IOUG ResearchWire

KEEPING UP WITH EVER-EXPANDING ENTERPRISE DATA

2010 IOUG Database Growth Survey

By Joseph McKendrick, Research Analyst

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Thomas J. Wilson, President

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Data collection and analysis performed with SurveyMethods.

EXECUTIVE SUMMARY

There is great awareness of and attention on database growth these days. Estimates put the amount of data in existence at this time at more than a zettabyte (or a trillion gigabytes), which would be the equivalent of 75 billion fully loaded iPads. All this data is streaming into and through enterprises from transactions, remote devices, partner sites and user-generated content. Formats vary from structured, relational data to graphics and videos.

In addition, enterprises are mandated to retain much of this data, and to be able to make the information available as users require. But it's increasingly clear that these enterprises are having difficulties managing the growing volumes of data, and there has also been an impact on application performance. New research shows that companies are responding to these challenges by throwing hardware at the problem. A new survey of 581 members of the Independent Oracle Users Group (IOUG), sponsored by Oracle Corporation, finds that managing data growth is a priority for many companies, but smarter responses are needed to address the challenge. The survey was conducted in July and August 2010.

A majority of respondents report having performance and budget issues due to exponential data growth. Those companies with the highest rates of data growth, in fact, are eight times more likely than slow-growth sites to be seeing significant increases in their storage budgets. New processes and tools are needed to help organizations take control of the massive volumes of information now moving through their systems. The IOUG survey looked at approaches being taken by organizations to manage their growing data stores, and what still needs to be done.

Key survey findings include the following:

- Data is growing rapidly at nine out of 10 respondents' companies, and business growth is driving this expansion in data stores. Sixteen percent of companies are experiencing data growth at a clip exceeding 50 percent a year. Many companies have large numbers of both Oracle and non-Oracle databases.
- Two out of five respondents' companies recognize the value of information lifecycle management to better manage storage growth. However, these are the early stages for ILM strategies for most companies. ILM approaches are most common at companies with high levels of data growth, though the most common approach continues to be that of buying new hardware to address the problem.
- An overwhelming majority of respondents say growing volumes of data are inhibiting application performance to some degree. The problem is even more acute at enterprises with the highest levels of data growth. However, most still attempt to address the problem with more hardware, versus more sophisticated/efficient approaches.
- Many companies feel compelled to retain data for extended periods of time—forever in some cases—and are having difficulty making it accessible to end users.
- Data storage budgets also keep growing. A sizable segment of companies with fast-growing data stores spend more than one-fourth of their IT budgets on storage requirements.

On the following pages are the detailed survey results, which explore the size of the rapidly expanding data market, along with traditional and more efficient approaches to managing this challenge.

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EXPLODING DATA GROWTH

Data is growing rapidly at nine out of 10 respondents' companies, and business growth is driving this expansion in data stores. Sixteen percent of companies are experiencing data growth at a clip exceeding 50 percent a year.

Just a few years ago, it was eye-opening when some organizations reported having databases topping the one-terabyte (TB) mark. Now, for many organizations, data is going into the hundreds of terabytes. One out of five respondents report that the total amount of online (disk-resident) data they manage today—taking into account all clones, snapshots, replicas and backups—tops 100 TBs. (See Figure 1.)

There are marked differences in data amounts by company size, the survey also finds. Among the smallest organizations surveyed (500 or fewer employees), only five percent report having more than 100 TBs of data—compared to 39 percent at their larger counterparts employing 10,000 or more. (See Figure 2.)

It's not a big surprise that nine out of 10 respondents saw jumps over the past year in the amount of data they manage. In a few organizations (16 percent), the volume expanded at a rate of more than 50 percent. (See Figure 3.)

The growth in data volumes may in some cases be a favorable trend, reflecting expansion within respondents' businesses. More than six out of 10 respondents report their data volumes have grown due to growing business demand, making this the leading driver of database growth. The drive to better compete on analytics is also a major factor in data growth. Half of the respondents also say their businesses are ramping up their data warehouse and business intelligence initiatives. (See Figure 4.)

Many of the sites covered in this survey employ a large number of Oracle database instances. In one out of five cases, respondents report currently having more than 100 instances of Oracle databases in their enterprises. (See Figure 5.) In addition, a similar number also have 50 or more non-Oracle database instances in production at their sites. (See Figure 6.)

There are huge disparities in the results when considering company size, however. While 38 percent of the largest organizations in the survey report having more than 100 instances of Oracle databases, only three percent of smaller firms have such numbers. (See Figure 7.) Among sites with non-Oracle databases, the difference is even starker—only one percent of the smallest companies have large numbers of non-Oracle databases, versus 25 percent of the largest enterprises. (See Figure 8.)

Another factor creating the massive surge in corporate database sizes is the fact that much of the data coming into and being retained by enterprises is copied, often multiple times. A majority of respondents' companies, 56 percent, report they have three or more copies of their production data made available for non-production purposes—such as testing, backup, mirroring, standby, or training. (See Figure 9.)

What proportion of respondents' data is managed in a database versus outside a database, such as file servers? The largest segment, 42 percent, report than most of this data—which may include text and video—is managed within databases. (See Figure 10.)

Most respondents report that their departments are consumed with database performance issues, and this will be their main priority over the coming year. Close to half are also concentrating on database migration projects. Two out of five are also looking for ways to consolidate their databases. (See Figure 11.)

When looking at how data priorities are altered by the pace of rapid data growth, differences emerge. Among the 16 percent of companies considered to be "high-data-growth" enterprises (reporting growth exceeding 50 percent over the past year), there is far stronger support for initiatives such as cloud, clustered, or grid computing than among their low- or no-growth counterparts. Companies with high data growth are almost three times more likely to be looking at cloud/grid strategies, and twice as likely to be considering information lifecycle management approaches, in which data is actually managed and staged from initial production to final archived storage. Optimizing database performance is a top priority, regardless of how fast data stores are expanding. (See Figure 12.)

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Figure 1: Total Amount of Data Managed

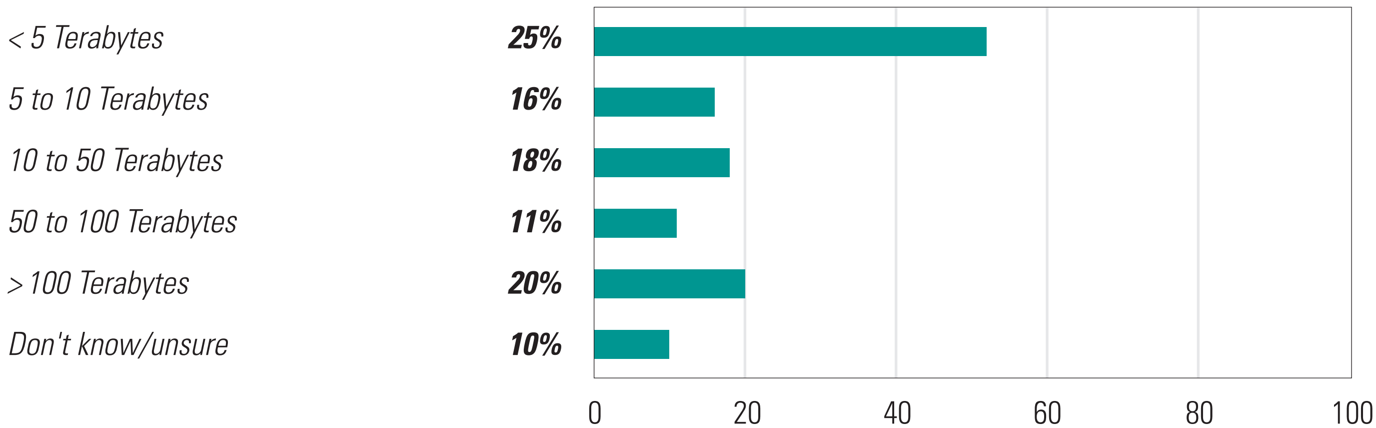

Figure 2: Total Amount of Data Managed—By Company Size

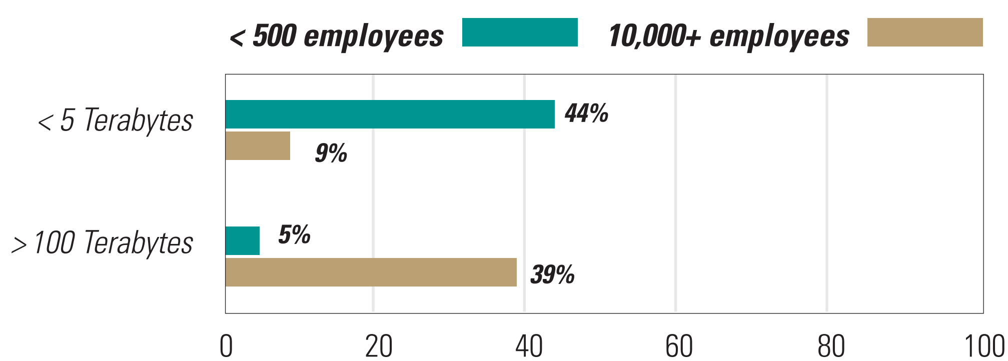

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Figure 3: Change in Data Amount Managed Since Last Year

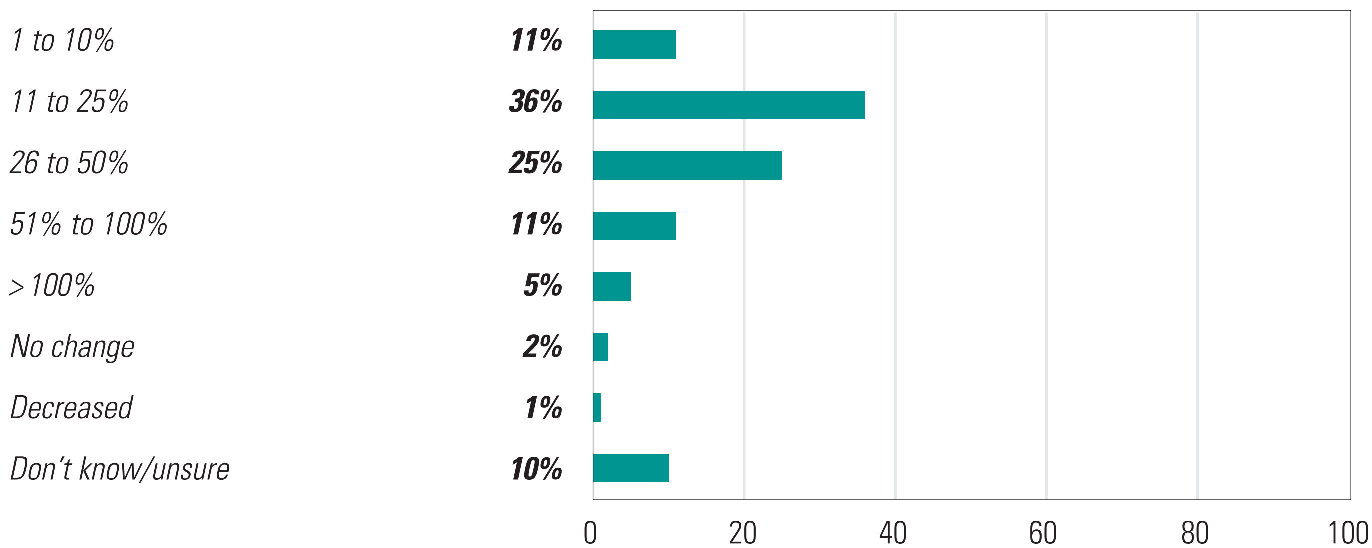

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Figure 4: Most Significant Sources of Data Growth

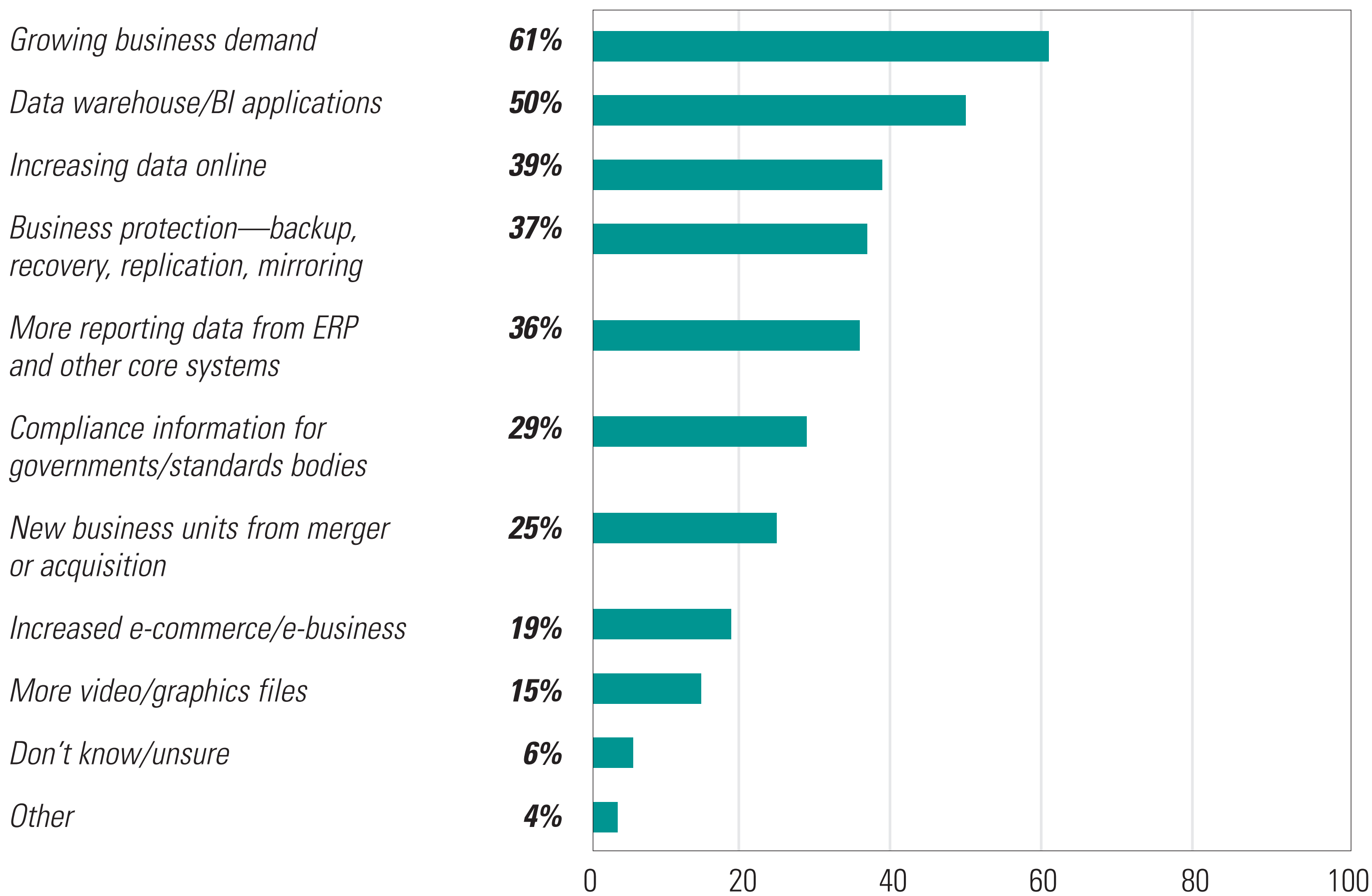

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Figure 5: Number of Oracle Database Instances Managed

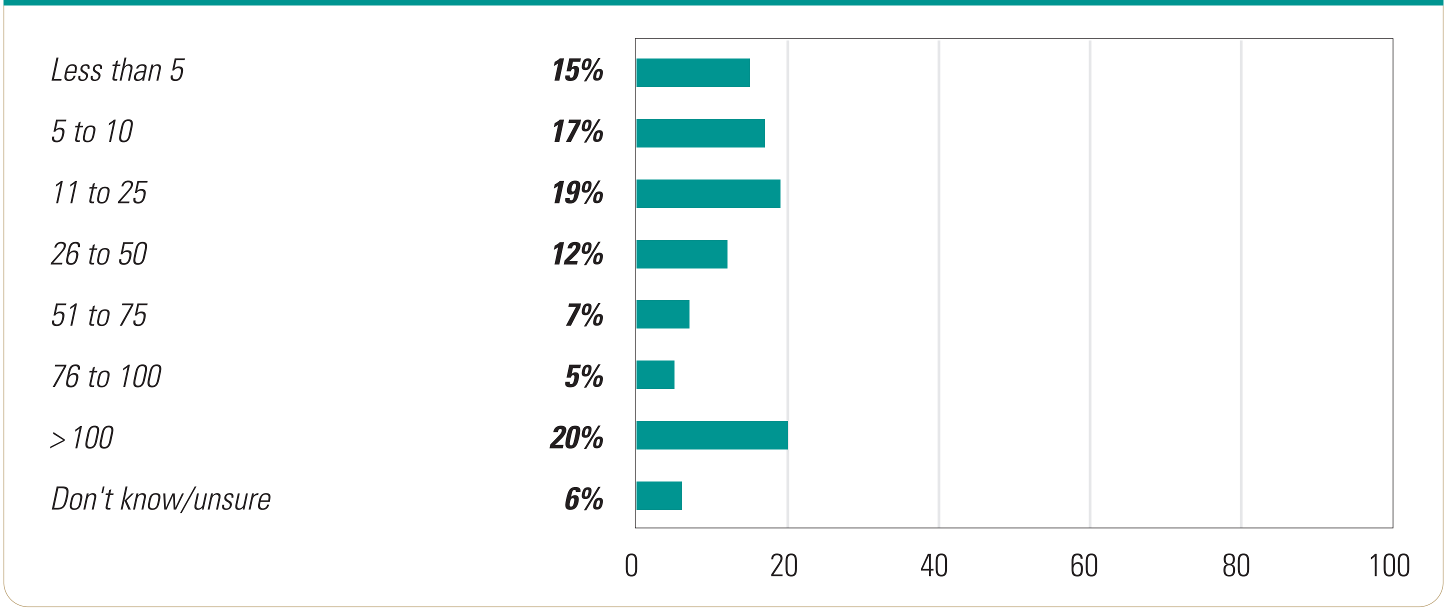

Figure 6: Number of Non-Oracle Database Instances Managed

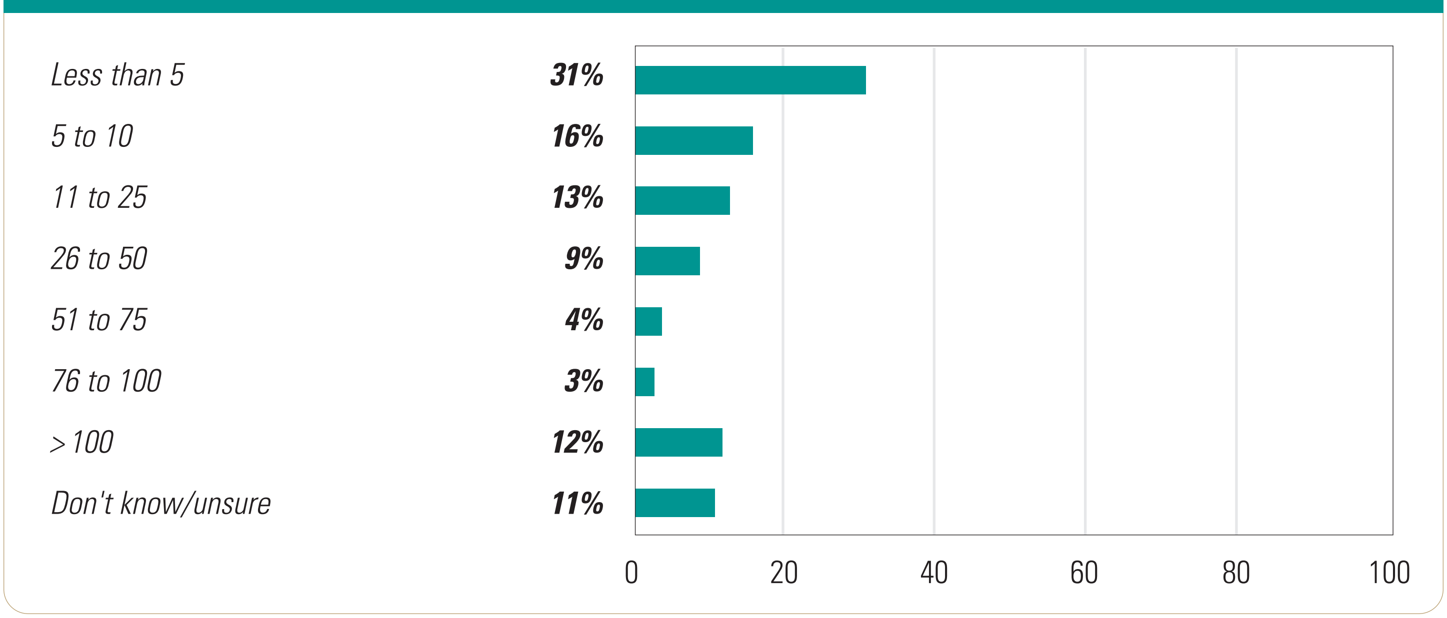

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Figure 7: Number of Oracle Database Instances Managed —By Company Size

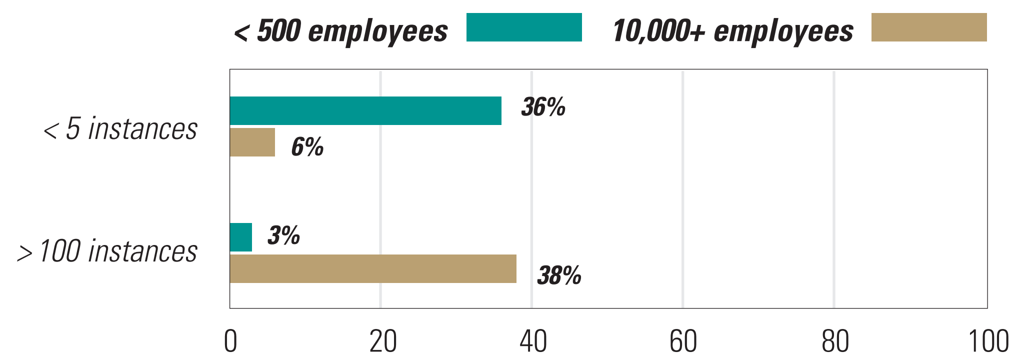

Figure 8: Number of Non-Oracle Database Instances Managed —By Company Size

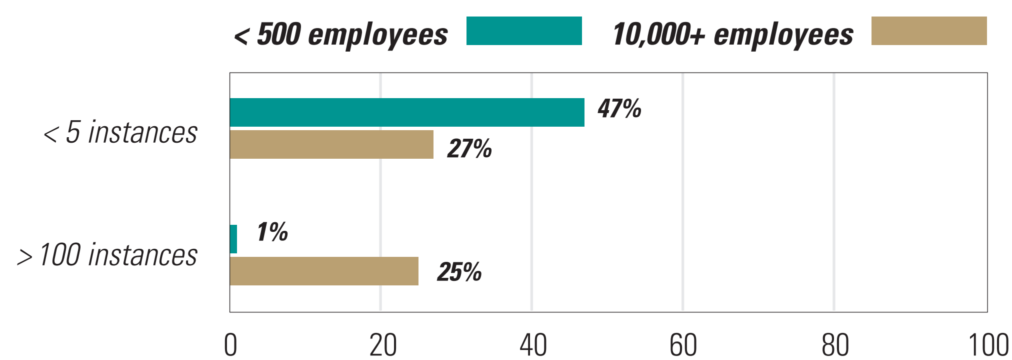

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Figure 9: Number of Production Database Copies Available for Non-Production Purposes

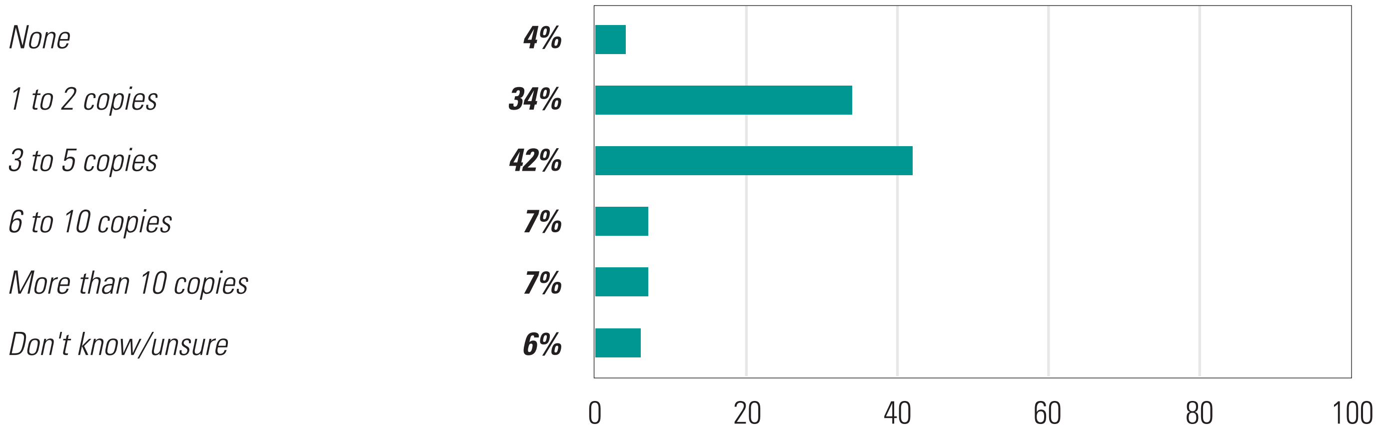

Figure 10: Proportion of Data Managed in a Database versus Outside a Database

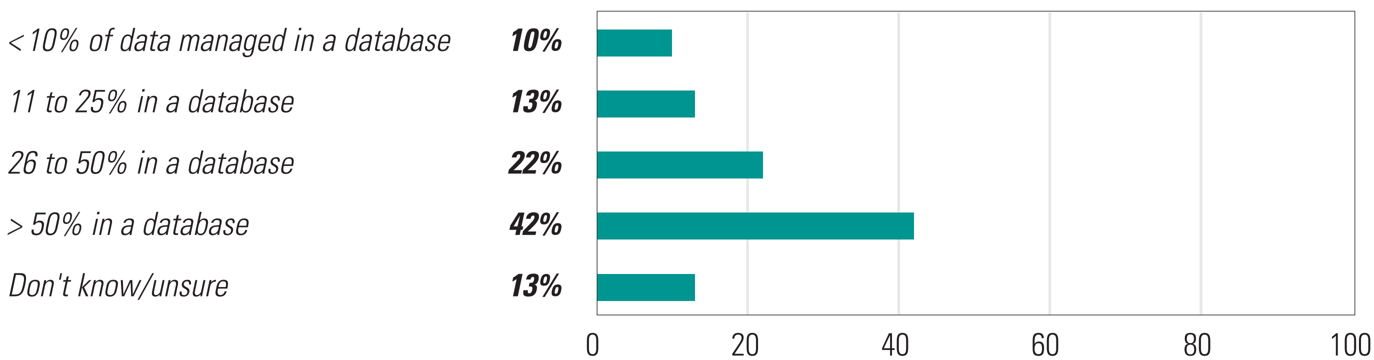

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Figure 11: Top Database Project Priorities for Coming Year

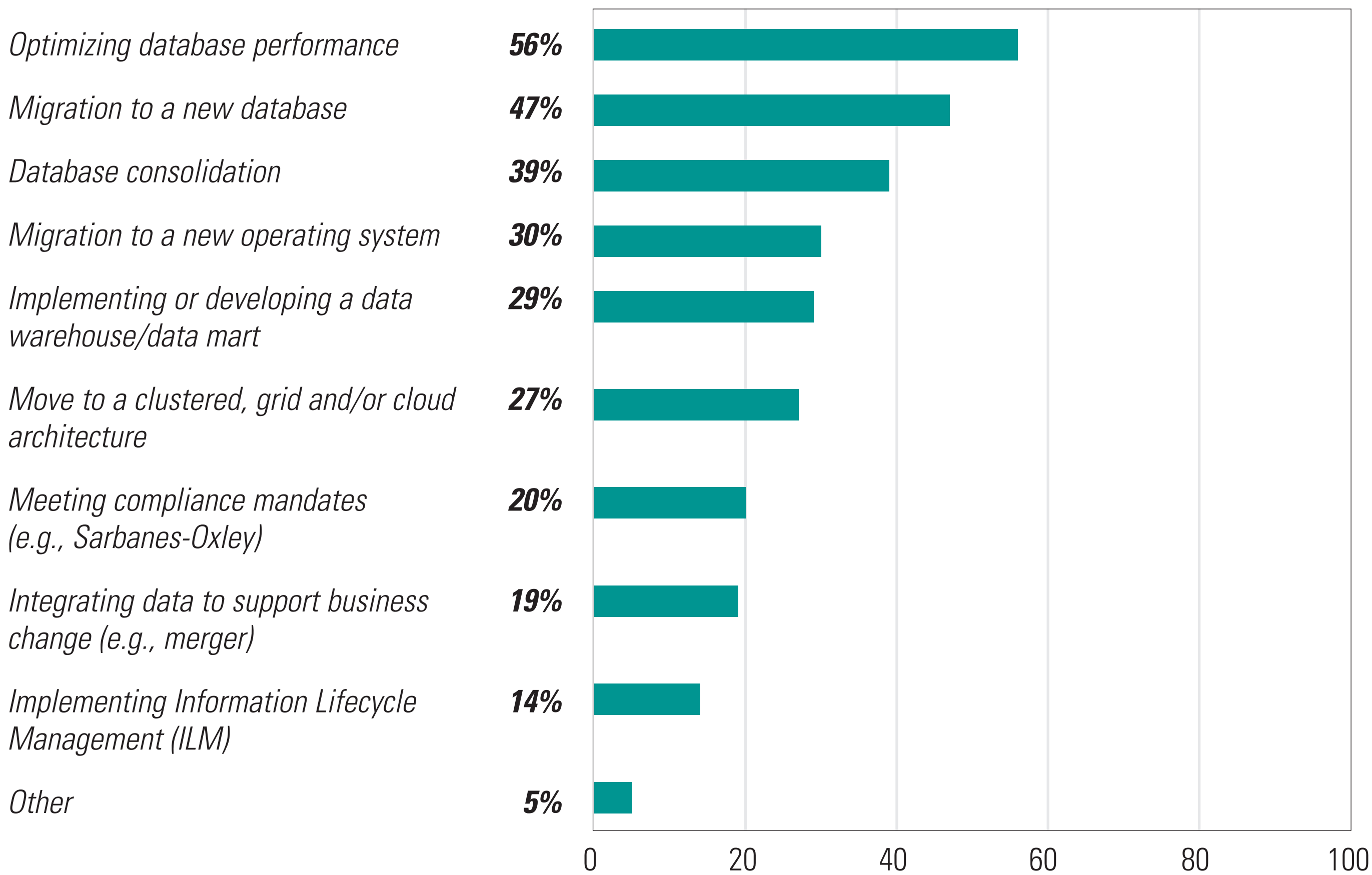

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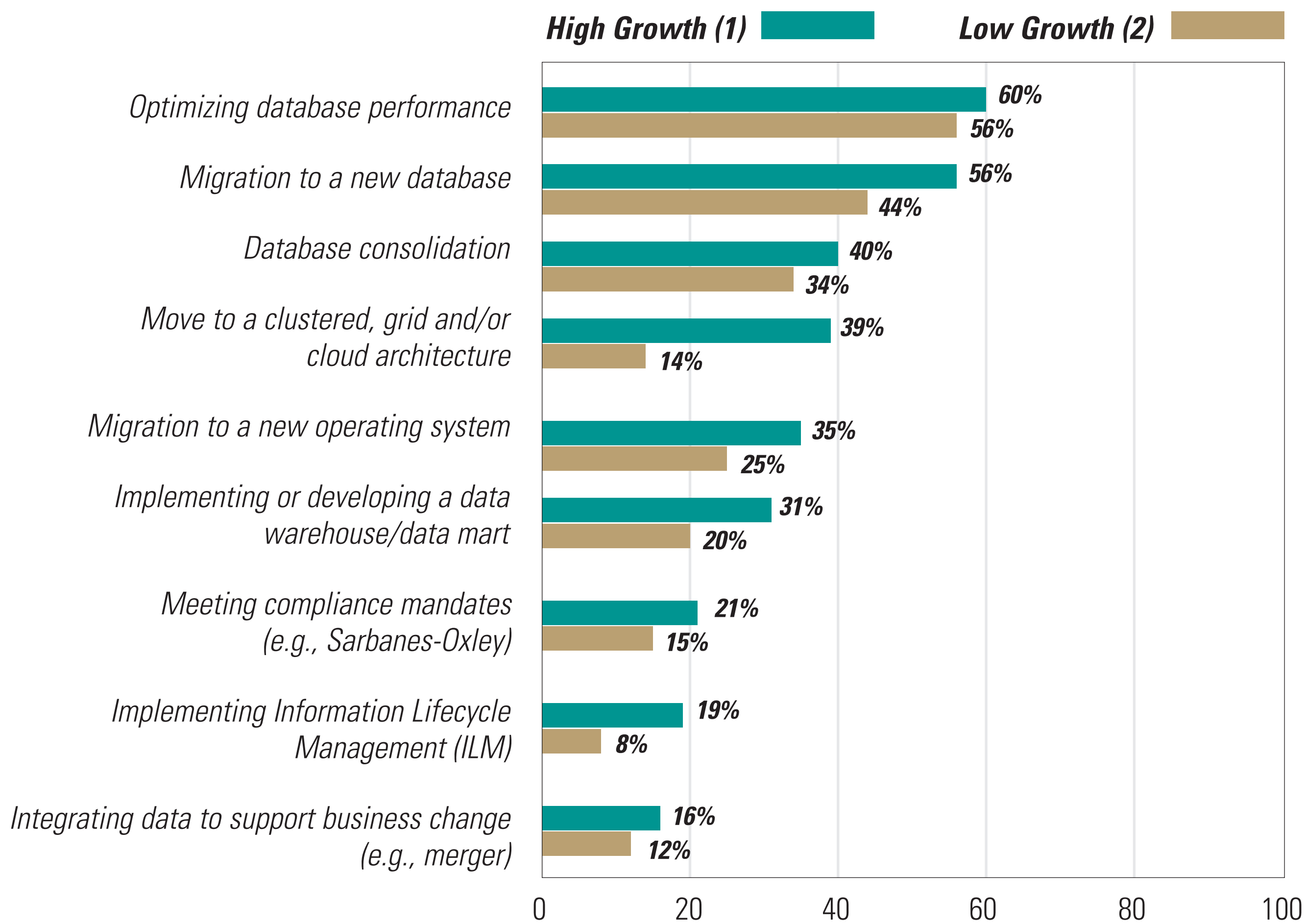
Figure 12: Top Database Project Priorities for Coming Year —By Pace of Data Growth



(1) Respondents reporting data growth exceeding 50% over the past year.
(2) Respondents reporting decreased to less than 10% growth.

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PERFORMANCE IMPLICATIONS

An overwhelming majority of respondents say growing volumes of data are inhibiting application performance to some degree. The challenge is even more acute at enterprises with high levels of data growth. However, most still attempt to address the problem with more hardware, versus more sophisticated/efficient approaches.

Is data growth a major source of application performance issues in respondents' organizations? The answer is an overwhelming "yes" in the survey—86 percent of respondents report that the increasingly massive amounts of data they must manage do cut into application performance at least some of the time. More than one-third report that data growth affects their operations "most" or "all" of the time. (See Figure 13.)

These performance issues are felt even more acutely among respondents reporting high levels of data growth. Forty-two percent of these companies report that data growth has created application performance issues most or all of the time, versus only 16 percent of low-data-growth enterprises. (See Figure 14.)

Three out of four will tune or upgrade the underlying databases to address application performance issues—not surprising, since this survey covers Oracle database administrators. For most respondents' companies, the answer to addressing performance issues is to buy new hardware to address the problem. Two out of three, in fact, will upgrade their servers, hardware and processors to meet performance issues, while half will boost their storage systems. Only in two out of five cases will solutions such as archiving older data be looked at to reduce the loads on systems. (See Figure 15.)

Respondents in companies with high rates of data growth show a greater tendency to attempt to address these performance issues with more hardware. For example, high- data-growth companies are twice as likely to add more storage systems, and are more inclined to increase their numbers of servers or processors. (See Figure 16.)

Figure 13: Data Growth Create Application Performance Issues?

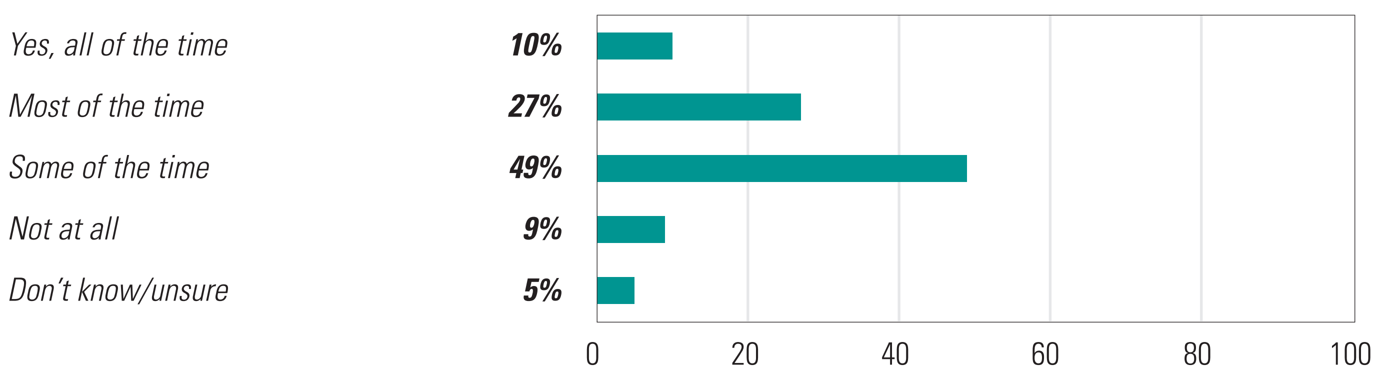

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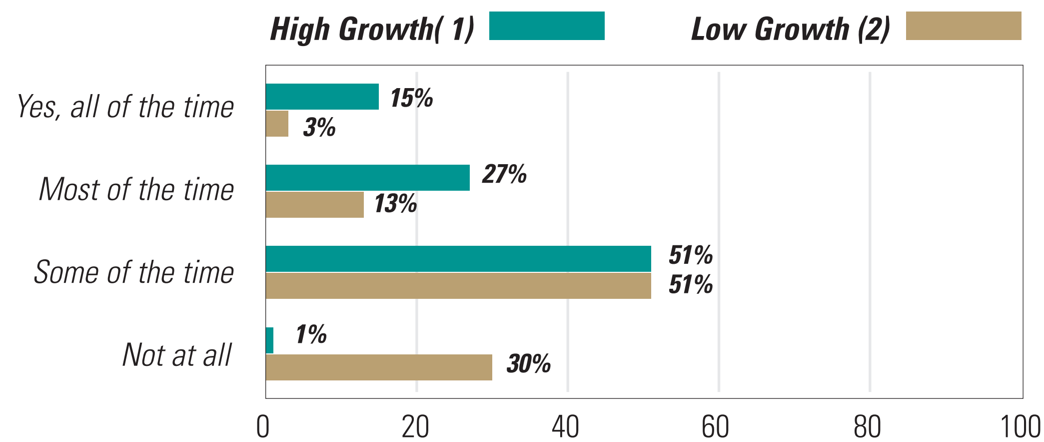
Figure 14: Data Growth Create Application Performance Issues? —By Pace of Data Growth



(1) Respondents reporting data growth exceeding 50% over the past year.
(2) Respondents reporting decreased to less than 10% growth.

Figure 15: How Performance Issues are Typically Addressed

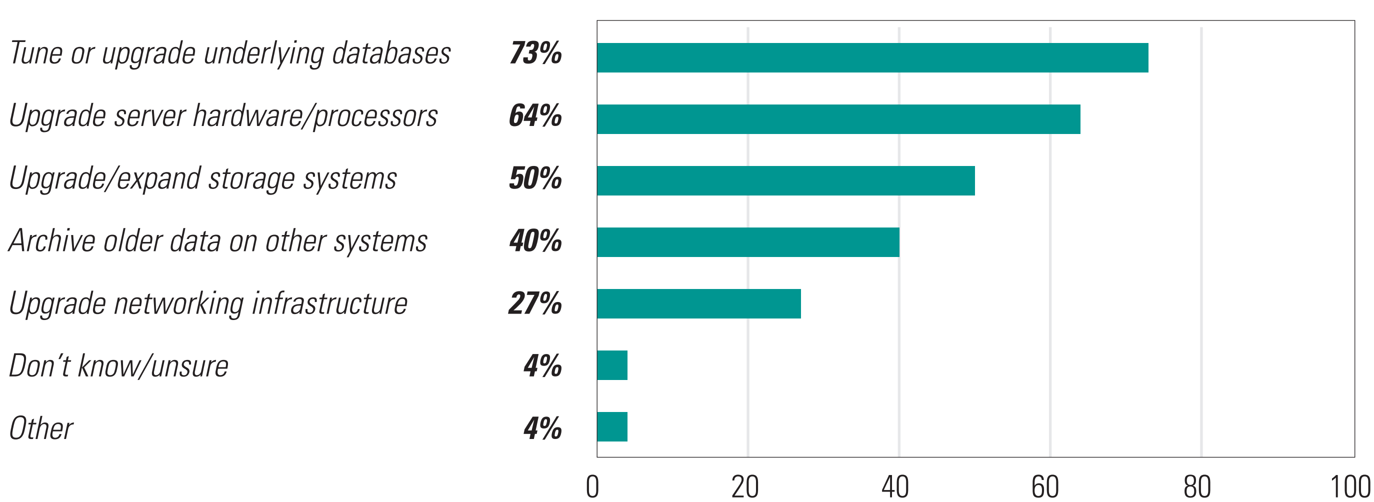


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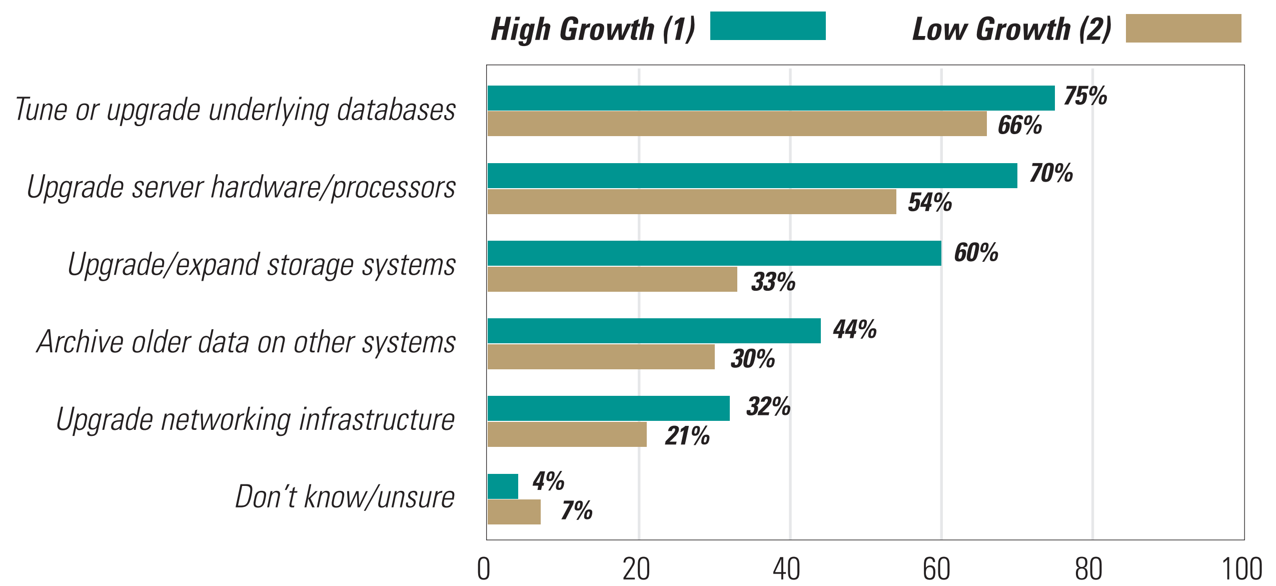
Figure 16: How Performance Issues are Typically Addressed —By Pace of Data Growth



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STRATEGIES

Two out of five companies recognize the value of information lifecycle management to better manage storage growth. However, these are the early stages for ILM strategies for most companies. ILM approaches are most common at companies with high levels of data growth, though the most common approach continues to be that of buying new hardware to address the problem.

There is strong support for the idea of implementing a formal information lifecycle management (ILM) process, the survey finds. An ILM approach helps align information with the most appropriate and cost-effective IT infrastructure from creation through final disposition. Close to two out of five respondents see ILM as a way to manage the proliferation of data within their storage systems. Just under one-third of respondents have also turned to database-level compression, and one-quarter see data deduplication as a way to contain data growth. (See Figure 17.)

How are companies facing large expansion of their data stores responding to this challenge, and is it different than among companies that are less challenged? There is a greater impetus to pursue an information lifecycle approach to data management among companies more challenged, the survey finds. A majority of the companies considered to be "high-data-growth" enterprises (reporting growth exceeding 50 percent over the past year), are implementing ILM, versus less than one-third of low-growth enterprises. Also, there is more of a tendency among the companies with higher rates of data growth to adopt file system compression as a strategy. Database-level compression and data deduplication is equally prevalent in both categories of companies, however. (See Figure 18.)

Among those respondents that have turned to database compression as a strategy to manage data growth, the most likely candidates for this compression are database backups and exports. More than two out of five also compress relational table data. (See Figure 19.)

For which type of data do respondents think they could save the most space via compression? The compression of database backups and exports is seen as the best route to saving disk space.

Two out of five respondents also see compression of unstructured or file data—documents or images. A similar number of respondents also see the compression of database copies for development and testing as a way to free up more disk space. (See Figure 20.)

For respondents that achieve additional disk space via compression, three out of five are conservative with the use of that extra space, saying that they intend to set it aside for future data growth. One out of four respondents say they are using the extra space to increase the level of online data protection and availability—such as a higher level of mirroring. A similar portion intend to better meet compliance, by keeping data online longer. (See Figure 21.)

Do respondents' companies have a clearly defined information lifecycle management strategy? While 47 percent of respondents have at least a partial ILM strategy underway, only 16 percent say they have a fully functioning program underway. (See Figure 22.)

More than eight out of 10 respondents report using some degree of automation to better manage their data storage requirements. (See Figure 23.) Conventional wisdom would dictate that high-data-growth enterprises would be embracing automation at a far higher rate than low-data-growth organizations. However, the survey finds that even though organizations may be facing a massive expansion of their data stores, they are not any more inclined than their low-data-growth counterparts to be adopting automated procedures to handle the load. (See Figure 24.)

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Figure 17: Primary Approach to Managing Storage Growth

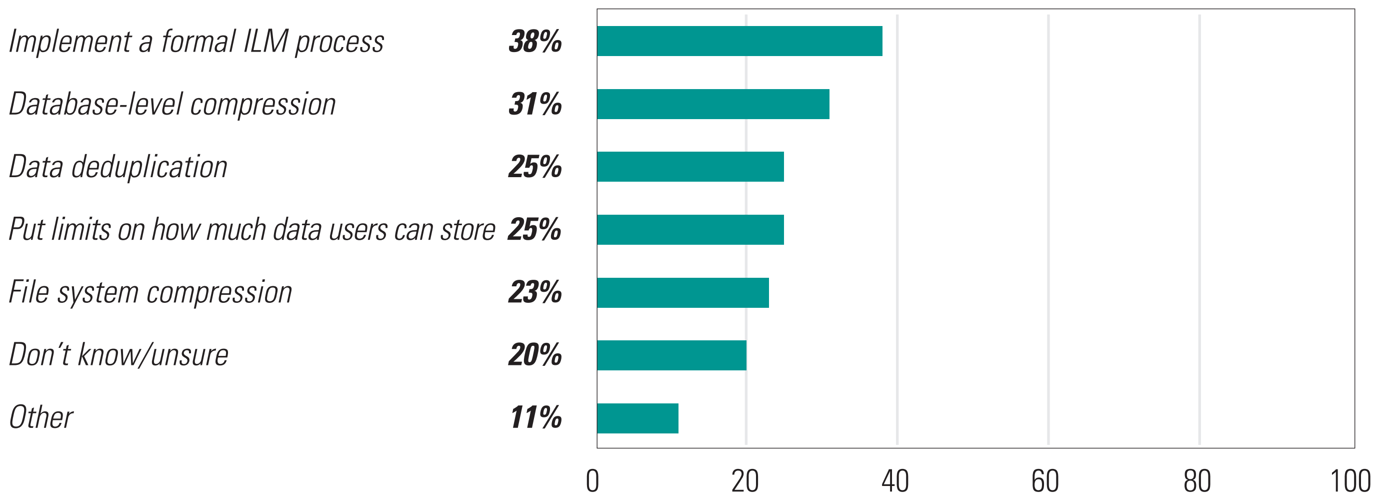
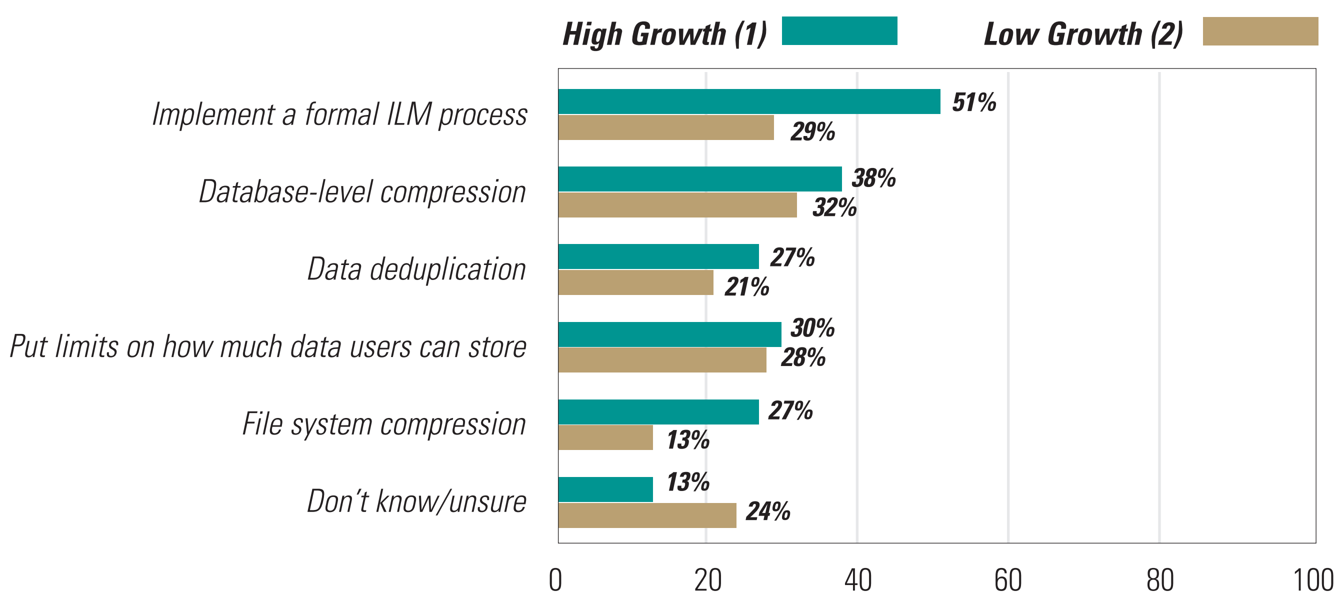


Figure 18: Primary Approach to Managing Storage Growth —By Pace of Data Growth



(1) Respondents reporting data growth exceeding 50% over the past year.
(2) Respondents reporting decreased to less than 10% growth.

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Figure 19: Types of Data Most Likely to Get Compressed

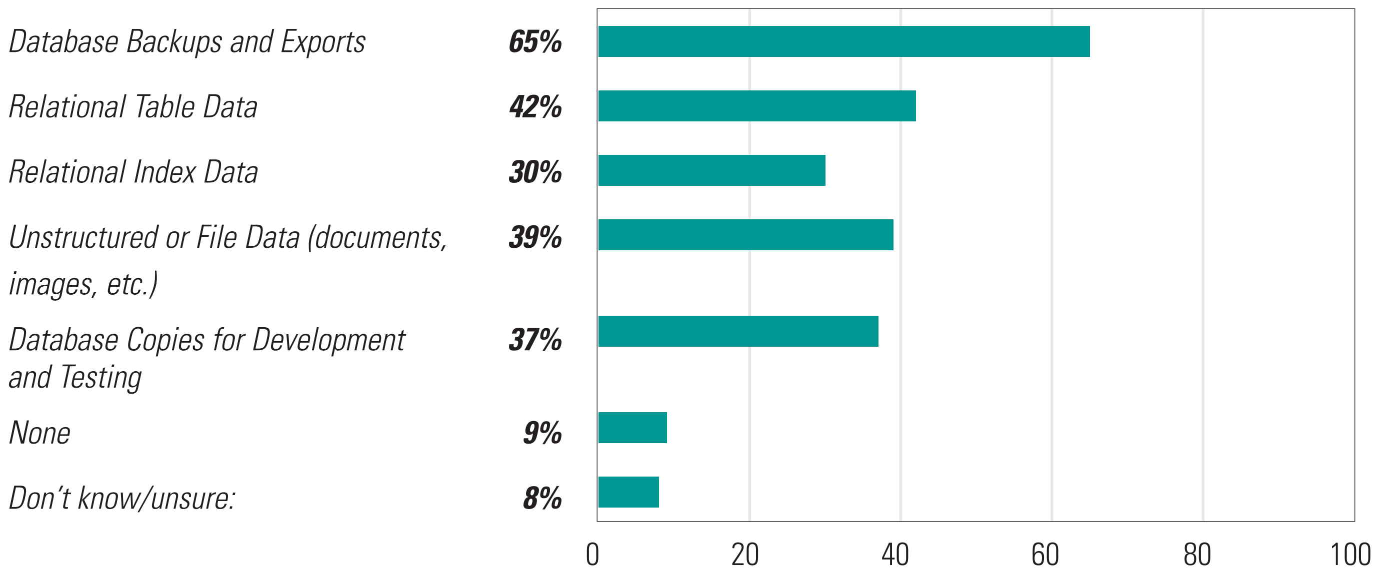

Figure 20: Type of Data That Could Save the Most Space Via Compression

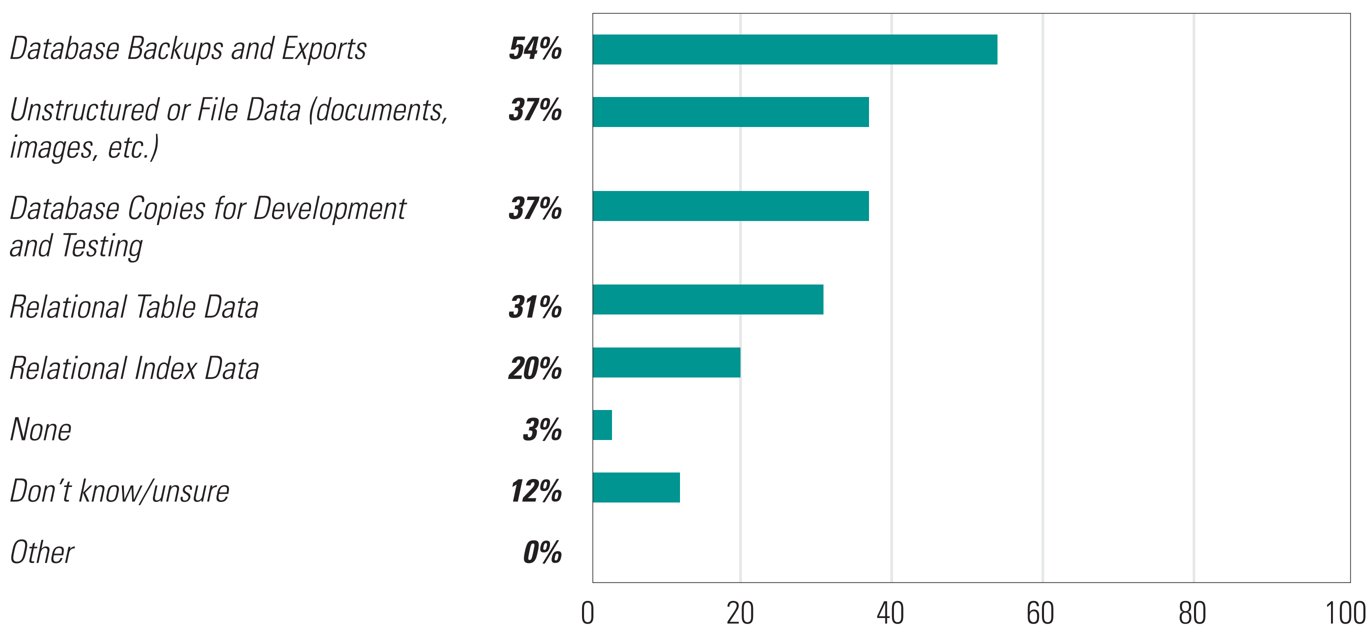

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Figure 21: Primary Uses for Extra Data Space Reclaimed Via Compression

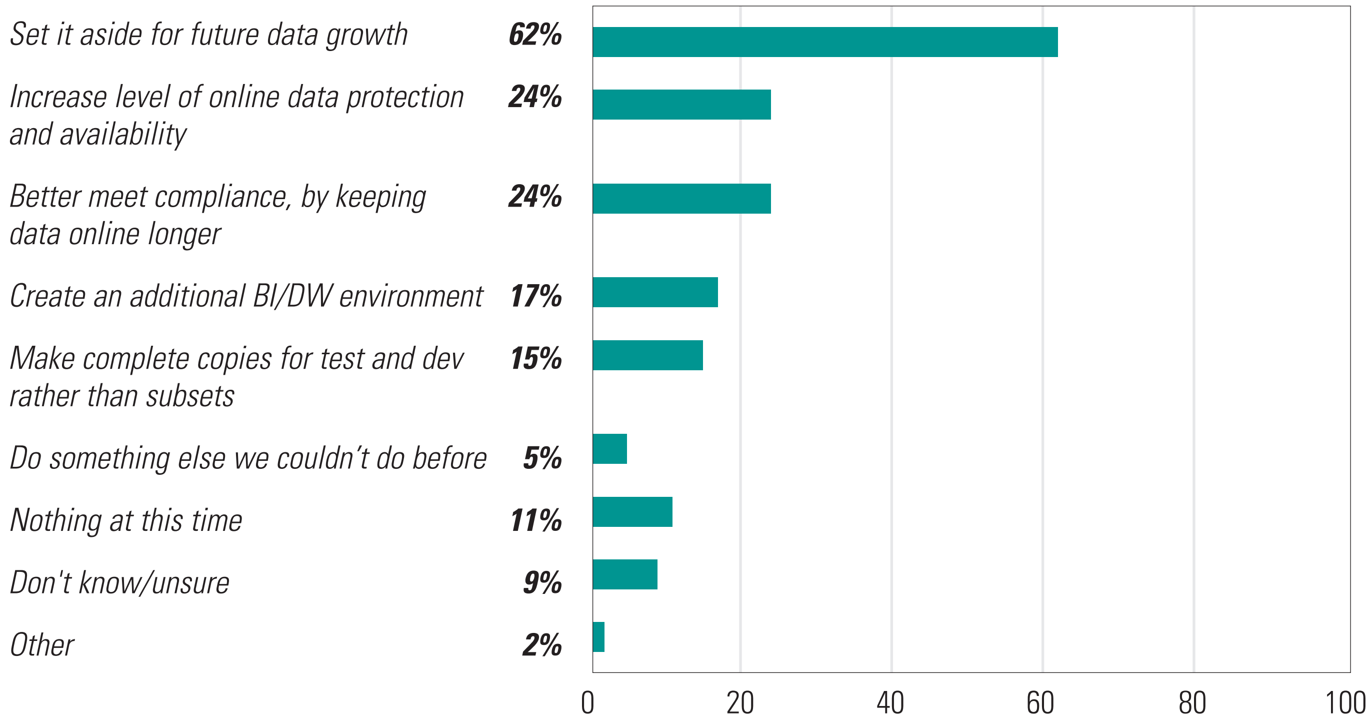

Figure 22: Have Clearly Defined Information Lifecycle Management Strategies?

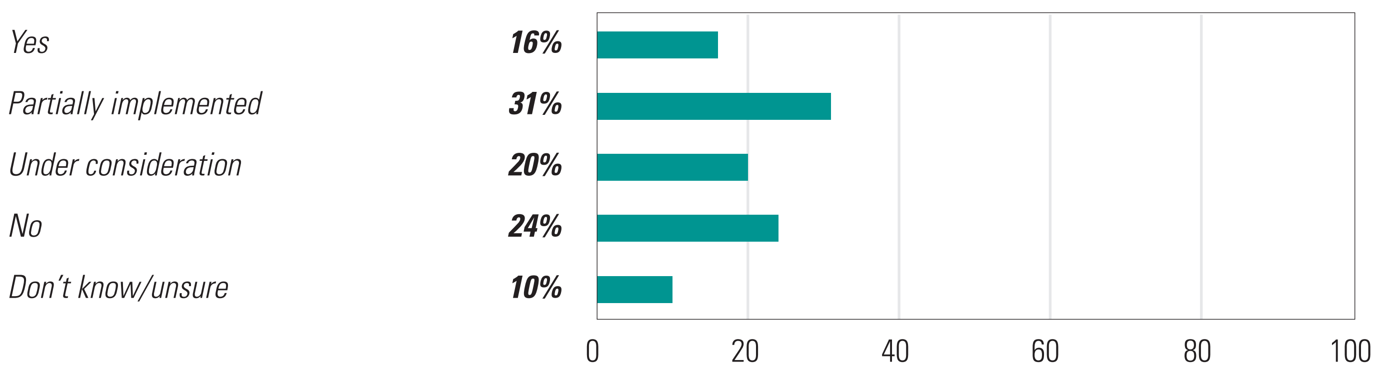

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Figure 23: Automated or Manual Procedures to Manage Storage?

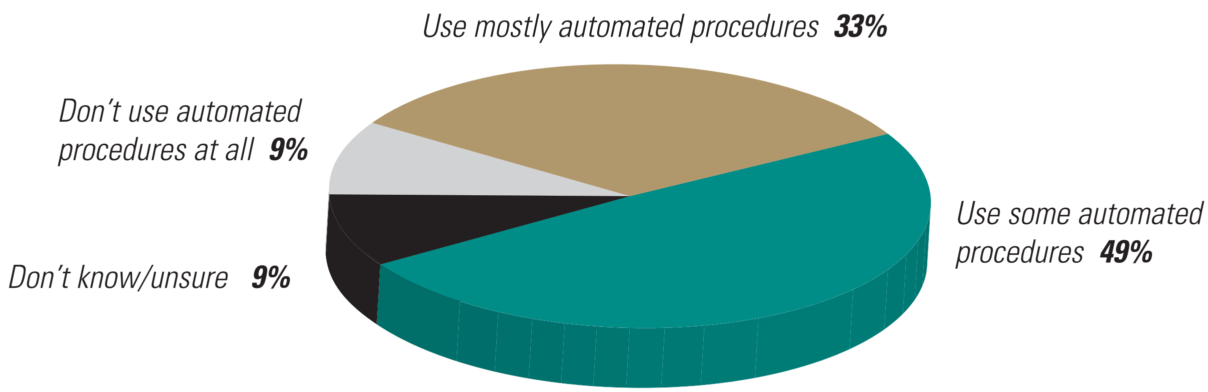
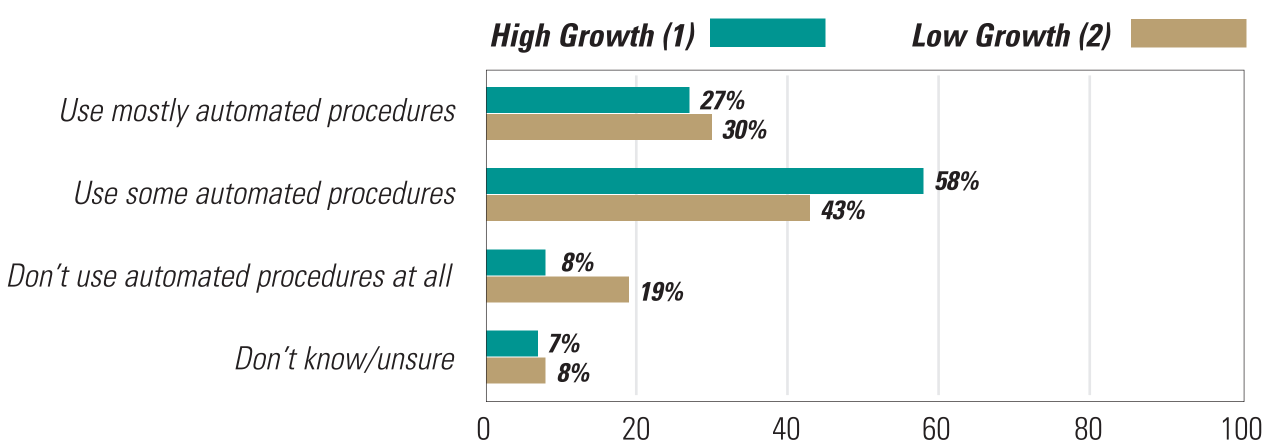


Figure 24: Automated or Manual Procedures to Manage Storage? —By Pace of Data Growth



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DATA ARCHIVING

Many companies feel compelled to hold on to data for extended periods of time—forever in some cases—and are having difficulty making it accessible to end users.

How long is the data at respondents' companies stored in archived systems, either because of company policies or compliance mandates? Almost one in 10 say they simply hold on to data forever. This may not be a practical choice for many companies, but another two out of five say they hold on to it for more than seven years—typically the legal proscribed time for most types of records. (See Figure 25.)

Why do companies need to hold on to data for extended periods of time? In more than two out of five cases, they are required to do so because of government mandates. One out of five see some business purpose to do so, but still, another 16 percent say they hold on to data in case of legal litigation. (See Figure 26.)

The need to have data quickly available for a variety of purposes—be it legal or for business value—is growing. A majority of respondents, in fact, report they have increased the proportion of data kept online in the past five years (versus moving to archived tape) to address the requirements of increased information accessibility. (See Figure 27.)

What are the challenges of making and keeping archived data available online, so it can be accessed more quickly? Three out of four respondents point out that it requires greater hardware investments, and half say it gets more complex to manage such arrangements. (See Figure 28.)

Interestingly, while many organizations are challenged by the growth in data and storage requirements, only a relatively small segment have turned to outside providers—in direct relationships or via the cloud—to help out. (See Figure 29.)

Tape is still a traditional media for data archiving, which may also contribute to performance issues. Close to one-third of respondents report that more than half of their archived data is stored on tape. (See Figure 30.)

Figure 25: Length of Time Archived Data is Stored

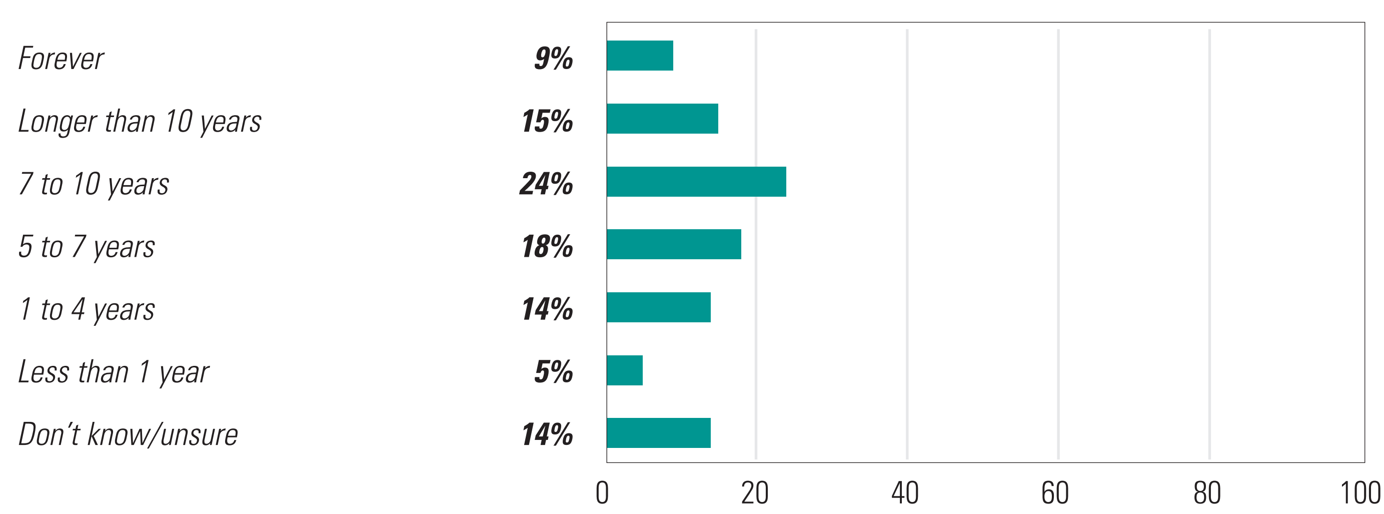

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Figure 26: Primary Reasons for Retaining Data for Extended Periods of Time

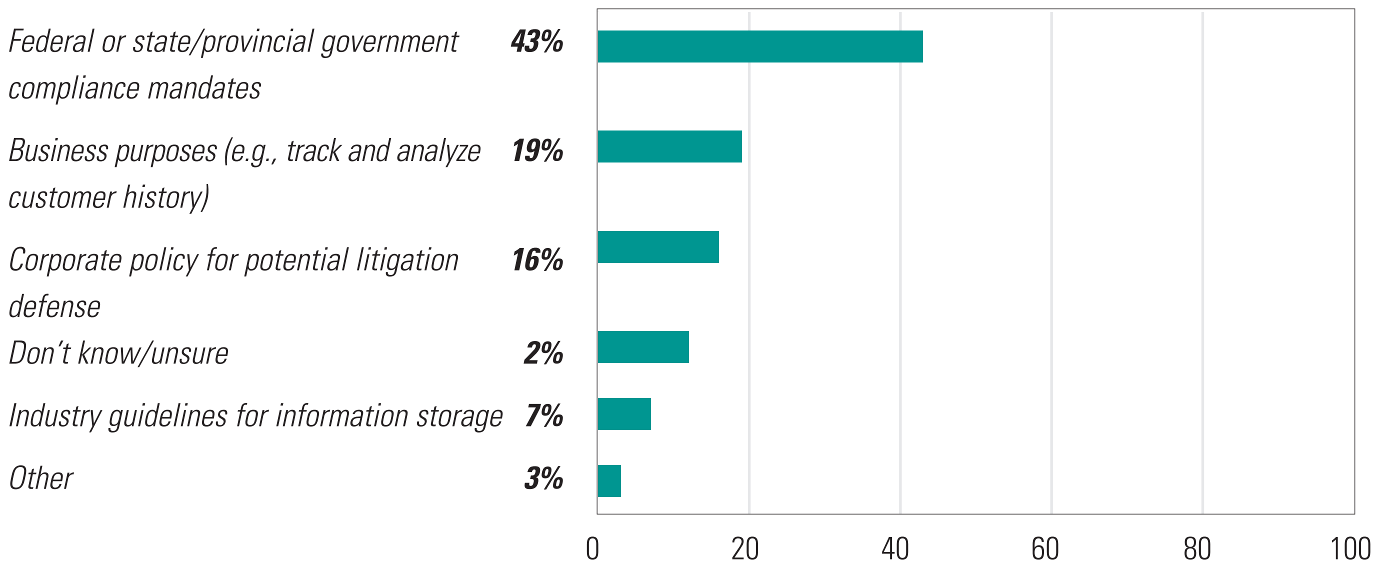

Figure 27: More Data Moved Online for Better Accessibility?

(Over the past five years)

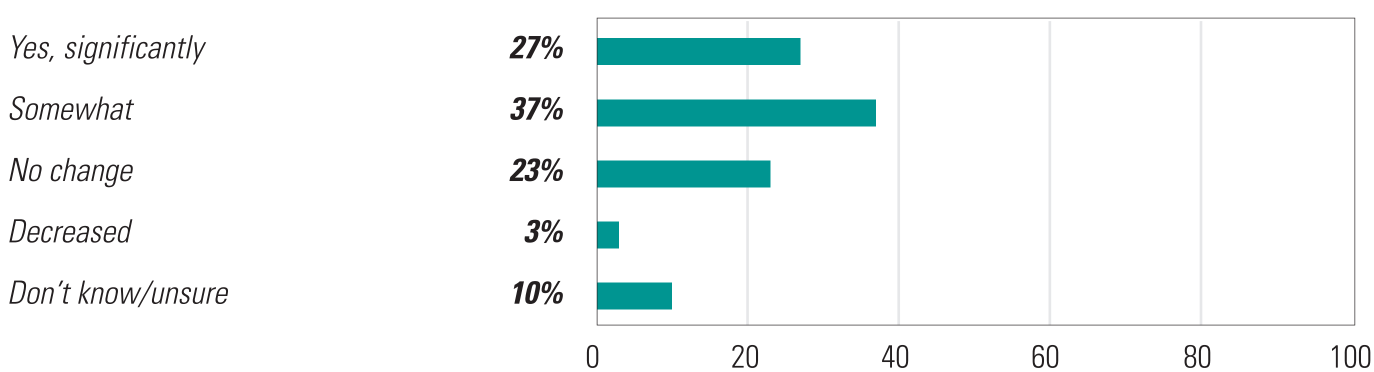

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Figure 28: Challenges of Online Data Accessibility

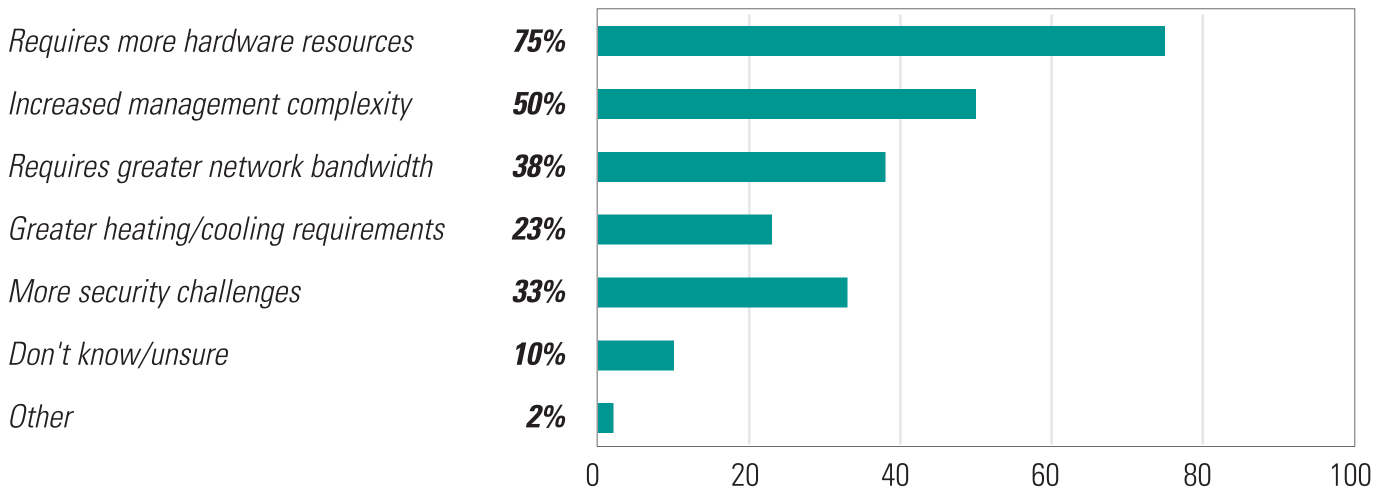

Figure 29: Outsource Archive Data Storage to Service/Cloud Providers?

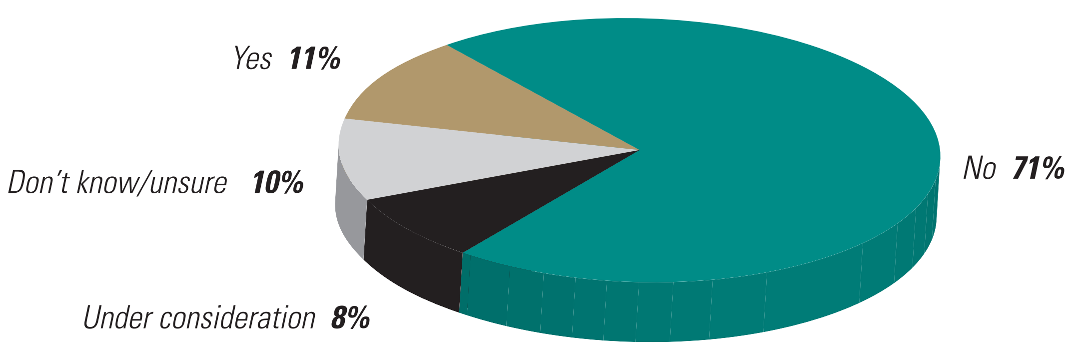

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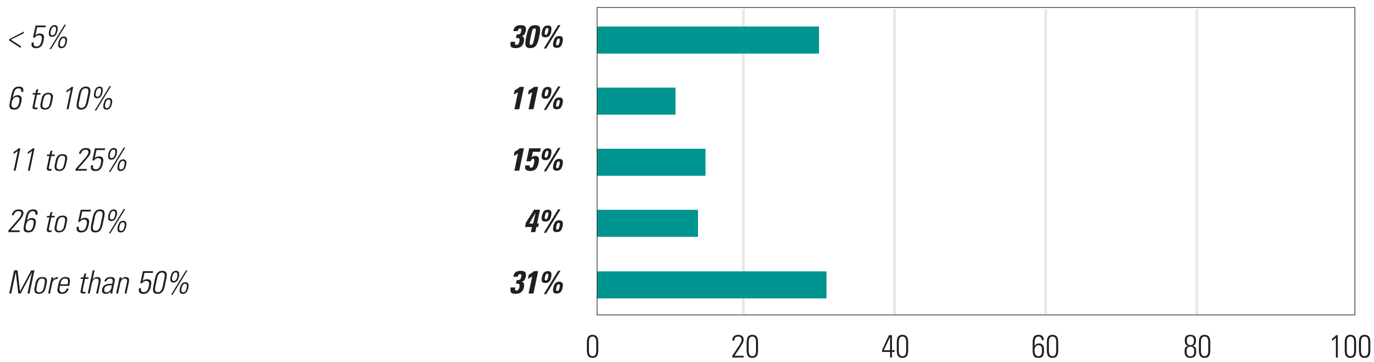
Figure 30: Amount of Archived Information Stored on Tape



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BUDGETS

Data storage budgets also keep growing. A sizable segment of companies with fast-growing data stores spend more than one-fourth of their IT budgets on storage requirements.

What percentage of respondents' IT budgets is spent on storage—including hardware, software, services, and management? Thirty-six percent of respondents report that storage represents between six and 25 percent of their total IT budget. In many cases, as cited by 43 percent of respondents, this is an unknown factor. (See Figure 31.)

As pointed out previously in this report, there is a tendency for companies with surging streams of data to try to solve the problem by adding hardware. Enterprises experiencing higher rates of data growth need to devote larger parts of the IT budgets to storage needs, the survey also confirms. One-fourth of the companies considered to be "high-data-growth" enterprises (reporting growth exceeding 50 percent over the past year) devote more than 25 percent of their IT budgets to storage, compared to only five percent of low-growth enterprises. (See Figure 32.)

More than two out of five respondents say their storage budgets increased over the past year, compared to only four percent seeing a decline. (See Figure 33.) This trend is expected to continue through the coming year. (See Figure 34.)

Companies with high-growth data environments are far more likely to be increasing their storage budgets than their slower-growth counterparts. One-fourth of the fast-growing data enterprises report they will be increasing their storage budgets by more than 10 percent in the coming year, versus three percent of their slower-growth counterparts. (See Figure 35.)

Figure 31: Percentage of IT Budget Spent on Storage

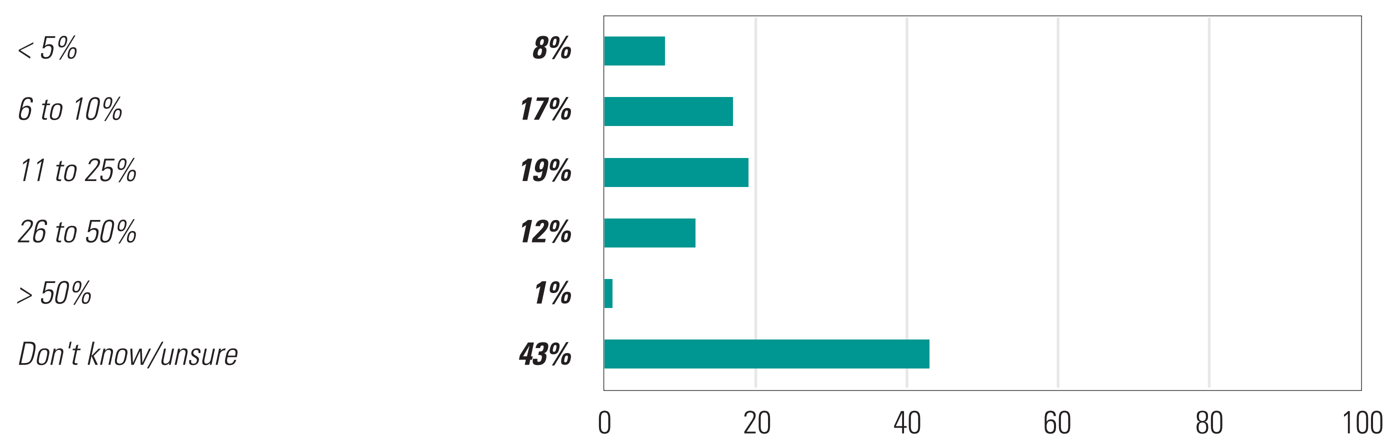

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Figure 32: Percentage of IT Budget Spent on Storage

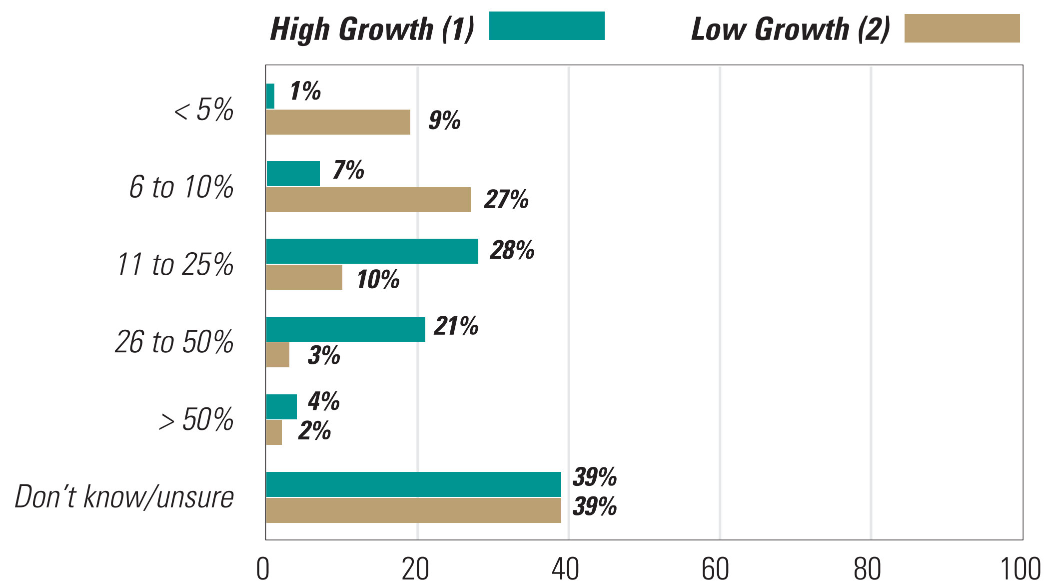

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Figure 33: Change in Storage Budgets Over Past Year

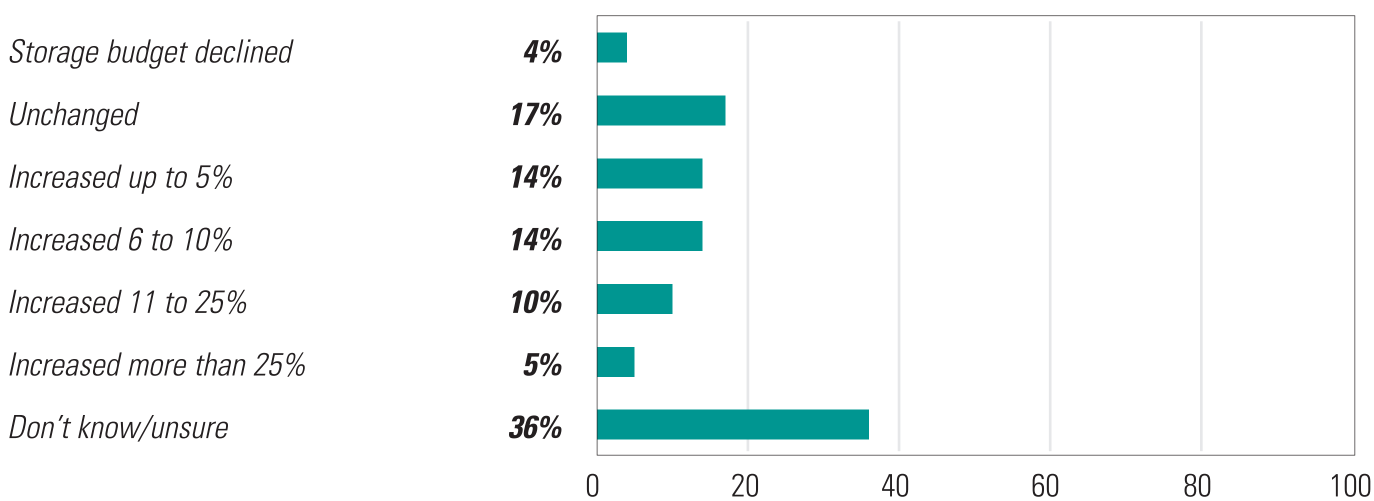

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Figure 34: Change in Storage Budgets Over Coming Year (2010-2011)

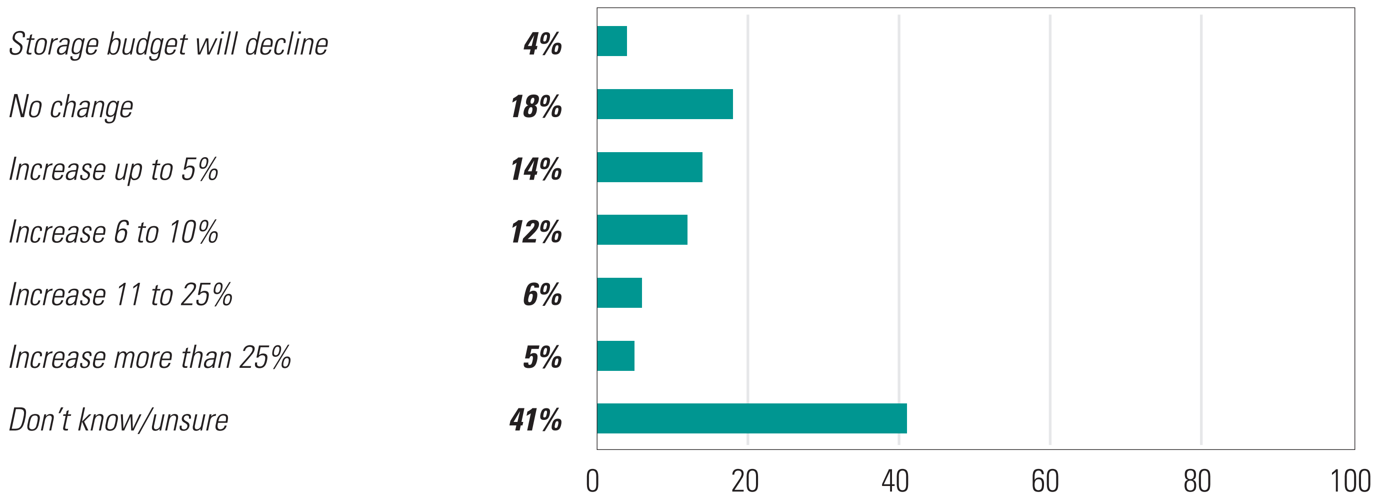
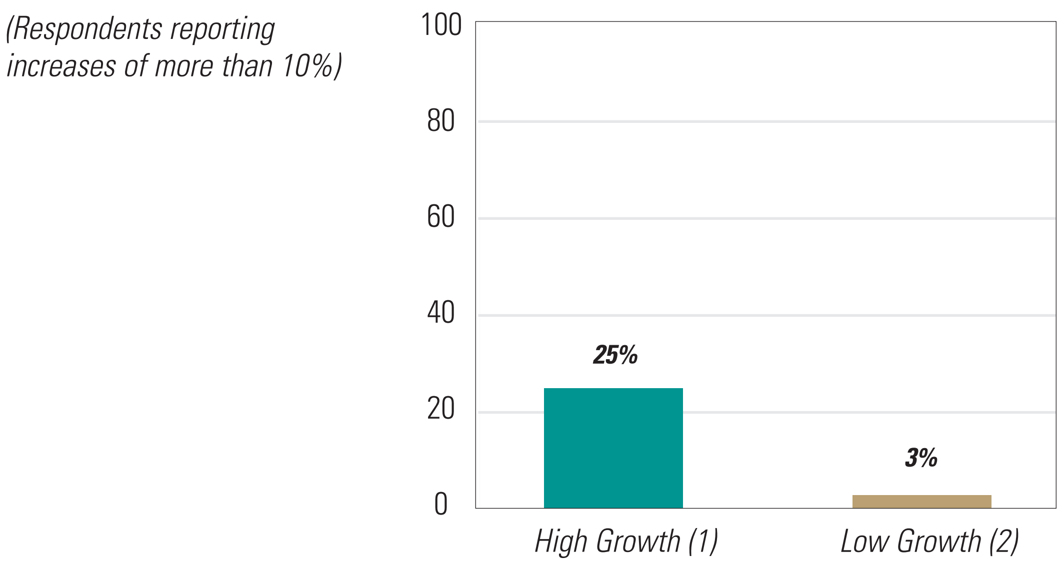


Figure 35: Increases in Storage Budgets Over Coming Year (2010-2011)—By Pace of Data Growth



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DEMOGRAPHICS

Figure 36: Respondents' Job Titles

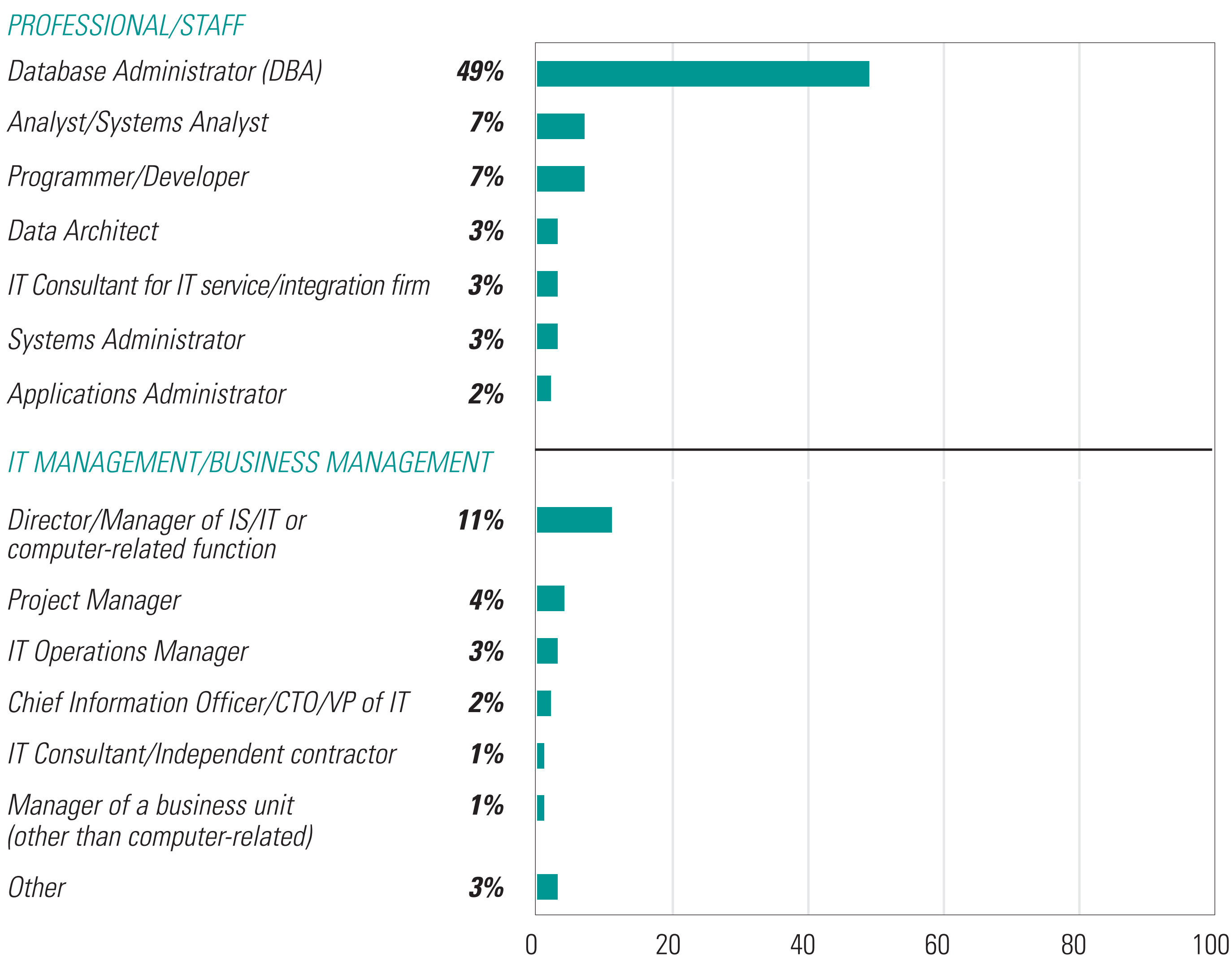

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Figure 37: Company Size—By Number of Employees

(Includes all locations, branches, and subsidiaries)

1-100 employees	***8%***
101-500 employees	***8%***
501-1,000 employees	***12%***
1,001-5,000 employees	***23%***
5,001-10,000 employees	***10%***
More than 10,000	***34%***
Decline to answer	***5%***

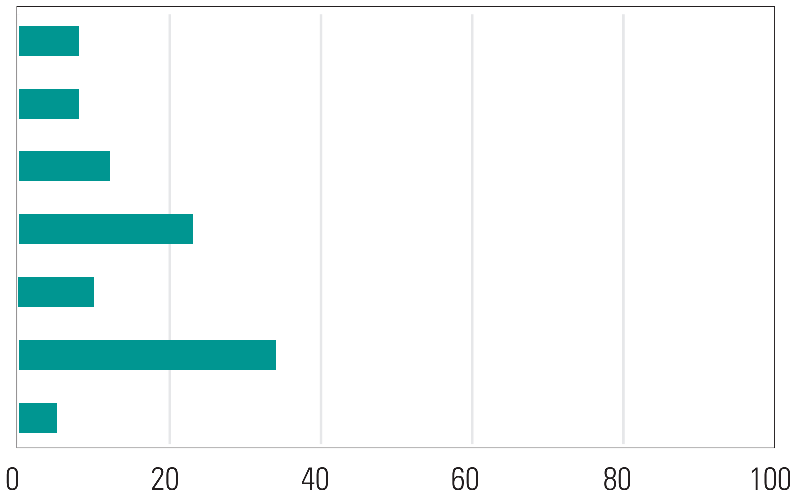

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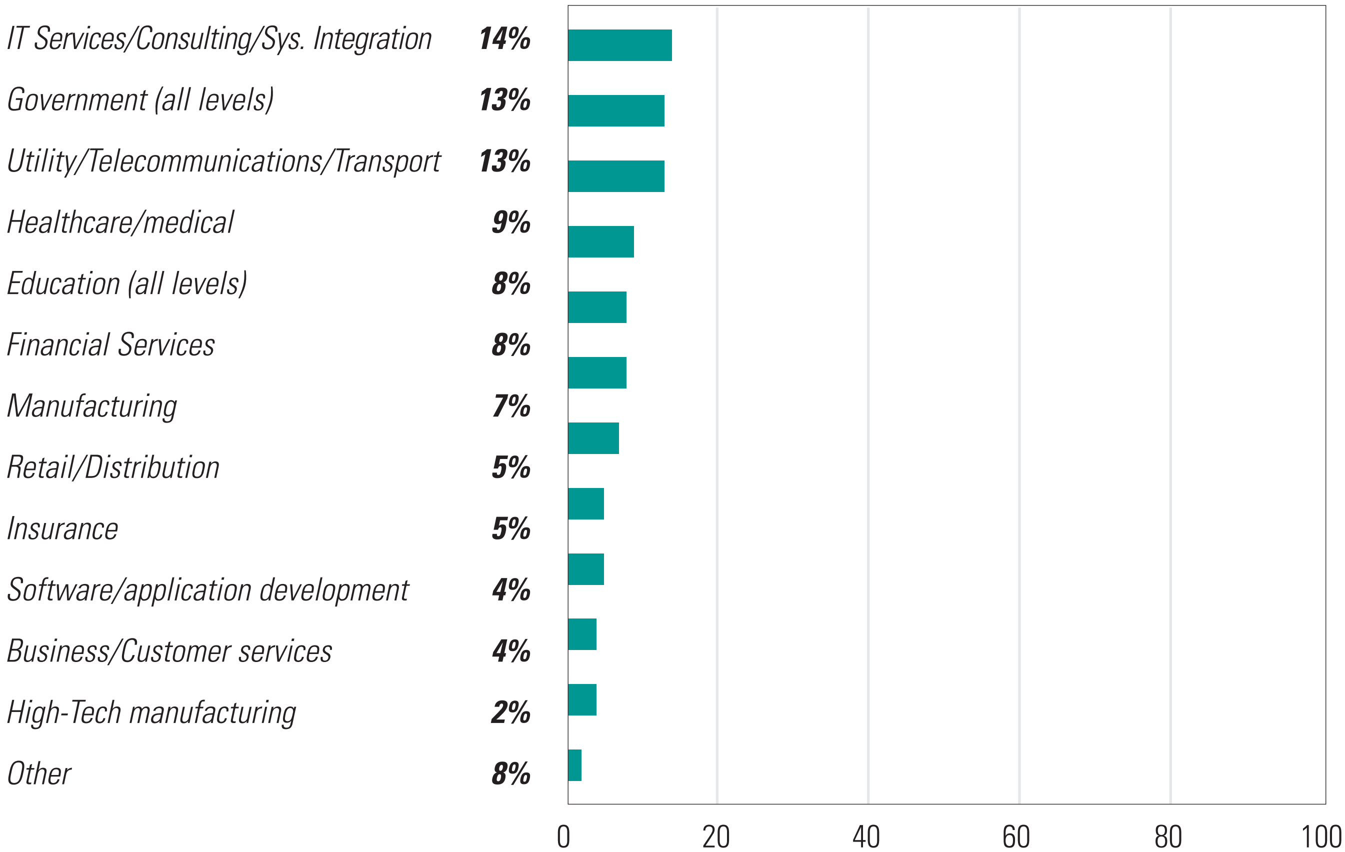
Figure 38: Respondents' Primary Industries



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