matter to the business. And today those applications are rich in data, which fuels business innovation, forward-looking strategy, and customer experience. Additionally, while cost savings serves as a driver for modernizing IT infrastructure, technology functionality and its ability to add value to the business is a greater driver.

Understanding drivers of an IT infrastructure change can be directly correlated to how organizations measure the success of that change. Improvements to performance (57%), reliability (57%), scalability (51%), productivity (47%), and agility (44%) are the top five criteria that organizations use to measure success. And cost savings proves to matter the least, with every other quantifiable indicator coming out ahead of cost. The opportunity to leverage the latest and greatest technology while ensuring operational success and effective business growth is far more valuable to the business than a bottom-line monetary investment.

Figure 2. Measuring Success: What Matters More than Acquisition Cost? Everything



Source: Enterprise Strategy Group

IT Challenges in Pursuing Operational Excellence

IT is expected to deliver the right technology and the right services to the right people at the right price at the right time. To achieve this operational nirvana, pursuing operational excellence is critical. When asked to rank the importance of consistent/proven technologies, low operational costs, and low capital costs, ESG research found that 43% of respondents rated investing in technologies that deliver proven/consistent operations as their top priority. Two-fifths (41%) of respondents rated low OpEx as their top priority, while just 16% reported low CapEx as their top priority.

Managing Compute

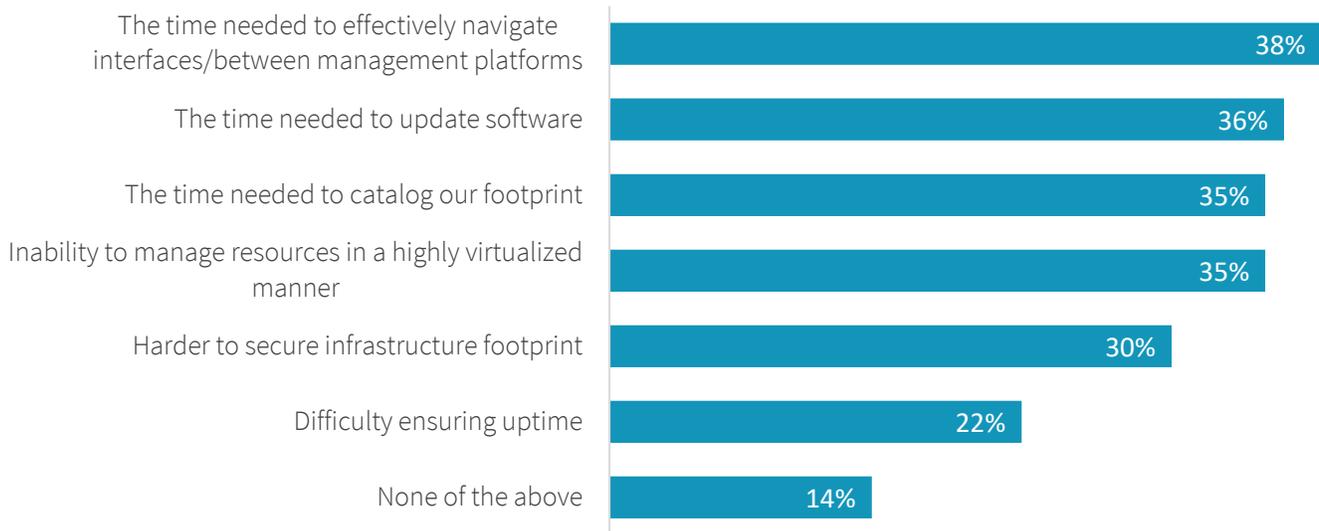
Compute is often looked at as a commodity. When IT organizations are looking to solve an issue, the most common fixes usually are to throw more compute at it, or get a bigger server, or refresh the hardware. But IT continues to overlook the criticality of effective and efficient compute and processing. Oftentimes compute serves as the backbone of IT. Hastily throwing more compute at the problem without understanding the ramifications is proving to have a negative impact on the long-term value of the business.

The first area in which organizations run into compute challenges is around heterogenous processor environments, where organizations leverage processors from different vendors to support application environments. When asked about management challenges associated with heterogenous processor environments that they've experienced, respondents cited several areas that have created problems (see Figure 3). 38% said they had a challenge with the time it takes to

effectively navigate interfaces/between management platforms, 36% said they had a challenge with the time needed to update software, and 35% said the time needed to catalog the compute footprint was a challenge. And while processor heterogeneity is the root of these challenges, it's not uncommon for organizations to utilize one primary processor vendor but maintain and manage several generations from that vendor. In fact, 83% of respondents have reported that they manage between 2 and 5 generations of their organization's primary processor vendor. And IT wants to be able to manage all those generations of technology from a single management console.

Figure 3. Management Challenges from Managing a Heterogenous Processor Environment

What type of management challenges – if any - has your organization experienced in managing its heterogenous processor environment? (Percent of respondents, N=199, multiple responses accepted)



Source: Enterprise Strategy Group

Management challenges are exacerbated by the fact that most organizations rely heavily on virtualization to deliver consolidated on-premises footprints and improve resource utilization. In fact, 59% of organizations use at least half of their physical servers as virtualization hosts. While the adoption of containers is on the rise, with 42% of organizations currently utilizing containers and another 28% planning to run containers to improve efficiency, application portability, and simplicity, virtualization is not going anywhere anytime soon. This will introduce a different form of resource management complexity, with IT expected to manage resources in both virtualized and containerized environments simultaneously.

Evaluating Cost for Modern IT

IT traditionally breaks cost into two categories: the initial cost of materials and procurement (CapEx), and the operational costs of deployment and ongoing management and maintenance (OpEx). The research highlighted that, when looking at IT priorities and future investments, CapEx is always part of the conversation but less important than the ability with which an investment can deliver value to the organization and improve operational efficiency (OpEx). Just 16% of organizations view the lowest cost of procurement as their top priority. Respondents were 2.6x more likely to say OpEx is their number one IT priority (versus those that said that CapEx was their top priority).

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The Appeal of CapEx Savings

One of the more common thoughts when upgrading or changing an on-premises compute infrastructure is cost, specifically how to lower purchasing prices. Costs are set by server OEM vendors (Dell, HPE, Lenovo, etc.) and are based on combined component pricing and ISV-set pricing on software packages. While software pricing drives overall cost much more than hardware, hardware component pricing is scrutinized. For example, the processor vendor and the capabilities of the processor will impact the cost of a new server, as will storage and memory. And while a decision to customize a server and take “the cheaper processor” to minimize upfront investment sounds harmless, the long-term cost ramifications could far exceed that initial (and minimal) cost savings.

More than three-quarters say purchasing decisions based on lower CapEx have led directly to higher OpEx.

ESG research shows that over half of organizations (56%) would consider alternative technology if the purchase price was at least 25% lower than their current primary processor vendor. But ESG research found that making the decision to switch processor vendors predominantly due to a lower cost (CapEx) had a negative impact to operational expenses. In fact, more than three-quarters say purchasing decisions based on lower CapEx have led directly to higher OpEx.

Revalidating Applications When Modernizing IT

Infrastructure upgrades and changes are simply a requirement. Organizations must modernize their IT infrastructure to better support next-generation application requirements. When changes occur, developers, architects, and IT work together to validate applications and ensure business and end-user requirements are met. In fact, 73% of organizations extensively revalidate their applications when moving to different hardware. And the criticality of the application is directly proportional to the speed at which the application is revalidated. In other words, mission-critical applications must be revalidated faster and with higher priority since the business relies more heavily on them in day-to-day operations. Revalidating applications is directly tied to OpEx costs since it takes the time of developers, architects, and IT to configure, deploy, and test the environment and applications. If something goes wrong, not only does it take longer to migrate an application to modern hardware, but it also brings into play various cost implications associated with application availability, impact to other processes, and responsiveness to other requests.

While leveraging modernized infrastructure creates work for developers and infrastructure architects, the degree with which the infrastructure changes matters. Overall, ESG research found that 64% of organizations discovered applications needed to be changed/rearchitected because of a change to the underlying infrastructure and 49% discovered the hardware could not support their application requirements. For compute infrastructure specifically, while it is obvious that upgrades are required over time, those that changed vendors as part of their infrastructure modernization initiatives saw more severe impacts. As an example, when organizations were making an infrastructure change and leveraging a new vendor, there was a higher likelihood (by 24%) that the hardware simply did not support the application requirements. This points out another key area that needs to be weighed when evaluating a modern compute infrastructure: vendor consistency.

Vendor Consistency Matters

ESG research shows that making a compute infrastructure change, including the introduction of a new processor vendor based on promises of higher performance and/or lower costs, can lead to more issues than benefits. In fact, compute vendor consistency (i.e., staying with the same processor component vendor) when upgrading/changing compute results in a 38% increase in likelihood of completing compute deployments *ahead* of schedule. Vendor inconsistency (i.e., changing the processor component vendor) results in a 2.9x increase in likelihood of completing storage deployments *behind* schedule. In other words, a vendor change at a component level directly correlates to the potential of deployment delays.

Vendor consistency also has a significant impact on cost. Organizations that changed compute and/or component vendors based on the promise of lower procurement costs witnessed a sizeable increase in operational costs. ESG modeled the differences in operational expenses between respondents who recently changed vendors and those who maintained existing vendors when upgrading/modernizing their compute infrastructure. The assumptions include an average revenue size of those surveyed (\$3.7B), a 5% IT budget as a percentage of revenue, and an assumed OpEx/CapEx IT budget split of 65%/35%. The results were eye-opening, with those who switched their compute/component vendor seeing operational costs of an estimated \$6.3 million more (versus those relying on in-place vendors).

Given the number of organizations that have shifted their technology as of recently, the reasons to maintain consistency are more apparent than ever. In storage environments, OEM and component vendor consistency results in an 83% increase in likelihood of rating the ROI as “excellent.” For compute, when asked how to categorize the timing with which one’s team was able to deploy (inclusive of solution design, implementation, and integration) a new/modern compute infrastructure purchase, organizations were in favor of leveraging the latest and greatest technology from existing vendors. Organizations that buy compute infrastructure from a vendor they already do business with are 38% more likely to be ahead of deployment schedule than those that buy from a new vendor. Right now, with all the complexity in IT environments, it is more important than ever to stay with what is proven to work rather than what sounds good on paper but that could potentially disrupt, if not put a halt to, the business.

Modeling Opex Differences

- 1. Average revenue of organizations surveyed: \$3.7B**
- 2. Assumed IT budget as a percentage of revenue: 5%**
- 3. Assumed OpEx/CapEx split of IT budget: 65%/35%**

Using these assumptions, ESG estimates that organizations not changing compute (and component) vendors have decreased OpEx spending (relative to those that have) by:

\$6.3M in the last 12 months.

The Bigger Truth

As organizations continue down the digital transformation path, the on-premises infrastructure stack is evolving. While some applications are getting offloaded to the cloud, many mission-critical applications are staying on-premises. And these applications demand flexibility to meet the dynamic needs of the business and its end-users. This is especially true as the world continues to deal with new norms, turbulent markets, and work-from-home mandates. And the result is that IT organizations are putting a greater emphasis on stability and reliability.

The truth is that based on ESG research, IT teams want consistency in the optimal and efficient delivery of right-sized on-premises infrastructure to support next-generation applications and services. Business continuity, productivity, and operational excellence matter most. Success of IT transformation and modernization initiatives are measured by improvements to performance, reliability, scalability, productivity, and agility, as opposed to cost. And when cost does play a role, making decisions based on lower CapEx directly drives higher OpEx, pointing to a need to pay closer attention to hidden costs, including the impact to deployment schedules and application disruption. The research proves that, by maintaining OEM/processor component vendor consistency when changing and modernizing on-premises IT, organizations are better able to meet, if not exceed deployment schedule expectations, as well as minimize application disruption.

IT decision makers continue to get bombarded with messages touting “eye-popping” cost savings and too-good-to-be-true performance benefits. Before making a technology buying decision, ensure that your impact analysis is complete. That means not only weighing long-term costs and ROI, but identifying unexpected/hidden cost areas, the potential for process disruption, the way value will be measured, and the speed with which you can achieve that value.

Appendix: Research Methodology and Respondent Demographics

To gather data for this report, ESG conducted a comprehensive online survey of IT compute and storage infrastructure decision makers from private- and public-sector organizations in North America (US). The North American survey was fielded between May 18, 2020 and June 05, 2020.

To qualify for this survey, respondents were required to be IT respondents with influence in the compute and storage infrastructure decision-making process who are knowledgeable about the underlying infrastructure at their organizations. All respondents must have been employed at organizations with 500 or more employees and annual revenue of \$50 million or more.

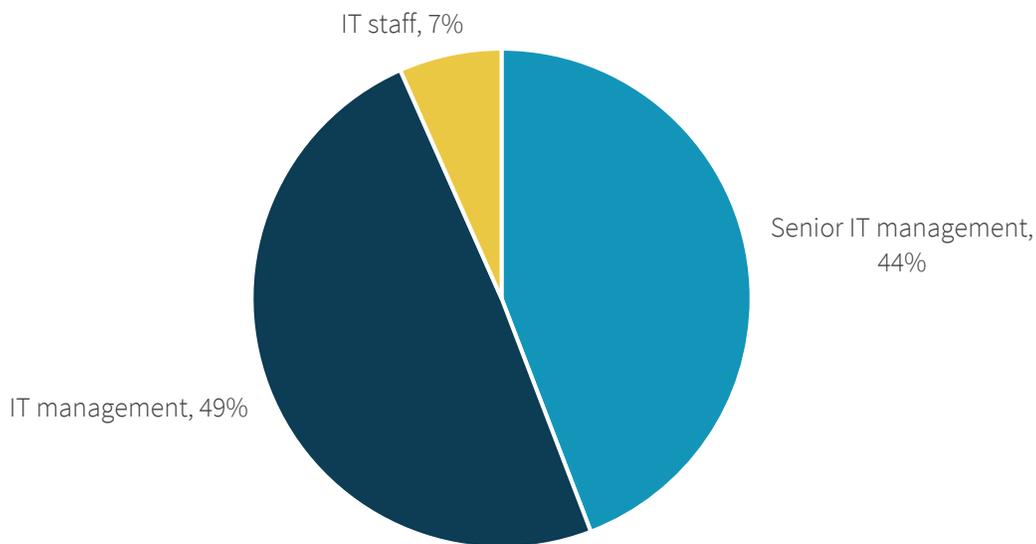
After filtering out unqualified respondents, removing duplicate responses, and screening the remaining completed responses (on several criteria) for data integrity, a final sample of 300 respondents remained.

All respondents were provided an incentive to complete the survey in the form of cash awards and/or cash equivalents. Note: Totals in figures and tables throughout this report may not add up to 100% due to rounding.

Figures 4 - 7 detail the demographics of the respondent base: individual respondents' current job responsibilities, as well as respondent organizations' total number of employees, primary industry, and annual revenue.

Figure 4. Survey Respondents, by Job Responsibility

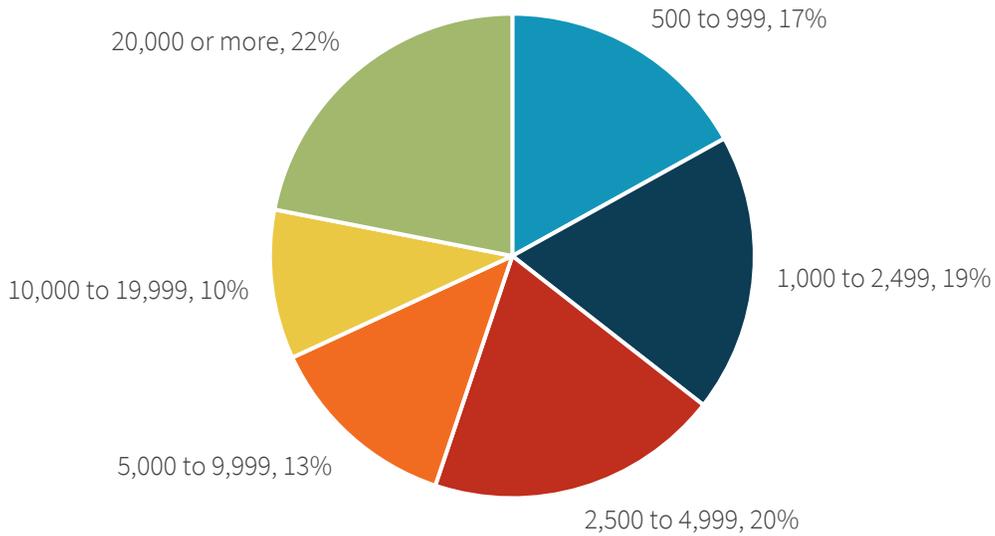
Which of the following best describes your current responsibility within your organization?
(Percent of respondents, N=301)



Source: Enterprise Strategy Group

Figure 5. Survey Respondents, by Company Size (Number of Employees)

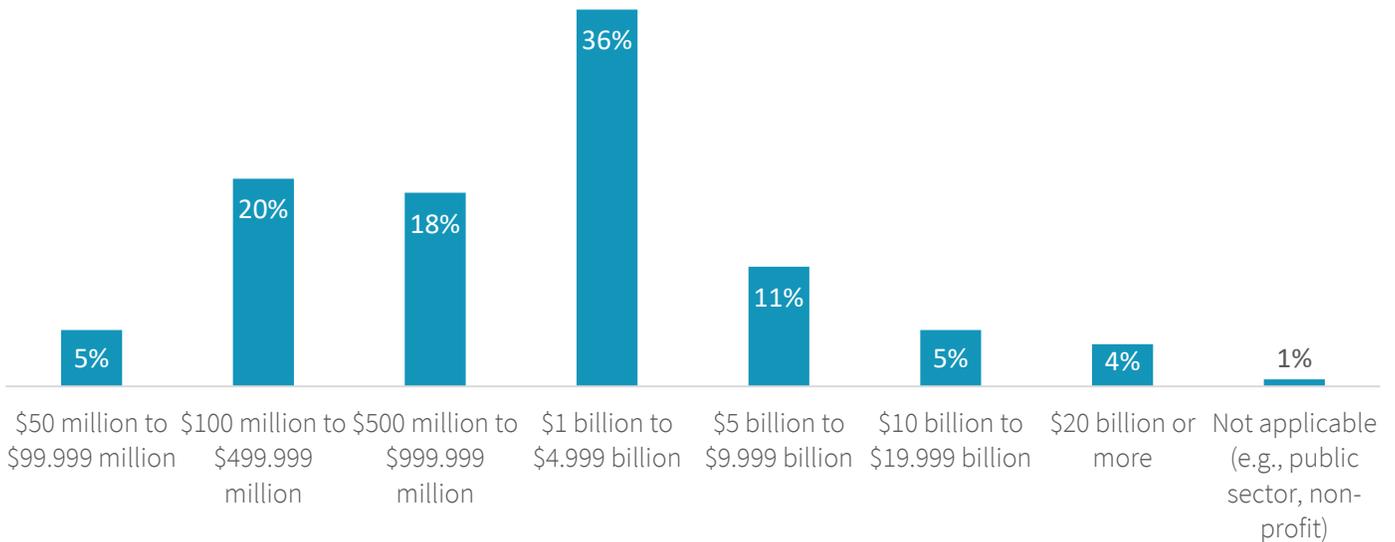
How many total employees does your organization have worldwide? (Percent of respondents, N=301)



Source: Enterprise Strategy Group

Figure 6. Survey Respondents, by Company Size (Revenue)

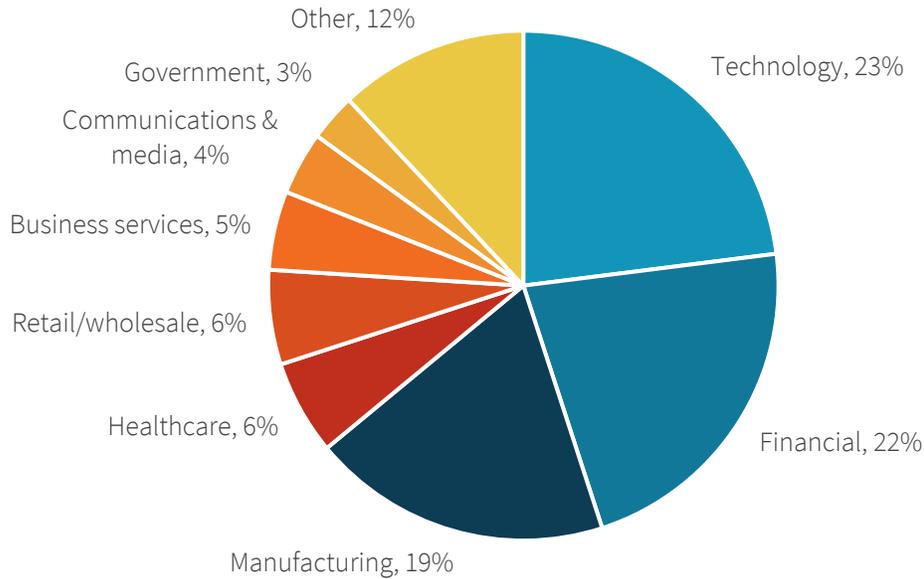
What is your organization's total annual revenue (\$US)? (Percent of respondents, N=301)



Source: Enterprise Strategy Group

Figure 7. Survey Respondents, by Industry

What is your organization's primary industry? (Percent of respondents, N=301)



Source: Enterprise Strategy Group

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