

INDUSTRY INSIGHTS

Application Performance Monitoring in the New Normal



**SURVEY
REPORT**
2021

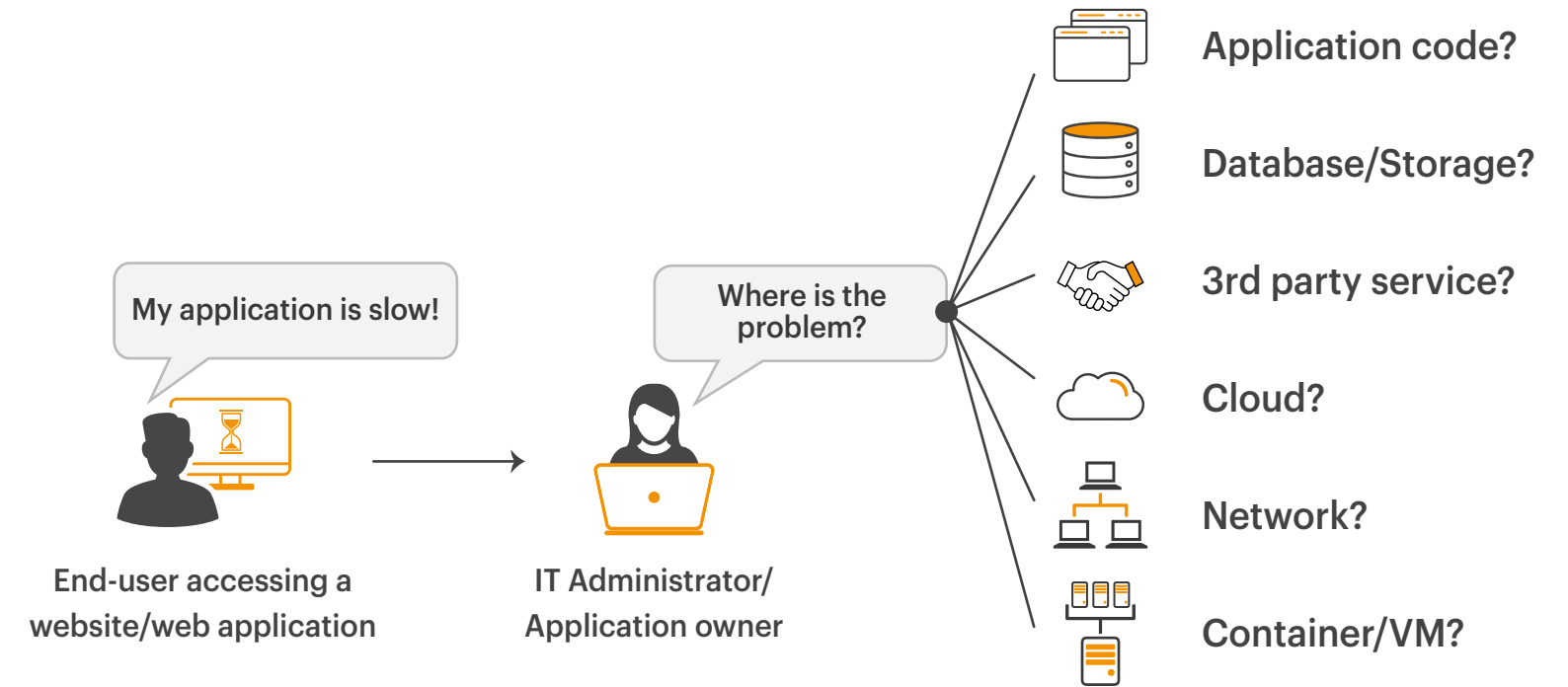
Application Performance Monitoring (APM)

IT services have grown in functionality and capability over the years. At the same time, businesses have become increasingly reliant on these services. IT service downtime and failure results in thousands of dollars of lost revenue, loss of customer goodwill, and reputation.

Application Performance Monitoring (APM) is the ability to track the performance of IT services and to ensure that they meet the needs of businesses.

- To ensure that IT admins detect problems before users complain, digital experience monitoring (DEM) is required.
- When a problem is detected, diagnosis must be quick and accurate. This is where capabilities like application tracing, AIOps, root-cause diagnosis, etc. come in.
- APM also provides insights for optimization and capacity planning that can deliver significant ROI to organizations.

The growing adoption of cloud and container technologies is introducing new blind spots that APM tools need to handle.



APM – Solving today’s toughest IT issue: “why is my application slow?”

A Pivotal Period for APM

The Covid pandemic has severely affected most organizations. With the majority of people working from home, managing remote workers has been challenging.

Compounding these challenges is that the IT teams are also remote which makes proactive detection and diagnosis of problems even harder. The extensive use of work from home has also highlighted the role of IT in supporting businesses and has put IT service performance in the limelight.

About this Survey

eG Innovations and DevOps Institute conducted this survey between July and September 2021 to shed light on the following topics:

- Determine which application platforms, cloud technologies and containerization technologies organizations used
- Track the state of application performance management today
- Highlight the challenges and changes that organizations had to make due to the pandemic
- Reveal the key areas where application developers/owners, Site Reliability Engineers (SREs), DevOps and IT professionals need help

Some analysts consider APM in the context of web applications alone. As a variety of different applications are being used in corporate networks today, this survey focuses on the broader usage of APM – for any type of business-critical application.

About this Report

This report is a compilation of the responses of **900+** app developers, SREs, DevOps and IT operations professionals from across the world. 72% of the participants were v practitioners - i.e., IT professionals who use APM technologies daily.

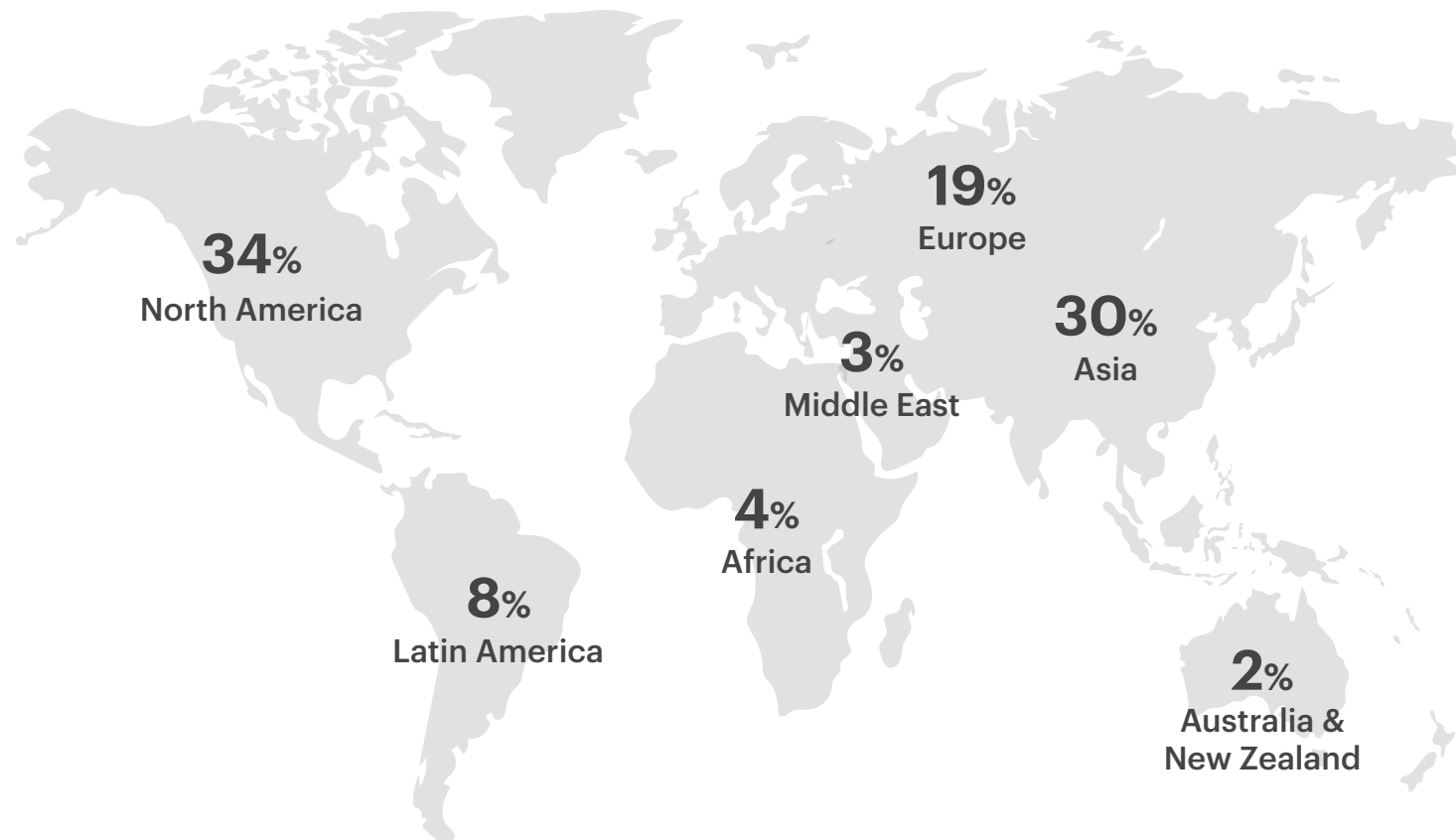
If you are an IT professional working with any application technology, whether SaaS, on-premises, proprietary, or COTS, you will find the key APM analysis, learnings and trends presented in this report useful.

Our thanks to the IT community who participated in this survey.



How the Survey was Conducted

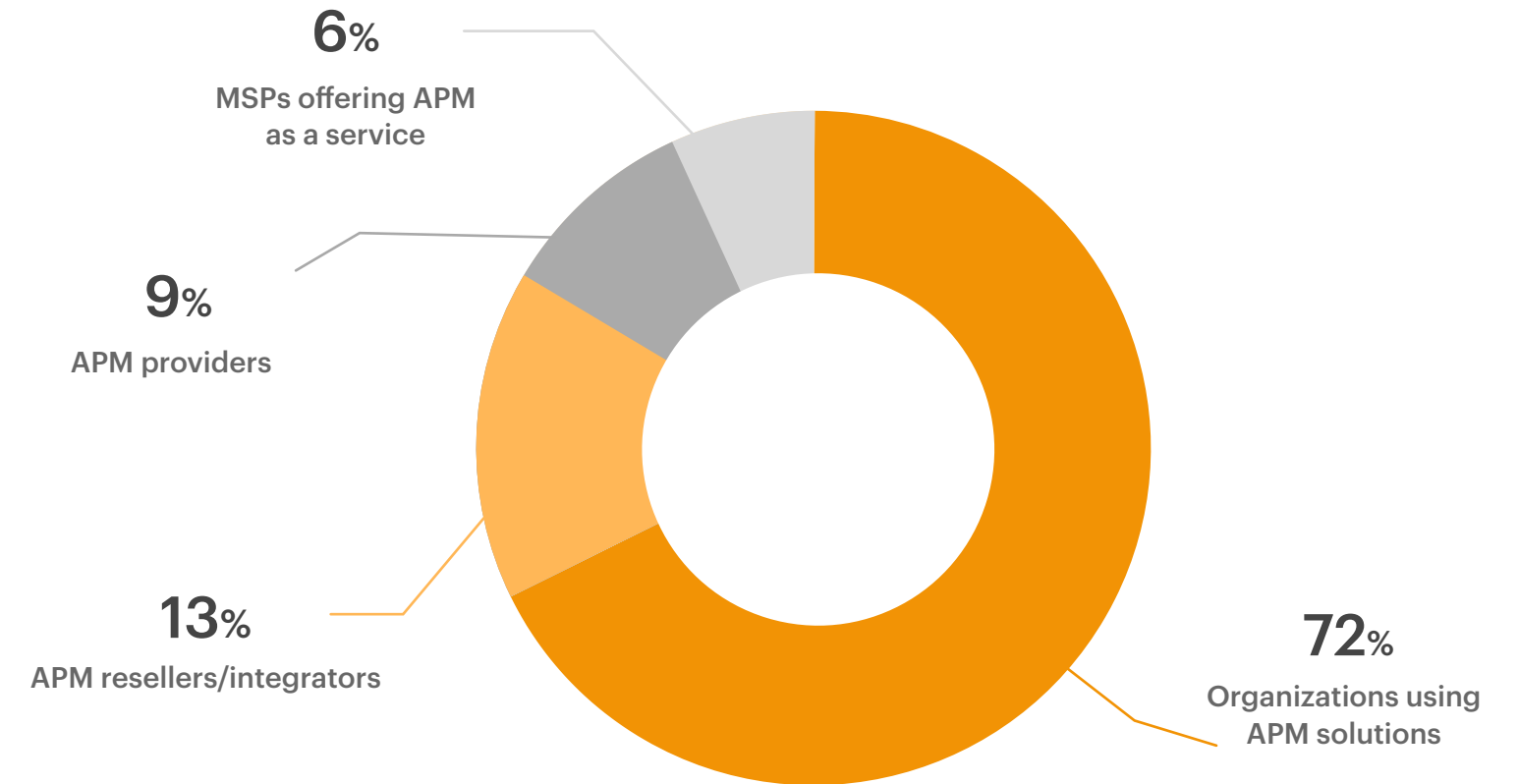
- The survey was conducted online. We reached out to IT professionals over email, online communities, Twitter, LinkedIn and other forums.
- The respondents spanned several key IT roles including app developers, SREs, DevOps, IT operations, IT architects and more.
- All the key geographies were well represented in the responses.



Geographical distribution of survey respondents

A team of professionals with expertise in APM solutions analyzed all the data collected to provide meaningful insights.

All the responses have been analyzed for consistency. Incomplete responses and suspected fraudulent responses were not considered when compiling the results.



Breakdown of respondents' organizations based on their connection/relationship with APM

Focus Areas of the Survey



1. About IT Applications and Infrastructures




2. How the Pandemic Affected APM Strategies





3. How APM Solutions are being used


Key Findings

IT Applications and Infrastructure


 **81%** of respondents rate web applications as being the most business-critical of their applications.

 **Java and Microsoft .NET** are the most popular programming languages/platforms in use today.

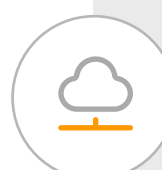
 **Microservices and DevOps technologies** are being deployed now and will be widely used in the future.


 **Virtual servers** are the most popular platforms for hosting applications. Container technologies are seeing adoption, with many preferring to use these technologies in the cloud.

Cloud Adoption

 **Hybrid cloud is the most common form of application hosting.**
88% of respondents have applications deployed in the cloud and 67% have hybrid cloud deployments.

 **AWS is the most popular public cloud provider,** having a 10% lead over Microsoft Azure.

 **Cloud instance is the most popular cloud service.** Collaboration and database services rank as the next two.

 **71%** of respondents are unhappy with their cloud provider's monitoring capabilities. AWS users have more concerns about monitoring gaps and cost of monitoring than Azure users.

Key Findings

Impact of the Pandemic on APM



19%

of organizations adopted APM tools for the first time during the pandemic. 66% saw changes in their deployment during the pandemic.



41%

of respondents feel that APM tools have become more important in the last year.



34%

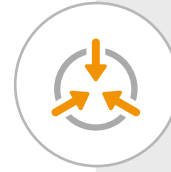
felt that management has paid more attention to the performance of applications in the last year.

Use of APM Tools



74%

of respondents are using 2-5 monitoring tools to get an end-to-end view of their applications and infrastructure.

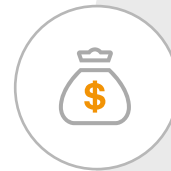


89%

of respondents see converged application and infrastructure monitoring as being necessary for their organization. Only 11% already have this capability deployed.



Customizable dashboards and ease of installation and use are the top capabilities expected from APM tools.



High licensing cost of APM tools is the main challenge organizations are facing.



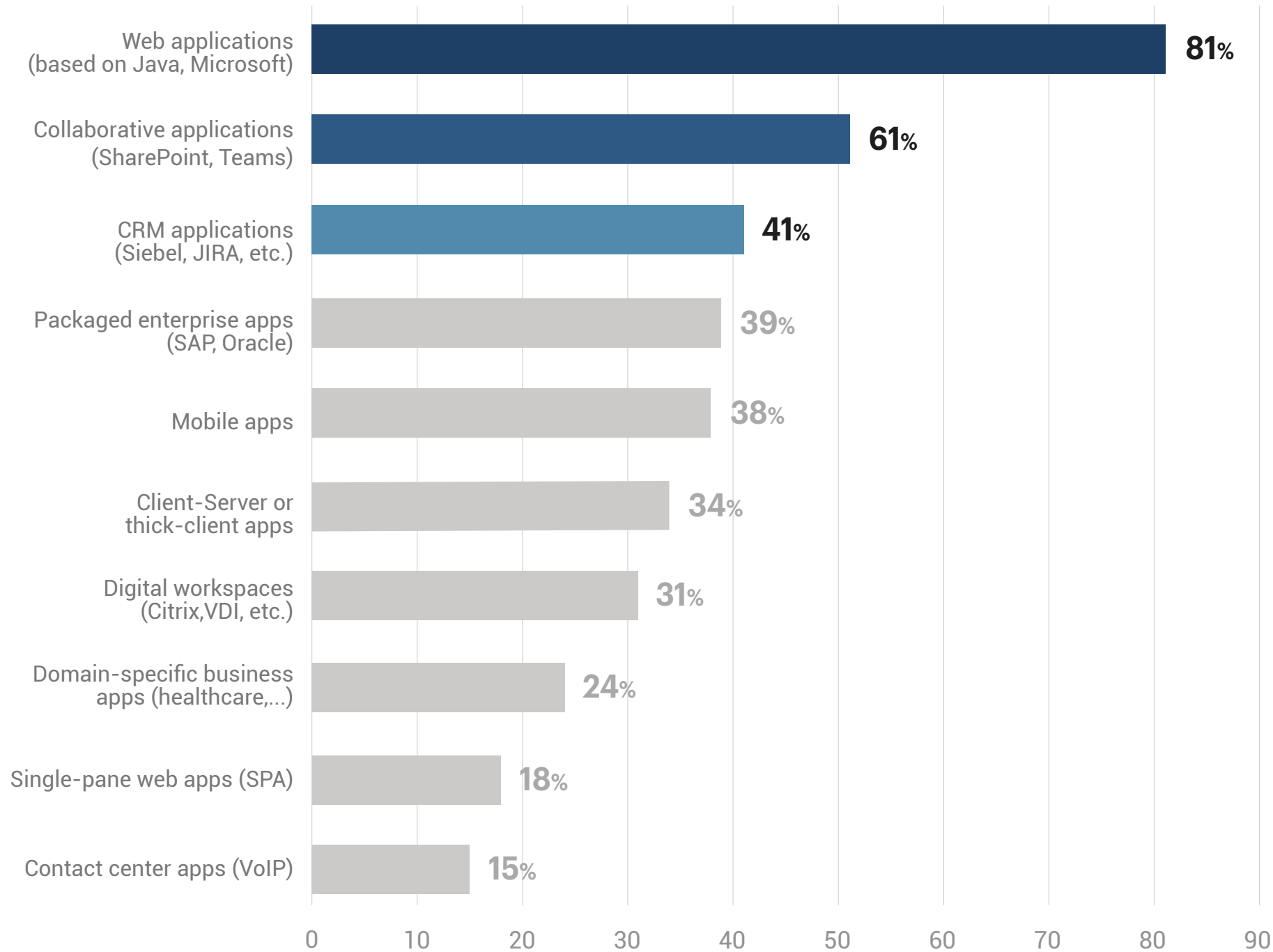
Respondents expect APM tools to provide a single pane of glass across the IT landscape, including application, network, infrastructure, etc.


About IT Applications and Infrastructure





1. What are the key business-critical IT application technologies that your organization uses?

Ranking of key business-critical IT application technologies



 **81%** see web applications as being the most business-critical.

 **61%** see collaborative apps (unified communications, file sharing, email, etc.) as key for their business.

 **41%** rate CRM applications as important. This is not surprising as CRM applications have wider applicability as compared to domain-specific applications.

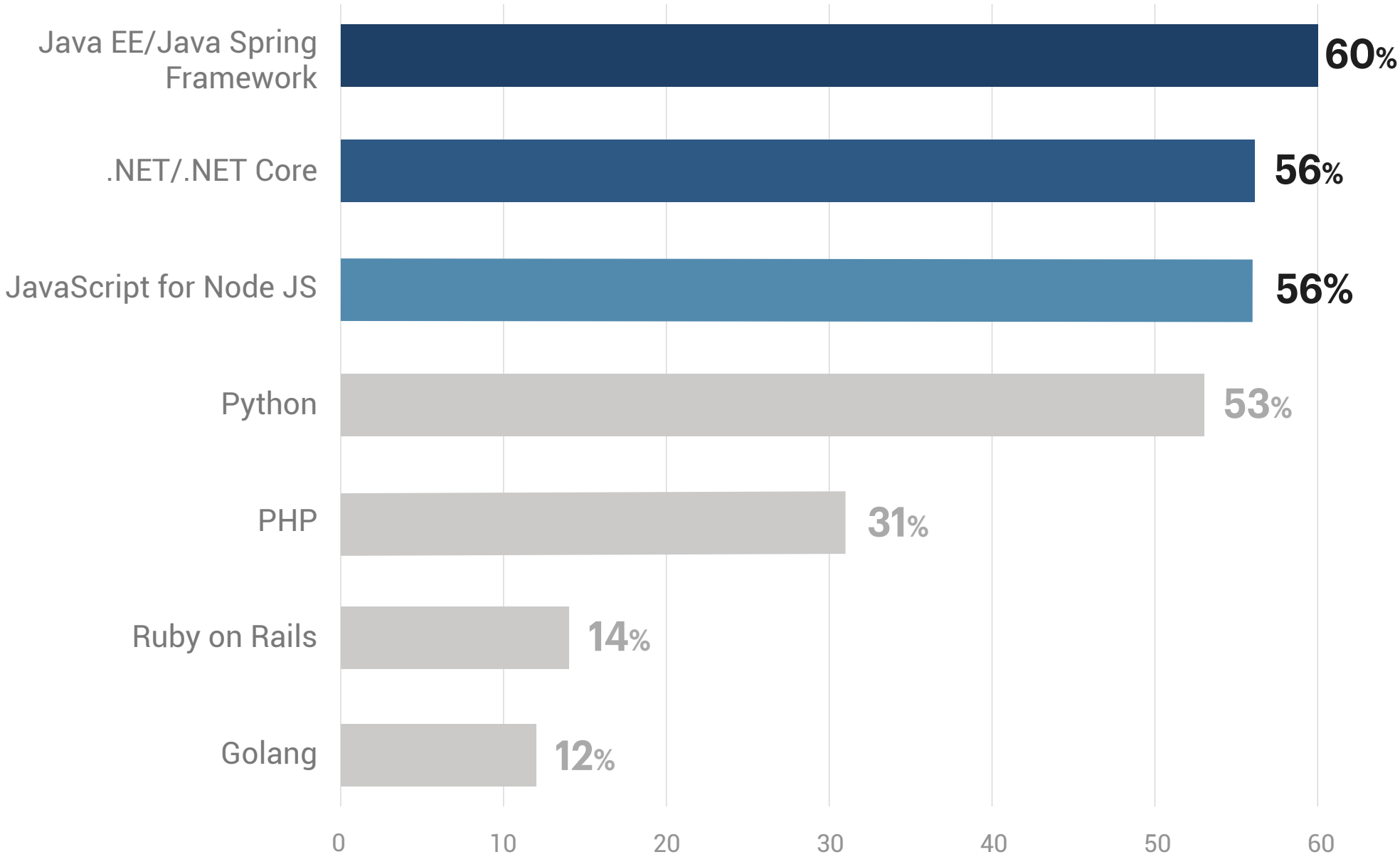
31% of respondents are using digital workspaces to support secure, remote access to corporate networks.

WHILE **34%** of respondents have client-server and thick-client applications, less than 1% have these legacy applications exclusively in use.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

2. What are the programming languages/platforms used for your key applications?


Top programming languages/platforms in use



60% are using Java technologies for key applications.



56% are using Microsoft .NET/.NET Core for key applications.

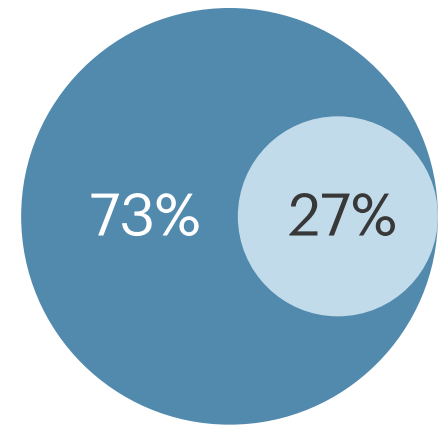
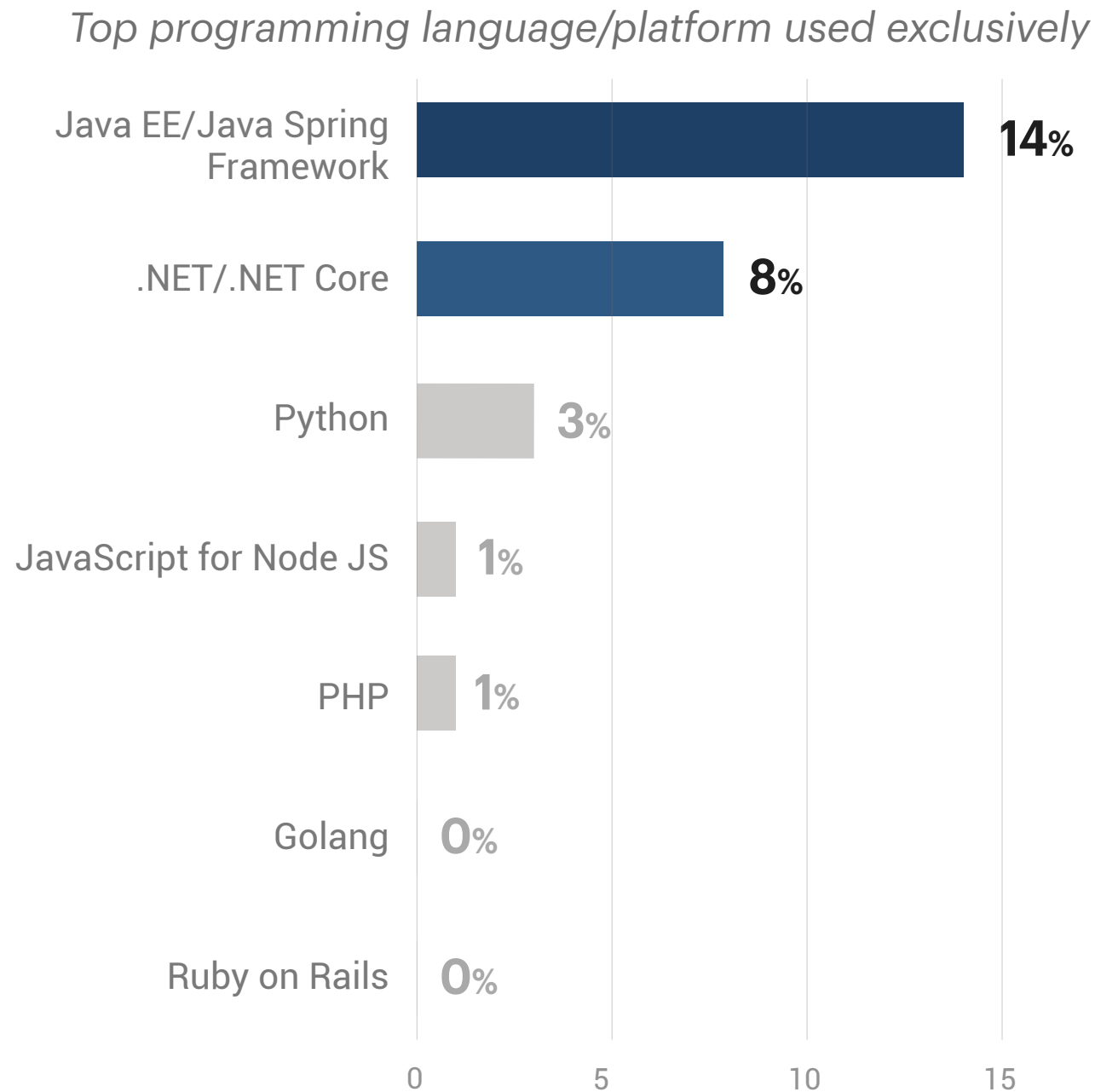


Popularity of Node.js is growing. It is among the top 3 technologies used.

PHP, Ruby on Rails, and Golang have lower adoption compared to the other languages/platforms.

Respondents could select multiple answer options therefore, the percentages do not add up to 100.

2. What are the programming languages/platforms used for your key applications?



73% of the respondents are using more than one programming language/platform for their key applications.

● Using more than 1 language/platform

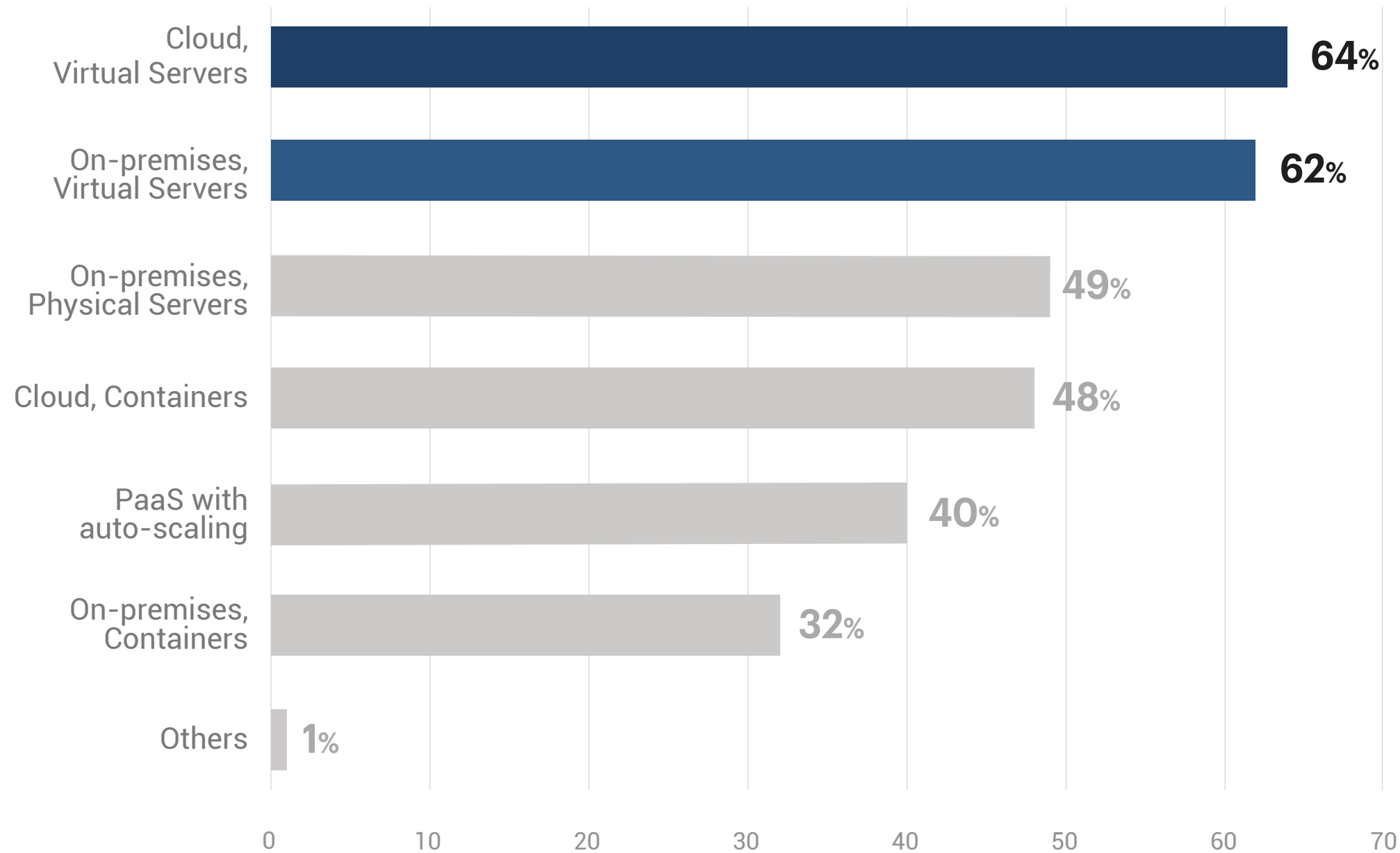
● Using only 1 language/platform

Java and Microsoft .NET are the two most popular choices when respondents used one programming language/platform exclusively.

Node.js is rarely used as the only programming platform. It is widely used as an additional technology in Java and Microsoft .NET deployments.

3. Which of these platforms are used to host your applications?

Top platforms used to host applications



Virtual servers - on-premises and in the cloud - are the popular platforms for hosting key applications.

49%

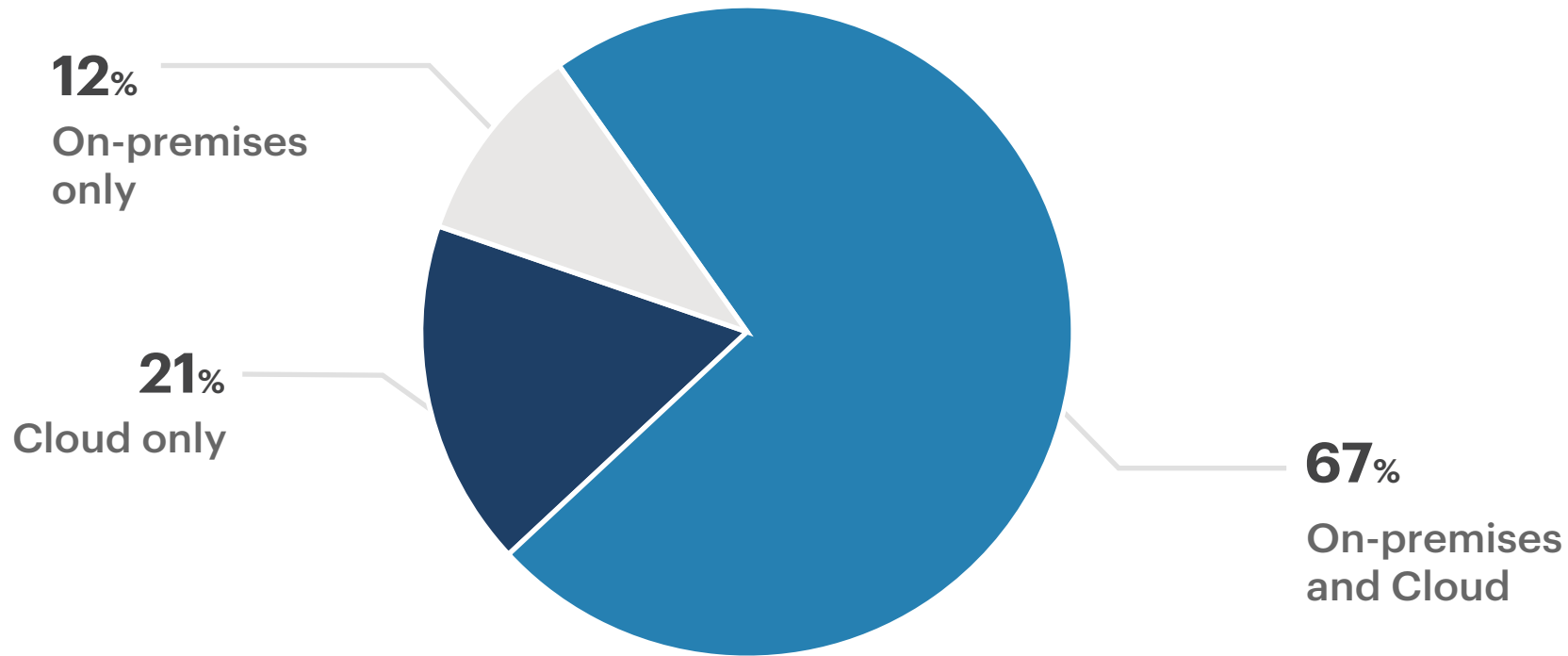
of respondents are still using physical servers to host applications.



Container technologies are being adopted on a broader scale in the cloud than they are on-premises.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

3. Which of these platforms are used to host your applications today?



APM technologies must account for cloud-native characteristics of applications.

12% of respondents are using only on-premises applications.

On-Premises usage

79% have some business applications hosted on-premises.

40% of these have started using container technologies.

Cloud usage

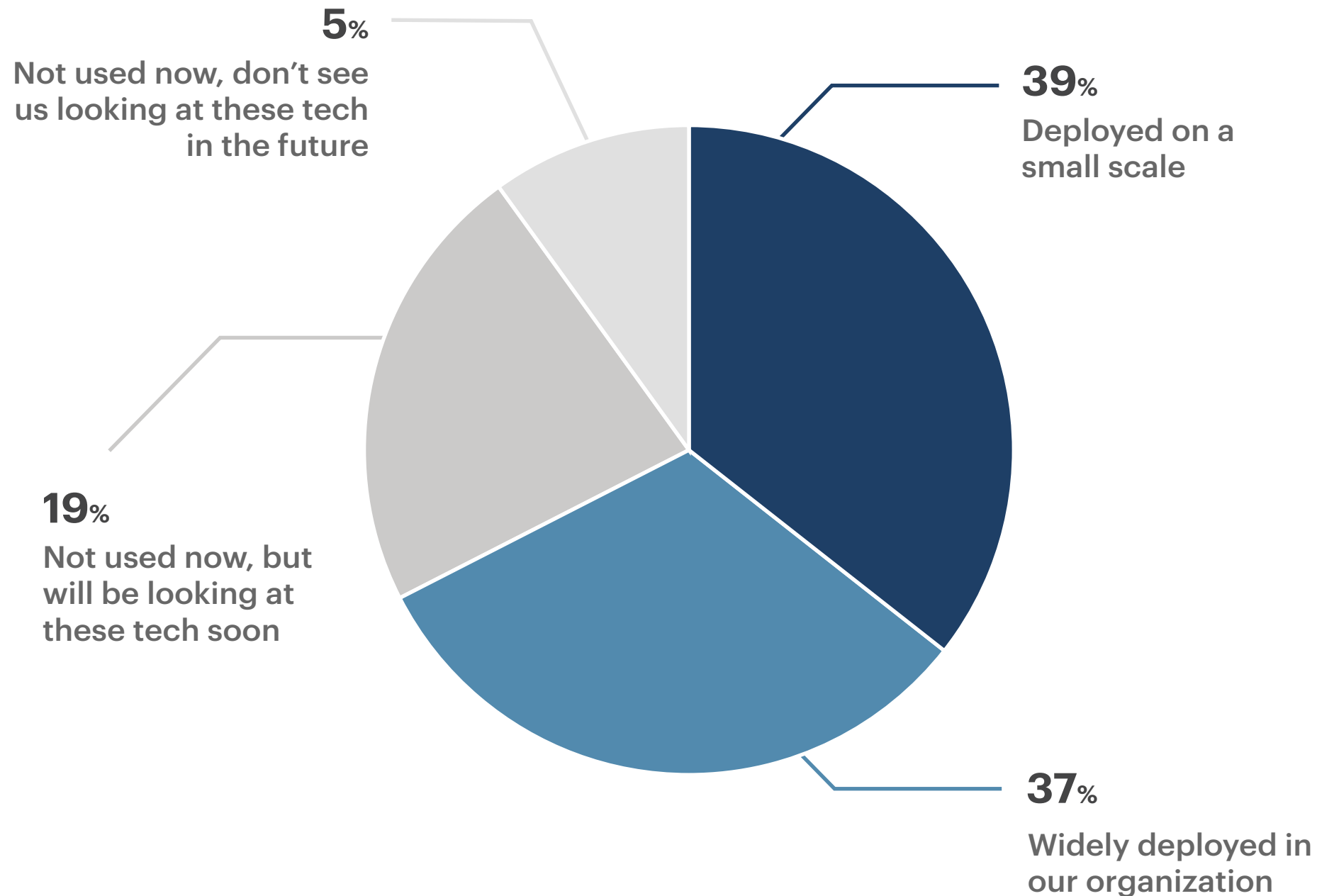
88% are using cloud technologies in some form to host key applications.

Of these:

- **24%** are using only virtual servers.
- **7%** are using only PaaS.
- **8%** are using only containers.

4. At what stage is your organization in the adoption of microservices and DevOps technologies?

Stages of adoption of microservices & DevOps technologies



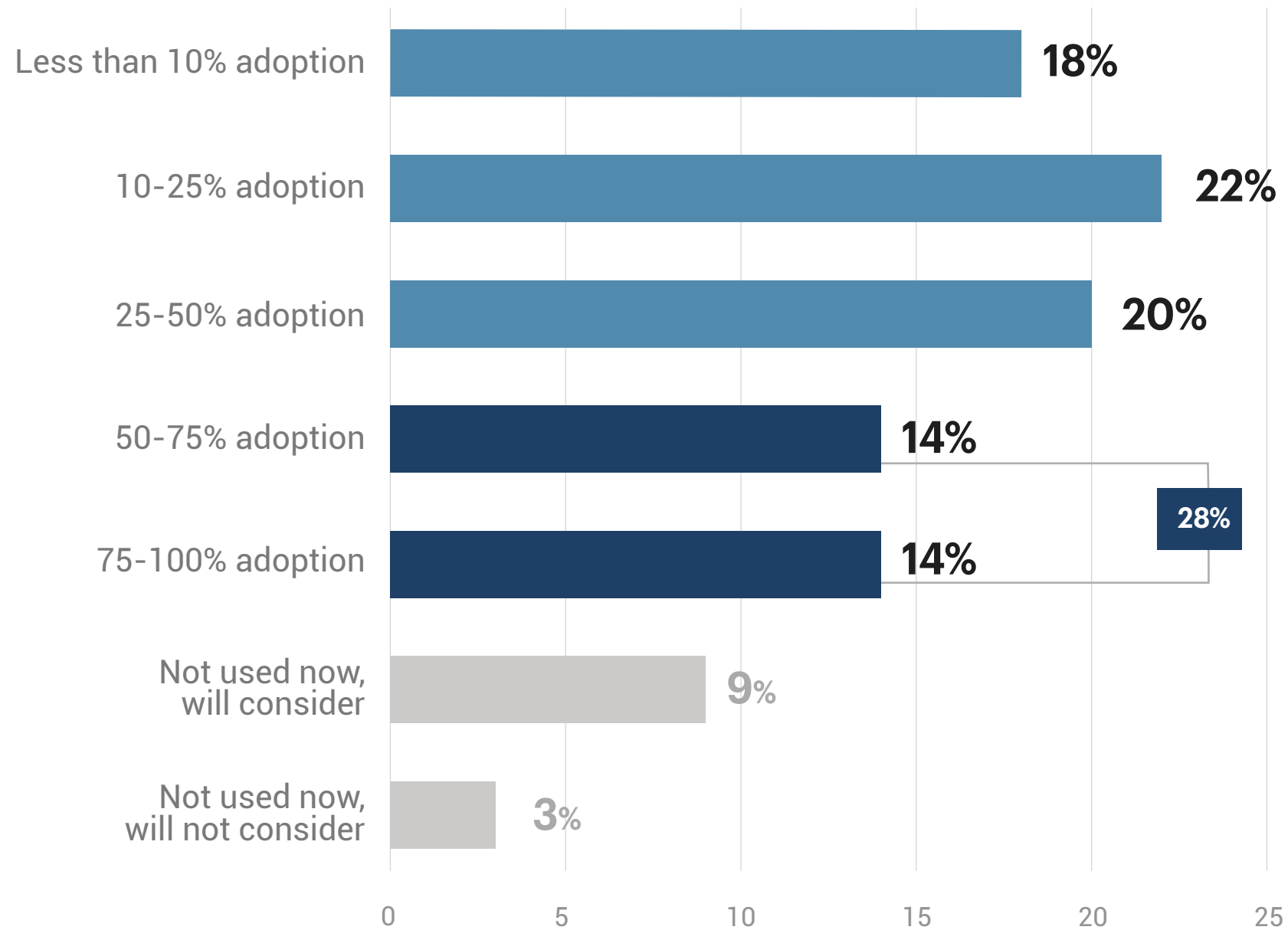
Microservices and DevOps technologies are here to stay.

95% of the organizations either have adopted or will soon be considering microservices and DevOps technologies.

37% of the respondents already have microservices and DevOps deployed widely in their organization.

5. At what stage is your organization in the adoption of public cloud services (AWS, GCP, Azure, etc.)?

Public cloud service adoption trend



28%

of organizations have more than 50% adoption of public cloud services.

88%

of the organizations have already adopted public cloud services.

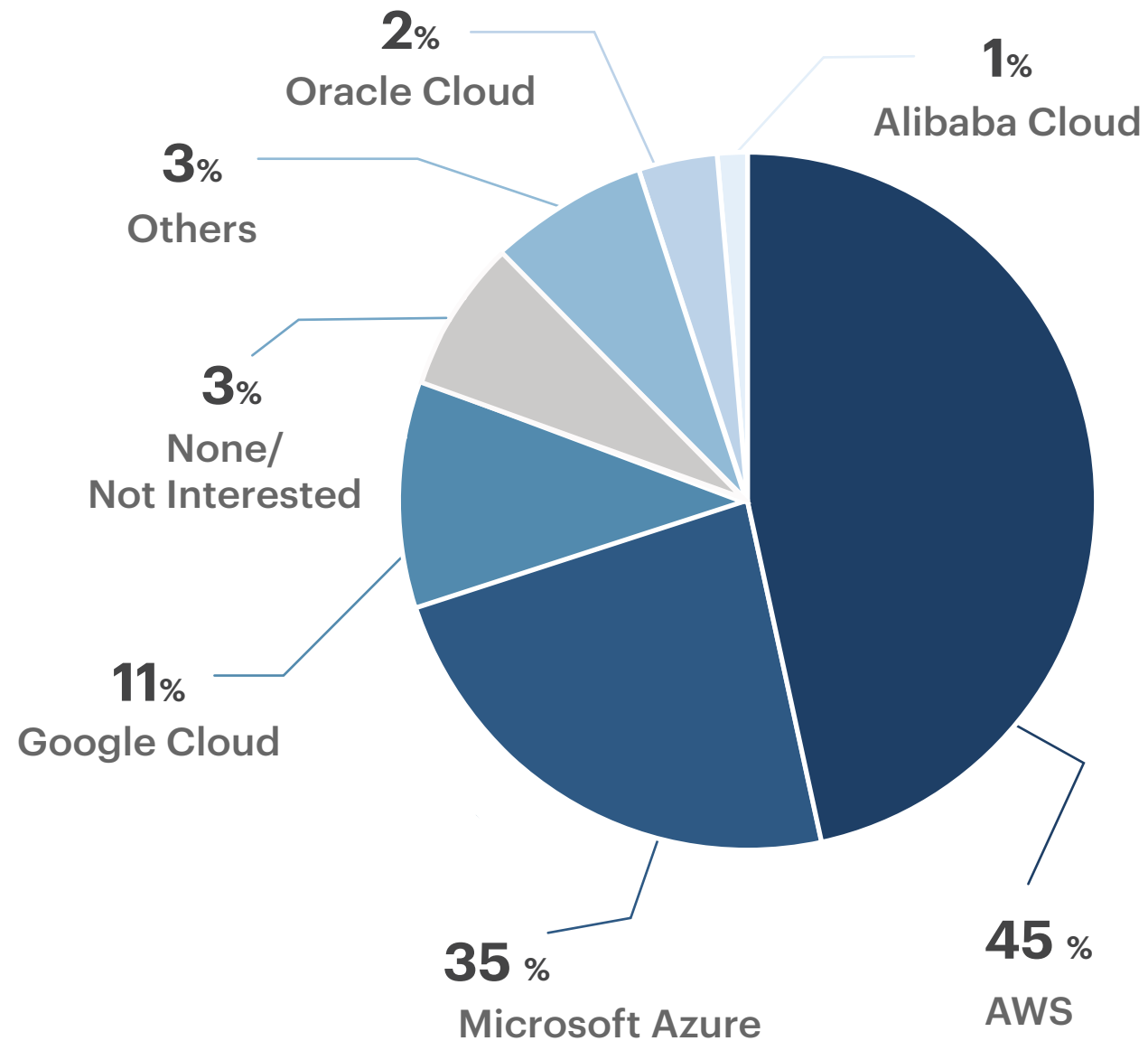
ONLY


3%


are not using and are unlikely to use public cloud services in the future.


6. Which public cloud provider do you use the most?

Popularity of different public cloud providers



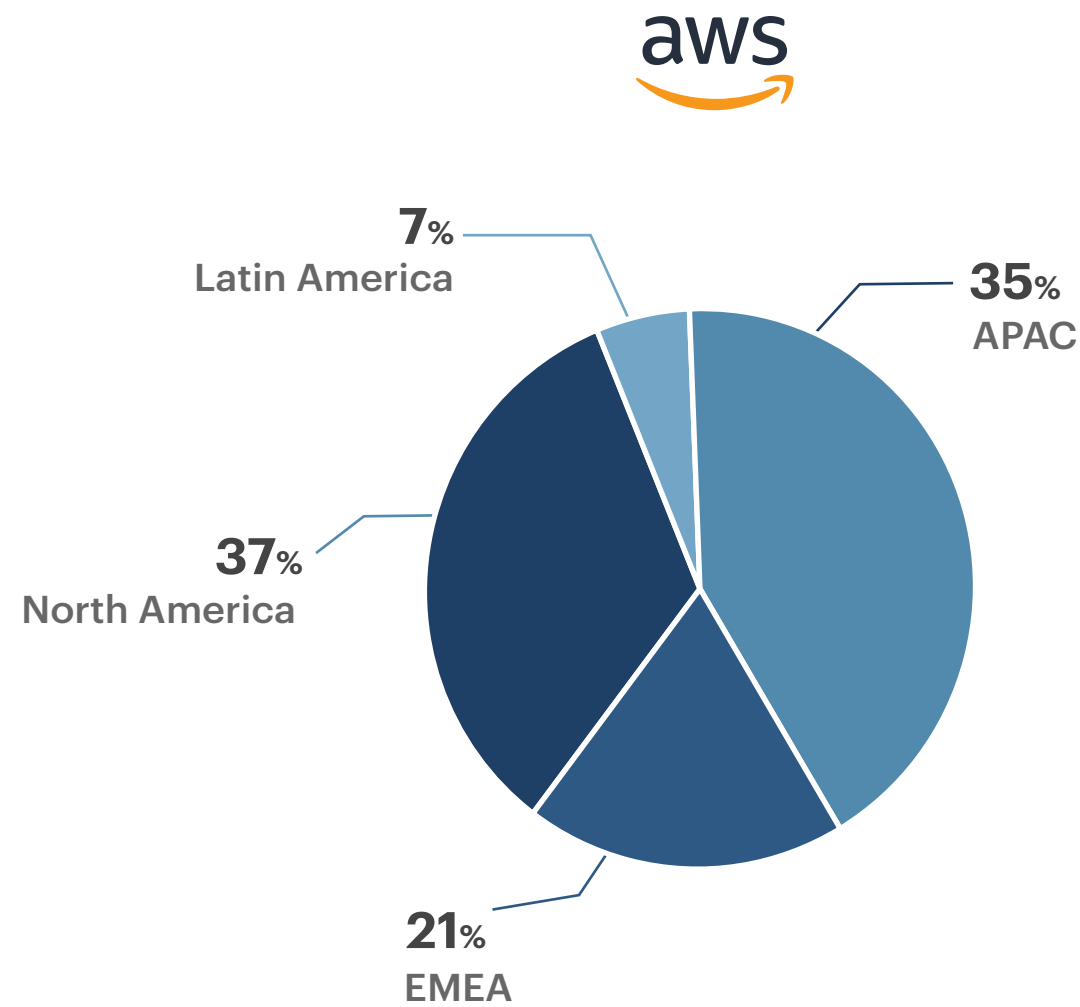
 **45%** of the respondents have AWS as their most used public cloud provider.

 **35%** of the respondents said Microsoft Azure is their most used public cloud provider.

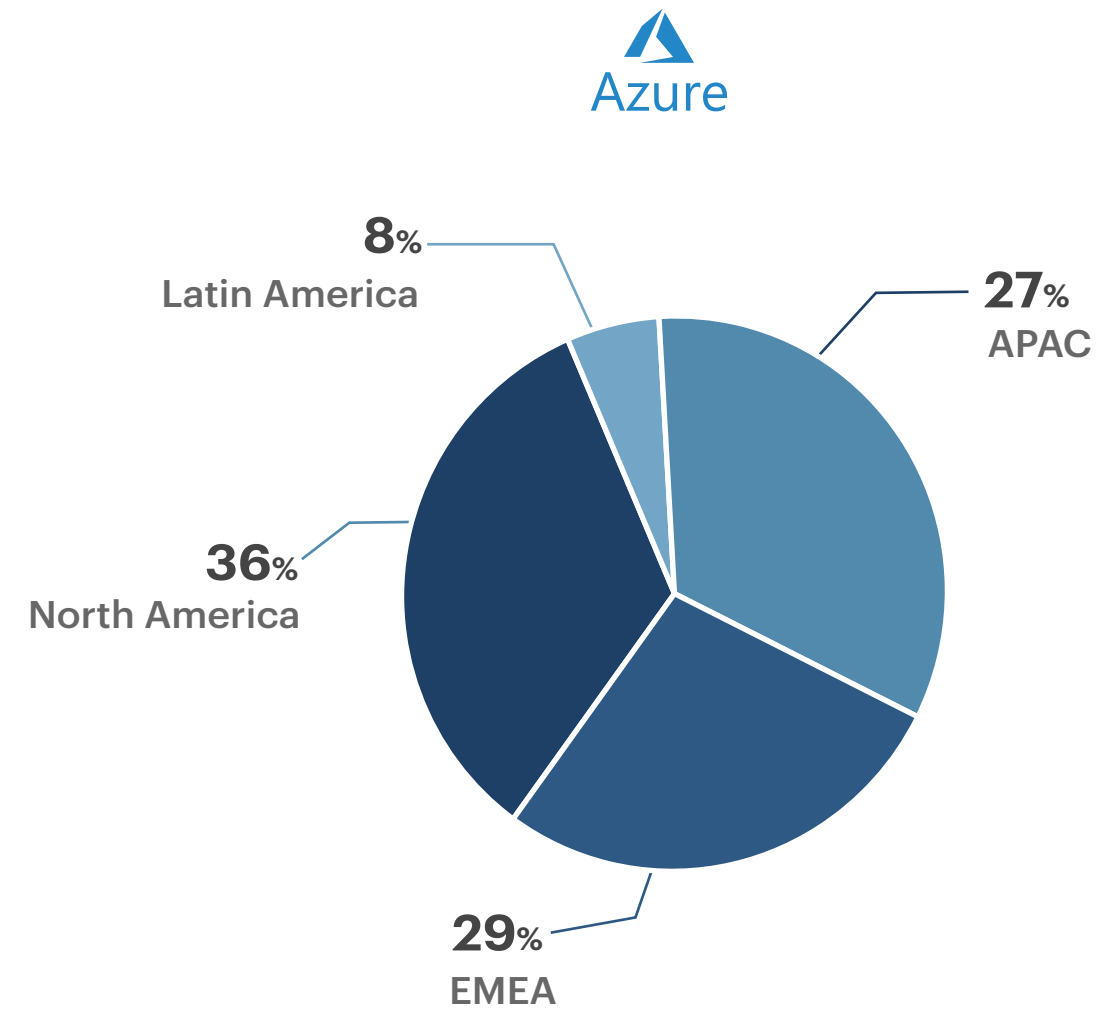
 Google Cloud is a distant third and adoption of other cloud providers is very low.

6. Which public cloud provider do you use the most?

Region-wise split of public cloud provider usage

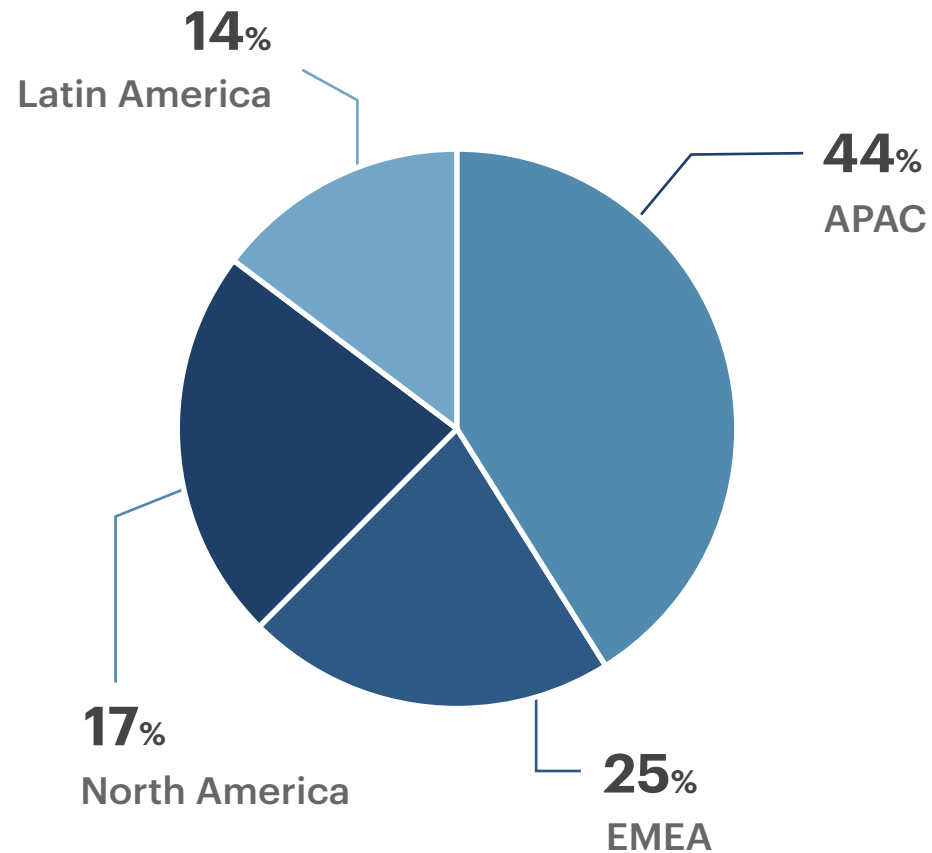


AWS (35%) has more deployments in Asia-Pacific.

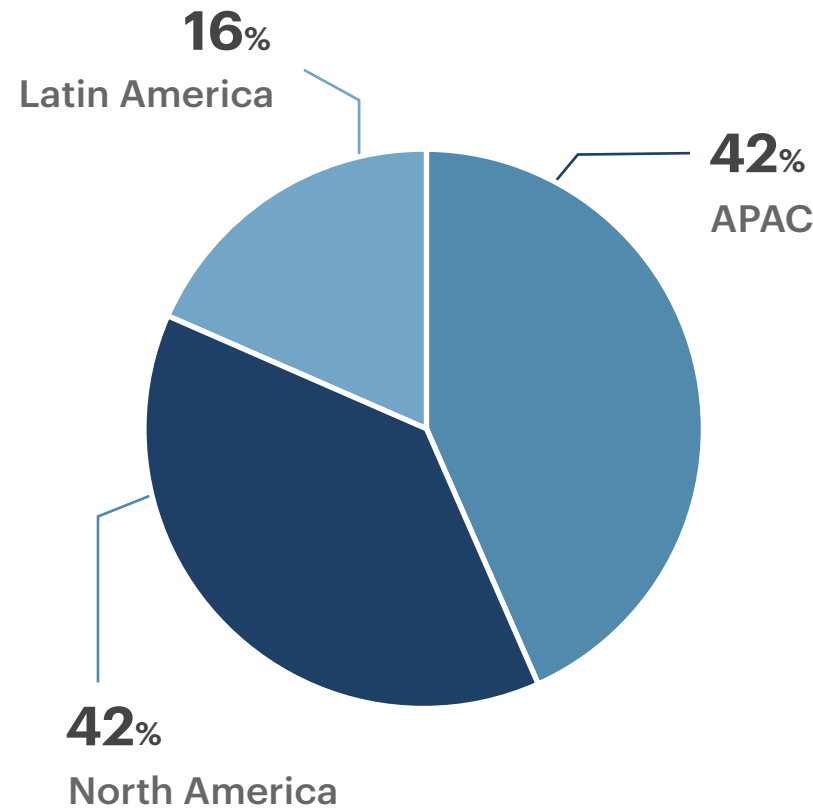


Azure (29%) is more popular in EMEA.

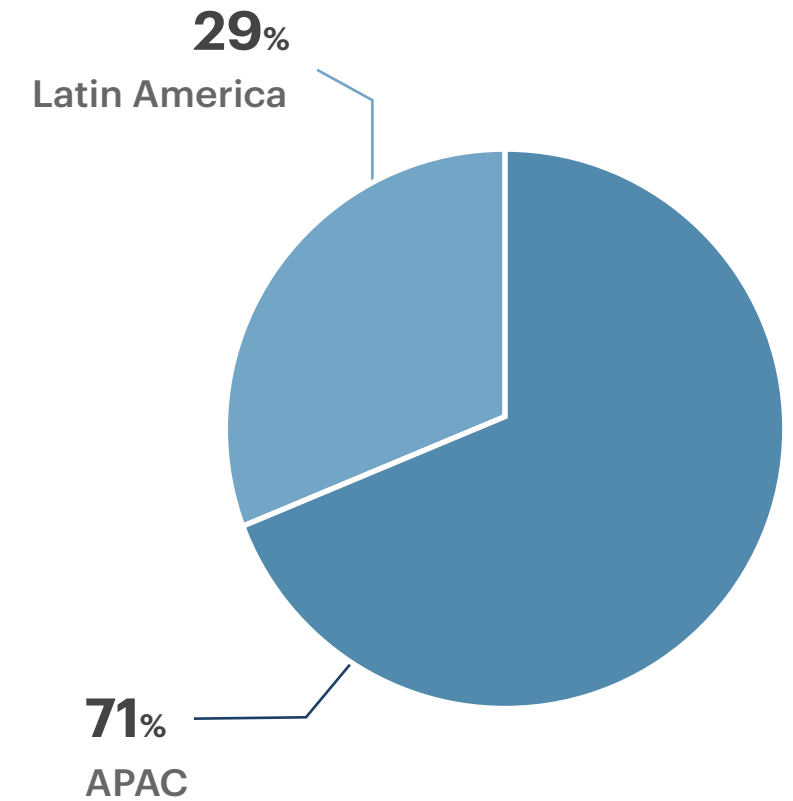
6. Which public cloud provider do you use the most?



Google Cloud has more adoption in APAC.



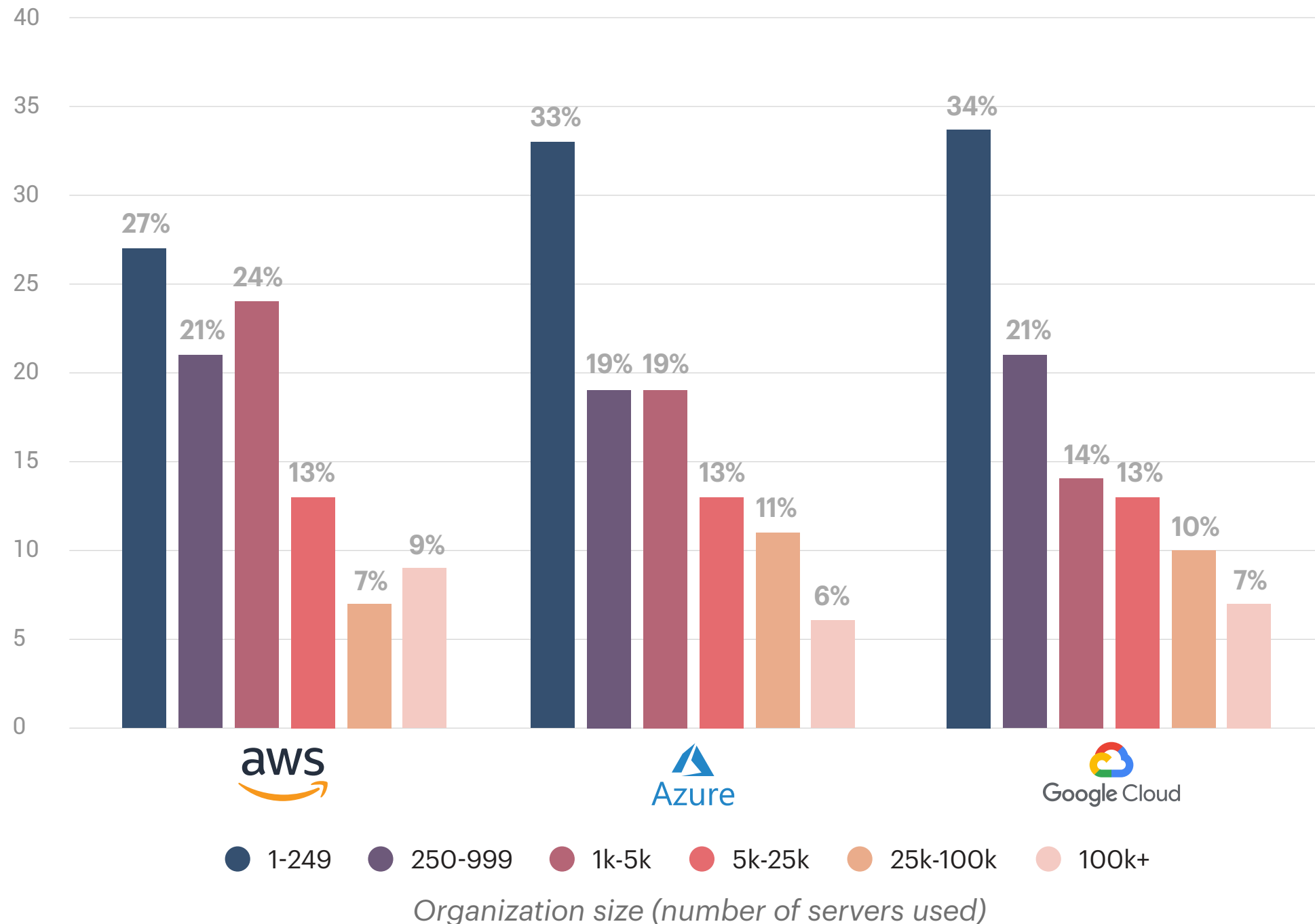
Oracle Cloud has equal adoption in APAC and North America. This survey did not find any installations in EMEA among our respondents.



Alibaba Cloud, not surprisingly, has an Asia-centric install base.

6. Which public cloud provider do you use the most?

Split of public cloud provider usage by organization size



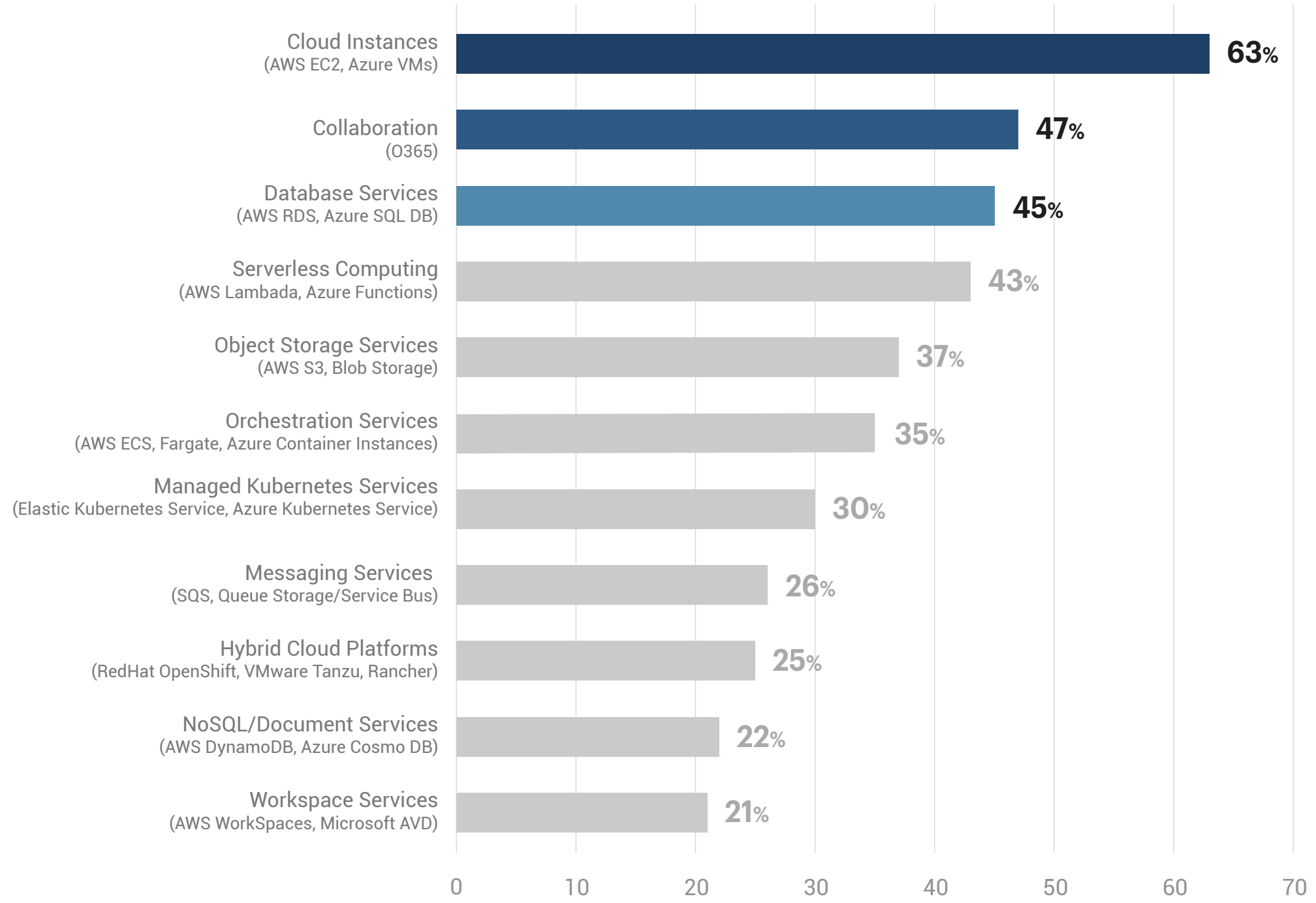
More small organizations (1-249 servers) are adopting Google Cloud and Microsoft Azure than AWS.

More mid-sized organizations (250-25K servers) are adopting AWS cloud.

Adoption of all three cloud providers is similar in large organizations (25K+ servers).

7. Which of the following cloud services are used in your organization?

Cloud services by popularity



Although there are a numerous cloud service offerings, the basic cloud instance deployment is still the most popular. **63%** of organizations are using cloud instances.

Collaboration services are a distant second with 47% adoption.

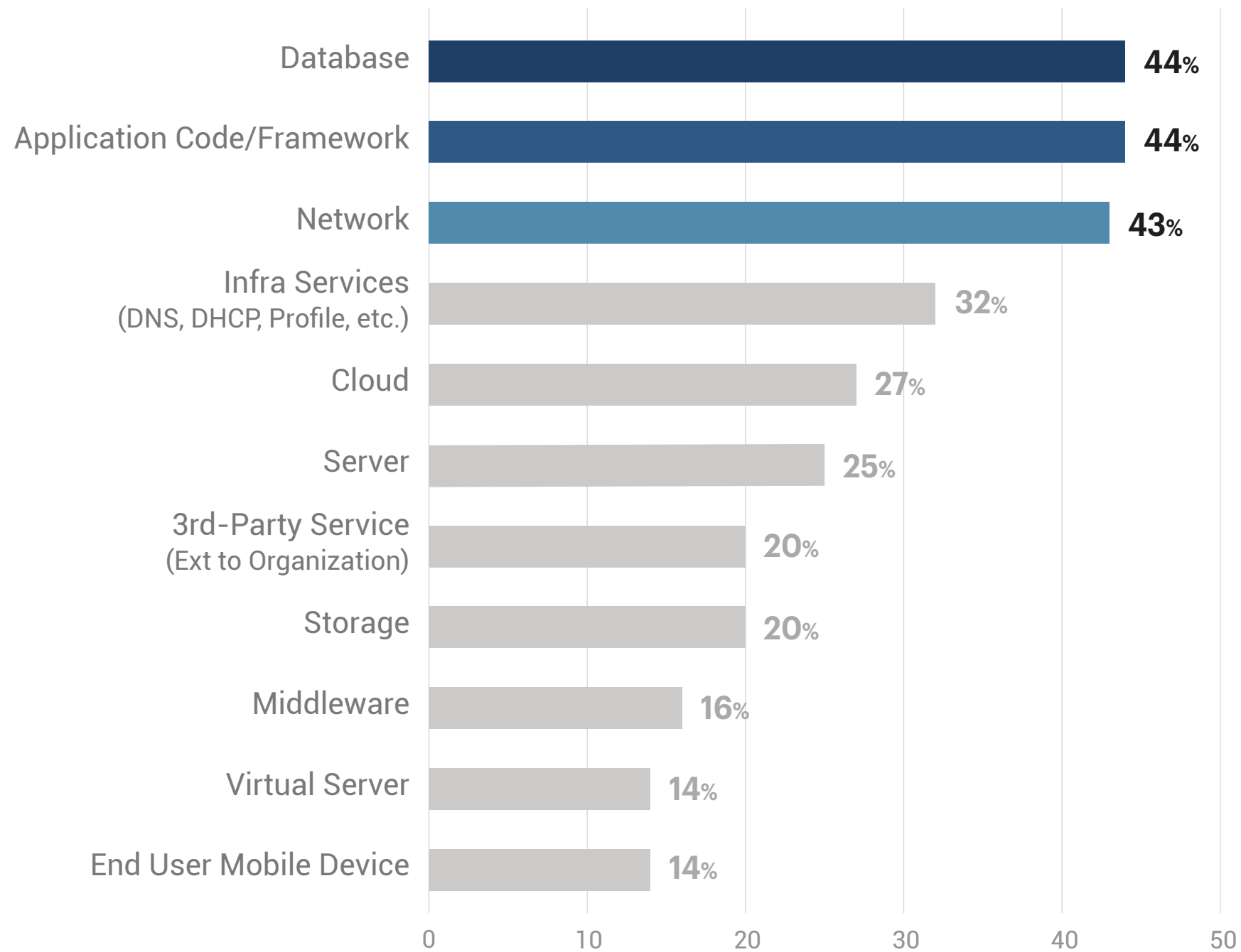
Relational database services have a higher adoption (45%) as compared to NoSQL services like DynamoDB and Cosmo DB (22%).

Adoption of digital workspaces in the cloud is in its infancy. 21% of organizations have tested these services.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

8. When there is a performance issue with one of the IT services you support, where is the problem most likely to be?

Top sources of application performance problems



There are three main reasons for application performance issues:

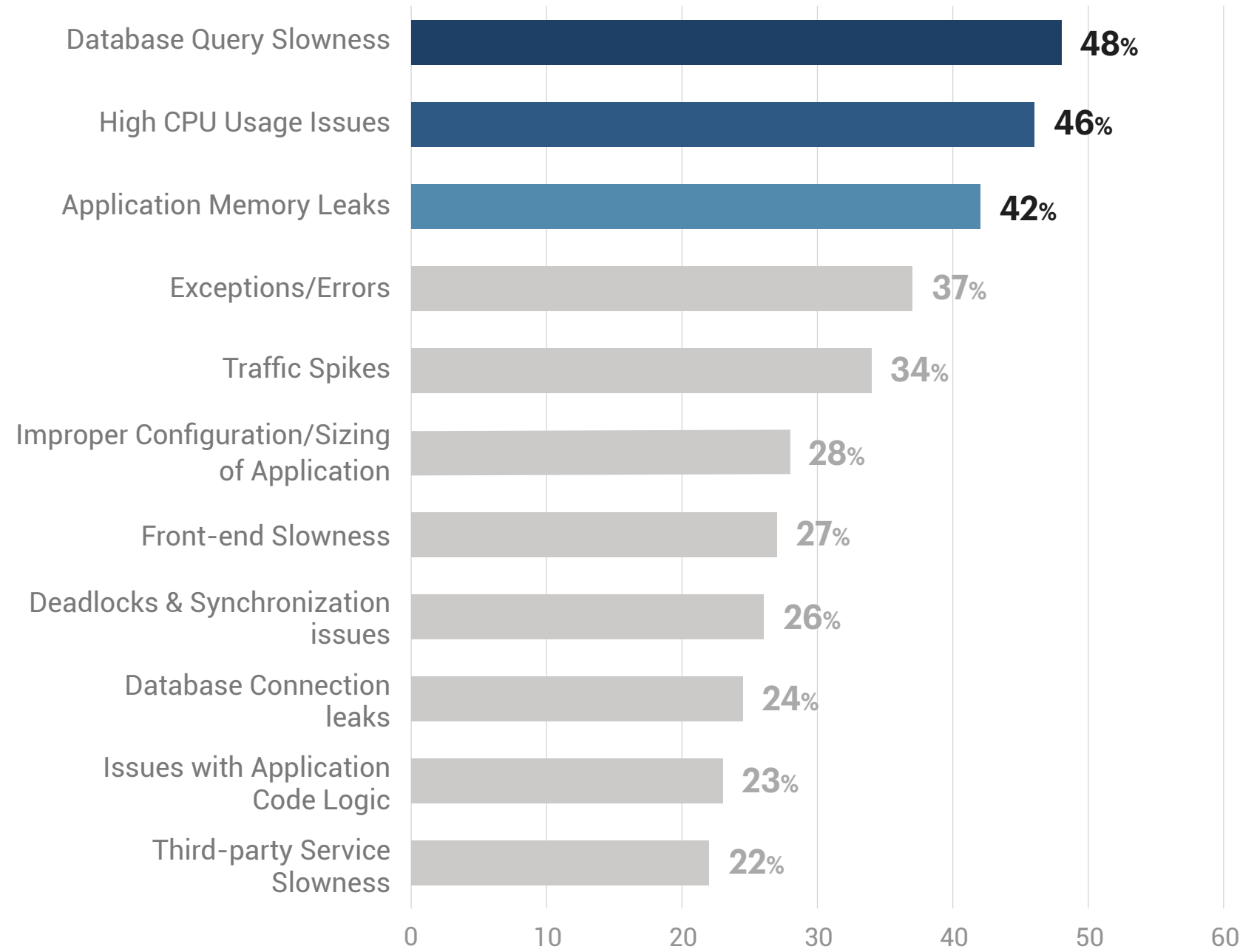
- Database
- Application code/framework
- Network

APM solutions need to focus on tracking database performance, application code visibility and network performance insights.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

9. When there is a problem in your application code, which of these performance problems occurs most often ?

Top reasons for application code problems



When application code issues are detected, **48%** of the time, it is because of a slow database query.

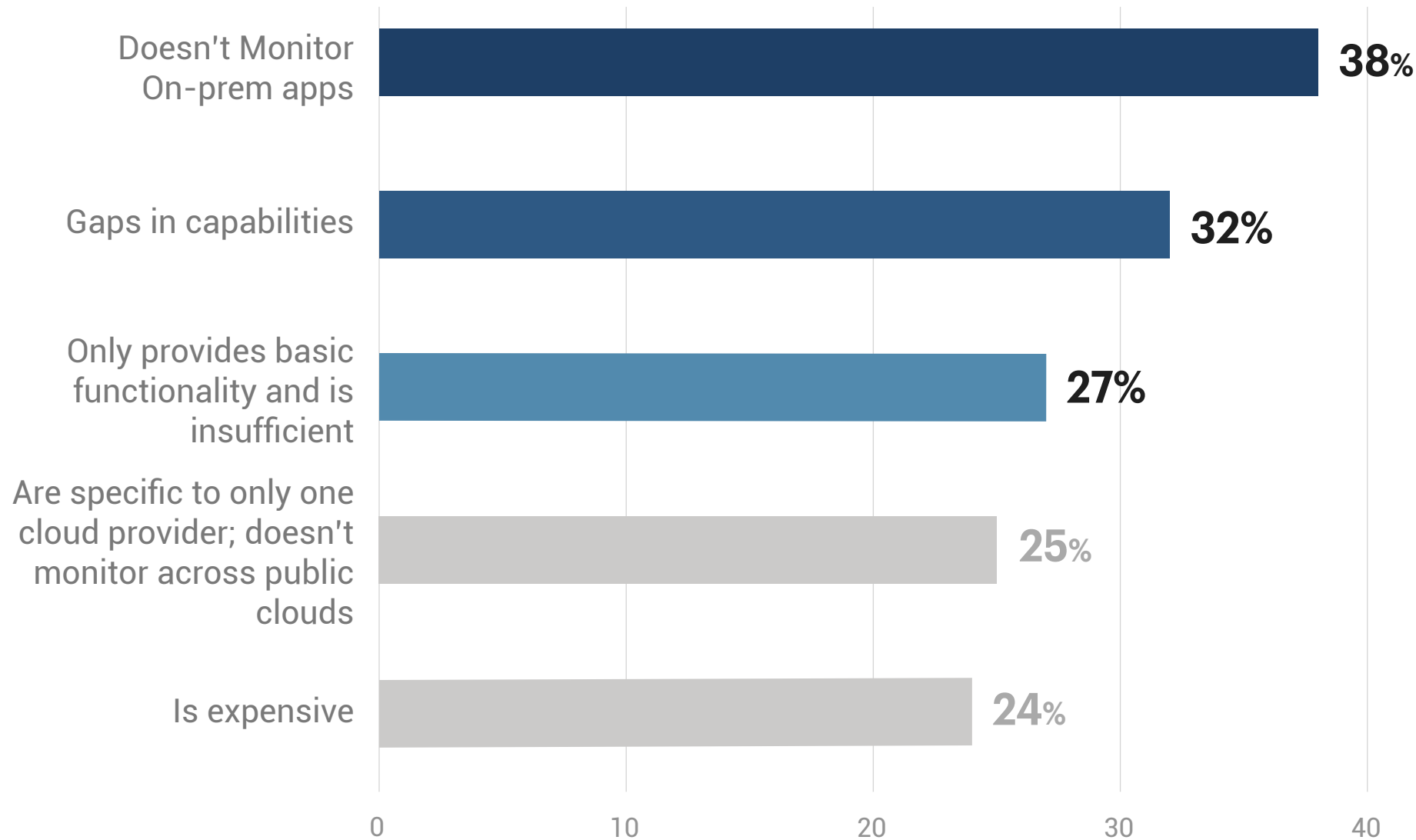


Resource issues with application code – runaway threads taking CPU or memory hogs in the code – are the second and third top problems relating to applications.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

10. Which of the following statements are true about your cloud provider's monitoring service (e.g., AWS CloudWatch, Azure Monitor, etc.) ?

Top concerns with cloud provider's monitoring service



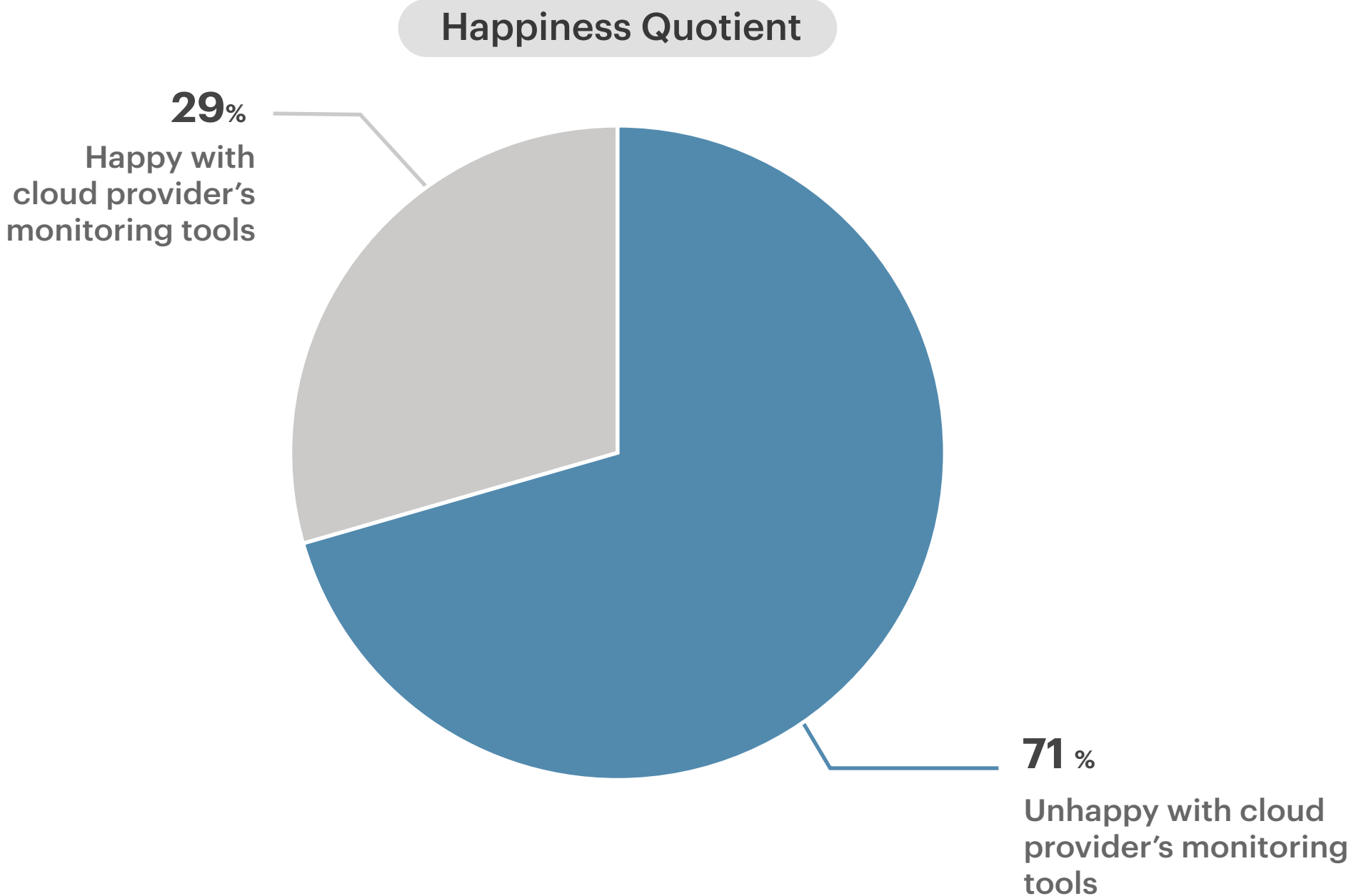
That their cloud provider's monitoring services cannot monitor on-premises applications is the top concern of respondents.

32% see gaps in capabilities with the cloud provider's monitoring service that they need to fill with third-party solutions.

24% of respondents state that their cloud provider's monitoring service is expensive.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

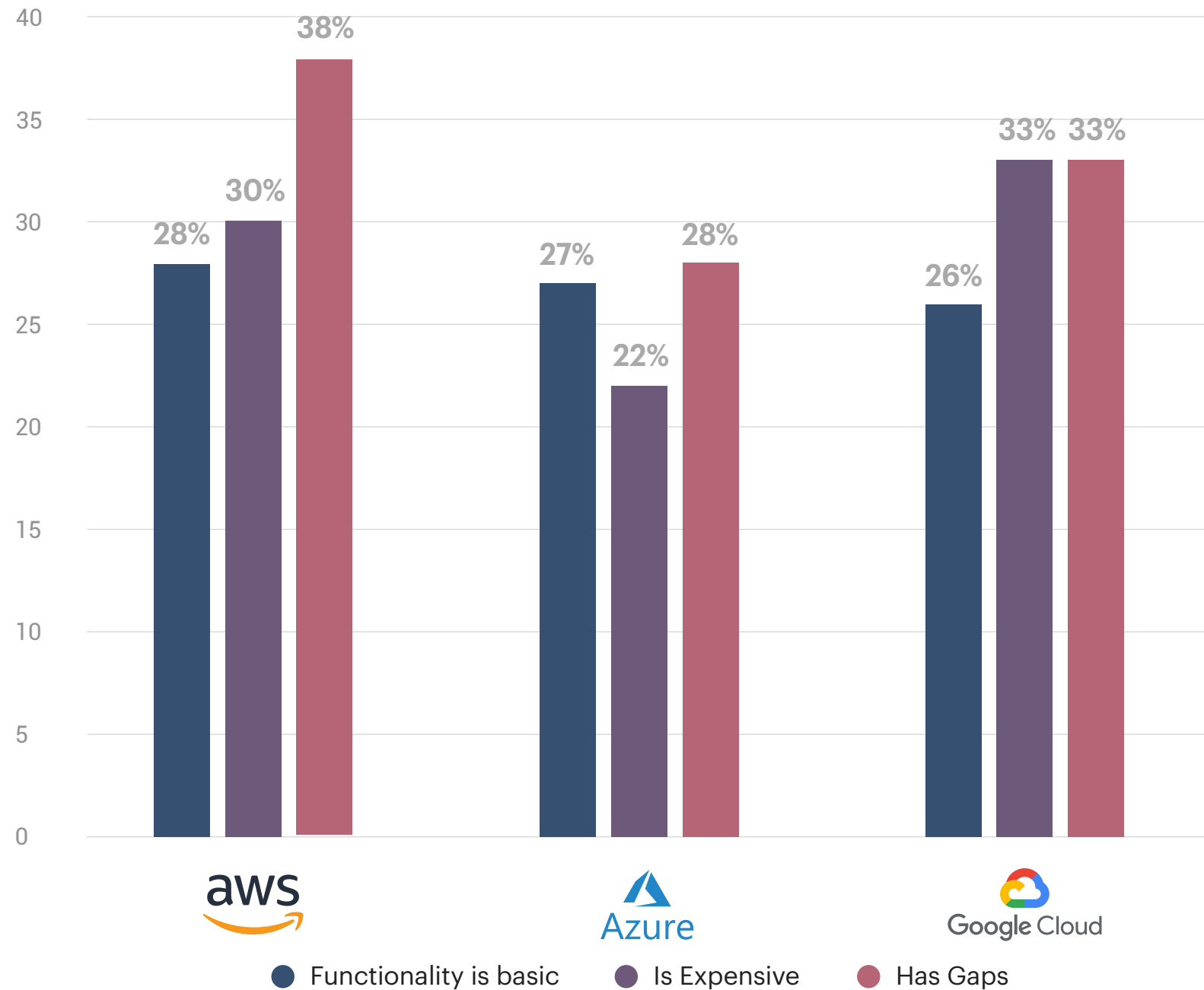
10. Which of the following statements are true about your cloud provider's monitoring service (e.g., AWS CloudWatch, Azure Monitor, etc.) ?



71% of the respondents are unhappy with their cloud provider's monitoring tools.

10. Which of the following statements are true about your cloud provider's monitoring service (e.g., AWS CloudWatch, Azure Monitor, etc.) ?

Perception of public cloud providers



OVER 25% of the users of the top 3 cloud providers feel that the functionality of the built-in monitoring service is basic.

8% more users of AWS feel its monitoring capability is expensive, compared to users of Microsoft Azure.

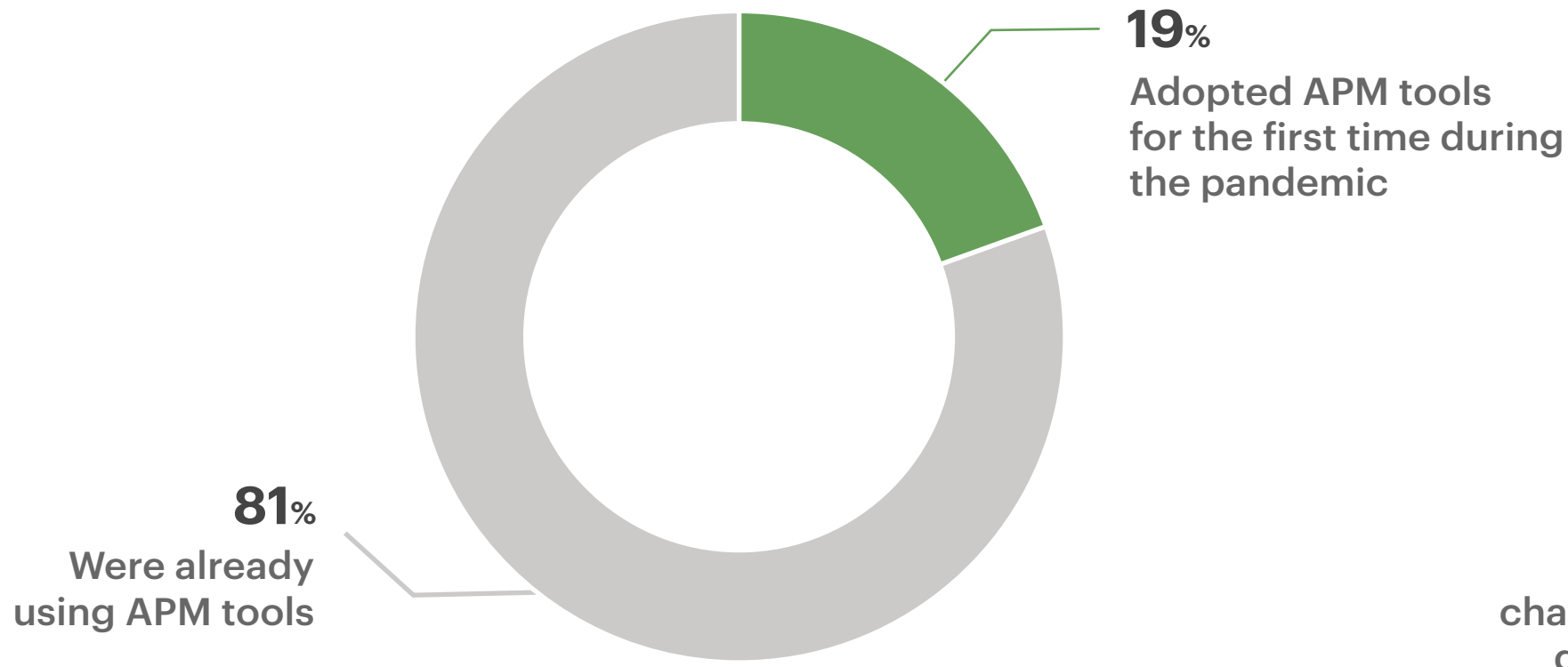
10% more users of AWS feel its monitoring capability has gaps, when compared to users of Microsoft Azure.

How the Pandemic Affected APM Strategies



11. How did the adoption of application performance monitoring tools change in your organization because of the pandemic?

Adoption of APM tools due to pandemic



11% added new APM solutions during the pandemic.

11. How did the adoption of application performance monitoring tools change in your organization because of the pandemic?



41%

feel that APM tools have become more important in the last year.



34%

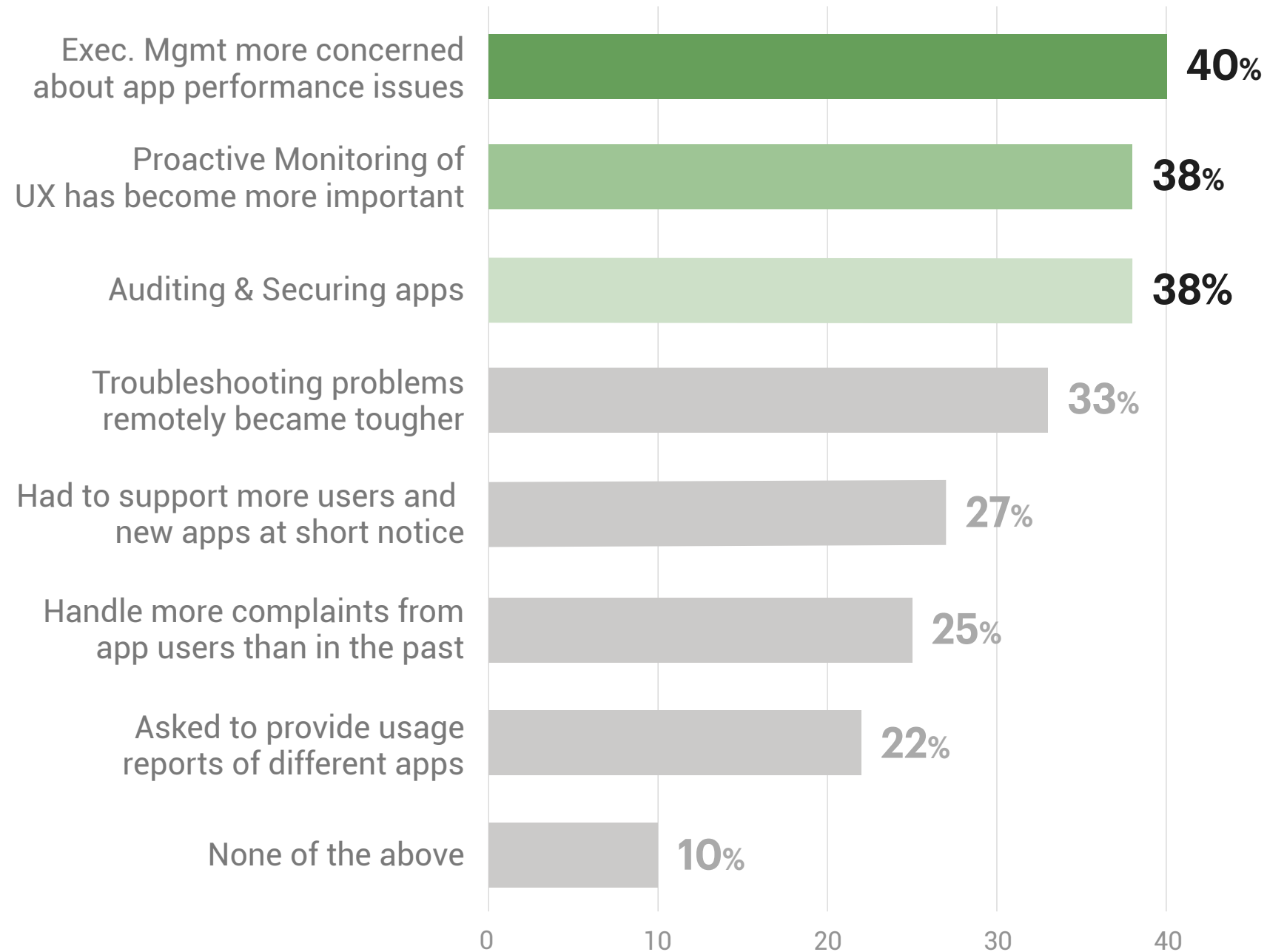
feel that management is paying more attention to the performance of applications as employees are remote.


31%


increased the percentage of applications monitored by APM tools.


12. In the last year, have you observed any of the following changes in your organization?

Top changes in organizations relating to APM



 Executive management has been more concerned about application performance issues as most employees are remote. This has turned attention to proactive monitoring of user experience.

 Auditing and security has also grown in importance, especially with remote access being prevalent.

 Troubleshooting, which impacts mean time to repair (MTTR), has been in focus. With both IT ops and employees being remote, there have been more challenges to ensure application availability and performance.

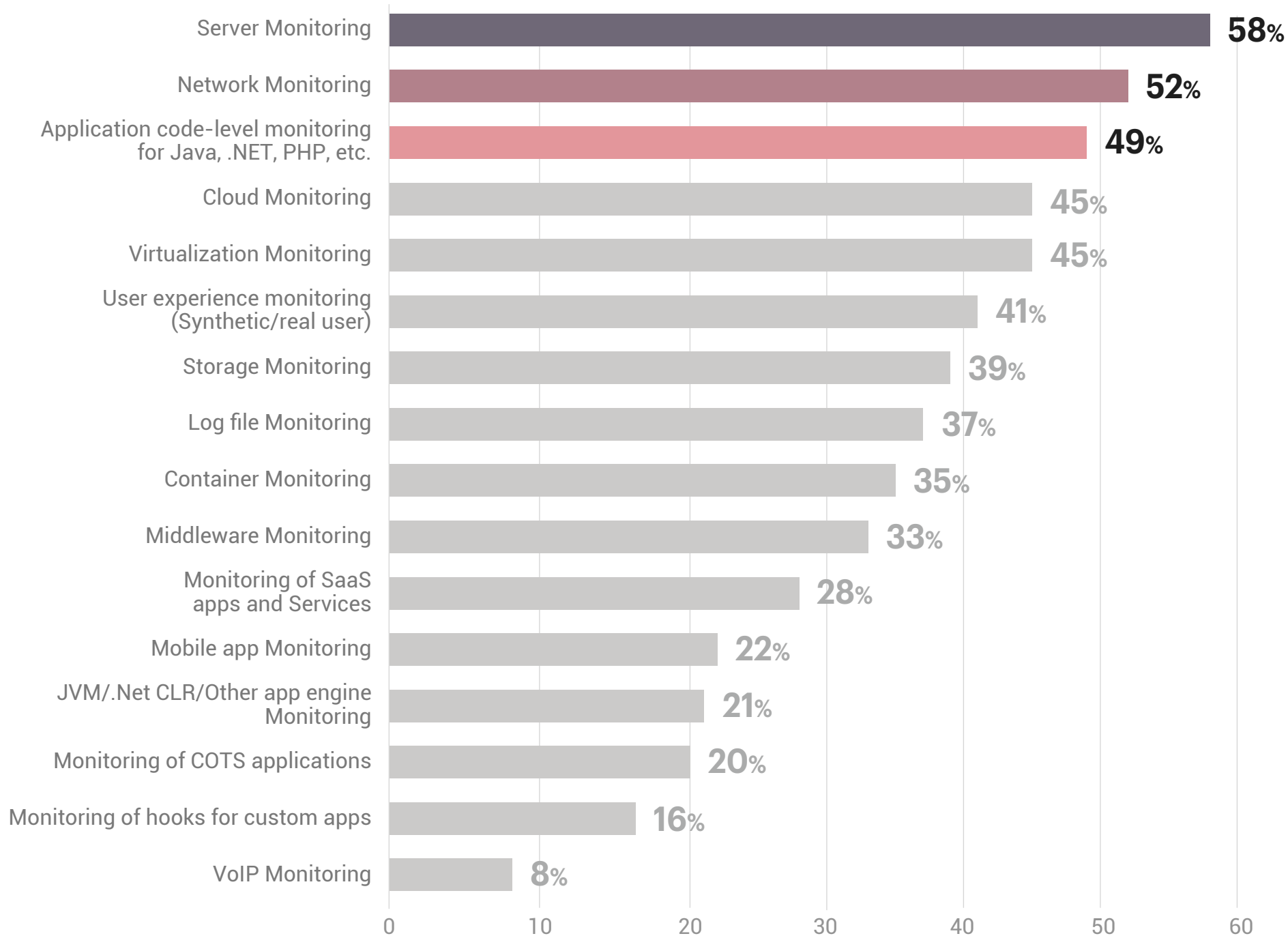
Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

How APM Solutions are being used



13. Which of these monitoring capabilities are important from an APM tool(s) for your organization ?

Most desired APM capabilities



Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

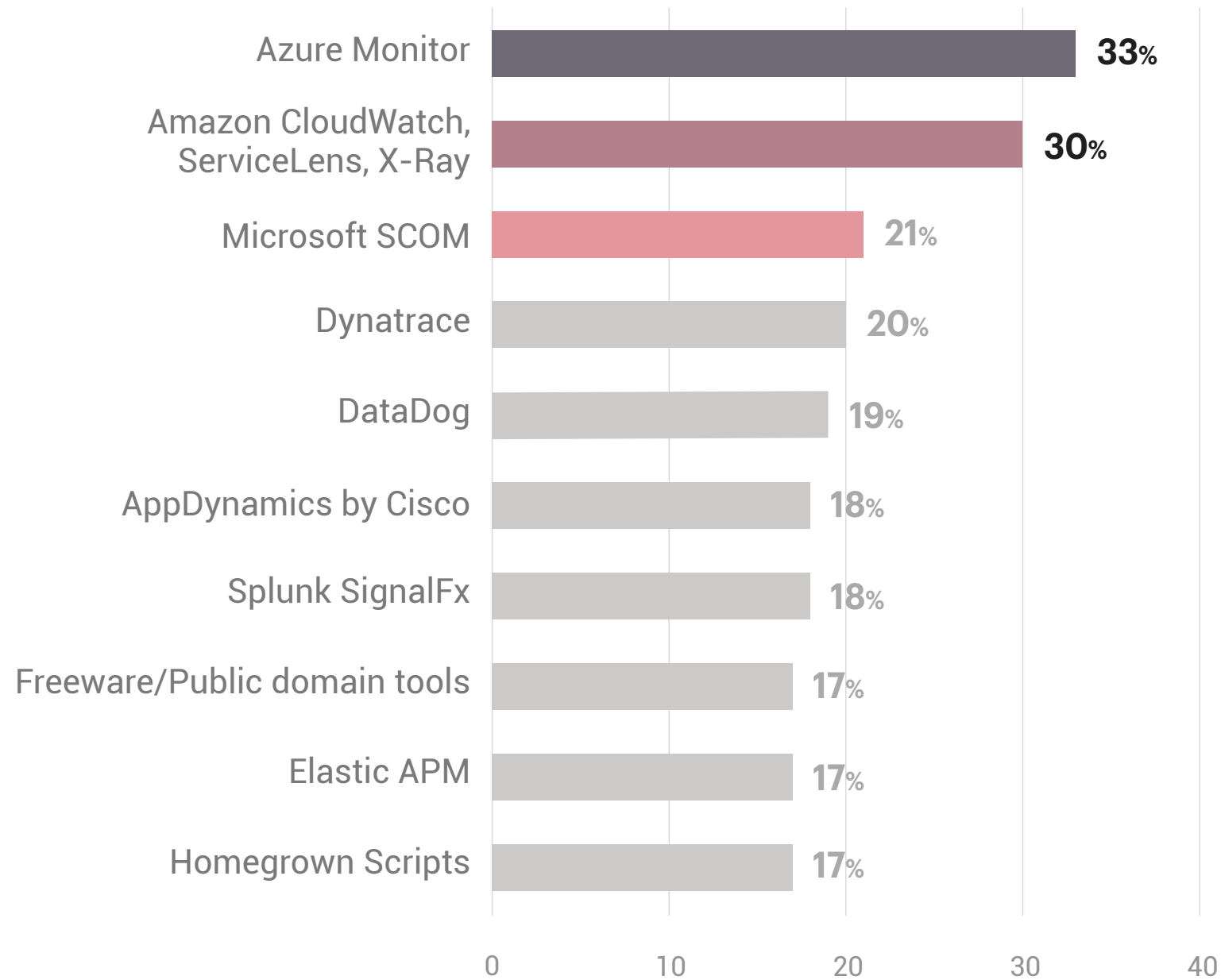
49% of respondents see code-level monitoring as a key capability of an APM tool.

Surprisingly, server and network monitoring are more important than application code insights. This highlights the need for end-to-end visibility when monitoring application performance.

User experience monitoring is sixth on the list at 41%, highlighting that IT personnel are still very much focused on resource monitoring. This statistic points to a disconnect between senior management wanting to track end user experience and the IT Ops team still focusing on monitoring resources.

14. What APM tools do you currently use?

Top 10 APM tools by popularity



It's no surprise that vendor provided monitoring tools, such as Azure Monitor, Amazon Cloud-Watch, and Microsoft SCOM are widely used.

The real surprise is that freeware, public domain tools and homegrown tools have a wide deployment, even though their advanced APM capabilities are limited.

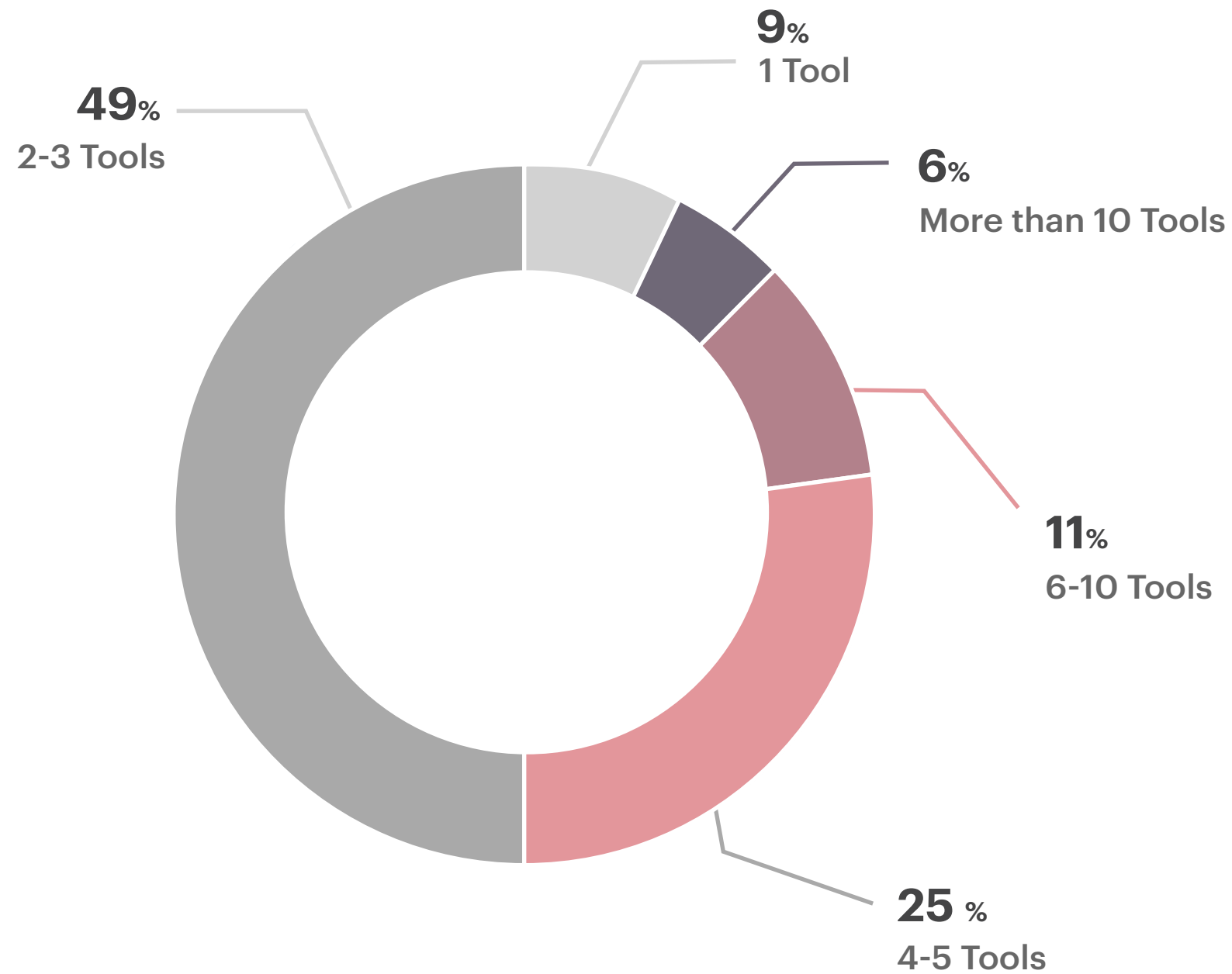


As cloud providers' built-in monitoring tools do not have cross-cloud applicability, multi-cloud deployments could pose challenges in the future.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

15. To track the performance of every layer and every tier of your application stacks and the infrastructure supporting them, how many different monitoring tool(s) do you use?

Number of APM tools in use in an organization



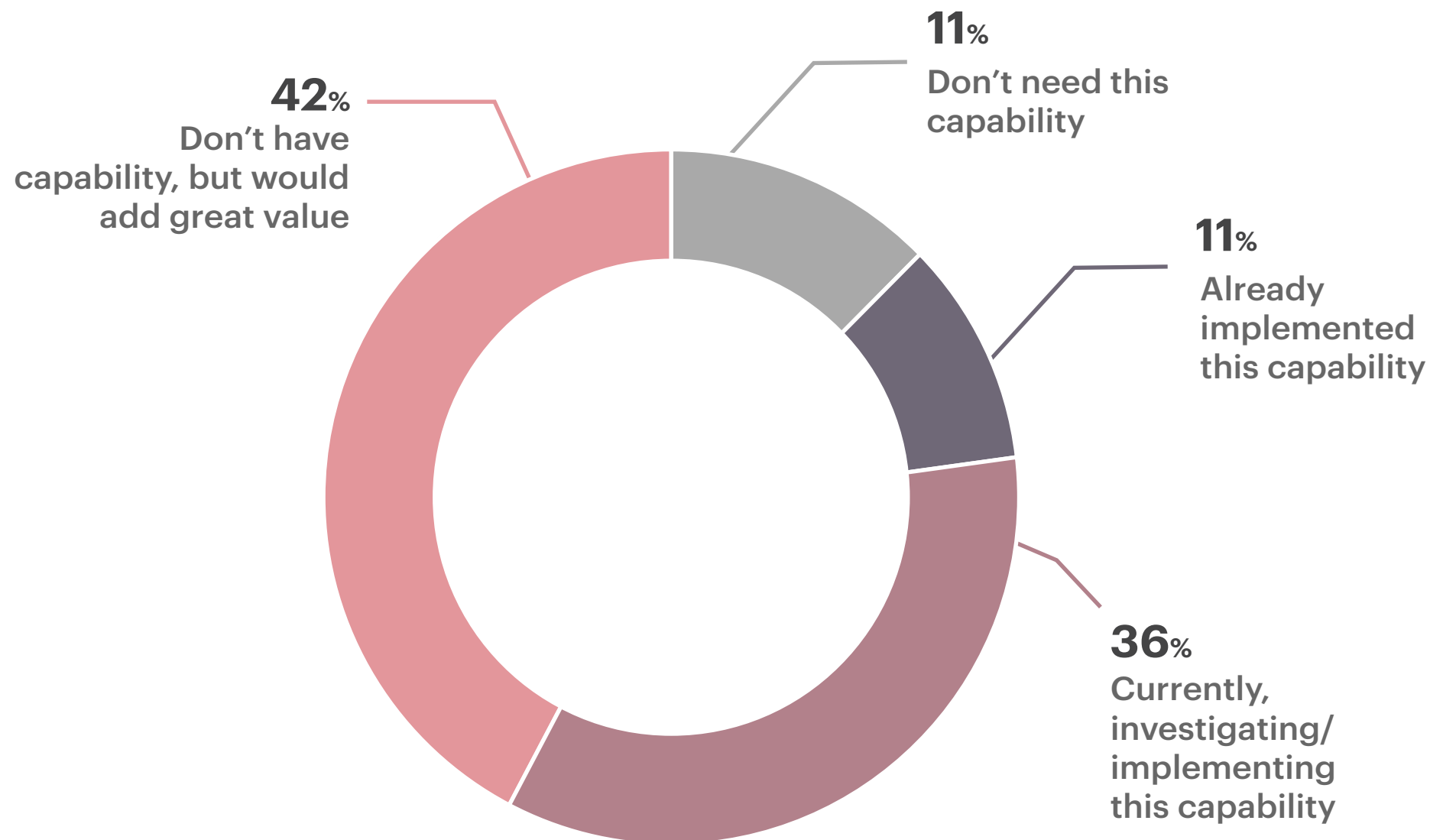
91% of the respondents are using more than one monitoring tool.

74% are having to use 2 to 5 monitoring tools to track application and infrastructure performance.

17% are using more than 5 monitoring tools to get complete visibility!

16. What is your view on converged application and infrastructure monitoring?

Converged application and infrastructure monitoring provides you one tool, one console to view the performance of applications and the supporting infrastructure and correlates performance across these tiers to answer the question “Why is my application slow?”.



89%

of the respondents believe that converged/unified monitoring is necessary for their organization.

36%

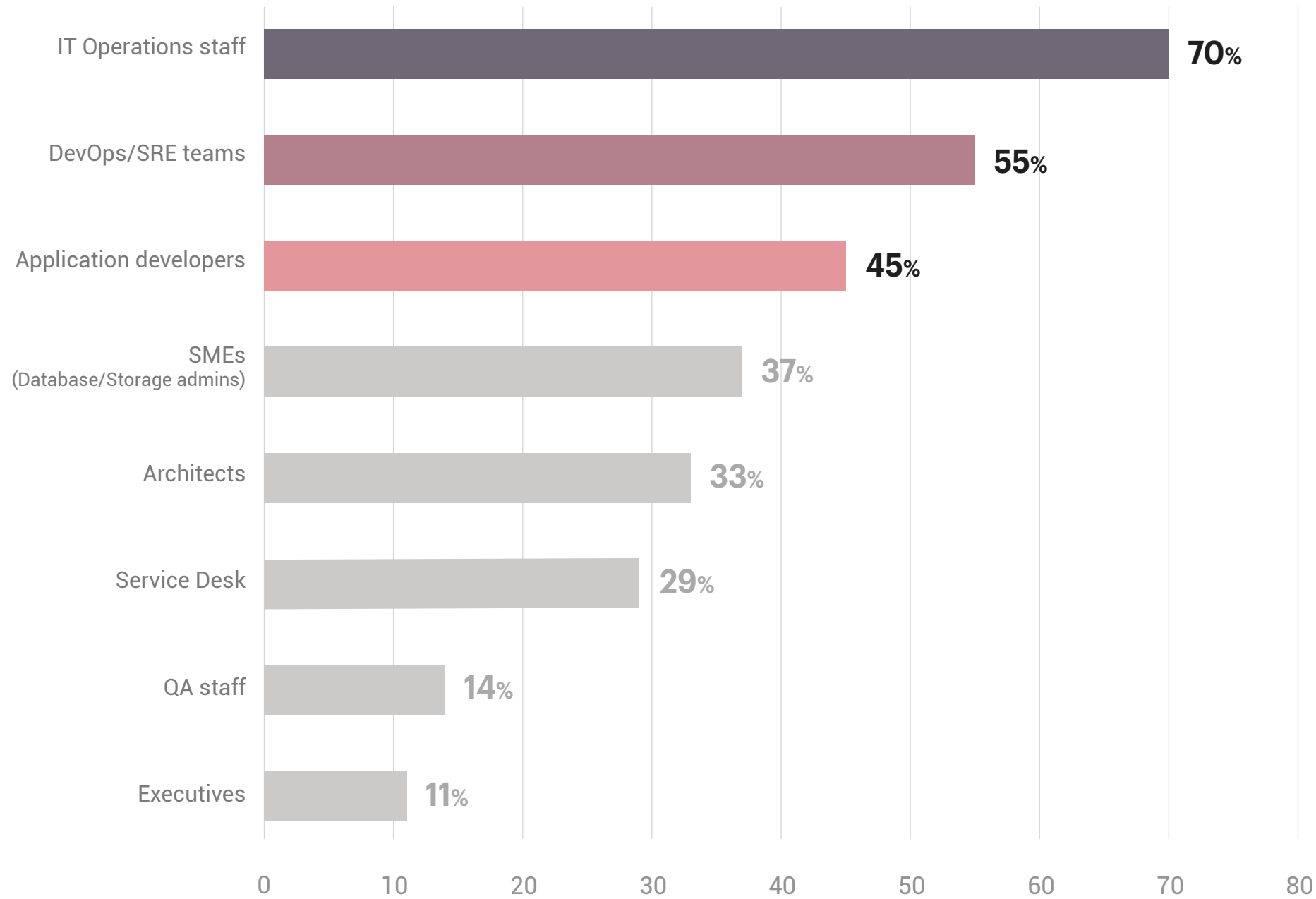
of the respondents are currently either investigating or implementing converged/unified monitoring.

42%

do not have converged application and infrastructure monitoring capabilities but see this adding great value.

17. Who are the users of your APM tool in your organization?

Main users of APM tools



APM is still the main responsibility of IT Operations teams.

In **70%**

of the organizations, IT Operations are one of the main users.

55%

of organizations have DevOps/SRE teams that use APM tools.

Many organizations have been looking to “shift left”. This trend is illustrated by the fact that 45% of organizations say application developers are using APM tools.

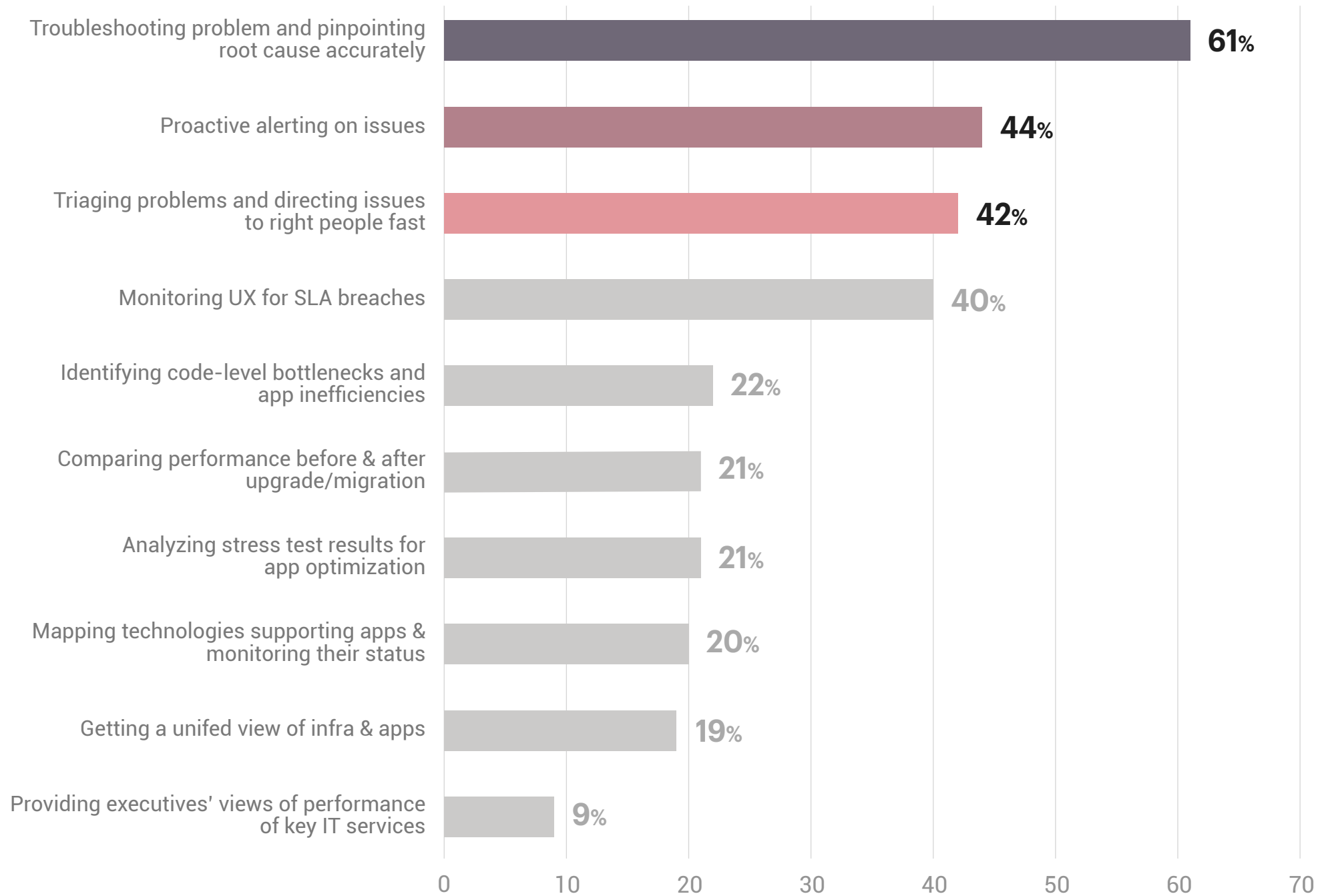
In **11%**

of the organizations, executives are using APM tools. This could be a sign of the times we’re in: pandemic, WFH, remote work et al.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

18. What are the top three use cases for APM in your organization?

Top use cases for APM



APM is seen primarily as a troubleshooting tool.

61%

of organizations are using APM tools to identify the root cause of problems.

44%

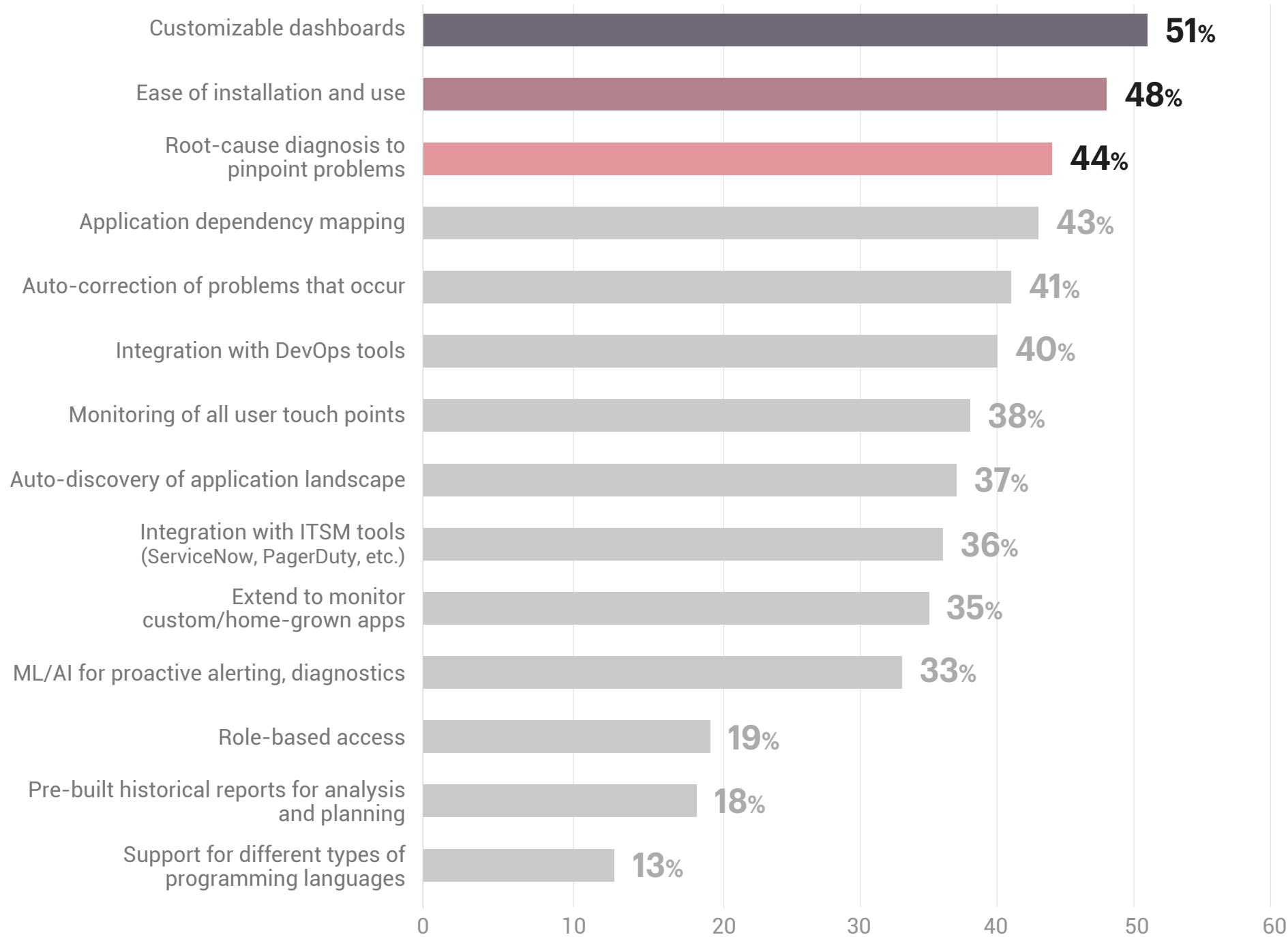
of the respondents rate proactive alerting on issues as the one of the main use cases for APM tools.

Only 40% of organizations are using APM tools for monitoring user experience.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

19. List the top 5 capabilities that are most important in your view for an APM solution.

Most important capabilities of an APM solution



Make APM tools easy to use and customizable is the key message from our respondents.

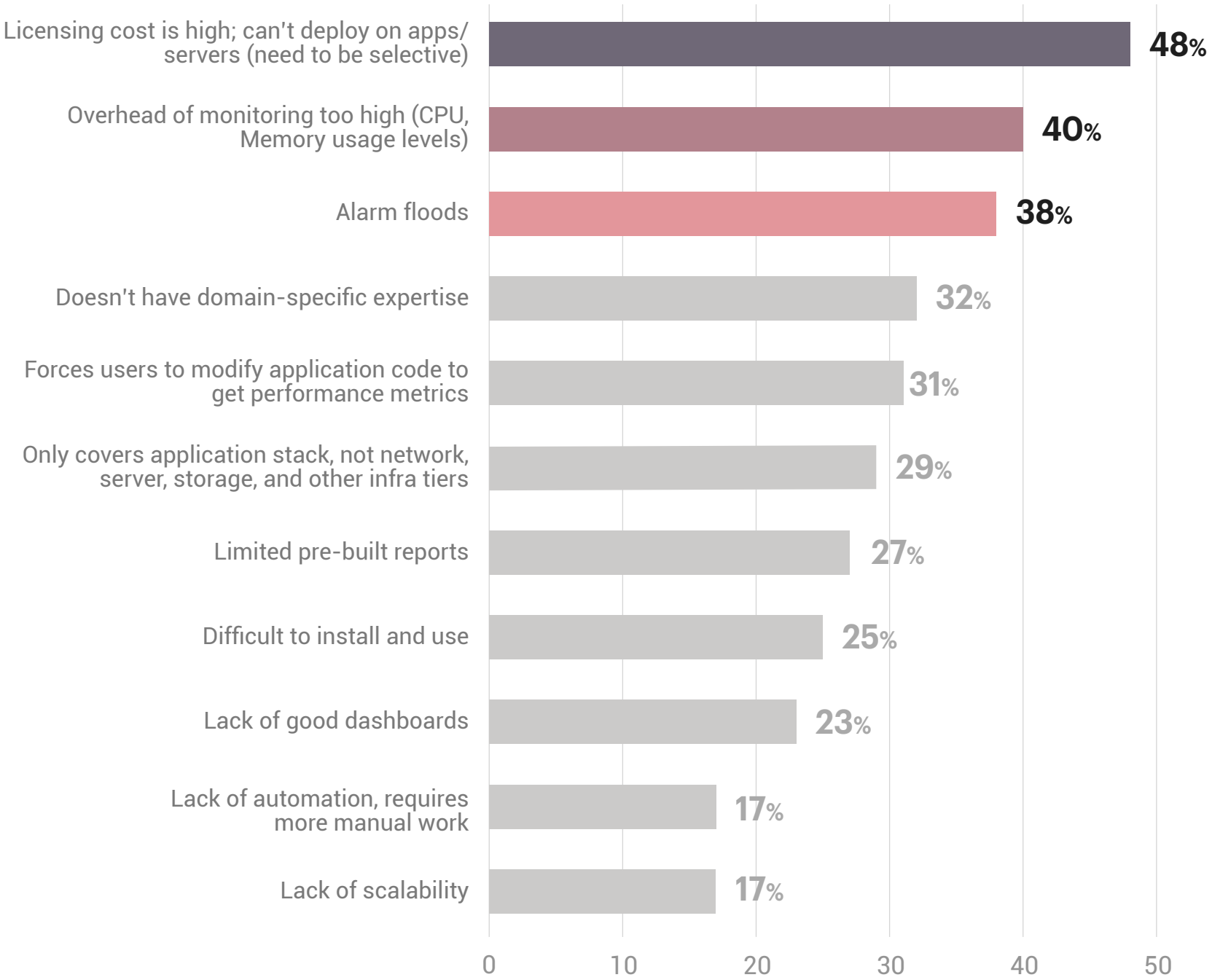
51% of the respondents rate customizable dashboards as the most important capability in an APM tool.

48% rate ease of installation and use as being important. This scores over core features such as auto-discovery, dependency mapping, root-cause diagnosis, auto-correction, etc.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

20. Pick the main challenges you face with your APM tool(s) today.

Main challenges with APM tools



High licensing cost of APM tools is the main challenge for organizations. As a result, they have APM deployed on some key servers/ applications, not all. This challenge outranks the next biggest challenge by over 8%.

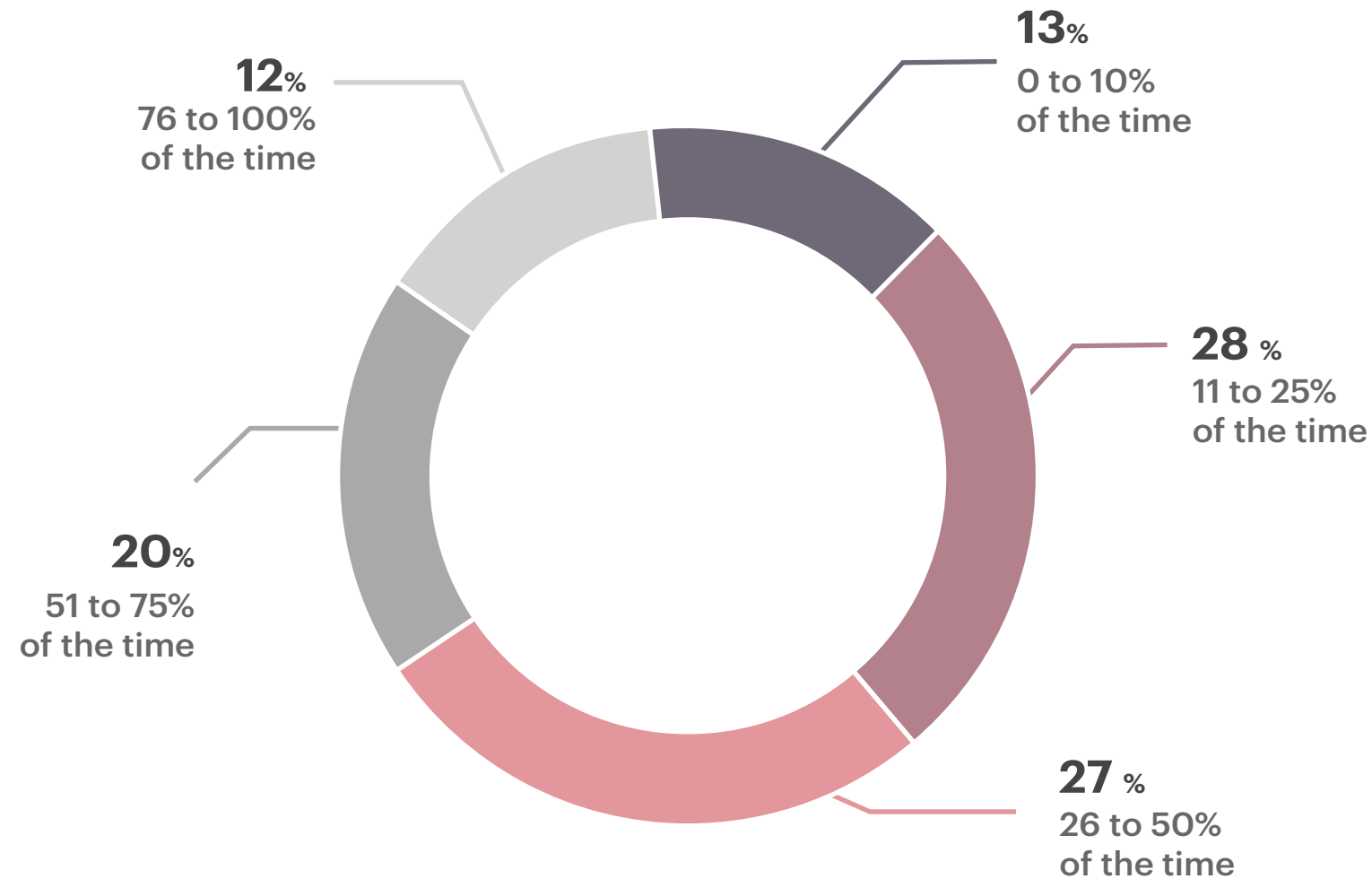
40% of respondents are concerned about the overhead of monitoring tools.

Having to deal with a flood of alarms is the 3rd most important challenge.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

21. How often is your IT Service Desk/Help Desk able to resolve application related complaints or direct the problem to the right application expert?

Ability of the Service Desk to triage or resolve application issues

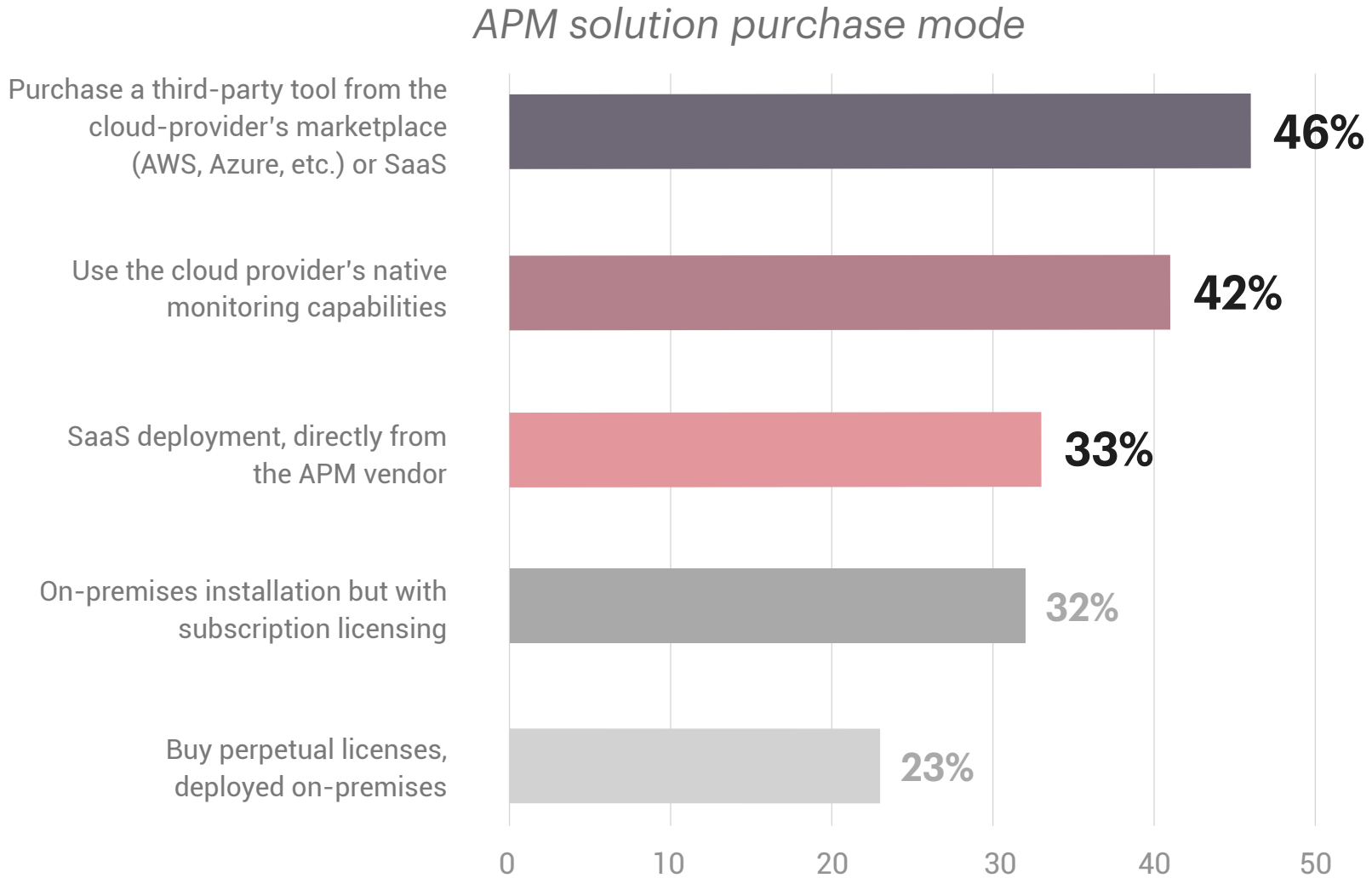


When service desk staff triage problems well, it cuts down MTTR and saves the organization time and money.

68% of respondents believe that helpdesk staff are not able to help at least 50% of the time.

41% are having to handle at least 75% of all user complaints themselves.

22. How did you purchase (or will purchase) your APM solution?



46% of the respondents have purchased/are likely to purchase a third-party APM solution from their cloud-provider's marketplace (AWS, Azure, etc.) as SaaS.

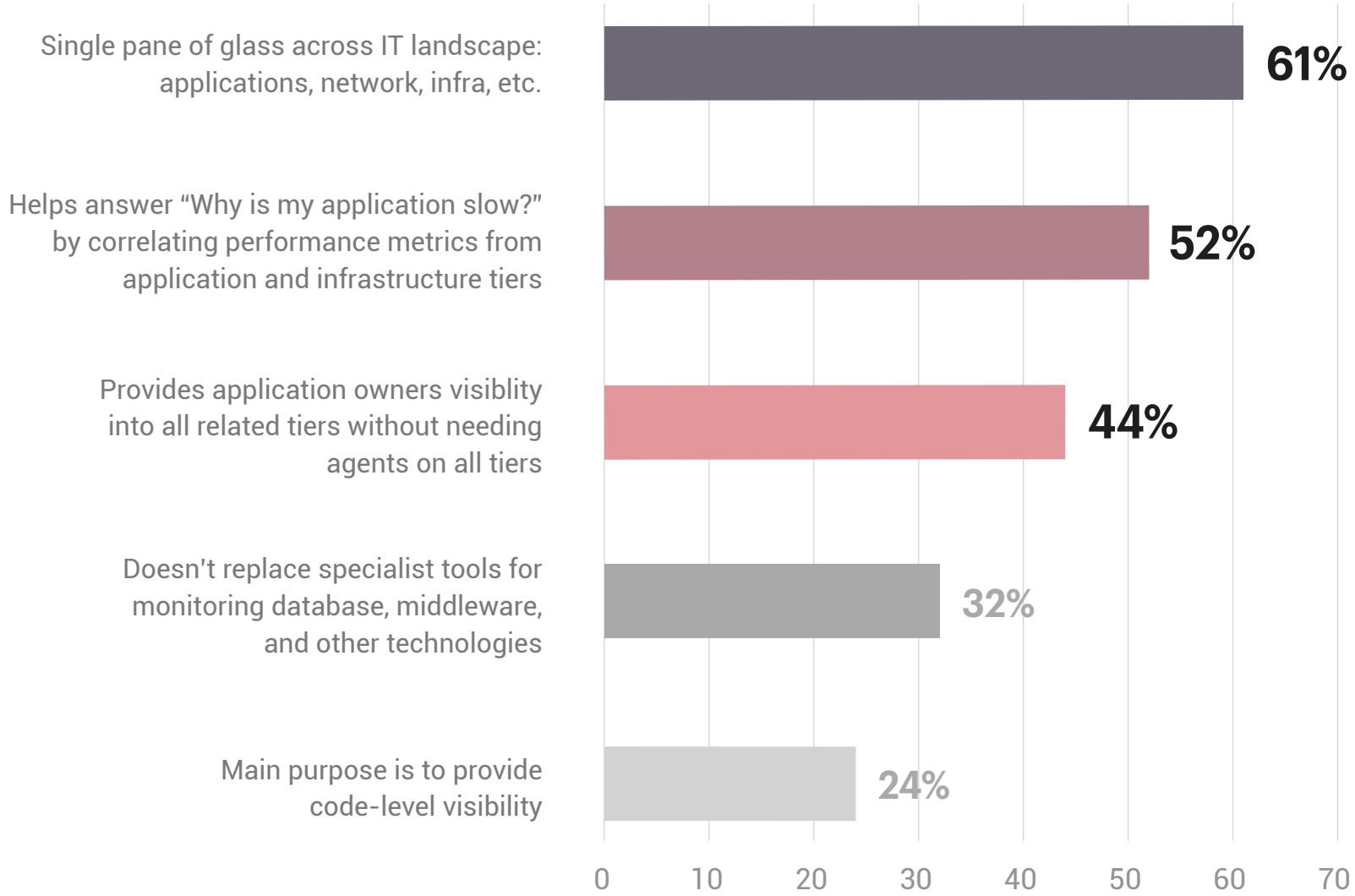
When purchasing from an APM vendor, 33% are looking to access APM as SaaS while 32% are looking to deploy the solution on-premises and pay an annual subscription.

Perpetual, on-premises deployment is a legacy model. Only 23% are looking at this option.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

23. In your opinion, which of these statements about an APM solution is correct?

Characteristics of APM solutions



61% see an APM solution as one that provides a single pane of glass across the entire IT landscape. This reiterates the need for converged application and infrastructure monitoring.

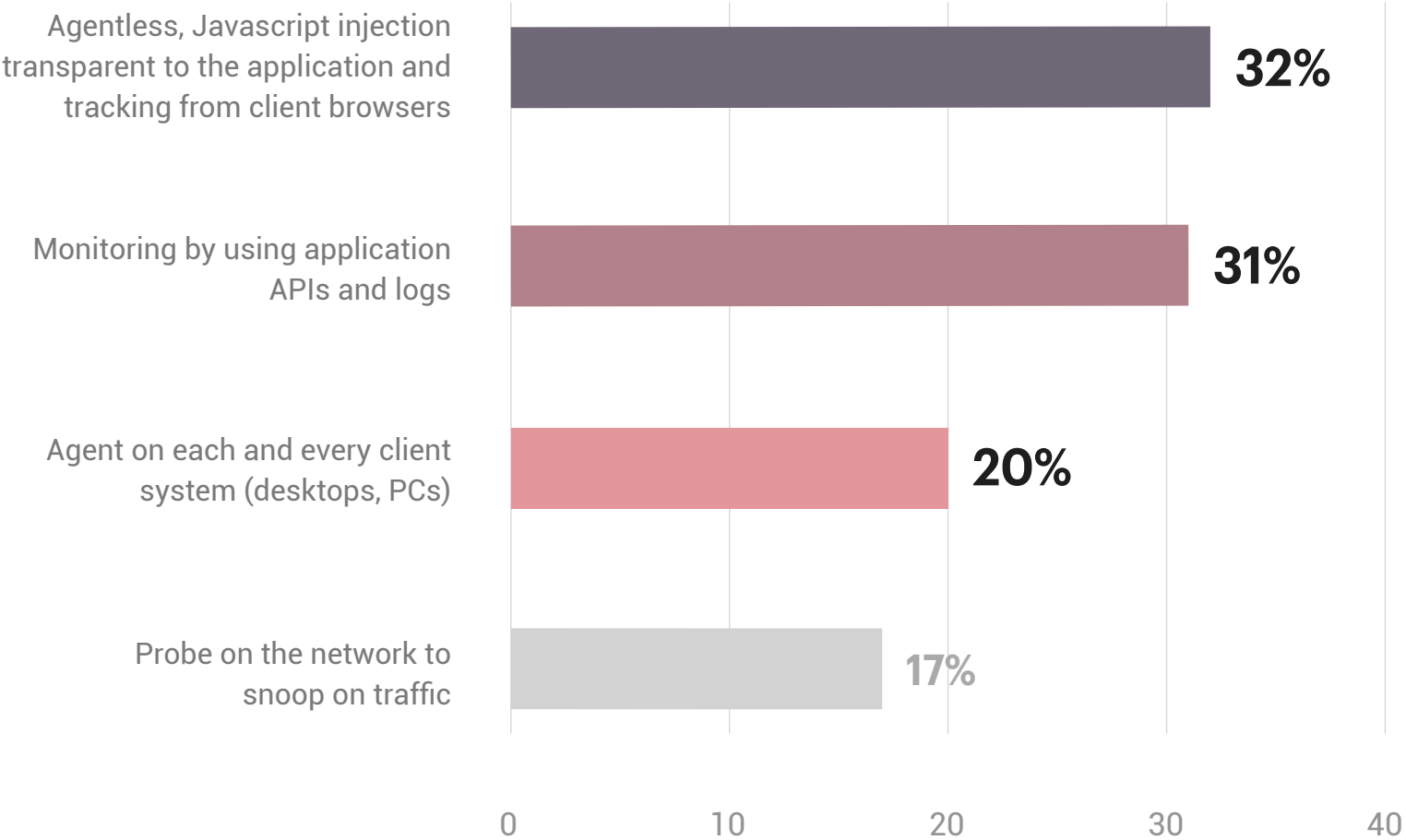
52% look at APM tools to answer the question "Why is my application slow?" by correlating performance metrics from the application and infrastructure tiers.

ONLY 24% see APM tools as just providing code-level visibility.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

24. What is your preferred way of monitoring real-user activity and performance for web application?

Preferred way of monitoring real-user activity and Performance for web apps



32% respondents prefer monitoring real-user activity and performance of web apps via agentless JavaScript injection, which is transparent to the application and tracks from client browsers.

Older methods of monitoring applications using agents on desktops and network probes are not as favored.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

25. Indicate one key capability that you wish your APM solution had today, or the one capability you consider to be the most important.

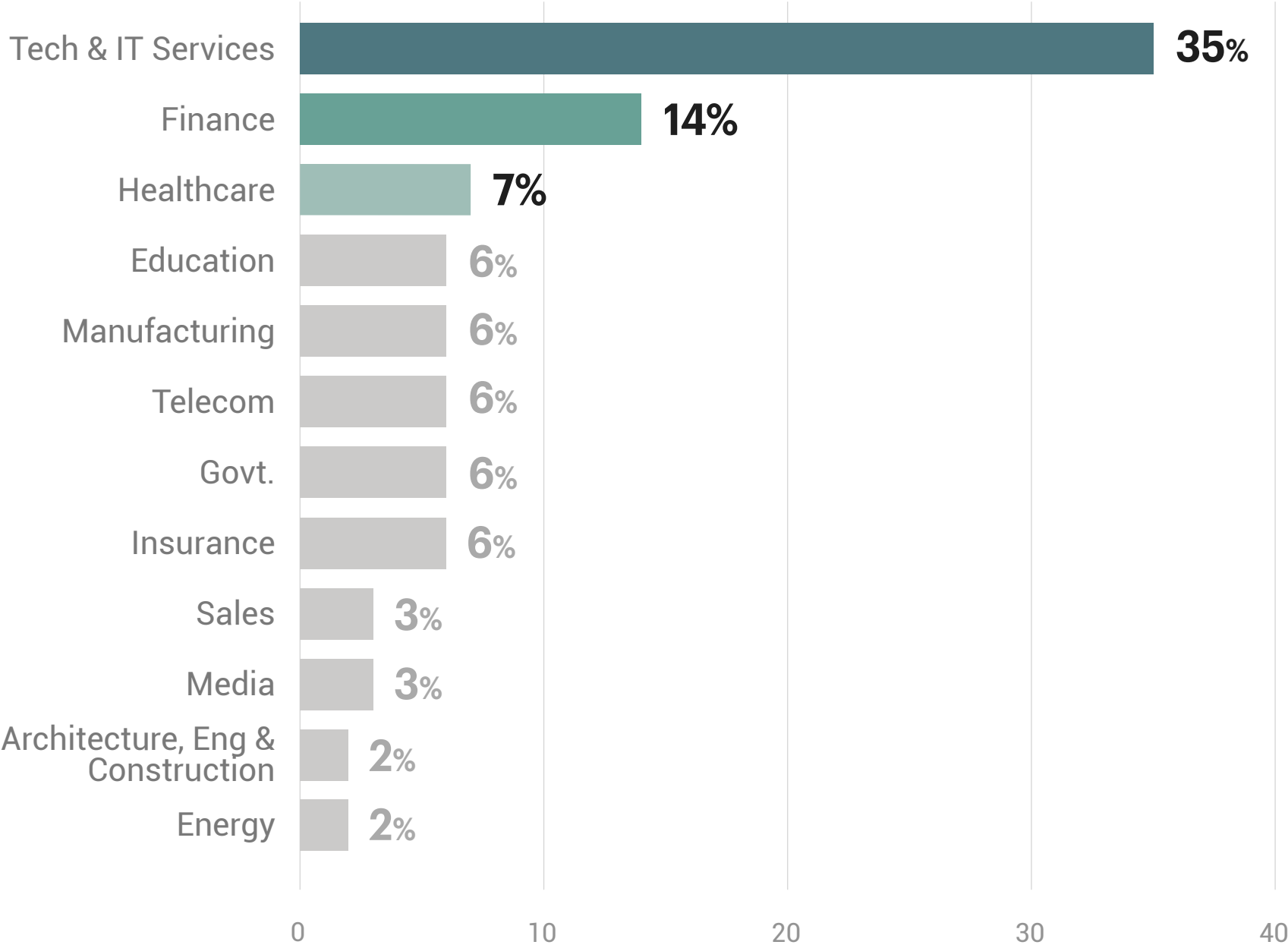


Demographics of Survey Respondents



26. Which industry vertical do you work in or support the most?

Respondents by Top 10 verticals



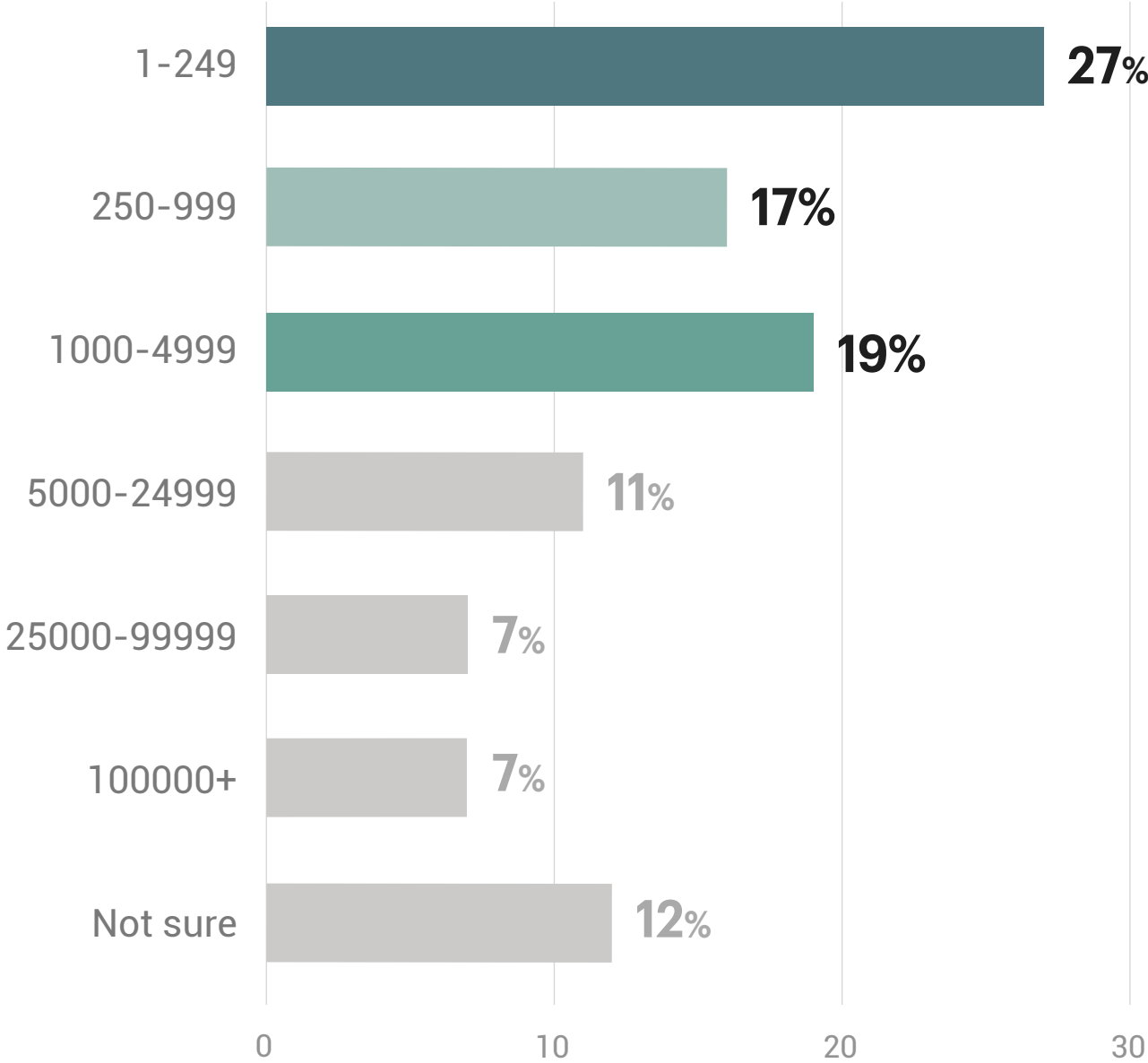
35% of respondents are in the technology and IT services sector.

Healthcare and finance were the other sectors with the highest representation.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

27. What is the total number of servers used in your organization (VMs, Physical Machines, Containers, etc)?

Distribution of organizations by servers deployed



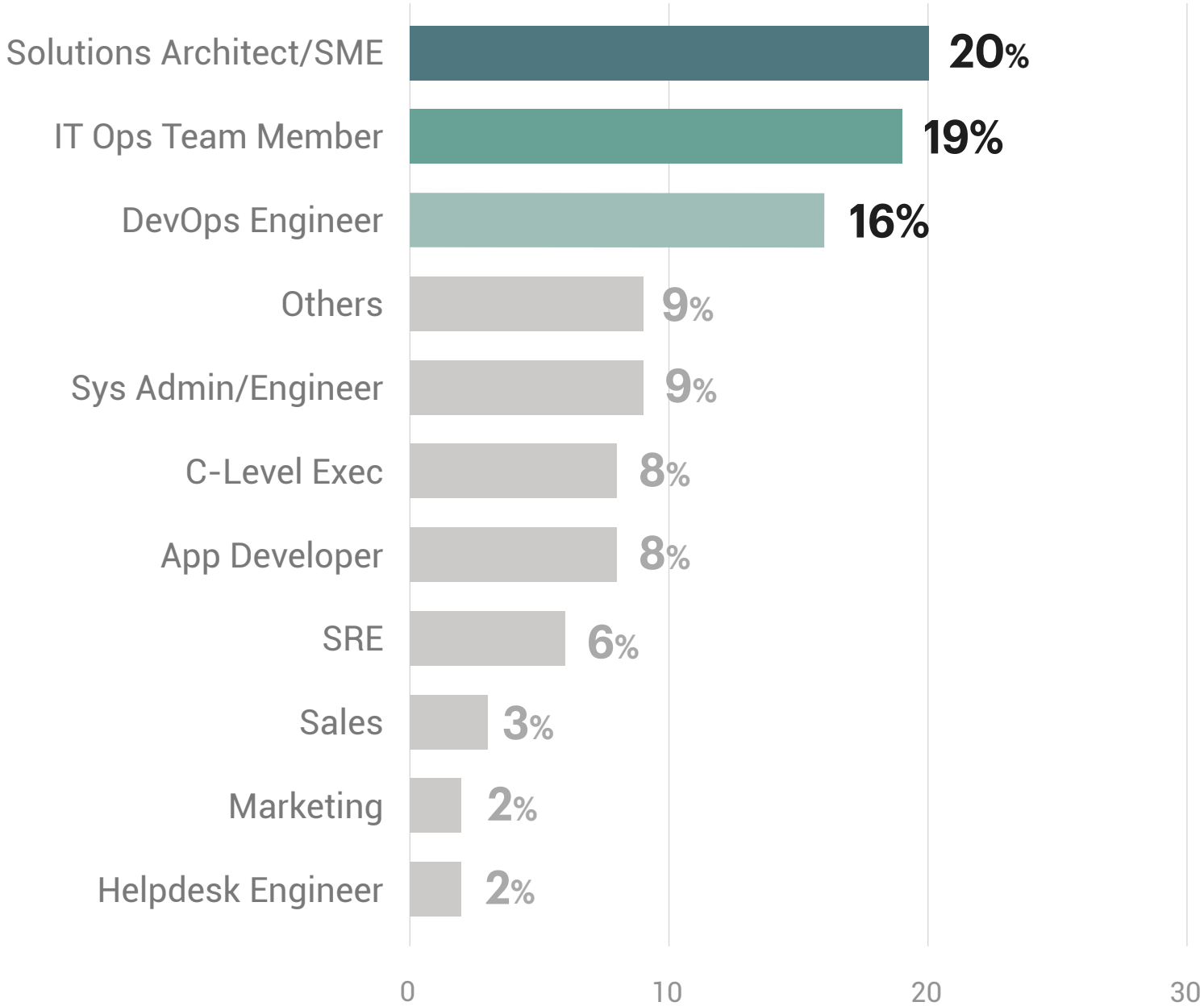
14% of respondents are from large enterprises with 25,000 servers or more.

44% of respondents are from small and medium with less than 1,000 servers.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

28. What is your role in your organization?

Distribution of respondents by their roles

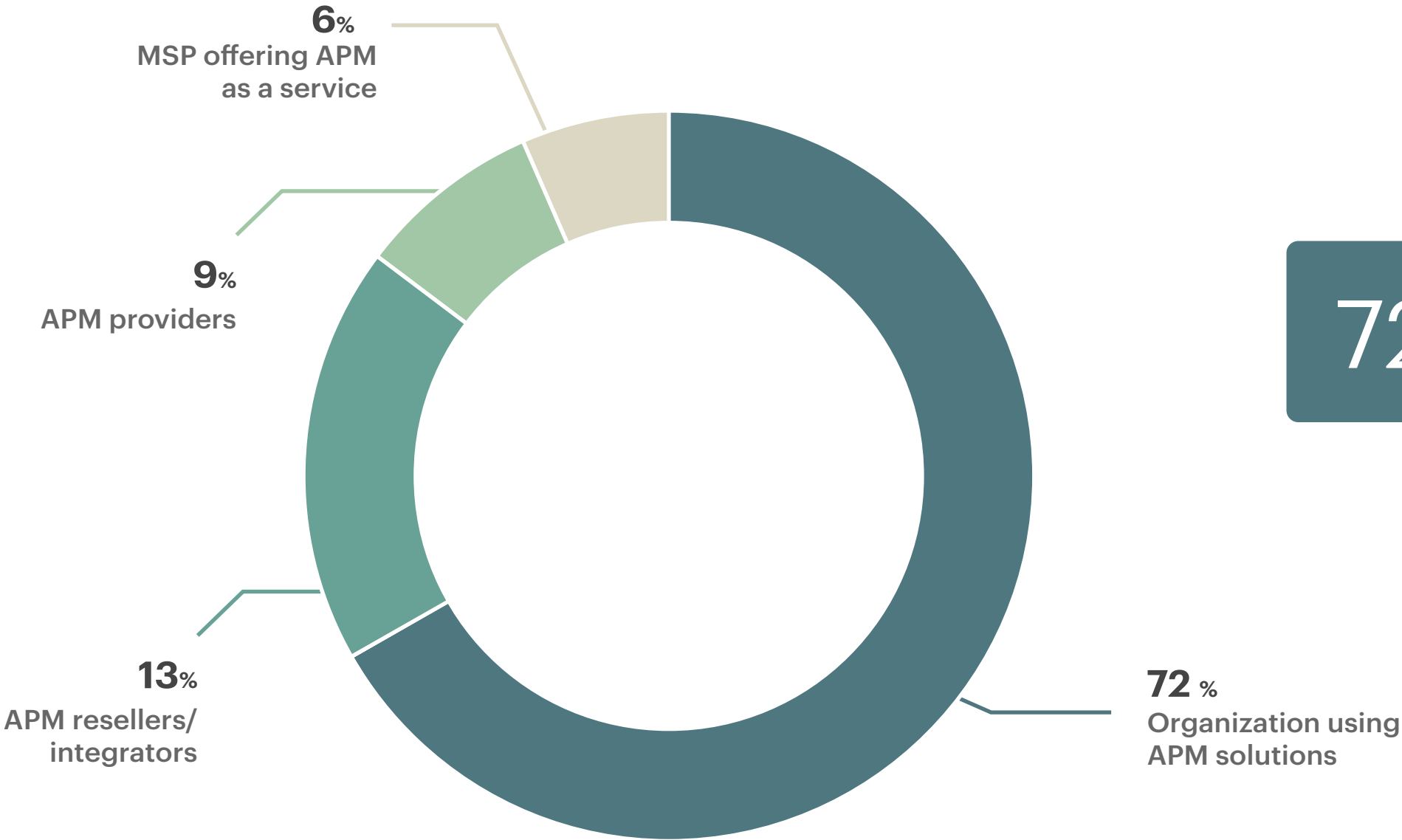


20% of respondents are Solution Architects/SMEs in their respective organizations followed closely by IT Ops Team Members at 19%.
DevOps engineers were third at 16%.

Respondents could select multiple answer options, therefore the percentages may not add up to 100%.

29. Which of these statements best describes your organization's connection with APM?

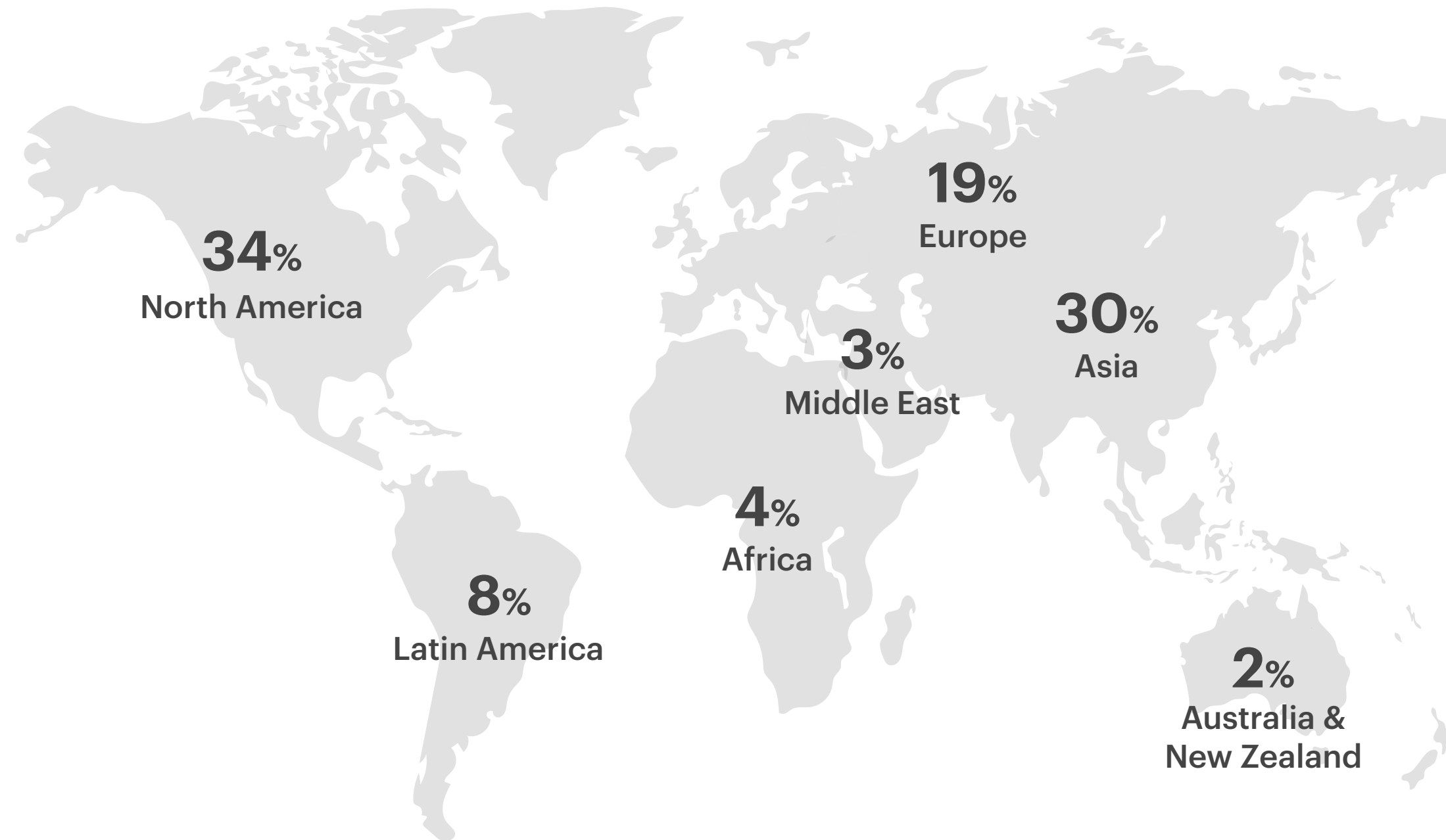
Breakdown of respondents' organizations based on their connection with APM



72% of respondents are from organizations using APM solutions.

30. Which region are you based out of?

Geographical distribution of survey respondents



About Us

About eG Innovations

eG Enterprise is an end-to-end performance management solution that allows enterprises to detect, diagnose, and resolve application performance issues before end-users are affected. Aligned with the universal functional dimensions of APM, eG Enterprise:

- Delivers deep performance visibility from application code to bare metal – across cloud, virtualized, containerized, physical, and hybrid IT infrastructures
- Ensures proactive detection and resolution of application slowdowns using built-in artificial intelligence, machine learning and root cause analysis
- Provides a unified console to monitor user experience, application and infrastructure performance, reducing disagreements and blame among application owners, IT Ops, DevOps, and developers

eG Enterprise APM delivers business transaction monitoring and code-level visibility for:



<https://www.eginnovations.com/application-performance-monitoring>

About DevOps Institute

DevOps Institute works to advance the human elements of DevOps. They create a safe and interactive environment where members can network, gain knowledge, grow their careers, support enterprise transformation, and celebrate professional achievements.

They are not just an information source; they connect and enable the global member community to drive human transformation in the digital age.

Members have access to an extensive certification portfolio, global research, collaborative bodies of knowledge, career resources, and their signature SKILup Day events.



60,000+

*DevOps Practitioners
Thought Leaders*



160+

Ambassadors



150+

Education Partners

<https://www.devopsinstitute.com/about-us/>

*Thank
you!*

A big thanks to all the 900+ IT pros who responded to our survey!

Your input has helped us compile this informative report for the industry.



For more information on Application Performance Monitoring:
Visit: www.eginnovations.com | Contact: info@eginnovations.com