Enterprise Strategy Group™
by TechTarget

RESEARCH INSIGHTS

The Value of a 'Full Stack' Approach to Cloud Talent Management

Staff with Entry-level Cloud Skills Are Helping
Organizations Thrive

By Adam DeMattia, Senior Director of Research
Enterprise Strategy Group

March 2023

Contents

Executive Summary

Cloud computing has become an essential part of modern business operations, and organizations that fail to adopt cloud technologies risk lagging behind their competitors. Having technical staff with expertise in cloud computing is crucial for organizations that want to take advantage of the many benefits of the cloud. The U.S. Bureau of Labor Statistics (BLS) predicts that employment opportunities encompassing cloud computing will grow by 15 percent from 2021 to 2031, much faster than the average for all occupations.[1] As such, the job outlook for cloud computing professionals is very promising.

Despite broader macroeconomic concerns and several well-publicized headcount reductions taking place in the tech sector recently, aggregate data shows a very competitive job market, with the unemployment rate in the tech sector standing at 2% versus a 3.7% rate nationally in the United States.[2] For many organizations, this creates a problem.

As these organizations are adopting aggressive cloud strategy roadmaps, their ability to recruit and retain cloud talent is hampered by the competitive job market. There simply isn't enough skilled and available talent to fill open roles. These hiring and retention headwinds have resulted in negative consequences for organizations. For example, more than two-fifths of respondents experienced their project timelines extend (48%), their teams' stress levels increase (44%), and the backlog of projects grow (43%).

AWS engaged TechTarget's Enterprise Strategy Group to execute a study to determine whether adopting a full-stack approach to cloud talent (i.e., hiring entry-level talent in addition to cloud experts) helps organizations mitigate these talent management issues and enables them to maximize success from cloud adoption. This report discusses the findings.

Survey Background

Enterprise Strategy Group (ESG) surveyed IT, application development, and human resources (HR)/talent management/learning and development professionals with influence in their organization's hiring decisions and hiring process for cloud roles. Participants were qualified to participate in the survey if they had hired entry-level talent to fill cloud-focused role and/or planned to hire similar talent in the next 24 months. Key questions included:

- What is the anticipated demand for entry-level cloud talent through 2024?

- What concerns do employers have, if any, regarding the hiring of entry-level talent?

- What benefits have organizations realized as a result of hiring entry-level talent?

In this context, entry-level talent was defined as individuals pursuing their first IT or application development role requiring cloud-specific skills or the ability to work with cloud infrastructure services. These individuals do not have any (or have minimal) prior professional experience working with cloud technologies. This includes recent graduates from universities and cloud-focused technical programs, as well as more experienced personnel that have held roles in other areas.

ESG fielded the survey September 8 - 23, 2022, with 788 decision maker respondents completing the survey. Respondents represented organizations in the U.S. (32%), EMEA (32%),[3] APAC (22%),[4] and Brazil (14%). The survey was complemented by 6 in-depth interviews with cloud team leaders to provide additional commentary and

---

[1] Source: The U.S. Bureau of Labor Statistics, *Occupational Outlook Handbook: Computer and Information Technology Occupations*, September 2022.
[2] Source: CompTIA, *The Tech Jobs Report*, December 2022.
[3] Countries represented in the EMEA region include: U.K. (13%), Germany (7%), France (5%), and South Africa (6%).
[4] Countries represented in the APAC region include: China (7%), India (5%), Indonesia (6%), Australia (4%), and New Zealand (1%).

real-life anecdotes about their cloud talent management experiences. Additional demographic and firmographic details are presented in the *Research Methodology and Respondent Demographics/Firmographics* section of this report.

Key Findings

General Cloud Hiring Trends, Practices, and Preconceptions

- Despite broader recession concerns, 20% of organizations plan to double their cloud headcount over the next 24 months, with nearly three-quarters expecting a rise in employment of 20%+. Only 12% see flat or declining headcount.

- Hiring experienced cloud professionals has gotten harder for over half (57%) of organizations compared to 12 months ago. Challenges retaining experienced cloud professionals follow a similar trend, with 53% of organizations reporting this as an issue.

- Decision makers facing these hiring and retention challenges often say that projects take longer to complete or are put on hold and cause additional stress on remaining employees, leading to employee burnout.

- Partly in reaction to labor market dynamics, 94% of organizations reported that they have hired entry-level cloud talent in the past 36 months.

Entry-level Hires Enable Organizations to Optimize the Talent Stack

- The vast majority of decision makers said that broadening the talent pool to include entry-level talent creates opportunities.

  o 91% see team productivity upside.

  o 90% see project outcome quality upside.

  o 89% see opportunity to improve customer satisfaction.

  o 88% see potential to accelerate cloud project completion.

  o 76% see opportunity to lower cloud operational costs.

- Organizations that hired entry-level talent realized positive outcomes.

  o An overwhelming number of organizations (92%) said hiring entry-level talent has helped their organization achieve higher innovation revenue from using cloud technologies.

  o 91% lowered IT-related costs, realizing expectations.

  o 90% improved their organization's agility.

  o 90% saw increased business/service availability.

- Entry-level hires reach "time to value"[5] in about half the time as expert-level hires. They add value as experts are being recruited or ramping up on more complex responsibilities.

---

[5] Time to value = time to hire + time to upskill to a level commensurate with the role's expectations, estimated in weeks.

- Entry-level talent is "stickier;" employees with entry-level skills voluntarily leave their organizations at a rate 35% lower than experts.

- Given these business outcomes, it is not surprising that 90% of organizations report positive ROI from hiring entry-level talent. This is underscored by 44% of the C-suite who report that these employees deliver "strong positive" ROI.

Partnership with HR is Essential to Enabling Entry-level Hiring

- 88% of organizations reported that increased collaboration between hiring managers and HR was required to ensure better alignment of job tasks and talent skill level. This collaboration led to the creation of entry-level roles. This enabled organizations to hire and place entry-level employees in roles tailored to their experience level and enabled expert talent to work on more complex projects.

- 69% of organizations indicated they tended to hire overqualified individuals for responsibilities with less complex tasks prior to creating entry-level roles. Hiring managers recognized that they needed to do a better job matching job tasks with the right level of candidate skills.

- Without collaboration, organizations would have continued to hire only experienced professionals and have them work on less satisfying tasks—which could have resulted in greater (>30%) labor costs.

General Hiring Trends, Practices, and Preconceptions

The robust demand for public cloud computing services combined with the tight labor market for technical talent means many organizations face a cloud skills gap. This lack of talent and/or resources can hold companies back from executing their cloud projects effectively or at the desired pace. Prior ESG research has shown that 64% of organizations are grappling with this challenge today.[6]

> **"Hiring cloud talent is very challenging. Unemployment in these roles is effectively at 0% at this point, and attrition has been high; we are seeing attrition rates double, or more, than a typical year."**
>
> Executive Director, Information Technology, financial services firm with >250k employees
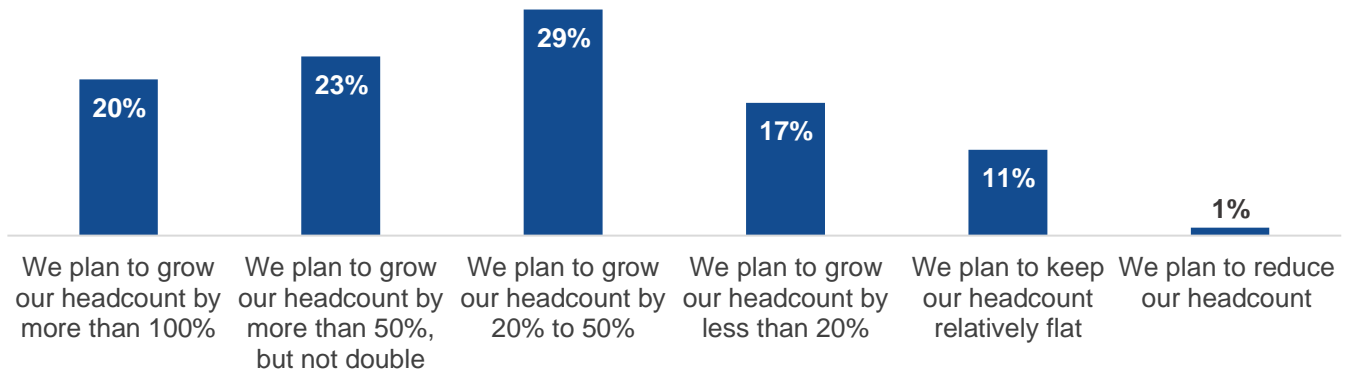
This survey uncovered that, despite broader macroeconomic concerns, the demand for cloud talent is not expected to abate in the foreseeable future. When respondents were asked about the change to their cloud team(s)' headcount over the next 24 months, nearly three-quarters expect a rise in employment of 20% or more and one-fifth plan to increase their headcount by more than 100%. Only 12% see flat or declining headcount (see Figure 1).

Figure 1. Changes to Cloud Headcount Over the Next 24 Months

In total, by how much do you believe your organization will change its current level of cloud talent headcount (across all experience levels) over the next 24 months, if at all? (Percent of respondents, N=788)

20%	23%	29%	17%	11%	1%
We plan to grow our headcount by more than 100%	We plan to grow our headcount by more than 50%, but not double	We plan to grow our headcount by 20% to 50%	We plan to grow our headcount by less than 20%	We plan to keep our headcount relatively flat	We plan to reduce our headcount

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Moreover, the increased demand for cloud talent is expected to span multiple disciplines, with more than two-thirds of respondents reporting increased cloud staffing plans this year across IT operations, software development, data management, DevOps, product engineering, and architecture and planning roles (see Figure 2).

---

[6] Source: Enterprise Strategy Group Research Insights Paper, *Understanding the Value of AWS Training to Organizations*, January 2023.

Figure 2. Percent of Respondents Expecting to Increase Staffing versus Not, by Role

Thinking about the following functional areas and all skill levels, which best describes your organization's cloud talent staffing plans this year? (Percent of respondents, N=788)

■ Percent of respondents reporting planned increases
■ Percent of respondents reporting planned staffing levels are flat or decreasing

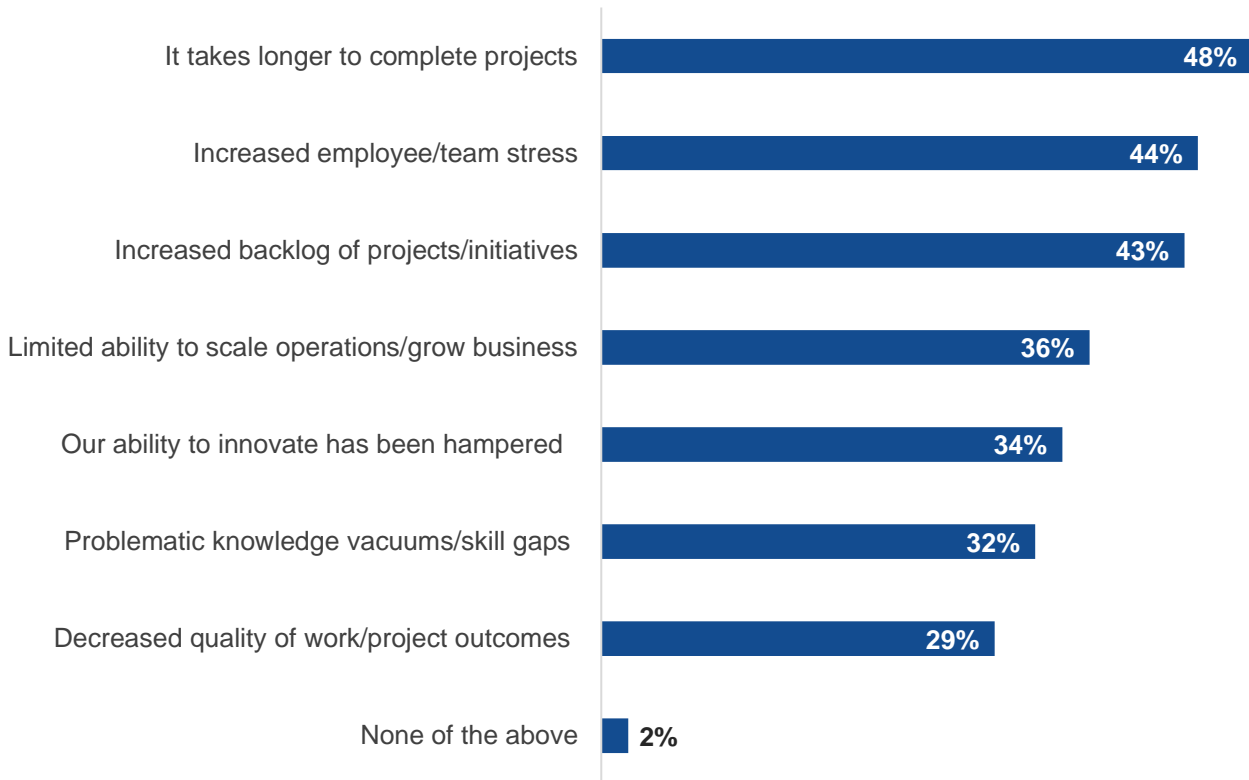| Role	Planned increases	Flat or decreasing
IT operations	80%	19%
Software development	79%	21%
Data engineering/data management/data governance	78%	22%
DevOps/site reliability engineers	77%	24%
Product engineering and management	71%	29%
Architecture and planning	69%	31%
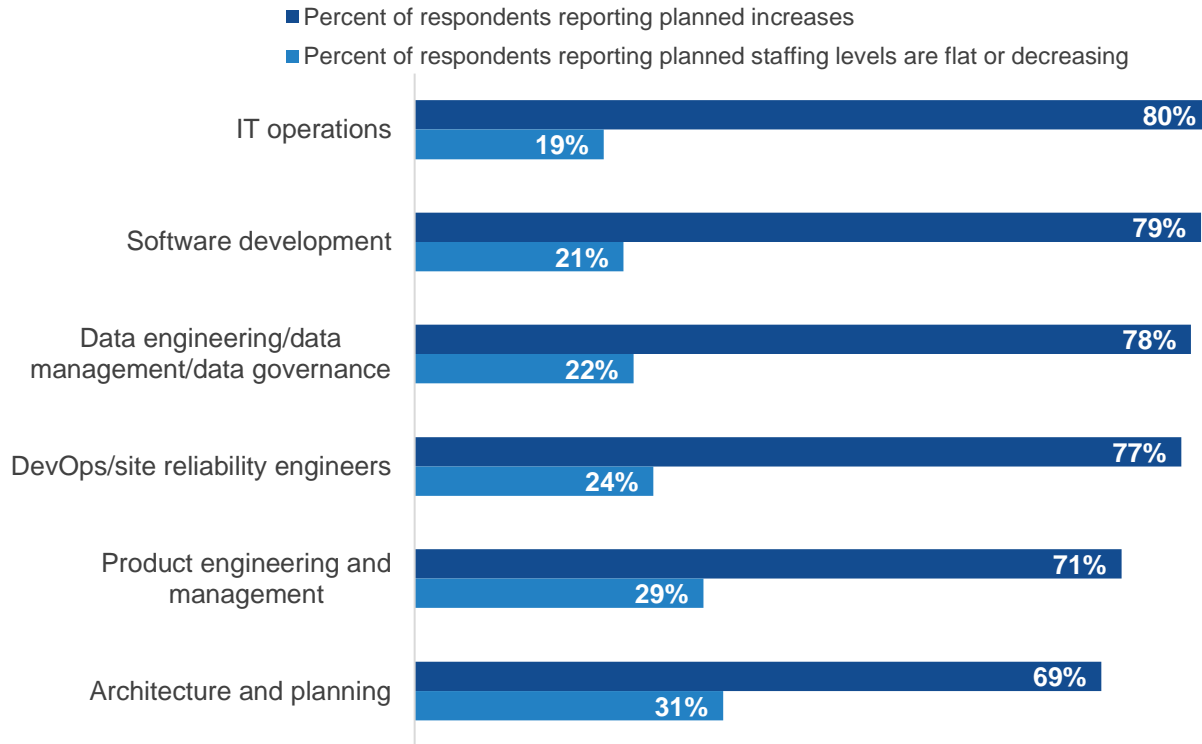
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

This planned pace of hiring, combined with the tight labor market, is likely to exacerbate existing skill gaps, particularly with over half of respondents reporting that it has gotten harder to recruit and retain experienced cloud professionals. At the time of this survey's fieldwork, 57% of respondents reported that it has gotten harder to hire experienced cloud practitioners over the past year. Similarly, 53% of respondents reported it has gotten harder over the past year to retain experienced cloud practitioners.

These hiring and retention headwinds have resulted in negative consequences for organizations. For example, more than two-fifths of respondents experienced their project timelines extend (48%), their teams' stress levels increase (44%), and the backlog of projects grow (43%, see Figure 3). These headwinds are deterrents to faster innovation, one of the biggest promises of cloud operations models.

Figure 3. Business Impacts Due to Difficulty in Retaining/Recruiting Experienced Cloud Talent

What negative impacts to the business (if any) have you observed due to difficulty retaining or recruiting experienced cloud professionals? (Percent of respondents, N=503, multiple responses accepted)

It takes longer to complete projects	48%
Increased employee/team stress	44%
Increased backlog of projects/initiatives	43%
Limited ability to scale operations/grow business	36%
Our ability to innovate has been hampered	34%
Problematic knowledge vacuums/skill gaps	32%
Decreased quality of work/project outcomes	29%
None of the above	2%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.
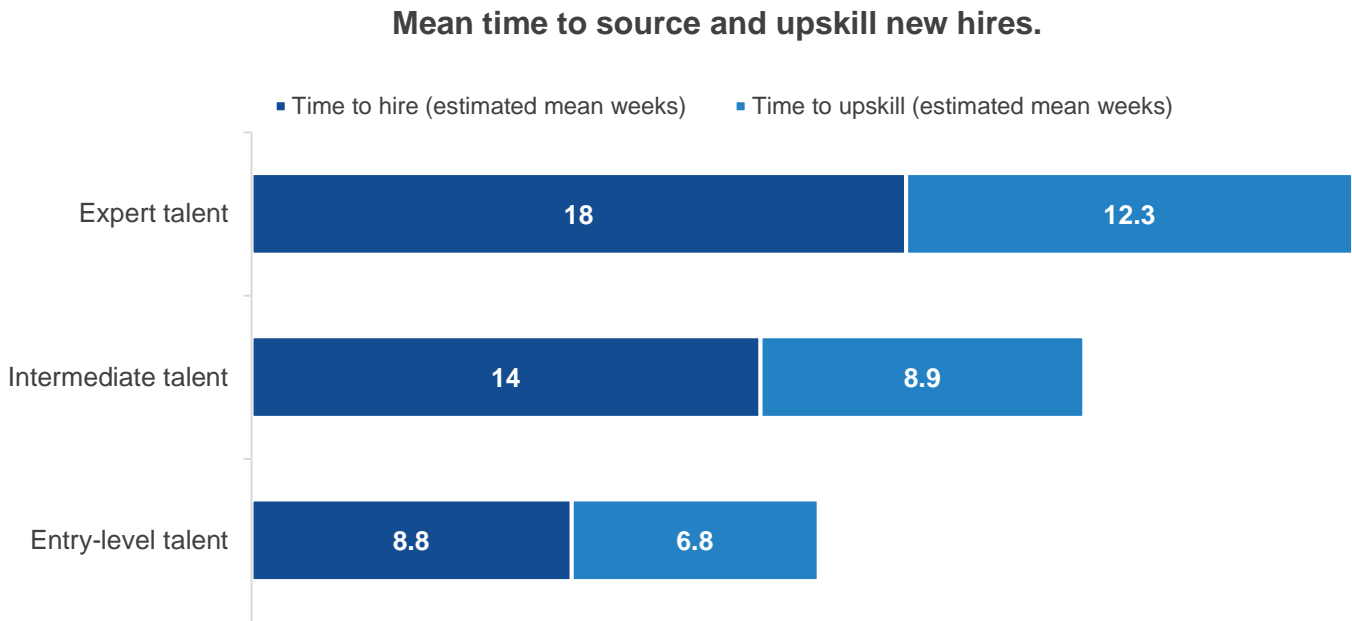
One avenue that organizations can pursue to mitigate the challenges presented by sourcing cloud experts is to hire more entry-level talent to work on cloud projects. This talent can take less complex work off the desks of their more tenured colleagues so they can be freed up to spend their time on more demanding work. These individuals also provide a pipeline of employees that can be upskilled over time to fill more advanced positions.

And with regards to the ease of sourcing and onboarding, the research shows that entry-level hires have a definitive advantage over more senior cloud experts. Entry-level hires can be sourced and fully onboarded in roughly half the time of expert-level hires (15.6 weeks on average versus 30.3 weeks, see Figure 4).

"Senior people don't want to do mundane things, they want to work with bleeding edge services. With an associate-level person they can delegate to, they can explore new services and use them in new ways to help the business innovate."

Vice President of Global Information Technology, technology company with >1,500 employees

Figure 4. Time to Fully Onboard New Hires of Various Experience Levels

Mean time to source and upskill new hires.

■ Time to hire (estimated mean weeks)   ■ Time to upskill (estimated mean weeks)

	Time to hire	Time to upskill
Expert talent	18	12.3
Intermediate talent	14	8.9
Entry-level talent	8.8	6.8

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

But there are a small number (6%) of decision makers that share some concerns regarding hiring entry-level cloud staff, like the ability to accomplish the tasks required and potential churn. However, data from the broader respondent base runs counter to this opinion: they estimated that only 13% of their entry-level staff members voluntarily left the organization in the past 12 months, compared to the 20% churn rate reported for expert-level staff members.

Notably, concerns over hiring entry-level cloud talent varies by function: 49% of respondents said line-of-business teams tend to have the most reservations, 28% said HR teams tend to have the most concern, but only 22% said managers of technical teams tend to be the most concerned. It is telling that the individuals closest to the technology and with first-hand experience working with new hires are least often the most concerned about hiring entry-level talent.

> **"It takes me about 6 months to find a cloud architect or a senior cloud engineer today. Those kinds of experienced roles are giving me a hard time."**
>
> Vice President of Global Information Technology, technology company with >1,500 employees
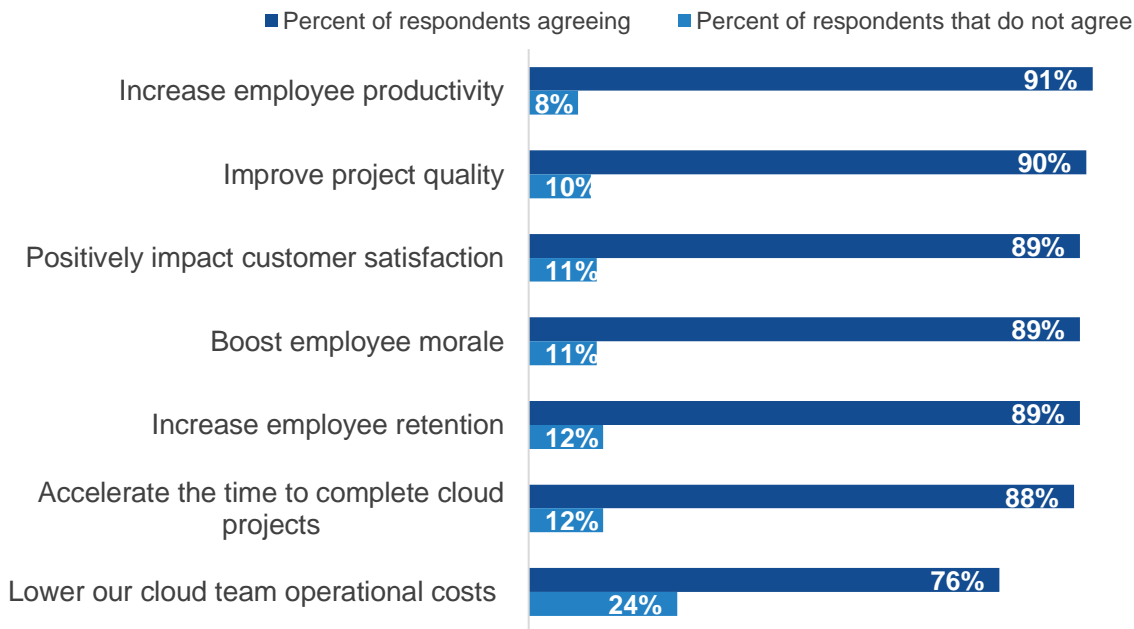
While cloud team leaders have to evaluate the pros and cons of hiring entry-level cloud candidates, the data indicates that the advantages are overcoming concerns. Over 9 in 10 (94%) decision makers reported that they have recently hired a candidate with entry-level cloud skills. Moreover, they believe that 24 months from now, 23% of their cloud talent mix will have entry-level cloud skills.

Rounding Out the Talent Stack with Entry-level Hires Makes a Difference

This study also shows that cloud leaders see value in hiring individuals with entry-level cloud skills. Whether or not an organization has hired entry-level talent, there is broad agreement that this talent pool provides many potential benefits. These include the opportunity to improve productivity, work/project quality, customer satisfaction, and much more (see Figure 5).

Figure 5. Level of Agreement Regarding the Opportunities Presented by Including Entry-level Talent

Whether or not your organization has hired IT and/or application development entry-level cloud talent, what is your level of agreement with the following statement? By broadening the talent pool for cloud projects there is an opportunity to... (Percent of respondents, N=788)

■ Percent of respondents agreeing ■ Percent of respondents that do not agree

Increase employee productivity	91% / 8%
Improve project quality	90% / 10%
Positively impact customer satisfaction	89% / 11%
Boost employee morale	89% / 11%
Increase employee retention	89% / 12%
Accelerate the time to complete cloud projects	88% / 12%
Lower our cloud team operational costs	76% / 24%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Apart from identifying potential benefits of entry-level cloud talent, the research took a deeper dive into the benefits of having a full talent stack that also includes entry-level personnel among intermediate and expert talent. Organizations that followed this hiring strategy saw positive impacts on their cloud operations. Roughly four out of five decision makers reported that their teams are: 1) able to pursue a greater number of projects (82%), 2) better able to allocate staffing budgets (81%), 3) better able to ideate new product ideas or business opportunities (80%), and 4) able to complete cloud migrations faster (79%).

Enterprise Strategy Group
by TechTarget

Entry-level Cloud Talent Amplifies Business Benefits of Cloud Adoption

The benefits of public cloud adoption have previously been investigated, including in this study. Benefits like increased business agility (47%), greater application elasticity (46%), and improvements in 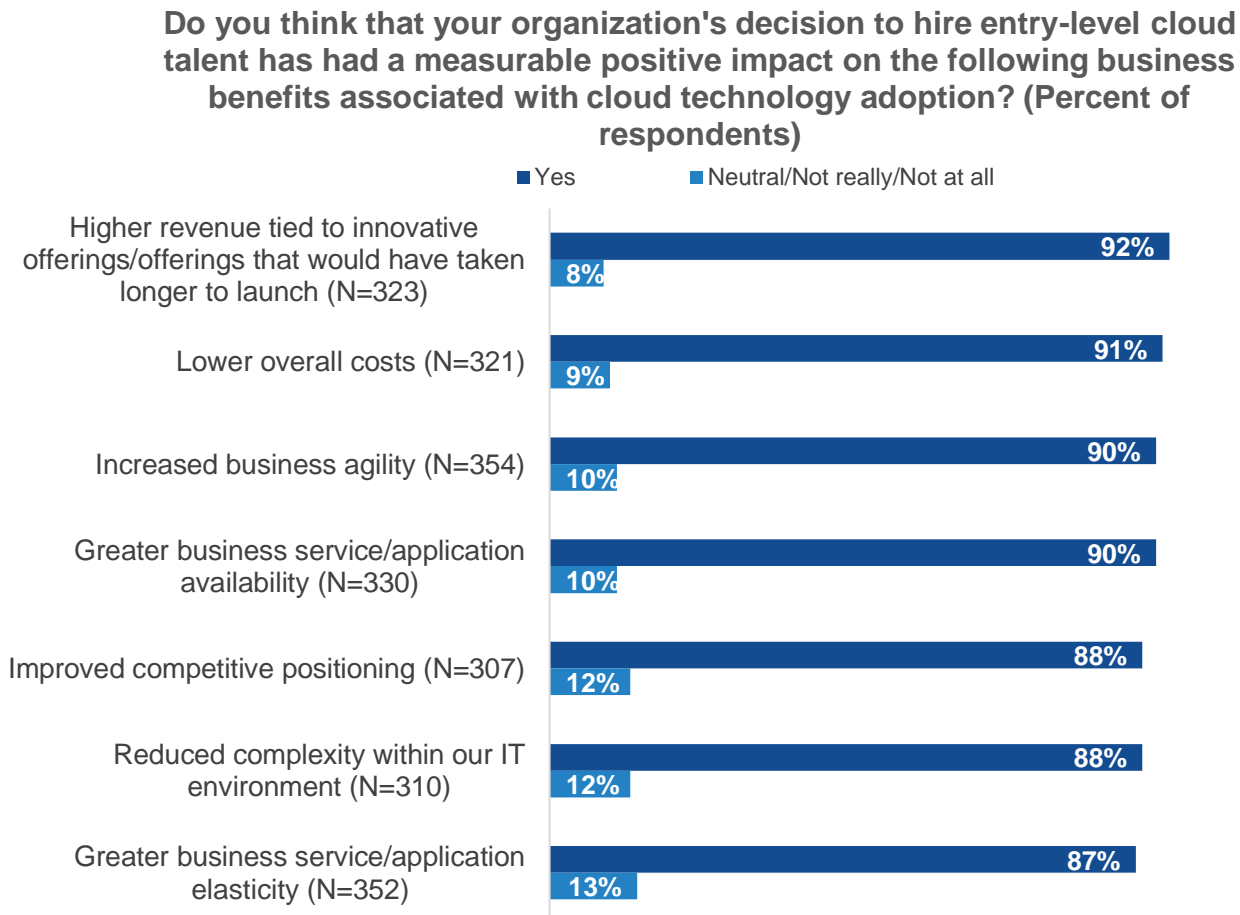application availability and uptime (43%) are widely known. However, we wanted to determine the impacts, if any, of having a full stack approach to cloud talent management on these cloud benefits. We found that an overwhelming number of organizations (92%) said hiring entry-level talent has helped their organization achieve higher innovation revenue from using cloud technologies, 91% said it has helped lower cost, 90% said it has helped increase business agility, and more (see Figure 6).

Given these business outcomes, it should come to no surprise that 90% of organizations report positive ROI from hiring entry-level talent. Moreover, 44% of the C-suite underscore this statement by reporting that these employees deliver "strong positive" ROI (versus 33% of less senior respondents).

> **"Diversity of opinion is a very important point. My team is based all over the world with varied backgrounds… Having diversity helps the team look at the same problem from different angles and get to the best solution. We see this as very important to the company and business success."**
>
> Vice President of Global Information Technology, technology company with >1,500 employees

Figure 6. Measurable Impact of Entry-level Talent on the Business Benefits Enabled by Cloud Technologies

Do you think that your organization's decision to hire entry-level cloud talent has had a measurable positive impact on the following business benefits associated with cloud technology adoption? (Percent of respondents)

■Yes ■Neutral/Not really/Not at all

Benefit	Yes	Neutral/Not really/Not at all
Higher revenue tied to innovative offerings/offerings that would have taken longer to launch (N=323)	92%	8%
Lower overall costs (N=321)	91%	9%
Increased business agility (N=354)	90%	10%
Greater business service/application availability (N=330)	90%	10%
Improved competitive positioning (N=307)	88%	12%
Reduced complexity within our IT environment (N=310)	88%	12%
Greater business service/application elasticity (N=352)	87%	13%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

11

Today's Entry-level Staff Can Become Tomorrow's Cloud Experts

In addition to amplifying cloud adoption benefits, 87% of decision makers reported that hiring entry-level candidates helped them close their cloud skills gap. It has also helped organizations build a "deeper bench" of cloud practitioners who can develop their skills over time through training and certification.

Leaders recognize that this approach to hiring requires investment of time and money for entry-level talent to arrive at their full potential. Thus, they have an expectation that these individuals will pursue both cloud training and certifications to upskill over time. Specifically, 90% of decision makers reported that entry-level cloud staff are either required to, or recommended to, take technical training courses after they are hired. A similar proportion of decision makers (86%) report the same requirement of technical certifications.

> **"Training matters. It's a reflection of your intellectual curiosity. It shows your interest and self-motivation, and that's important."**
>
> Vice President, Information Technology, manufacturing company with 700 employees

The good news is that, combined with upskilling, the majority (53%) of cloud staff hired with entry-level skills have been promoted to more experienced roles within 24 months of being hired.
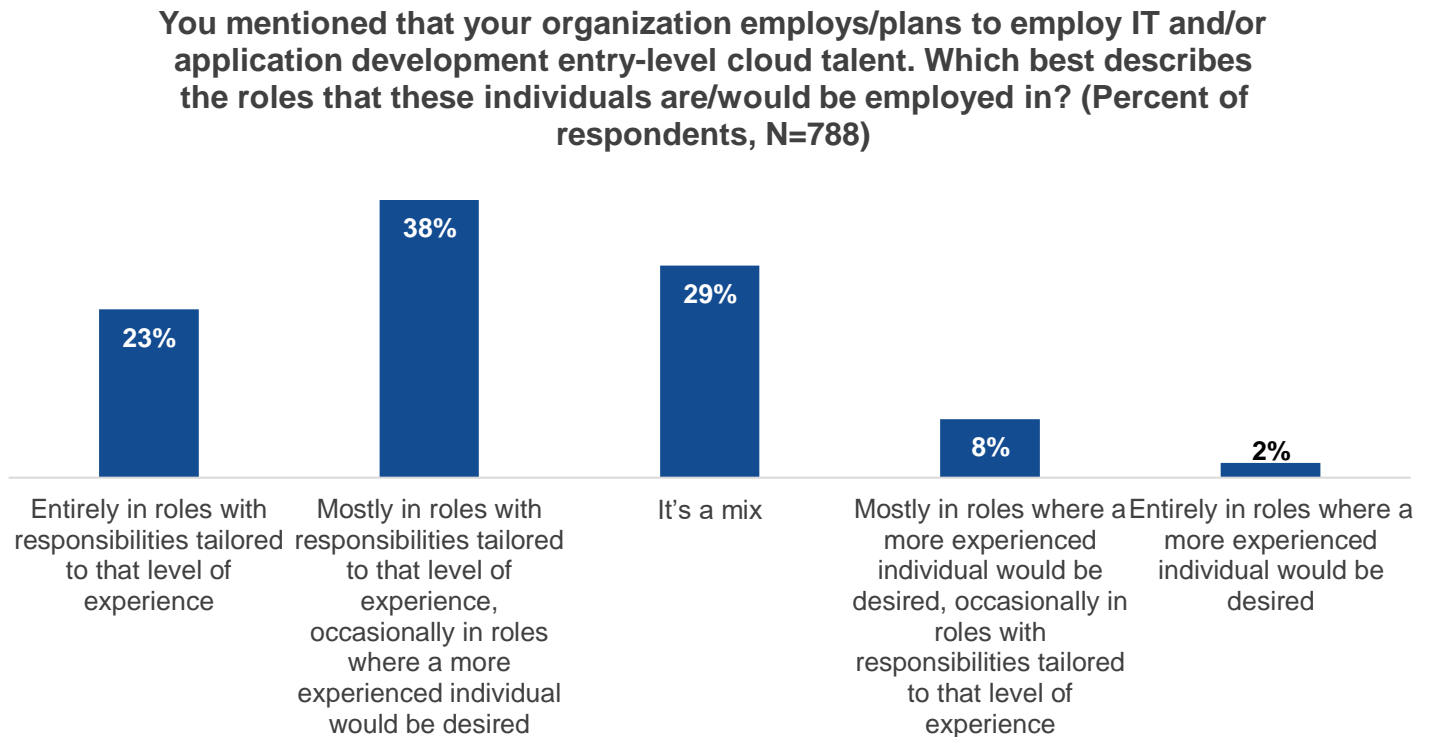
Partnership with HR is Essential to Enabling Entry-level Hiring

This research also provides insight on how hiring managers can engage with their HR teams to develop a full stack approach to cloud talent management. First, organizations that seek to hire entry level talent as part of a full talent stack should do so with a plan. It is essential to fill roles that have been tailored to the experience level of the staff (see Figure 7). This is a critical part of the strategy to get right, as it is the job of leaders to put their team members in the best position to succeed.

Figure 7. Most Organizations Put Entry-level Employees in Roles Tailored to their Level of Experience

You mentioned that your organization employs/plans to employ IT and/or application development entry-level cloud talent. Which best describes the roles that these individuals are/would be employed in? (Percent of respondents, N=788)

Entirely in roles with responsibilities tailored to that level of experience	Mostly in roles with responsibilities tailored to that level of experience, occasionally in roles where a more experienced individual would be desired	It's a mix	Mostly in roles where a more experienced individual would be desired, occasionally in roles with responsibilities tailored to that level of experience	Entirely in roles where a more experienced individual would be desired
23%	38%	29%	8%	2%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Just as critical, the development of these roles takes cross-functional collaboration with the HR team: 88% of decision makers reported that collaboration with the HR team was required in order to align candidate requirements to entry-level cloud roles within IT and application development teams.

Decision makers also say that collaboration is needed in order to prevent the organization from limiting its prospective candidate pool: 77% agree that industry practices for hiring cloud-related talent often overestimate the level of experience needed to deliver value. Resetting expectations takes time and effort, but it is important to shift the systemic hiring practices that hinder organizational success.

According to this research, time spent on collaboration is well worth it as a majority of decision makers (69%) said it was commonplace at their organization to hire or seek candidates that tended to be overqualified. This was prior to the development of roles designed for entry-level staff. This underscores the value of a full-stack approach to cloud talent management. It can help organizations avoid hiring cloud experts for responsibilities that may be accomplished by less specialized or less senior candidates. In turn, this helps organizations reduce labor costs, while also avoiding a scenario where cloud experts may become dissatisfied by responsibilities that are not challenging enough for their skills.

Apart from creating entry-level specific cloud roles, the data shows that many organizations are taking steps to better prepare their entry-level cloud hires for the job. Earlier we noted how the vast majority of organizations either require or recommend that these individuals pursue cloud training and certifications. Topically speaking, respondents most often say training and certification that centers on security (45%), cloud fundamentals (44%), or data analytics (42%) is prioritized to skill up entry-level hires. Many organizations (61%) are going beyond these mandates and recommendations, by also building out training programs specially designed to help accelerate entry-level hires' time to value.

Conclusion

This research leads to several key takeaways for organizations:

1. You may be putting your organization at a disadvantage if you only consider candidates with expert-level cloud skills. Most of your peers and competitors (94%) are taking a more optimized approach to cloud talent management by employing a full talent stack.

2. However, taking a full-stack approach to cloud talent management does require the organization be forward-looking regarding training and certification to give these hires a pathway to greater skills and opportunities. This helps the organization increase the return on investment from these hires, while also reducing employee turnover.

3. Hiring managers should plan to collaborate extensively with their HR counterparts, both in defining the roles and responsibilities for entry-level staff and also in ensuring that job requirements (e.g., prior experience, educational requirements, etc.) are well aligned to the tasks the individual will be asked to accomplish. This helps mitigate any potential misalignments in capabilities, while also allowing the organization to maximize its labor cost advantage from hiring entry-level talent.

How AWS Can Help

AWS Education Programs prepare diverse learners for in-demand, entry-level cloud roles around the world. With hands-on experience in the AWS Cloud, graduates have the skills and knowledge they need to add value on the job. By tapping into a qualified pool of graduates, you can optimize your recruiting efforts and make onboarding new talent efficient and cost-effective.

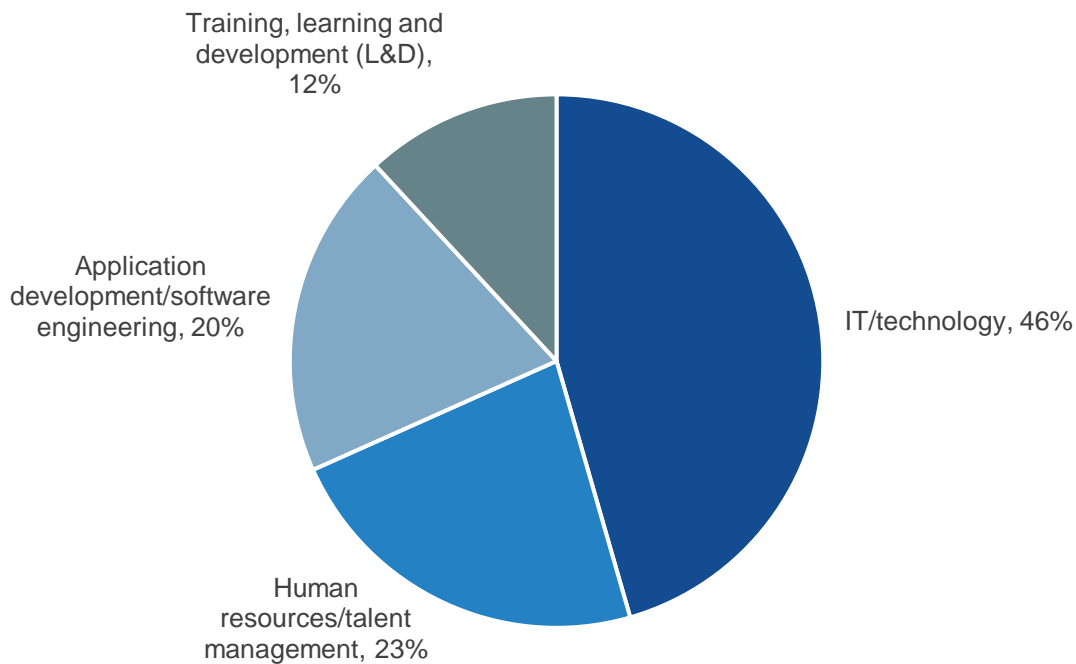**Connect with entry-level cloud talent**

Research Methodology and Respondent Demographics/Firmographics

ESG conducted a comprehensive survey among IT and software engineering hiring managers and human resources stakeholders influential in hiring decisions for roles related to cloud technologies. Organizations from various regions were represented, including U.S. (32%), EMEA (U.K. [13%], Germany [7%], France [5%], and South Africa [6%]), Asia-Pacific (China [7%], India [5%], Indonesia [6%], Australia [4%], and New Zealand [1%]), and Brazil (14%). Organizations represented skewed toward enterprises, with 69% having 1,000+ employees and 31% having 100-999 employees. The survey was fielded in September 2022. All respondents were provided an incentive to complete the survey.

After applying screening criteria and data quality control best practices, a final sample of 788 respondents completed the survey. Figure 8 - Figure 12 detail the demographics and firmographics of the respondent base. Note: The margin of error of a sample of N=788 is + or – three percentage points. Statistical significance testing conducted in the course of this analysis was at a 95% confidence level. Totals in figures and tables throughout this report may not add up to 100% due to rounding.
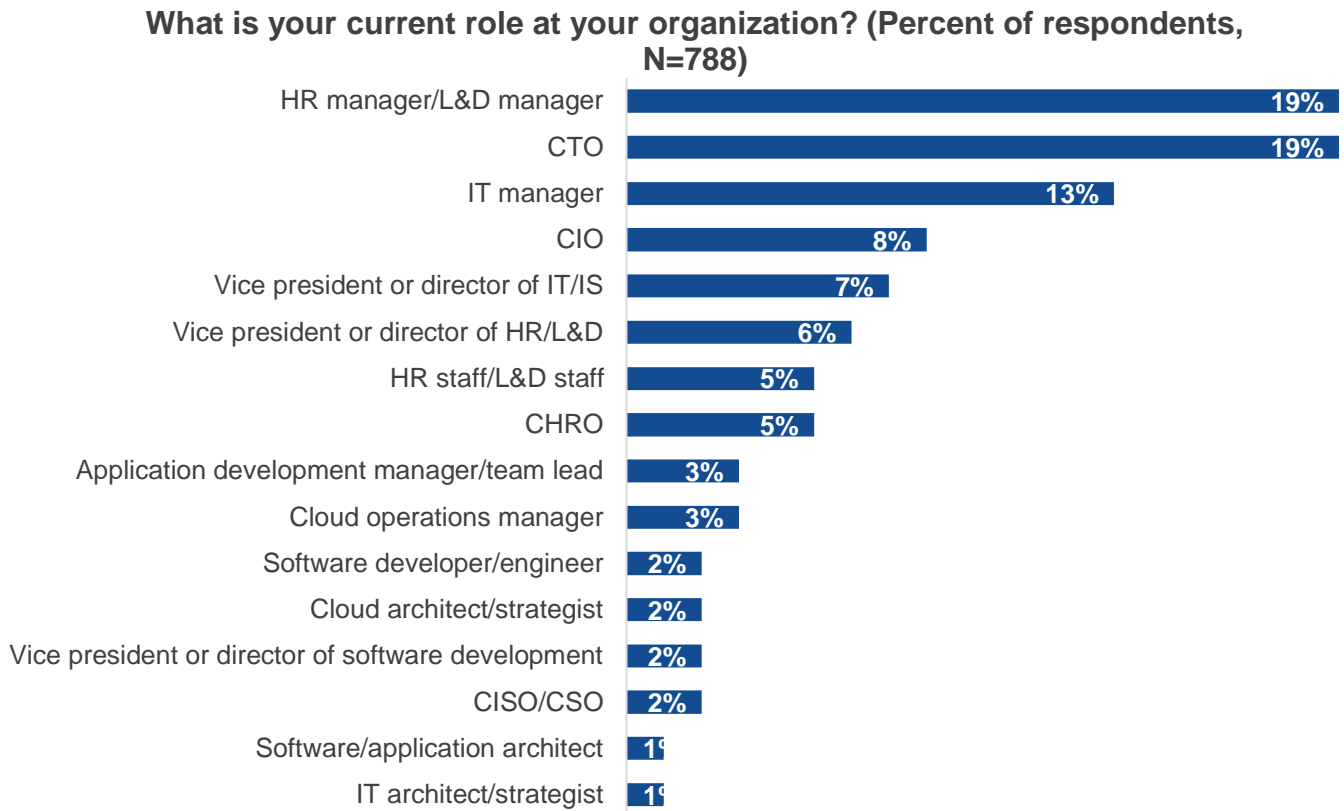
Figure 8. Respondents, by Job Function

Which of the following best describes your current job function? (Percent of respondents, N=788)

- Training, learning and development (L&D), 12%
- Application development/software engineering, 20%
- IT/technology, 46%
- Human resources/talent management, 23%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Figure 9. Respondents, by Job Title

What is your current role at your organization? (Percent of respondents, N=788)

Role	Percent
HR manager/L&D manager	19%
CTO	19%
IT manager	13%
CIO	8%
Vice president or director of IT/IS	7%
Vice president or director of HR/L&D	6%
HR staff/L&D staff	5%
CHRO	5%
Application development manager/team lead	3%
Cloud operations manager	3%
Software developer/engineer	2%
Cloud architect/strategist	2%
Vice president or director of software development	2%
CISO/CSO	2%
Software/application architect	1%
IT architect/strategist	1%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Figure 10. Respondents, by Hiring Influence

In which of the following ways, if any, have you influenced hiring decisions for cloud-focused talent at your organization over the last 36 months? (Percent of respondents, N=788, multiple responses accepted)

I defined/helped define talent needs and shaped hiring priorities for our team/department/organization	73%
I have interviewed candidates and influenced hiring decisions	68%
I defined/helped define our recruitment strategy	66%
I have written cloud technology job and skill requirements	63%
I have been a hiring manager	36%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Figure 11. Respondents, by Company Size

How many total employees does your company have worldwide? (Percent of respondents, N=788)

100 to 249	250 to 499	500 to 999	1,000 to 1,499	1,500 to 1,999	2,000 to 2,499	2,500 to 4,999	5,000 to 9,999	10,000 to 19,999	20,000 or more
5%	9%	17%	14%	5%	6%	14%	13%	7%	10%
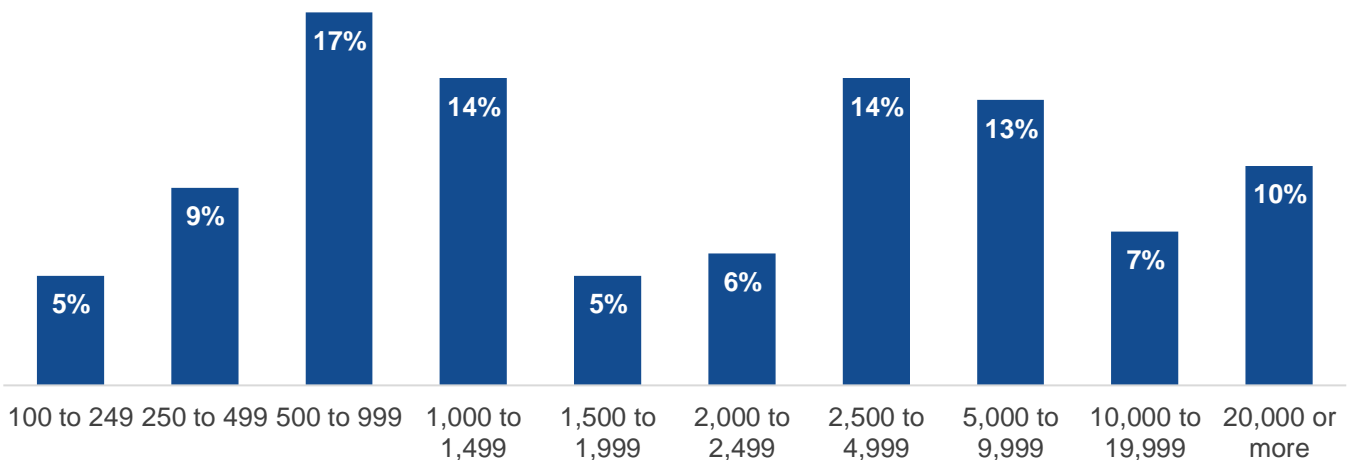
Source: Enterprise Strategy Group, a division of TechTarget, Inc.

Figure 12. Respondents, by Industry

What is your company's primary industry? (Percent of respondents, N=788)

Other, 11%
Communications and media, 3%
Healthcare, 6%
Government, 6%
Retail/wholesale/e-commerce, 8%
Financial, 10%
Business services, 10%
Technology, 30%
Manufacturing, 17%

Source: Enterprise Strategy Group, a division of TechTarget, Inc.

About Enterprise Strategy Group
Enterprise Strategy Group is an integrated technology analysis, research, and strategy firm that provides market intelligence, actionable insight, and go-to-market content services to the global IT community. © TechTarget 2023.

contact@esg-global.com
www.esg-global.com