



For the Complete Technology & Database Professional

2019 IOUG DATABASES IN THE CLOUD SURVEY

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TABLE OF CONTENTS

<i>Executive Summary</i>	3
<i>Public Cloud Adoption on the Rise</i>	4
<i>Cloud Benefits and Workloads</i>	7
<i>Most Recent Database Project</i>	11
<i>Most Recent Public Cloud Implementations</i>	13
<i>Demographics</i>	18

EXECUTIVE SUMMARY

Database systems have been part of corporate data centers for decades, and substantial infrastructures have been built around them to assure their security, resiliency and ability to support mission-critical applications. Now, much of the technology required to keep delivering business value is available in the cloud, which is fast becoming the de facto method of data deployment. Already, one-fourth of corporate data is being maintained by cloud providers, and data managers intend to move as much of their data environments into the cloud as soon as possible.

These are some of the findings of a new survey 202 data managers and professionals, conducted among members of the Independent Oracle Users Group (IOUG). The survey, fielded by Unisphere Research, a division of Information Today, Inc., in partnership with Amazon Web Services, covered a broad sample of company types and sizes.

Respondents were asked about their most recent database project—whether it was an upgrade, migration or addition of new functionality—and if it was in the cloud or on-premises. They were then asked about their most recent cloud-based database project. In some cases, these were one in the same.

The following findings came to light in the survey:

- On average, one in every four bytes of enterprise data is now managed by public cloud providers. This will increase, but hybrid cloud is the model for most.
- Scalability is the most oft-cited benefit seen in the cloud. At the same time, structural concerns dominate the tops of data managers' lists for moving to cloud.
- Close to half of new database projects are going to public cloud providers. While most database projects are still on-premises, these will soon be in the minority.
- Cloud now involves upgrading current systems as much as it is about new systems. Most cloud-based database deployments are coming out of on-premises environments.
- Cloud-based data functions are no longer at the periphery of enterprises—many are now supporting core enterprise applications.
- Hybrid is the arrangement going forward, as enterprises seek to leverage the best of what public cloud has to offer in combination with existing on-premises assets.
- Integration, skills and security were the three most pressing issues encountered during cloud migration processes.

Many of the executives and professionals participating in the survey are enthusiastic about the advantages cloud can bring to their enterprises. “The greatest value is that cloud offers cheap and cost effective storage capacity and reduced the need to have power on-premises,” according to one respondent. “It also allows access to the database anywhere in the world where there is access to the internet.”

There is definitely “value added to a data environment,” another respondent agrees. “The flexibility with amounts of storage, memory and access speeds has been incredible. We need more computing power...we just turn up the dial, and turn it down when we’re done.”

On the following pages are the results of this comprehensive survey.

PUBLIC CLOUD ADOPTION ON THE RISE

On average, one in every four bytes of enterprise data is now managed by public cloud providers. This will increase, but hybrid cloud is the model for most.

The amount of enterprise data now being maintained by third-party cloud providers has reached critical mass, the survey finds. Currently, data managers report, on average, that 25% of their organization's critical enterprise data is managed in public clouds. (See Figure 1.)

Accordingly, "high cloud adopters" and "low cloud adopters" in enterprise data cloud engagements were identified in terms of the amount of data now deployed in the public cloud. Twenty-four percent of respondents—the high cloud adopters—report having more than 35% of their data assets with public clouds, while 34%—the low cloud adopters—have less than 10% of their data in the cloud. Distinctions between these two groups are explored throughout this survey report.

Six in 10 data managers (60%) indicate their use of public cloud-based data resources and platforms has increased over the past year. For more than one-quarter, 26%, this increase exceeded 10% over the past year. The percentage anticipating more than 10% growth in public cloud adoption will expand from 26% to 28% over the coming year. (See Figure 2.)

The high cloud adopters in the survey have far more aggressive public cloud expansion plans than their low cloud counterparts. A majority of high cloud adopters, 53%, plan to expand their use of public cloud-based data resources and platforms over the coming year, compared to fewer than 20% of low cloud adopters. (See Figure 3)

While public cloud is gaining traction among most enterprises, respondents make it clear that they have no intention of going all the way with public cloud. Two-thirds say it's likely they will be moving into hybrid cloud arrangements over the next one to two years. One in five indicate they still have no cloud plans at this time. (See Figure 4.)

For one data manager, the value of cloud is "in the decreased need for backup and high-availability support from on-premises teams." In addition, the company gains "in integrating third-party software without adding the support demand to our support teams." Another respondent observes that her company's "cloud-based solutions have significant potential to leverage access to data by many users, including customers, who see the greatest value because they can access information at will."

Figure 1: Where is your organization's data located and managed?

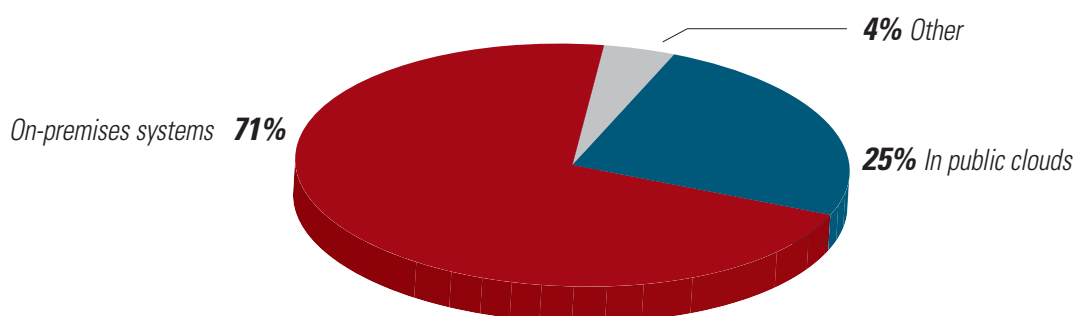


Figure 2: How has your use of public cloud-based data resources and platforms changed over the past year? How will it change next year?

	Past 12 months	Next 12 months
Decrease	2%	2%
No change	32%	18%
Increase 1–5%	18%	15%
Increase 6–10%	16%	17%
<hr/>		
Increase 11–25%	13%	17%
Increase 26–50%	9%	11%
Increase by more than 50%	4%	10%
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Total Increase	26%	38%
Don't know/unsure	7%	9%

Figure 3: Public Cloud Expansion Plans (greater than 10% expansion indicated)

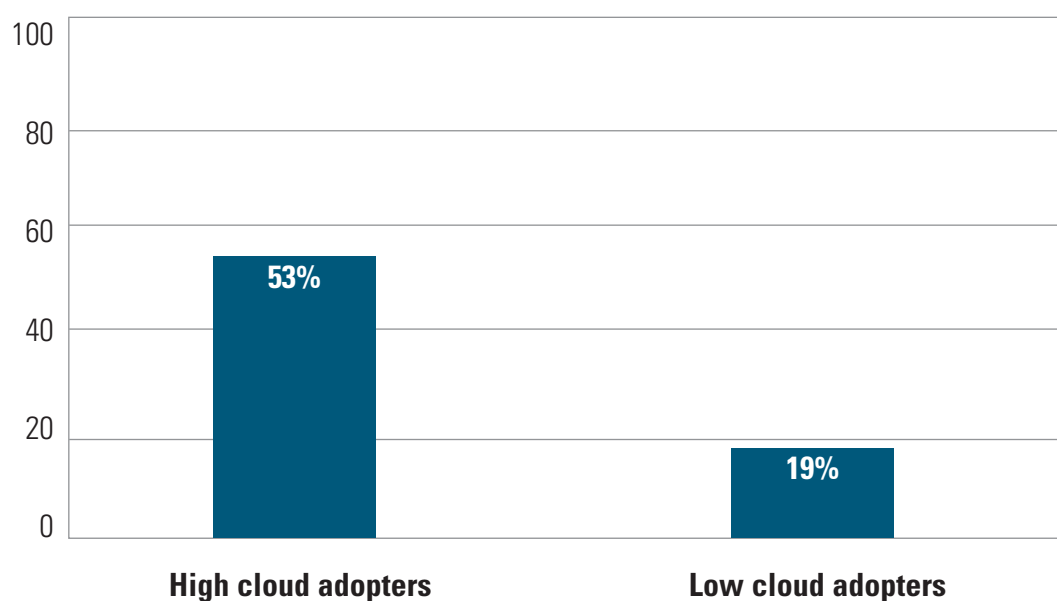
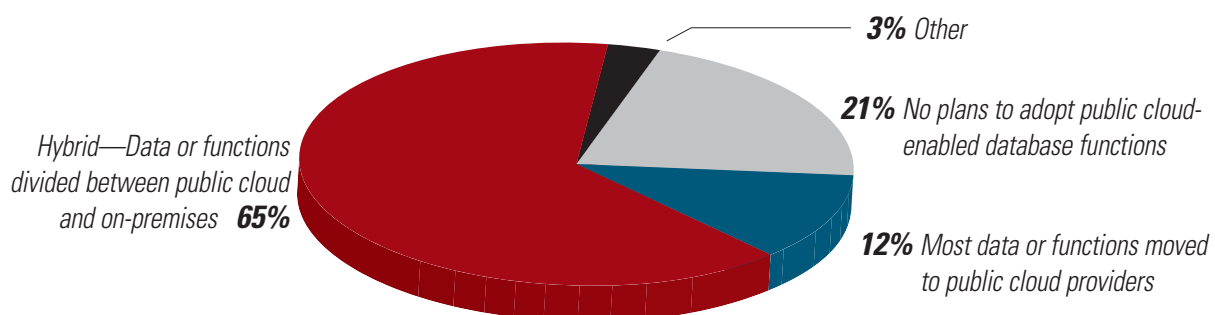


Figure 4: What kind of cloud database environment will your organization be adopting in the next 1-2 years?



CLOUD BENEFITS AND WORKLOADS

Scalability is the most oft-cited benefit seen in the cloud. At the same time, structural concerns dominate the tops of data managers' lists for moving to cloud.

While reduced costs were often the driving force to cloud implementations in the early days—and remains so—IT leaders and professionals are now even more likely to see cloud as a way to quickly scale and support their growing application environments and data sets. A majority of data managers that have migrated to cloud, 54%, say they are seeing greater scalability. Cost and lowered administration also factor in as important benefits: 44% of cloud implementers say they have achieved lower costs, while 43% are seeing a reduced need for infrastructure maintenance as a result of contracting with cloud services. (See Figure 5.)

Cost savings is the leading reason enterprises are turning to cloud computing at this time, as indicated by 50%. Another 43% cite the cloud's ability to deliver greater capacity and storage, while 24% see the cloud as a way to ensure backup and storage. Close to one in four, 24%, also are focusing on

business advantages delivered through cloud, such as analytics capabilities. (See Figure 6.)

It comes as no surprise, then, that data storage is the primary type of workload supported in cloud implementations, indicated by close to half of respondents (48%). Spinning up dev/test environments for application development is the second-ranked type of workload supported by cloud at 40%. Business workloads also are a key part of the cloud equation, with 35% running analytics applications within cloud sites, along with 30% who now run ERP or enterprise applications in the cloud. (See Figure 7.)

“Currently we use mostly IaaS for hosting our databases,” states a respondent. “But in near future, we will migrate some of those to partially managed cloud solutions due to customers' requirements for decreasing administration and on-premises costs.”

Figure 5: What are the benefits your enterprise is seeing as a result of migrating database(s) to a public cloud platform

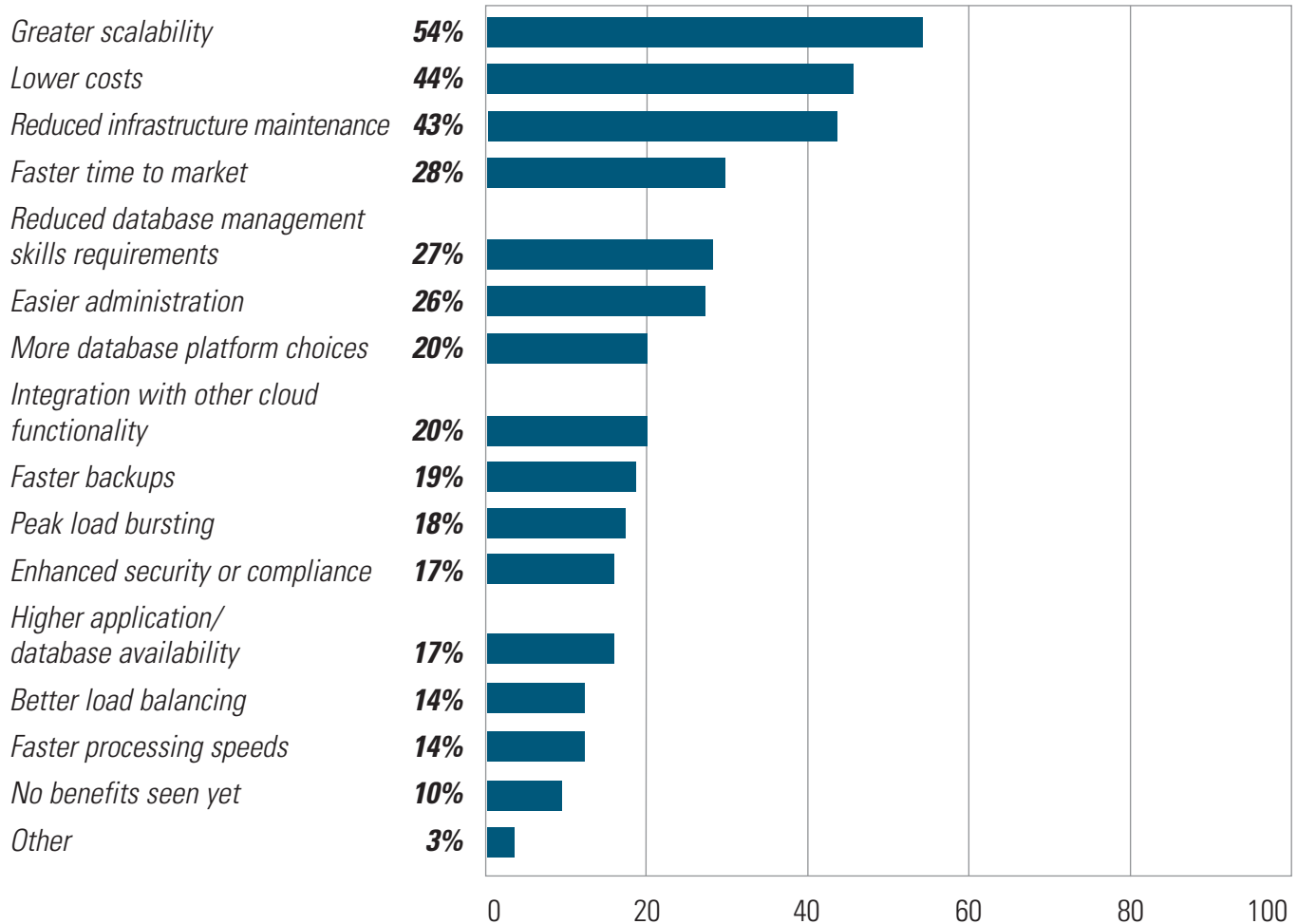


Figure 6: What is driving your adoption of cloud-based data environments?

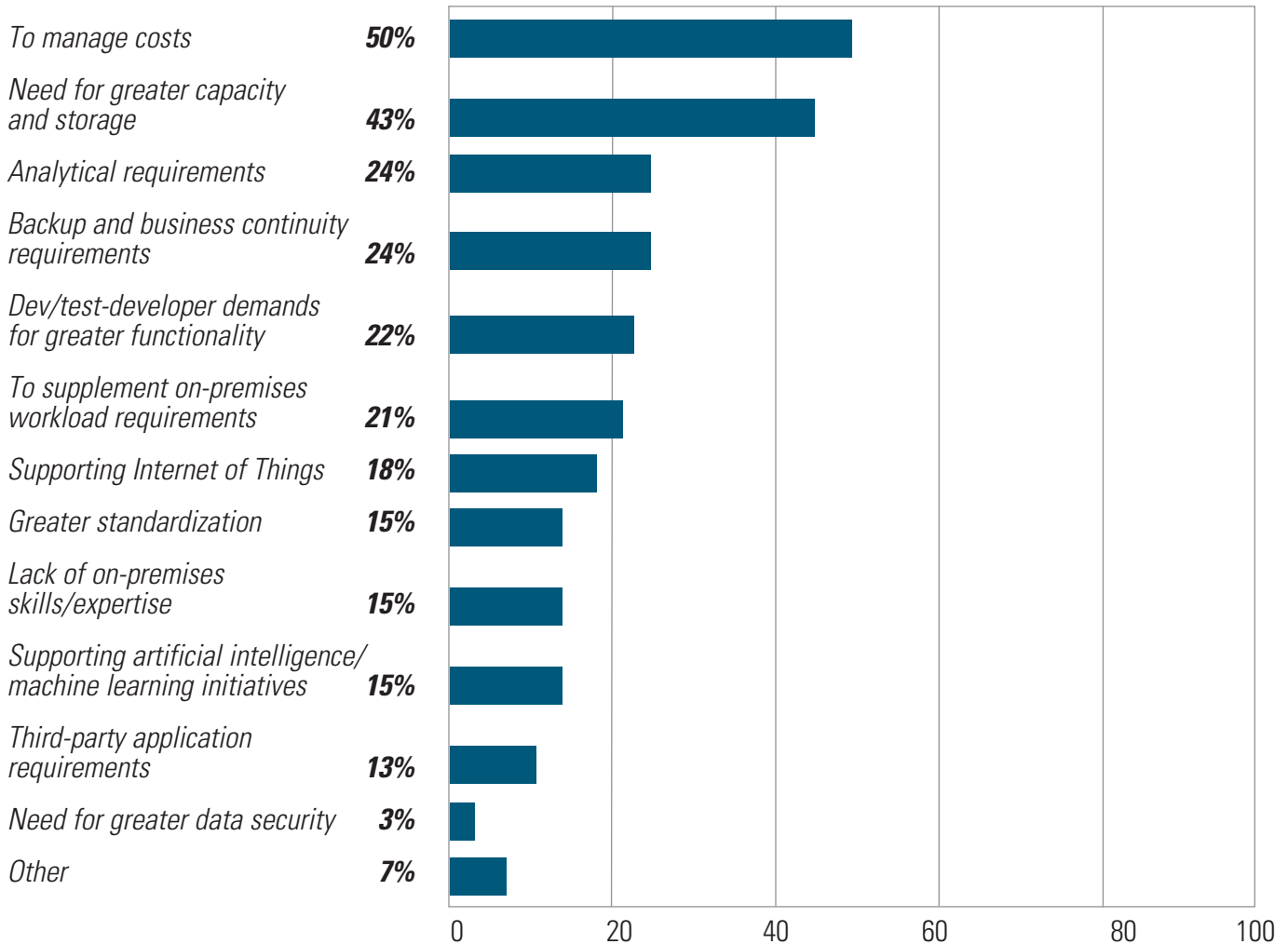
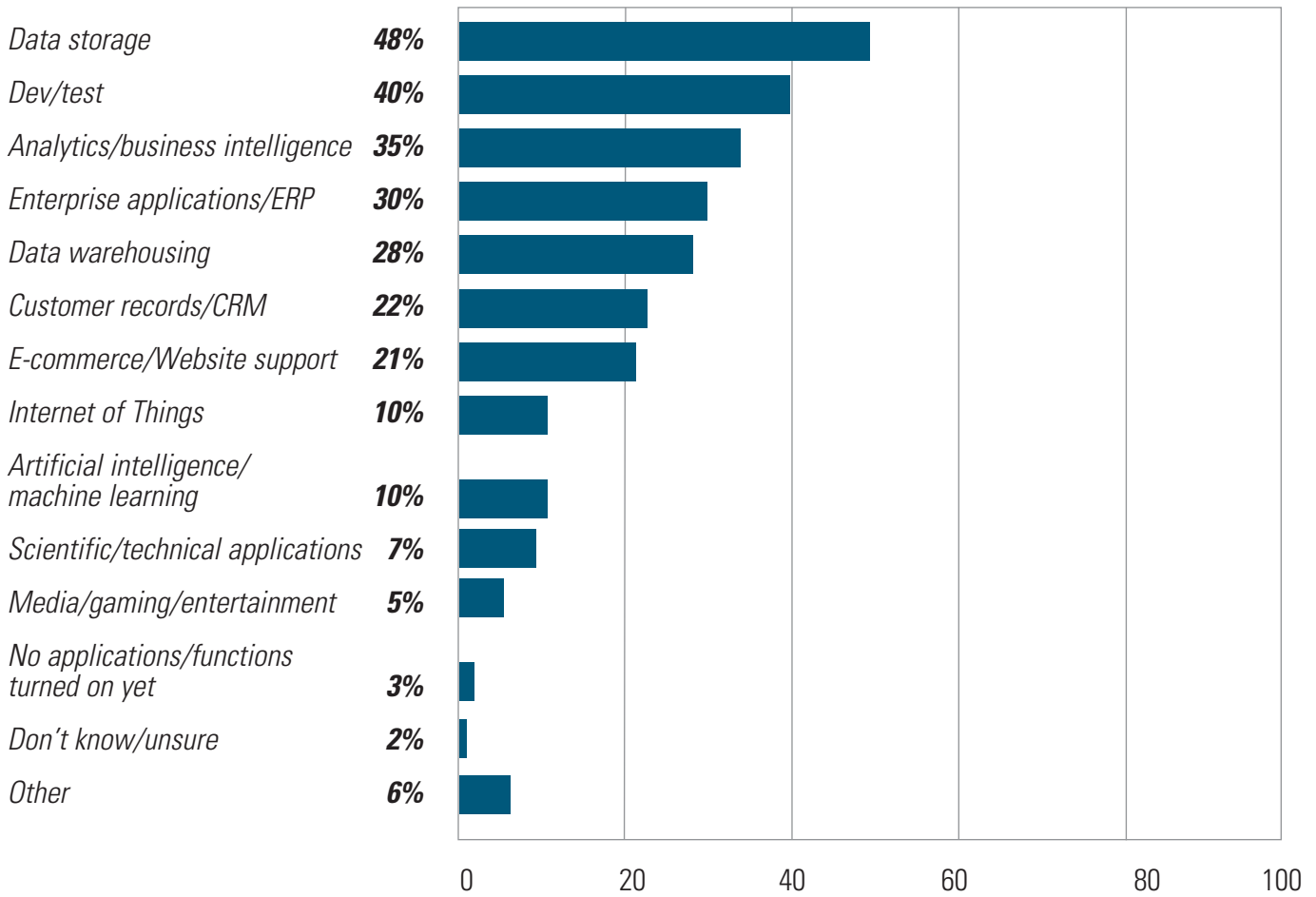


Figure 7: What workloads are currently performed via your cloud services?



MOST RECENT DATABASE PROJECT

The greatest shift in databases over the next three years will be from on-premises systems to hybrid environments. At the same time, close to half of new database projects are going to public cloud providers. While most database projects are still on-premises, these will soon be in the minority.

Respondents were asked about their most recent database project—whether it was an upgrade, migration or addition of new functionality—and if it was in the cloud or on-premises. For the next section, respondents were then asked about their most recent cloud-based database project. In many cases, these projects were one and the same.

Even for organizations that currently have mainly on-premises databases, there is a looming shift toward hybrid environments on the horizon, the survey shows. For their latest database projects, organizations are close to evenly split between deploying in the cloud or on-premises, with a tilt toward on-premises. A total of 44% deployed their projects in the public cloud or as part of a hybrid architecture split between cloud and on-premises, while 52% indicated their most recent database project involved an on-premises implementation. When it came to cloud, 14% opted to host their entire database in the cloud, while 12% turned to cloud Software as a Service offerings that include back-end data functionality. (See Figure 8.)

For some companies, previous investments in on-premises infrastructure is either restricting their cloud choices, or serves as insurance in the event of disruption. “For my organization,

I see value in moving the lower environment to cloud,” one respondent explained. “However, moving everything to cloud is not possible as we have done lot of investment in on-premises solutions.” Another stated that they will remain on-premises “with mission-critical applications where downtime is a priority,” noting that if a “cloud app were to go down for any reason—any link in the chain—I do not want to have to tell management that we can’t issue a PO or transact inventory—this would be a huge disruption to our production.”

In most cases, as cited by 63%, these projects came off of on-premises environments. Most database managers do not expect these particular projects to be on-premises within the next three years, however—only 26% expect their work to remain onsite in their organizations. (See Figure 9.) Among the high cloud adopters in the survey, while a majority report their databases are still on-premises (52%), close to half will be moving data to public cloud settings (48%), with another 33% with hybrid clouds. While low cloud adopters are still mainly on-premises (73%), at least 43% indicate they will remain with on-premises data, while 35% will be moving to hybrid cloud arrangements. (See Figure 10.)

Figure 8: What was the location of your most recent implementation?

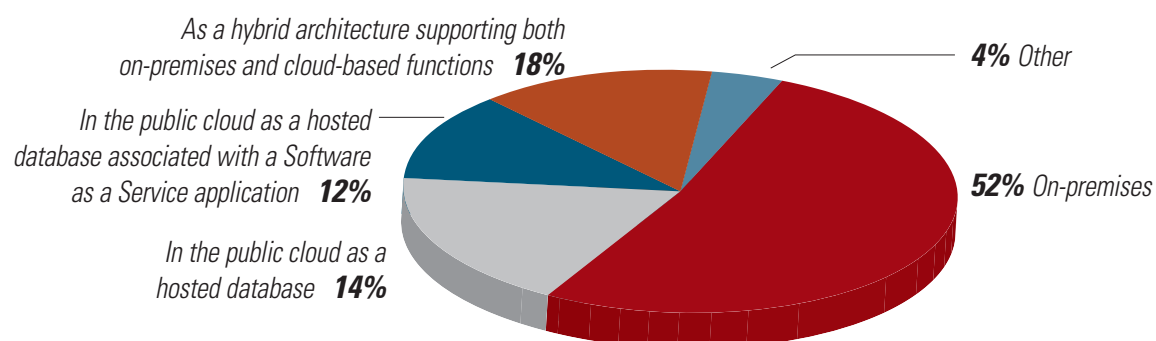


Figure 9: If you upgraded or migrated an existing environment with your most recent database implementation, where did it reside previously? Where will it reside in three years?

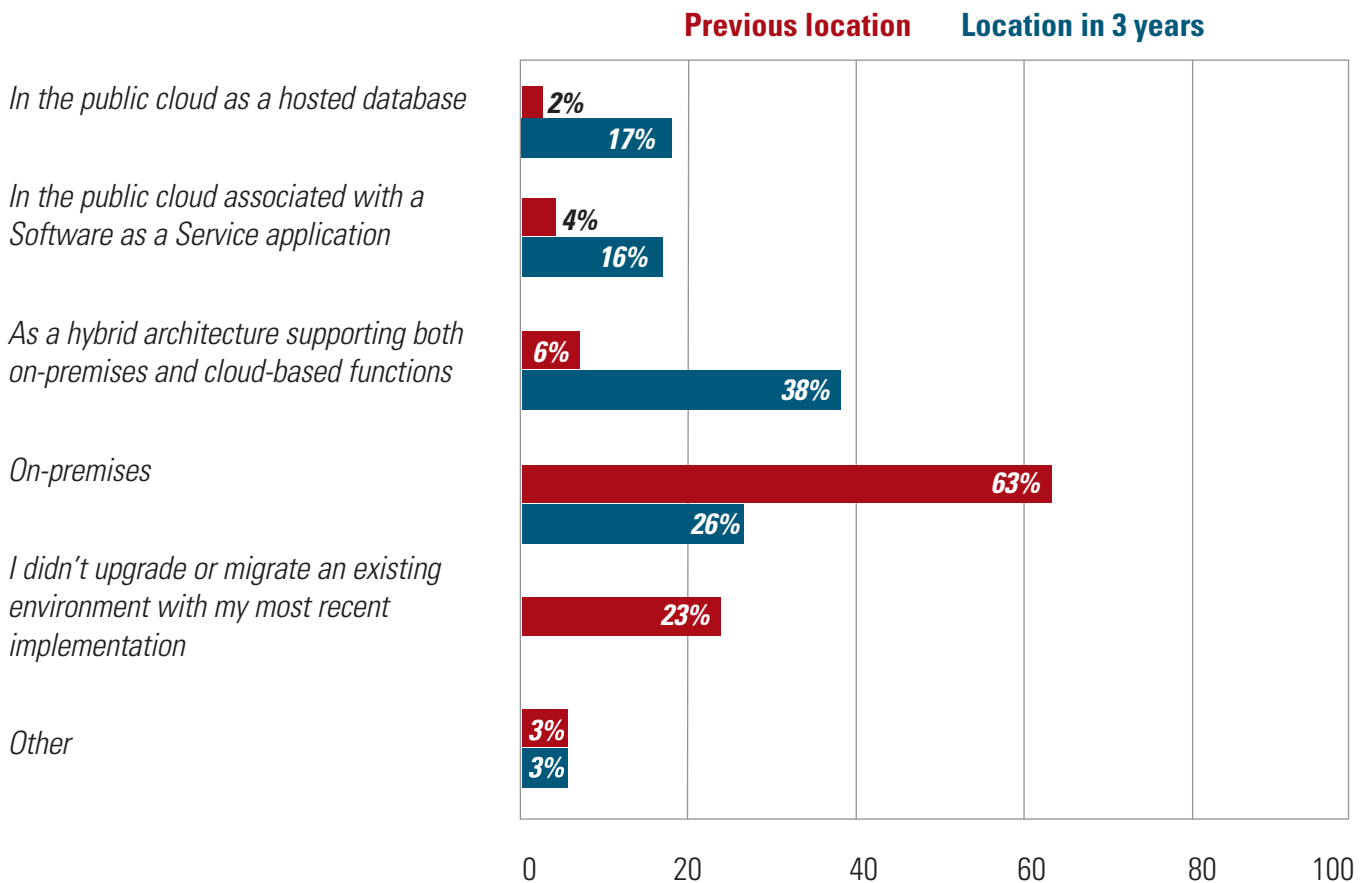


Figure 10: Location of Databases Three Years From Now

High cloud adopters 52% on-premises —> 48% public cloud, 33% hybrid cloud

Low cloud adopters 73% on-premises —> 43% on-premises, 35% hybrid cloud

MOST RECENT PUBLIC CLOUD IMPLEMENTATIONS

Cloud now involves upgrading current systems as much as it does new systems. Most cloud-based database deployments are coming out of on-premises environments.

While cloud has typically been seen as a platform applied to new initiatives, a majority of database managers indicate that cloud is being applied to upgrade or replace existing systems. (See Figure 11.) Forty-one percent state that their latest cloud project was to add new functionality, but 59% say it was intended to either replace an existing system (35%) or upgrade the features of an existing system (24%).

A majority of respondents, 59%, indicate that their most recent cloud project involved migrating off of their on-premises environment. Within the next three years, only 9% of projects will involve on-premises migrations. (See Figure 12.)

Cloud-based data functions are no longer at the periphery of enterprises—many are now supporting core enterprise applications. Hybrid is the arrangement going forward, as enterprises seek to leverage the best of what public cloud has to offer in combination with existing on-premises assets.

While cloud implementations in the early days were typically for edge-of-enterprise functions—such as organizing sales communications—cloud is now moving closer to the core of enterprises. A large segment of public cloud data projects, 41%, went to directly supporting production applications. (See Figure 13.) Interestingly, for 27% of the group, this was their very first public cloud deployment for a database function. The largest segment, 44%, report this is among the first five or six cloud-focused projects. (See Figure 14.)

Hybrid cloud computing discussed in the first section, is still not fully being realized, but this is likely to change soon. There is momentum for hybrid—while only 6% of all database

implementations involved hybrid arrangements, this is the most common form of cloud-focused project, cited by more than one-third. (See Figure 15.)

Integration, skills and security were the three issues encountered during cloud migration processes.

Networking and connectivity issues were the most frequently cited challenge, with 37% reporting this as a problem in their latest cloud project. Another 35% encountered issues with performance, and the same amount needed more skills than were readily available. More than one-third of respondents also raised concerns about security. (See Figure 16.) “We’ve seen increased processing speed with the cloud servers, but are still experiencing slowness in connections from on-prem to cloud,” according to one respondent. “We’re also getting a lot of network errors and downtime due to cloud issues.”

Some executives and professionals still need to be convinced about the potential benefits of cloud. A respondent frankly stated that “we see no benefit from cloud based databases. The loss of control, potential security issues, latency, communication as a point of failure, and cost all argue against a move from on premises.”

In terms of lines of responsibility, DBAs are most likely to be put in charge of public cloud database projects, as cited by 42% of respondents. IT operations teams and outside service providers took the lead at 18% of enterprises each. (See Figure 17.) When it comes to mature cloud data sites, DBAs tend to assume a greater role, the survey shows. Among high cloud adopters in the survey, 53% say their DBAs are in charge, while low cloud adopters tend to divide cloud management between their service providers and DBAs. (See Figure 18.)

Figure 11: Was the main purpose of your most recent public cloud database implementation to add new functionality, upgrade, or migrate an existing environment?

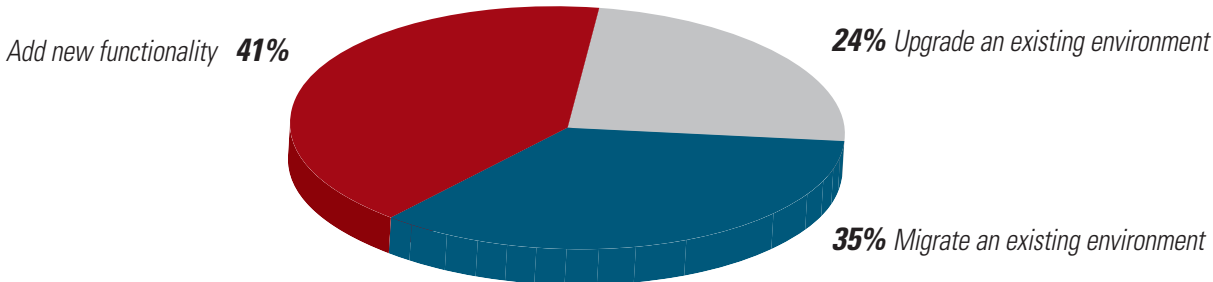


Figure 12: If you upgraded or migrated an existing environment with your most recent database implementation, where did it reside previously? Where will it reside in three years?

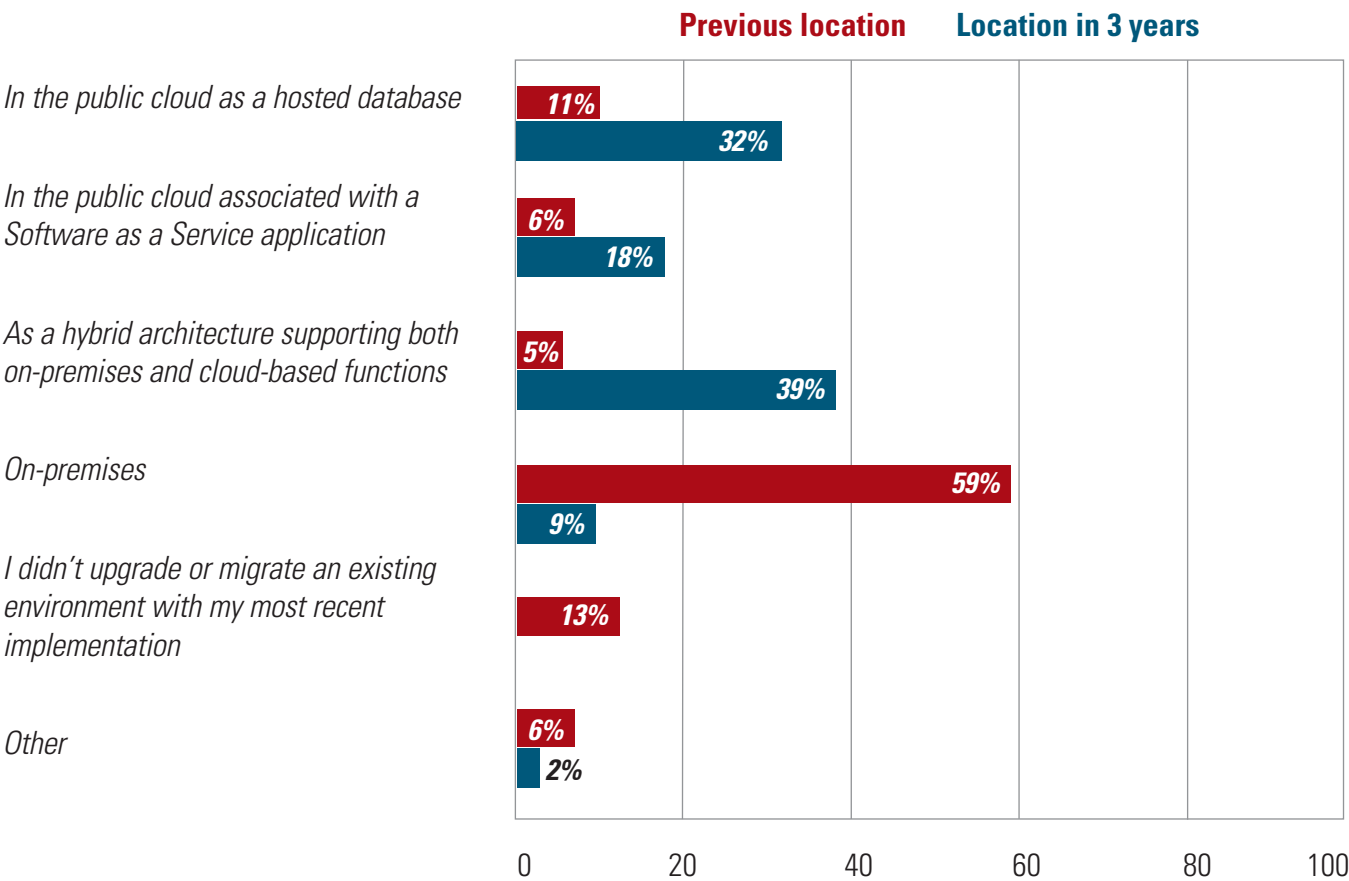


Figure 13: Please tell us about your most recent public cloud-based enterprise database implementation. What was the purpose or function of this database?

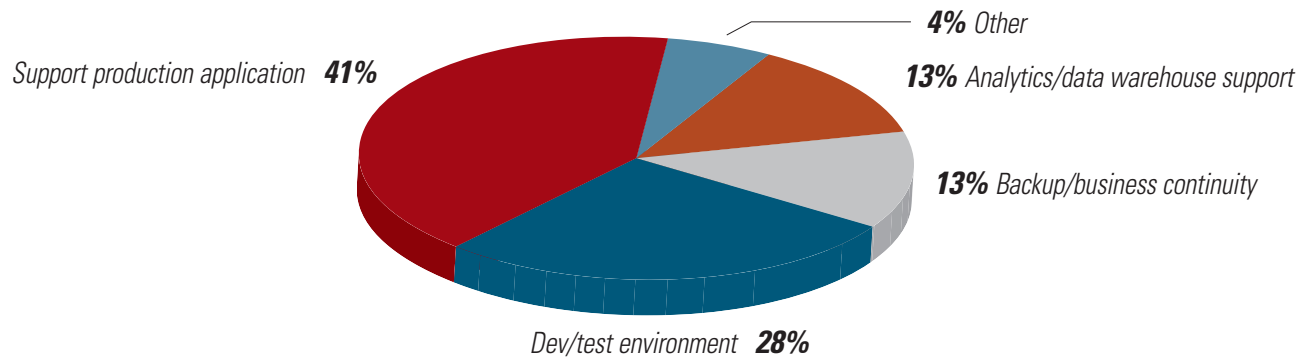


Figure 14: Did you have other cloud-based databases deployed before this most recent public cloud database implementation?

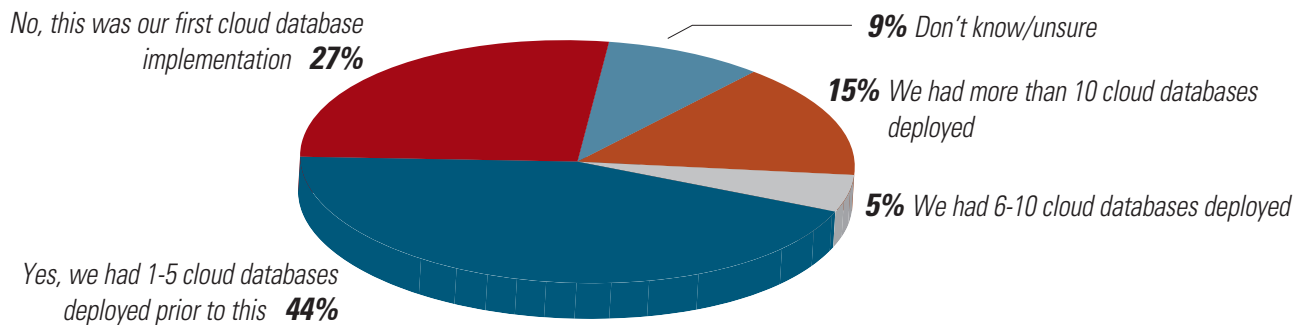
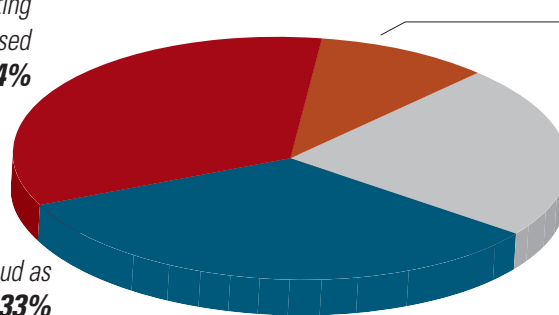


Figure 15: How is this public cloud database deployment structured?

As a hybrid architecture supporting both on-premises and cloud-based functions **34%**

In the public cloud as a hosted database **33%**



10% Other

23% In the public cloud associated with a Software as a Service application

Figure 16: What were some of the challenges you encountered during this implementation process?

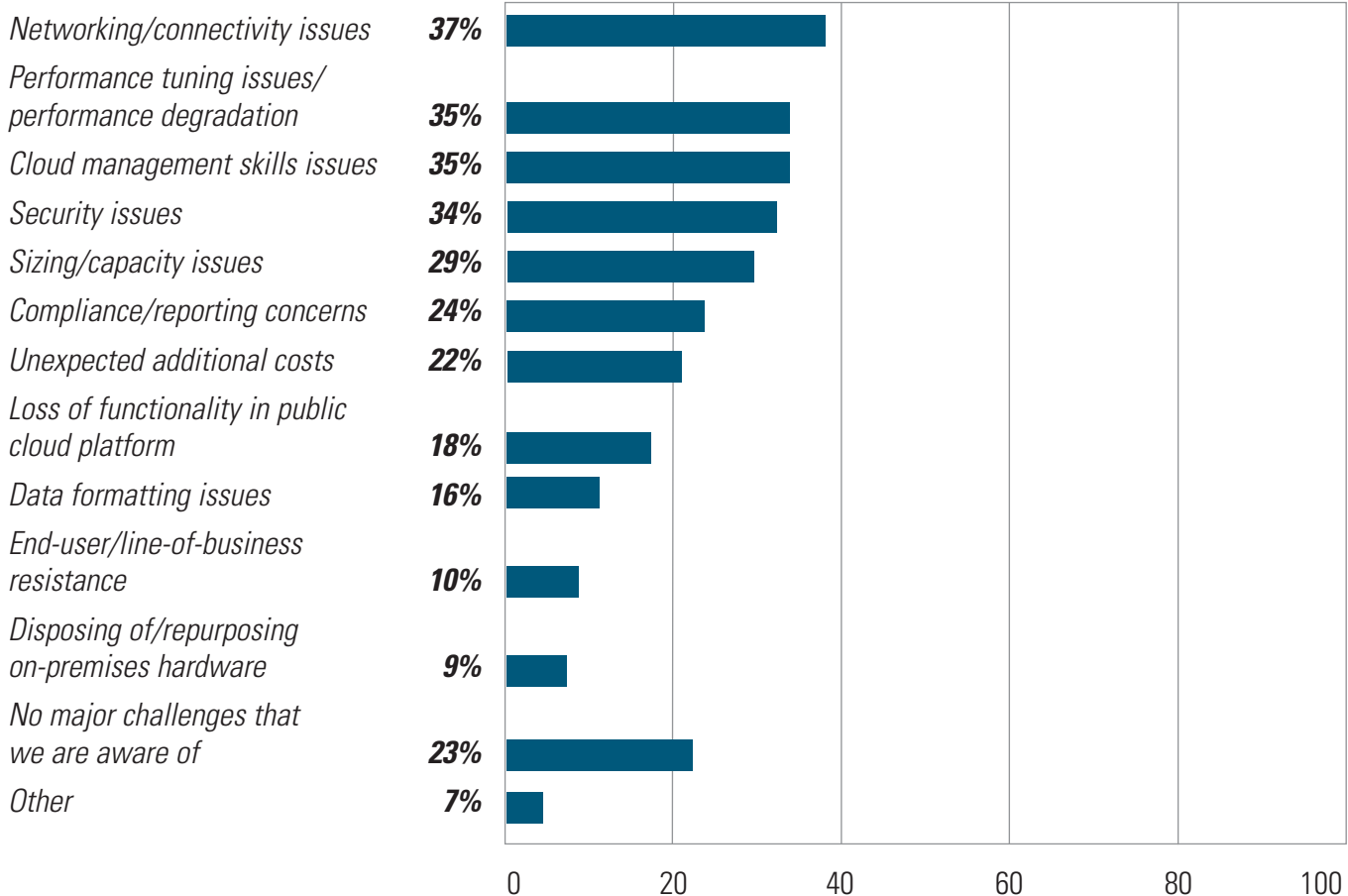


Figure 17: Who is responsible for managing this public cloud database deployment?

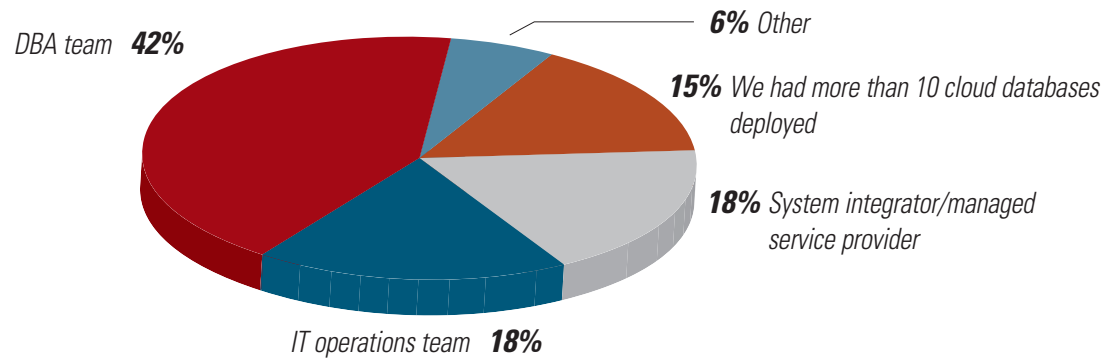
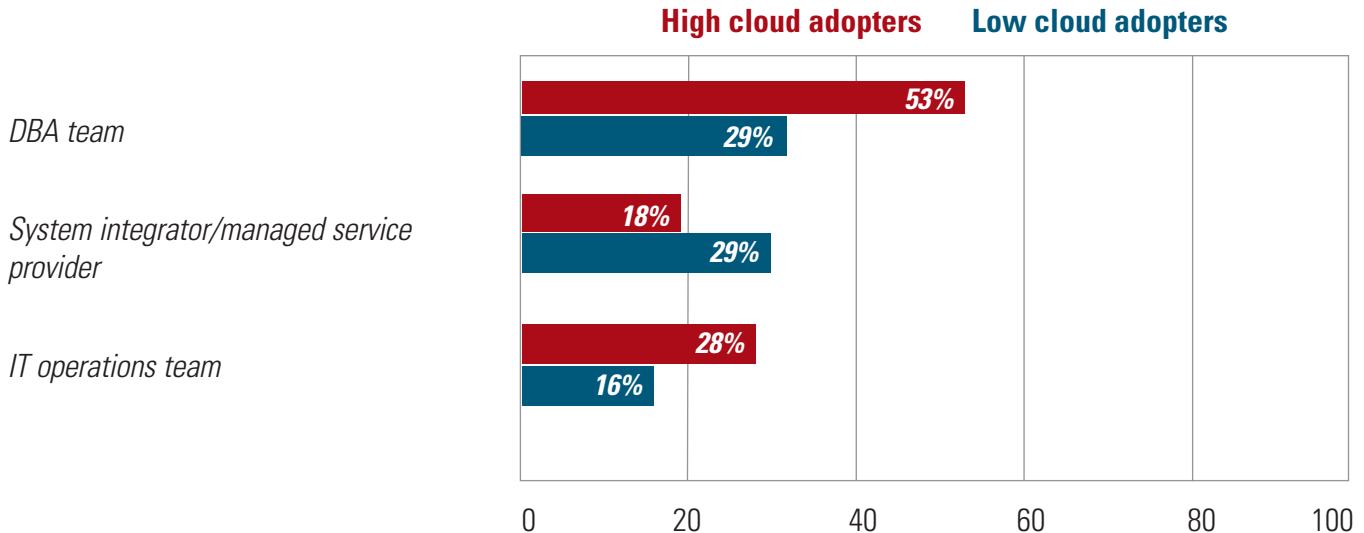
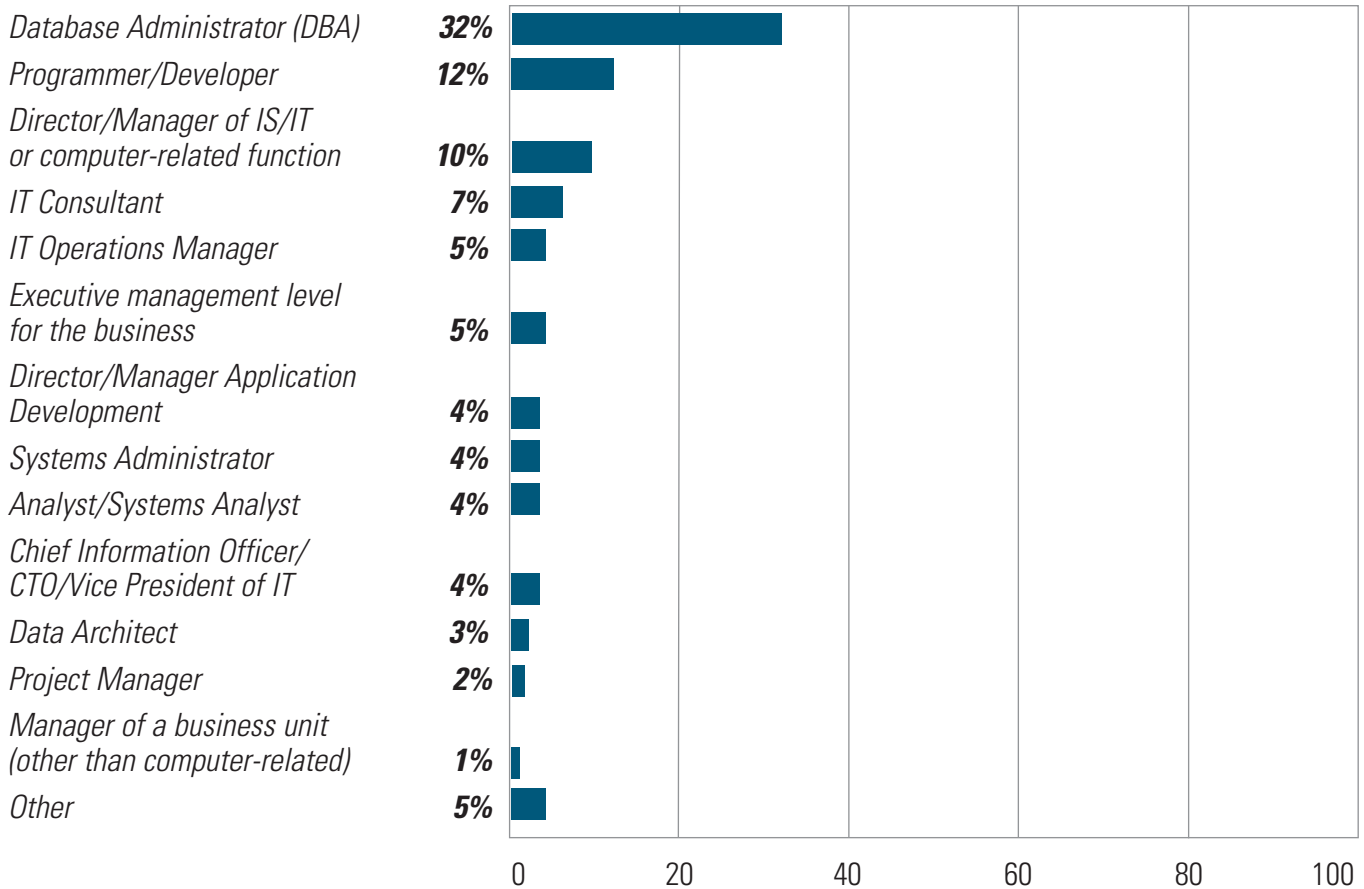


Figure 18: Who is Responsible—High cloud adopters versus low cloud adopters



DEMOGRAPHICS

Figure 19: What is your primary job title?



**Figure 20: How many employees are in your entire organization?
(Include all locations, branches, and subsidiaries)**

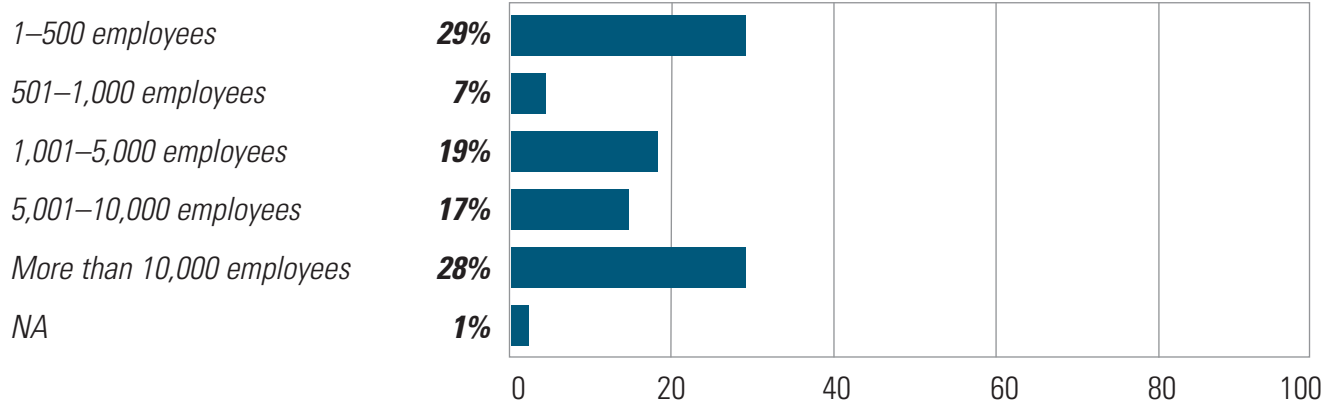


Figure 21: What is your organization's primary industry?

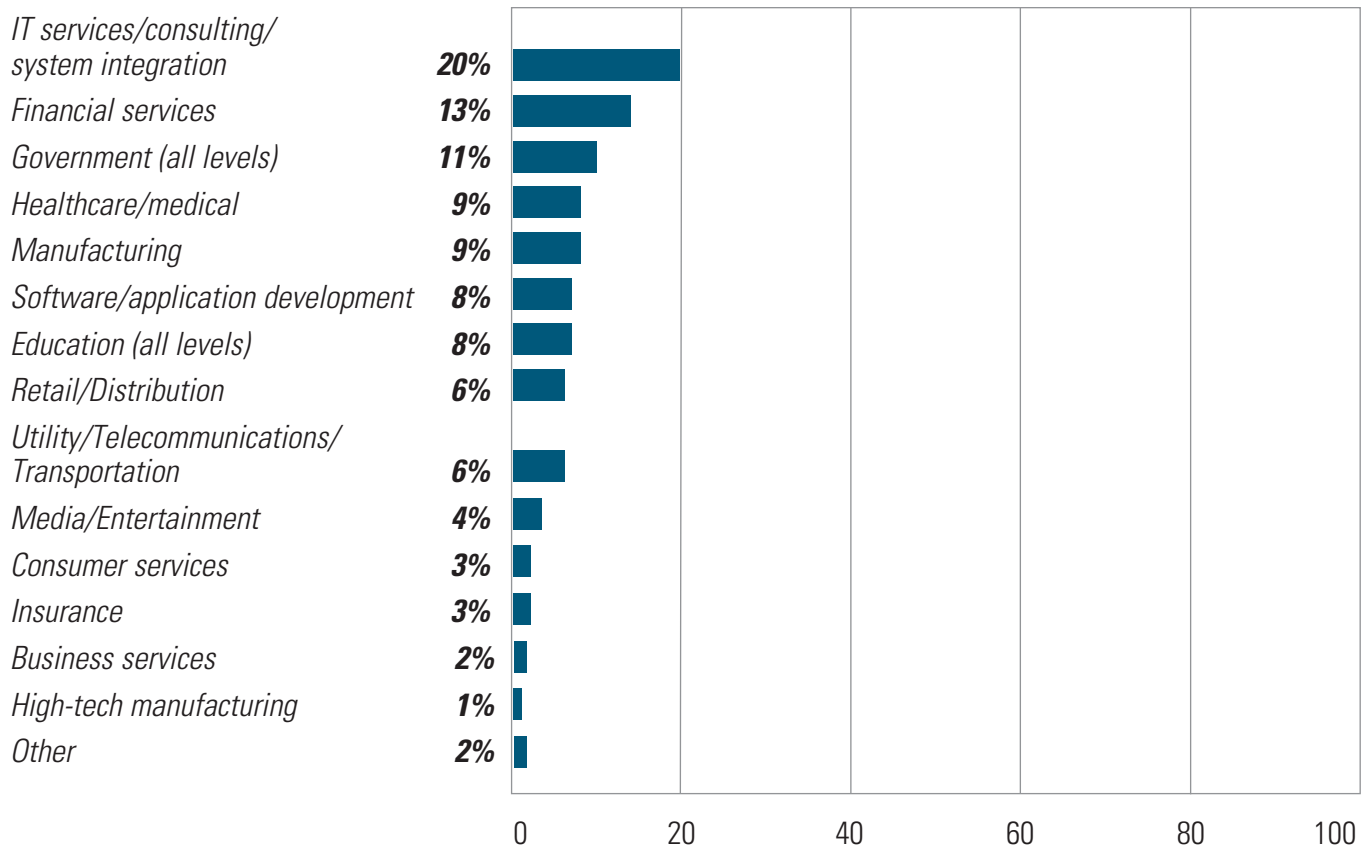


Figure 22: How many databases does your organization currently own, including production, testing and development?

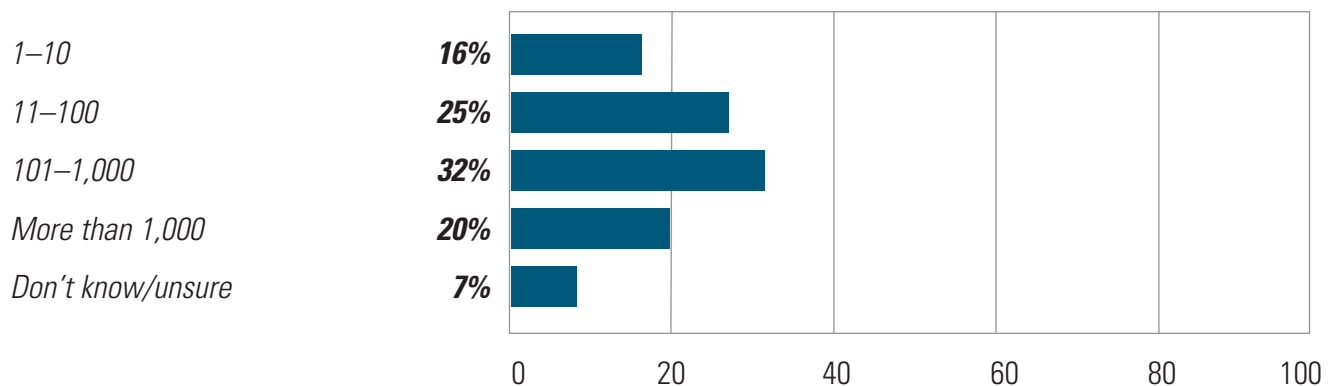


Figure 23: What databases do you and your team work with?