



# THE RAPIDLY ACCELERATING CLOUD-ENABLED ENTERPRISE

2015 IOUG SURVEY ON DATABASE MANAGEABILITY

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## TABLE OF CONTENTS

<i>Executive Summary</i> .....	<b>3</b>
<i>Data Environments</i> .....	<b>4</b>
<i>Priorities of Today’s Data-Driven Organizations</i> .....	<b>7</b>
<i>Databases and the Speed of Business</i> .....	<b>11</b>
<i>Manual vs. Automated</i> .....	<b>15</b>
<i>Trending: Cloud, Compliance, and IT Analytics</i> .....	<b>18</b>
<i>Keeping Current</i> .....	<b>21</b>
<i>Conclusion</i> .....	<b>23</b>
<i>Demographics</i> .....	<b>24</b>

## EXECUTIVE SUMMARY

With the rapid adoption of cloud and the emergence of the collaborative development operations (DevOps) approach within enterprises, there's been a great deal of speculation and discussion on the future of the database administrator role. Some pundits cited the ever-accelerating needs of enterprises to push products and services to market as quickly as possible, and to leverage cloud solutions and automation to manage the data side of things as evidence of obsolescence of the DBA role.

However, this is far from reality. In fact, the DBA is even more vital than ever to enterprises—having evolved significantly from the traditional DBA roles known just a few years ago. Even in this world of cloud, mobile, and Internet of Things, organizations continue to rely on data to achieve greater competitive advantage, and better serve customers. Data is flowing into enterprises from an incalculable and ever-shifting range of sources. The expertise of data stewards and professionals at all levels is needed to turn this big data into actionable intelligence for the business. There is no one more qualified than the modern DBA to tackle the job of managing big data for the enterprise.

Database manageability for big data is more top of mind in today's business climate than ever before, as enterprises increasingly deploy cloud-based and mobile solutions to take advantage of new opportunities. The opportunities and challenges created by database manageability for big data are explored in a new survey of 301 data managers and professionals who are members of the Independent Oracle Users Group (IOUG). Within this sample, 255 are currently running Oracle Database as their primary data environment. This survey was underwritten by Oracle Corporation and conducted by Unisphere Research, a division of Information Today, Inc.

Survey respondents hold a variety of job roles and represent a wide range of organization types, sizes, and industry verticals. The largest segment (58%) of respondents holds the title of database administrator, followed by that of director or manager.

Close to one-third work for very large organizations with more than 10,000 employees. By industry sector, the majority of respondents come from IT service providers, government agencies, and education. (See Figures 25–27 at the end of this report for more detailed demographic information on job titles, company sizes and industry groups.)

**Key highlights and findings from the survey, which provide new insights into database manageability issues and solutions today, include the following:**

- The challenge of managing and converting big data streams into actionable business intelligence is intensifying. Databases' footprints keep expanding, both in terms of sheer numbers, as well as capacity, leading to more challenges for administrators

to handle. A majority of respondents, 62%, say their data volumes are expanding at a rate of greater than 10% annually.

- Accelerating time to market is affecting every aspect of data managers' jobs. Along with security issues, cloud and big data now have a direct impact on the way many organizations manage their data environments. Keeping the performance of their systems at high levels and being able to rapidly fix any problems that may occur with the same resources as before are among the predominant issues. Two-thirds of respondents report that log files are their fastest-growing type of data, followed by more than two-fifths stating that new data formats account for much of the data growth being experienced.
- Today's manual database operations, processes, and approval time are among the causes of delays holding up the real-time enterprise, many database managers and professionals admit. Frantic development cycles and the accelerated pace of business innovation requires that data and insights be available at a moment's notice. Close to 41% of respondents report that it takes a week or more to approve change requests, as well as to configure new databases for key purposes, even for testing.
- In today's fast-paced business climate, rolling out new products and services is critical for staying one step ahead of the competition. To do this, organizations need to rely on their mission-critical applications and IT services. Behind the scenes are the administrators managing it all.
- Enterprises who implement management and monitoring tools tend to be more engaged with the complex issues around security, governance, and compliance, as well as cloud and big data issues. Close to three-fourths of managed sites are focusing on these issues. Seventy percent are managing greater influxes of unstructured or semi-structured data.
- Keeping data environments up-to-date is not a simple task. Close to one in three Oracle managers run in excess of five different set configurations of patched or updated databases across their production, testing, and development domains. This suggests a greater need for automation and more proactive management to maintain concurrency and consistency across today's data environments.

On the following pages are the results of this latest examination into today's pressing database manageability concerns, and the most effective solutions.

## DATA ENVIRONMENTS

The challenge of being able to manage and convert big data streams into actionable business intelligence is intensifying. Databases' footprints keep expanding, both in terms of sheer numbers, as well as capacity, leading to more challenges for administrators to handle. A majority, 62%, say their data volumes are expanding at a rate of greater than 10% annually.

How many total distinct Oracle Databases (including development, testing, and production) do respondents' companies run? At least 38% of the shops surveyed run 100 or more distinct databases—up from 25% reporting these numbers in the previous survey. This suggests growing complexity and data demand within enterprises. This raises the bar for Oracle Database administrators to implement solutions and tools that address new business requirements. At the lower end of the scale, 21% report having 10 or fewer databases in production at their sites. (See Figure 1.)

Not surprisingly, this number varies greatly depending on the overall size of the company. Those managers and professionals with the largest organizations in the sample (more than 5,000 employees) are more likely to have thousands of databases running across their environments. Nineteen percent of these larger organizations have more than 1,000 Oracle Databases within their domains. In contrast, none of the organizations

in the two smaller size categories have these numbers. Twenty percent of small organizations (1,000 employees or fewer) reported having 100 or more databases, compared to 41% of their mid-size counterparts (1,000–5,000 employees). A majority of the largest firms report having this quantity of databases. (See Figure 2.)

How fast is the number of total distinct Oracle Databases (including development, testing, and production) at respondents' organizations growing annually? About 15% report growth in excess of 20% a year, and another 15% report growth between 10% and 20%. Another 30% report growth between six and ten percent annually. (See Figure 3.)

On average, how fast are respondents' databases growing in size annually (in terms of gigabytes or terabytes)? One in 10 respondents reported that their data sizes are expanding at a rate exceeding 50% a year. For another 28%, the rate is exceeding 20% annually. (See Figure 44.)

**Figure 1: Number of Total Distinct Oracle Databases**

(Number of databases)	2015	2013	2011
<10	21%	22%	18%
11 to 50	22%	32%	28%
51 to 100	12%	14%	17%
101 to 500	24%	13%	21%
501 to 1,000	4%	6%	6%
>1,000	10%	6%	6%
Don't know/unsure	7%	8%	3%

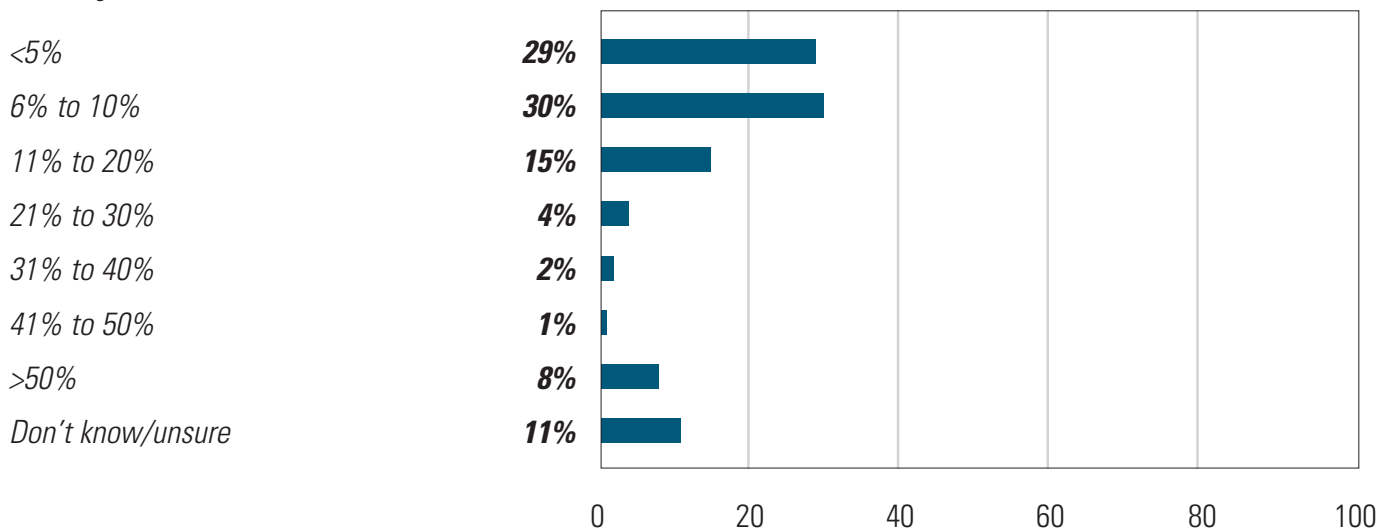
## Figure 2: Number of Total Distinct Oracle Databases—By Company Size

(Number of employees)

	1 to 1,000	1,001 to 5,000	>5,000
<10	36%	12%	11%
11 to 50	24%	19%	21%
51 to 100	10%	28%	7%
101 to 500	18%	39%	26%
501 to 1,000	2%	2%	7%
>1,000	0%	0%	19%
Don't know/unsure	8%	0%	9%

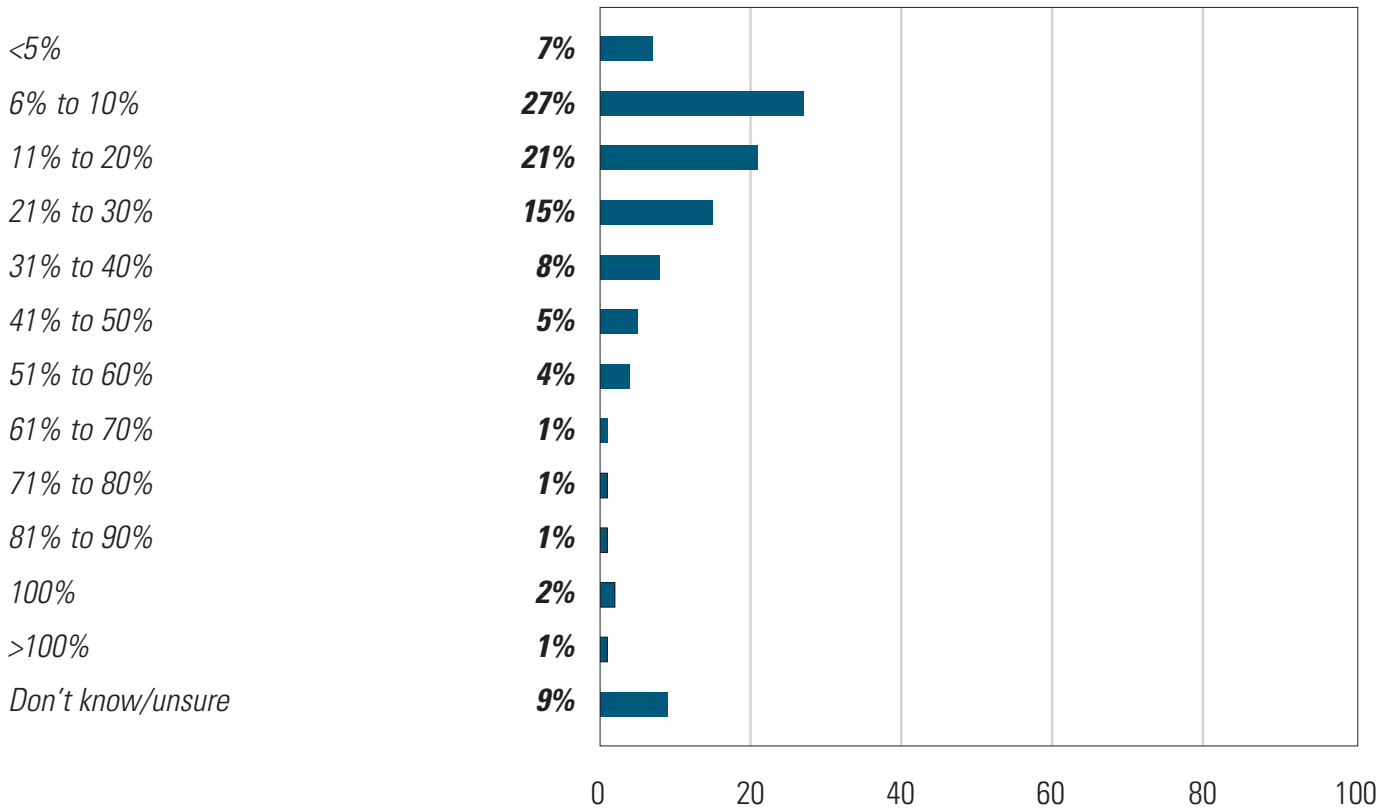
## Figure 3: Annual Growth of Distinct Oracle Databases

(Annual growth rate in number of databases)



## Figure 4: Annual Growth of Data Stored in Oracle Databases

(Annual growth rate in total amount of data)



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## PRIORITIES OF TODAY'S DATA-DRIVEN ORGANIZATIONS

Accelerating time to market is affecting every aspect of data managers' jobs. Along with security issues, cloud and big data now have a direct impact on the way many organizations manage their data environments. Keeping the performance of their systems at high levels and being able to rapidly fix any problems that may occur with the same resources as before are among the predominant issues. Two-thirds report that log files are their fastest-growing type of data, followed by more than two-fifths stating that new data formats account for much of the data growth being experienced.

Organizations these days are increasingly turning to data to help make better decisions, increase their speed to market, engage with customers, and better understand their markets. Security, governance and compliance remain the most important concerns for today's data managers and professionals. Close to three-fourths report that these issues have the greatest impact on their jobs and priorities. Cloud and big data, however, also weigh in among large portions of respondents as key trends. Close to half of the Oracle Database administrators in the survey see cloud computing in general as a major shift in their organizations. Another 43% acknowledge that big data—in all its forms—is reshaping their computing landscapes. (See Figure 5.)

Private cloud and database as a service—two interlocking concepts—also are on the horizons of many Oracle data sites. More than one-third of managers and professionals indicate they are seeing an impact from these types of technology initiatives. More than one-fourth also reported that public cloud initiatives are shaping their database operations.

Along with trends sweeping through the data center, there are a number of challenges that data managers and professionals continue to face. The ability to deliver rapid service to organizations which need to move at lightning speeds tops the list of challenges, as it has in previous surveys over the years. Currently, more than half the respondents, 52%, reported that providing rapid diagnosis of performance problems is their most pressing challenge. This is followed closely by identifying application (SQL) issues, at 45%, and keeping databases up to date with patch levels, which increased 30% from a previous study conducted in 2013. (See Figure 6.)

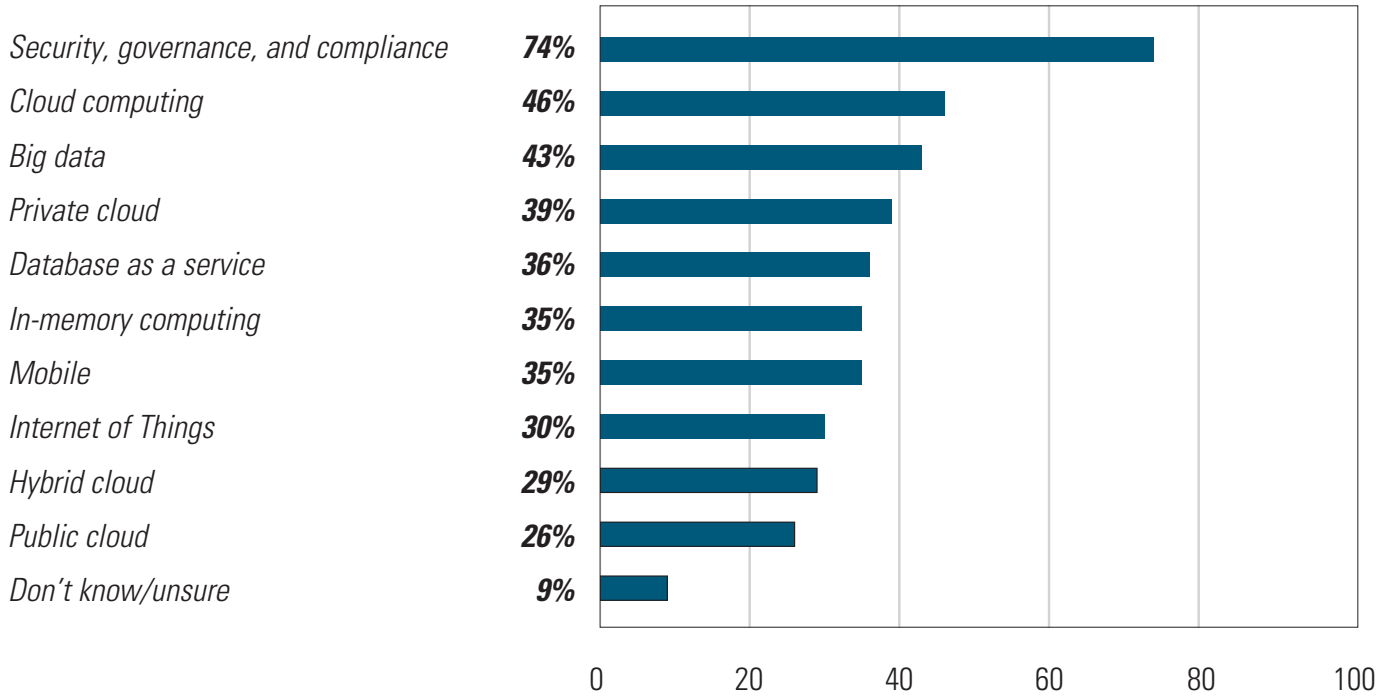
Interestingly, while the age of automation and cloud may be upon us, an increasing number of database managers and professionals report that they are being mired in manual processes. More than one-third cited this as a challenge, up a dramatic 162% from four years ago.

When it comes to database management and operational tasks, 38% of respondents admit to managing a larger number of databases with the same set of resources—and they are doing this with repetitive labor-intensive tasks. Compliance management is also becoming a bigger part of administrator's jobs, as well as having the flexibility and ability to quickly provision test and development systems.

Log files and new data formats are behind much of the data growth being experienced. Are respondents seeing a significant increase in data resulting from various sources? Data analytics running against IT systems and software is a major source of data now streaming or being loaded into enterprise systems. A majority, 66%, report that they are seeing a data influx from IT analytics and logging. More than two-fifths also report increases in unstructured and semi-structured data, the core of the big data challenge. (See Figure 7.) The rise of analytics data is most pronounced among mid-size companies. Seventy-six percent of these respondents are experiencing data growth at an increasing rate. Larger organizations are more likely to be working with unstructured data of all types. Interestingly, smaller organizations are seeing more activity streaming in from the Internet of Things than their larger counterparts. (See Figure 8.)

## Figure 5: Impact of Technology Trends on Database Administration

(Respondents reporting "significant" to "moderate" impact.)





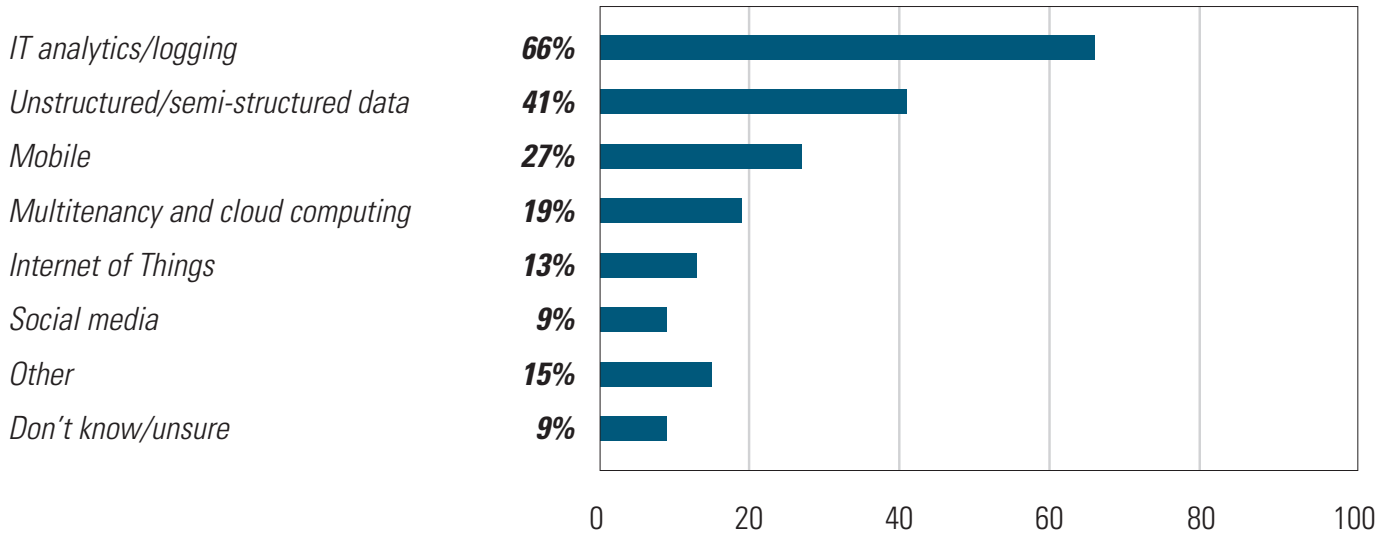
## Figure 6: Leading Database Administrative Challenges

(Total percentage of respondents answering “4” or “5” for each choice, based on a scale of 1 to 5, with “1” meaning little to no challenge, to “5” meaning extreme challenge.)

	2015	2013	2011
Rapid diagnoses of database performance problems	52%	47%	42%
Keeping databases at current patch levels	51%	39%	45%
Identifying application (SQL) issues	45%	44%	33%
Managing larger number of databases with same resources	38%	31%	33%
Validating and applying SQL tuning solutions	37%	—	—
Testing new technologies and infrastructure solutions for databases	35%	—	—
Dealing with too many manual repetitive tasks and processes	34%	31%	13%
Responding to security threats	34%	29%	35%
Resource usage analysis and capacity planning	30%	28%	—
Promoting database changes from development or test to production	26%	24%	21%
Tracking system configurations for compliance purposes	31%	21%	26%
Provisioning test or development systems	34%	20%	22%
Log-file analysis for root cause analysis of failures	31%	—	—
Operations analysis to improve SLA, availability and performance	31%	—	—
Database consolidation	25%	—	—

## Figure 7: Data Sources on the Rise

(Total percentage of respondents)



## Figure 8: Data Sources on the Rise—By Company Size

(Number of employees)

	1 to 1,000	1,001 to 5,000	>5,000
IT analytics/logging	54%	76%	67%
Unstructured/semi-structured data	33%	42%	48%
Mobile	31%	32%	30%
Multitenancy and cloud computing	15%	18%	19%
Internet of Things	18%	13%	13%
Social media	13%	8%	13%
Other	15%	18%	15%

## DATABASES AND THE SPEED OF BUSINESS

Today's manual database operations, processes, and approval time are among the delays holding up the real-time enterprise, many database managers and professionals admit. Frantic development cycles and accelerated pace of business innovation requires that data and insights be available at a moment's notice. Close to 41% of respondents reported that it takes a week or more to approve change requests as well as to configure new databases for key purposes, even for testing.

As data stores grow, so do the complexities involved in managing today's data environments. The challenge is providing the business the information it needs—in real time, if possible—at a time when the influx of data is almost overwhelming. Still, the business needs information now.

In terms of average approval times for new database or database change requests, many database managers and professionals report it takes some time until these requests go through.

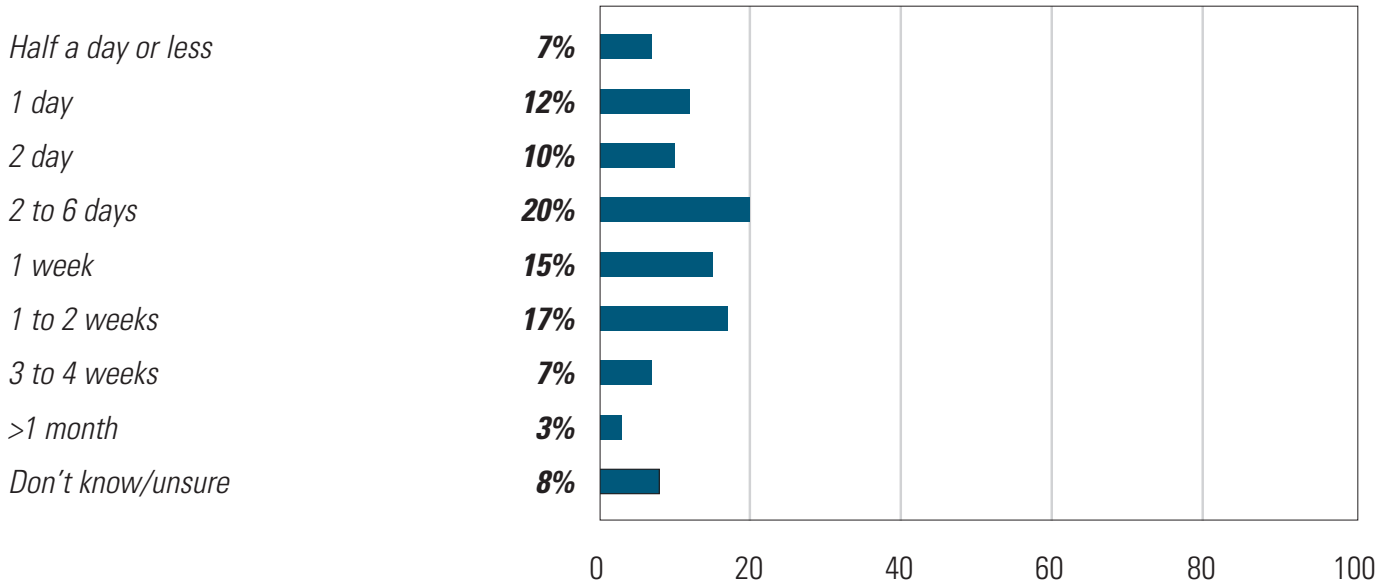
A total of 42% state that the wait time is one week or longer. One in 10 respondents stated that such change requests may take three to four weeks or longer to get approved. Only a handful of respondents have a relatively rapid approval process that may entail a few hours. (See Figure 9.) Smaller companies are less likely to experience longer wait times (one week or more)—likely due to fewer reporting layers within their organizations. (See Figure 10.)

The same time lag also extends to spinning up new databases for production or testing purposes, the survey confirms. For example, 41% state that it would take a day or longer—sometimes extending into weeks—to have a production database provisioned and ready for use. Even testing databases, which typically are not exposed to the same security issues and therefore do not require comprehensive attention, may be delayed in arriving. A total of 31% reported that bringing

up a new testing database could take one day or longer. At the other end of the spectrum, about 31% report they have the challenge mastered and they can bring up a production database within a few hours. Another 43% report they can bring up testing databases within the same morning it is requested. (See Figure 11.) Larger companies are more likely to report longer implementation times, again, likely due to the multi-layer reporting environments seen there. (See Figure 12.)

The ability to stand up new databases and associated applications rapidly to meet new business needs is vital in today's competitive environment. On average, however, it may take some time for database managers and professionals to implement configuration management and security for new database requests in their production environments. For close to one-third of enterprises, this is a process that lasts more than a day, and could even extend into a few weeks. For creating testing databases, there's a bit less of a lag—23% report it would take more than a day, while 58% report they could have testing databases ready to go within a matter of a few hours. Fifty percent also indicate production databases can be readied in five hours or less. (See Figure 13.) Smaller organizations take less time to implement new configurations and security environments, the survey also shows. (See Figure 14.)

**Figure 9: Average Approval Times for New Database or Database Change Requests**



**Figure 10: Average Approval Times for New Database or Database Change Requests—By Company Size**

(Number of employees)	1 to 1,000	1,001 to 5,000	>5,000
1 day or less	26%	16%	17%
1 week or more	30%	49%	47%

### Figure 11: Amount of Time Needed to Provision or Deploy New Databases

	<i>Production</i>	<i>Testing</i>
<1 hour	<b>5%</b>	<b>6%</b>
1 to 5 hours	<b>26%</b>	<b>37%</b>
6 to 10 hours	<b>21%</b>	<b>19%</b>
11 to 24 hours	<b>6%</b>	<b>7%</b>
1 to 7 day	<b>30%</b>	<b>26%</b>
8 to 30 days	<b>8%</b>	<b>3%</b>
>1 month	<b>3%</b>	<b>2%</b>

### Figure 12: Amount of Time Needed to Provision or Deploy New Production Databases—By Company Size

<i>(Number of employees)</i>	<i>1 to 1,000</i>	<i>1,001 to 5,000</i>	<i>&gt;5,000</i>
5 hours or less	<b>33%</b>	<b>26%</b>	<b>33%</b>
1 day or more	<b>35%</b>	<b>39%</b>	<b>45%</b>

**Figure 13: Amount of Time Needed for Configuration Management and Security for New Database Requests**

	<i>Production</i>	<i>Testing</i>
<1 hour	<b>13%</b>	<b>17%</b>
1 to 5 hours	<b>37%</b>	<b>41%</b>
6 to 10 hours	<b>12%</b>	<b>12%</b>
11 to 24 hours	<b>8%</b>	<b>8%</b>
1 to 7 day	<b>23%</b>	<b>19%</b>
8 to 30 days	<b>6%</b>	<b>3%</b>
>1 month	<b>2%</b>	<b>1%</b>

**Figure 14: Amount of Time Needed for Configuration Management and Security for New Database Requests—By Company Size**

<i>(Number of employees)</i>	<i>1 to 1,000</i>	<i>1,001 to 5,000</i>	<i>&gt;5,000</i>
5 hours or less	<b>55%</b>	<b>52%</b>	<b>43%</b>
1 day or more	<b>30%</b>	<b>26%</b>	<b>35%</b>

## MANUAL VS. AUTOMATED

In today's fast paced business climate, rolling out new product and services is critical for staying one step ahead of the competition. To do this, organizations need to rely on their mission-critical applications and IT services. Behind the scenes are the administrators managing it all.

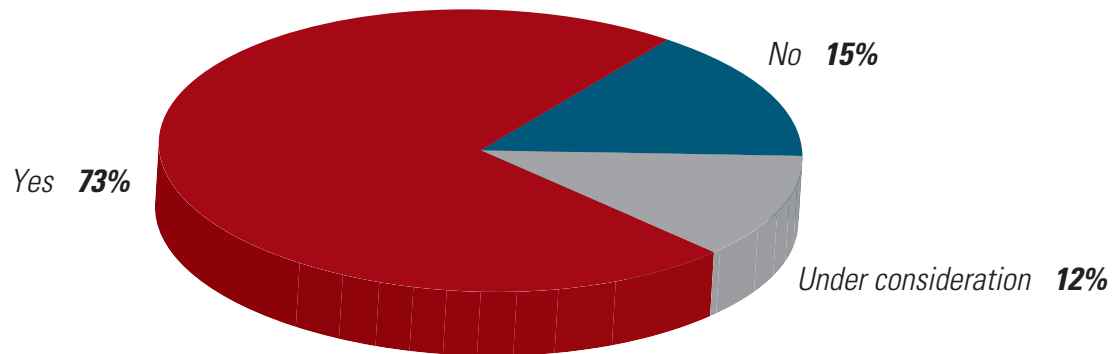
When respondents were asked about their database manageability methods and practices, close to three-fourths of enterprises, 73%, said they use Oracle Enterprise Manager to measure and track their database environments. (See Figure 15.)

In addition, sites running Oracle Enterprise Manager tend to handle more databases than those running any other management solution. Close to half of respondents at Oracle Enterprise Manager sites report having more than 100 databases, versus 27% of non-Oracle Enterprise Manager sites. Interestingly, Oracle Enterprise Manager users are also more cognizant of the number of databases across their domains—

only 5% could not calculate the number, versus 12% of non-Oracle Enterprise Manager users. (See Figure 16.)

Administrators who use management tools to perform various tasks tend to be more focused on the challenges affecting a range of quality of service issues. A majority of Oracle Enterprise Manager users, 52%, said that keeping current with system updates and patches is a critical priority, compared to only 42% of non-Oracle Enterprise Manager users. In addition, more than half of Enterprise Manager users are keen about performance, versus 44% of non-users. (See Figure 17.)

**Figure 15: Use Oracle Enterprise Manager?**



**Figure 16: Number of Total Distinct Oracle Databases—Oracle Enterprise Manager Sites Versus Non-Users**

	<i>Oracle Enterprise Manager sites</i>	<i>Non-Oracle Enterprise Manager sites</i>
<100	<b>48%</b>	<b>60%</b>
101 to 500	<b>31%</b>	<b>9%</b>
501 to 1,000	<b>5%</b>	<b>3%</b>
>1,000	<b>11%</b>	<b>15%</b>
Don't know/unsure	<b>5%</b>	<b>12%</b>



## Figure 17: Number of Total Distinct Oracle Databases—Oracle Enterprise Manager Sites Versus Non-Users

(Total percentage of respondents answering “4” or “5” for each choice, based on a scale of 1 to 5, with “1” meaning little to no challenge, to “5” meaning extreme challenge.)

	<i>Oracle Enterprise Manager sites</i>	<i>Non-Oracle Enterprise Manager sites*</i>
<i>Keeping databases at current patch levels</i>	<b>52%</b>	<b>42%</b>
<i>Rapid diagnoses of database performance problems</i>	<b>51%</b>	<b>44%</b>
<i>Identifying application (SQL) issues</i>	<b>48%</b>	<b>35%</b>
<i>Managing larger number of databases with same resources</i>	<b>42%</b>	<b>24%</b>
<i>Validating and applying SQL tuning solutions</i>	<b>38%</b>	<b>27%</b>
<i>Provisioning test or development systems</i>	<b>36%</b>	<b>20%</b>
<i>Responding to security threats</i>	<b>35%</b>	<b>25%</b>
<i>Testing new technologies and infrastructure solutions for databases</i>	<b>35%</b>	<b>41%</b>
<i>Dealing with too many manual repetitive tasks and processes</i>	<b>34%</b>	<b>31%</b>
<i>Resource usage analysis and capacity planning</i>	<b>32%</b>	<b>28%</b>
<i>Log-file analysis for root cause analysis of failures</i>	<b>31%</b>	<b>31%</b>
<i>Operations analysis to improve SLA, availability, and performance</i>	<b>31%</b>	<b>31%</b>
<i>Promoting database changes from development or test to production</i>	<b>27%</b>	<b>18%</b>
<i>Tracking system configurations for compliance purposes</i>	<b>32%</b>	<b>21%</b>
<i>Database consolidation</i>	<b>27%</b>	<b>24%</b>

(\*Not currently using or considering Oracle Enterprise Manager.)

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## TRENDING: CLOUD, COMPLIANCE, AND IT ANALYTICS

Enterprises who implement management and monitoring tools tend to be more engaged with the complex issues around security, government and compliance, as well as cloud and big data issues. Close to three-fourths of managed sites are focusing on these issues. Seventy percent are managing greater influxes of unstructured or semi-structured data.

Those sites that have adopted management tools to help configure and monitor their data environments show a greater awareness and engagement with the various trends shaping the database space. For example, close to three-fourths of sites with Oracle Enterprise Manager in place are working through security, governance, and compliance initiatives, versus 62% of sites working without the management toolset. While overall cloud computing initiatives are similar, Oracle Enterprise Manager users are deeper into the various enterprise depths of cloud-private cloud (37% of Oracle Enterprise Manager users versus 30% overall), Database as a Service (37% versus 22%), and hybrid cloud (30% versus 15%). (See Figure 18.)

As noted in the previous section, the enhanced engagement with these key trends and enablers at Oracle Enterprise Manager sites is likely the product of the more complex environments these sites tend to have. For example, 46% of Oracle Enterprise Manager sites have more than 100 databases, versus 27% on non-Enterprise Manager sites.

As a direct result of the more pervasive and up-to-date environments managed at Oracle Enterprise Manager sites, there also is a greater tendency to be supporting analytics and “big data” environments. For instance, 70% of Oracle Enterprise Manager users report greater amounts of analytics and log data coming from their systems, versus 42% of their non-user counterparts. (See Figure 19.) Does this mean that users of advanced management tools, such as Oracle Enterprise Manager, are better equipped to handle more data and are able to perform trend analysis on it? Perhaps.

Likewise, while 44% of respondents at Oracle Enterprise Manager sites report handling greater volumes of unstructured data, this is only the case at 38% of non-Oracle Enterprise Manager sites.

Oracle Enterprise Manager sites also tend to be capable of supporting more configurations than their non-Oracle Enterprise Manager counterparts. For example, close to half of managers at Oracle Enterprise Manager sites calculate that they are running more than five configurations of development databases, versus 28% of non-Oracle Enterprise Manager sites. (See Figure 20.)

## Figure 18: Impact of Technology Trends on Database Administration —Oracle Enterprise Manager Sites Versus Non-Users

(Respondents reporting “significant” to “moderate” impact.)

	<b>Oracle Enterprise Manager sites</b>	<b>Non-Oracle Enterprise Manager sites*</b>
Security, governance, and compliance	<b>74%</b>	<b>62%</b>
Cloud computing	<b>44%</b>	<b>43%</b>
Big data	<b>42%</b>	<b>24%</b>
Private cloud	<b>37%</b>	<b>30%</b>
Database as a service	<b>37%</b>	<b>22%</b>
In-memory computing	<b>37%</b>	<b>18%</b>
Mobile	<b>31%</b>	<b>37%</b>
Internet of Things	<b>31%</b>	<b>15%</b>
Hybrid cloud	<b>30%</b>	<b>15%</b>
Public cloud	<b>24%</b>	<b>15%</b>

(\*Not currently using or considering Oracle Enterprise Manager.)

**Figure 19: Data Sources on the Rise—Oracle Enterprise Manager Sites Versus Non-Users**

	<i>Oracle Enterprise Manager sites</i>	<i>Non-Oracle Enterprise Manager sites*</i>
<i>IT analytics/logging</i>	<b>70%</b>	<b>42%</b>
<i>Unstructured/semi-structured data</i>	<b>44%</b>	<b>38%</b>
<i>Mobile</i>	<b>28%</b>	<b>31%</b>
<i>Multitenancy and cloud computing</i>	<b>19%</b>	<b>15%</b>
<i>Internet of Things</i>	<b>12%</b>	<b>12%</b>
<i>Social media</i>	<b>8%</b>	<b>15%</b>
<i>Other</i>	<b>15%</b>	<b>19%</b>

(\*Not currently using or considering Oracle Enterprise Manager.)

**Figure 20: Enterprises with Multiple Database Configurations—Oracle Enterprise Manager Sites Versus Non-Users**

(More than five configurations supported)

	<i>Oracle Enterprise Manager sites</i>	<i>Non-Oracle Enterprise Manager sites*</i>
<i>Development</i>	<b>47%</b>	<b>28%</b>
<i>Test</i>	<b>44%</b>	<b>24%</b>
<i>Production</i>	<b>43%</b>	<b>20%</b>

(\*Not currently using or considering Oracle Enterprise Manager.)

## KEEPING CURRENT

Keeping data environments up-to-date is not a simple task. Close to one in three Oracle managers run in excess of five different set configurations of patched or updated databases across their production, testing and development domains. This suggests a greater need for automation and more proactive management to maintain currency and consistency across today's data environments.

It's common to see multiple versions of databases run within the same enterprise domains, reflecting different stages of upgrades and patches. The survey confirms that Oracle Database managers run a number of different database configurations (software patch versions) of databases in their data centers. For the most part, respondents run between one and five separate configurations at any one time, with approximately three in five running this number for development, test, and production databases.

Close to one in three Oracle shops also report managing between six and 20 different configurations for both their development and production environments. (See Figure 21.)

In terms of new databases, a majority provision for up to 10 databases a year for development, testing, and production purposes. (See Figure 22.)

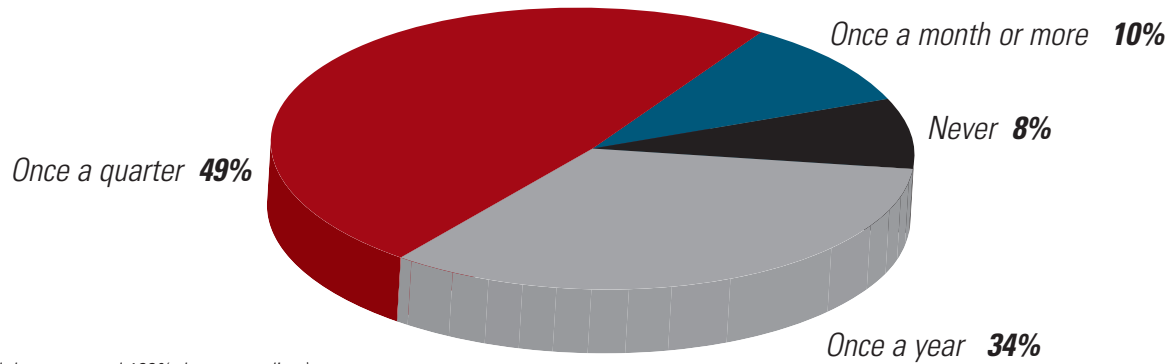
How frequently do Oracle administrators and professionals typically patch their databases? There are varying degrees of attention to this, the survey finds. Only one in 10 will implement database patches on at least a monthly basis. Close to half will deploy database patches at least once every quarter. However, more than one-third reported that they only apply the necessary patches on an annual basis at best. (See Figure 23.)

### Figure 21: Number of Different Database Configurations Supported

	1 to 5	6 to 20	21 to 50	>50
Development	57%	29%	11%	3%
Test	60%	25%	12%	3%
Production	61%	28%	7%	5%

### Figure 22: Number of New Databases Provisioned Annually

	1 to 10	11 to 25	26 to 50	51 to 100	101 to 250	>250
Development	62%	21%	11%	3%	2%	2%
Test	65%	19%	8%	5%	2%	2%
Production	70%	16%	8%	2%	3%	1%

**Figure 23: Frequency of Database Patches**

*(Total does not equal 100% due to rounding.)*

## CONCLUSION

**Keeping data environments up to date is not a simple task. Close to one in three Oracle managers run in excess of five different set configurations of patched or updated databases across their production, testing, and development domains. This suggests a greater need for automation and more proactive management to maintain currency and consistency across today's data environments.**

The role of the database administrator is not fading away with the advent of automation and cloud. If anything, it's on the rise. This survey of 301 data managers and professionals, members of the IOUG, finds that demand for database administration skills will only grow more acute as enterprise data environments grow more sophisticated, distributed and expansive.

The IOUG recommends administrators responsible for managing and monitoring Oracle Database environments learn about the different trends, challenges, and solutions that make up the database manageability area. As industries and businesses adopt new technologies, it's critical now more than ever to continue to grow personally and professionally.

Key survey insights and highlights include:

**Big data keeps getting even bigger.** Databases' footprints keep expanding, both in terms of sheer numbers as well as capacity, leading to more challenges for administrators to handle.

**It's about keeping the business running at top speed.** Accelerating time to market is affecting every aspect of data managers' jobs. Keeping the performance of their systems at high levels and being able to rapidly fix any problems that

may occur with the same resources as before are among the predominant issues.

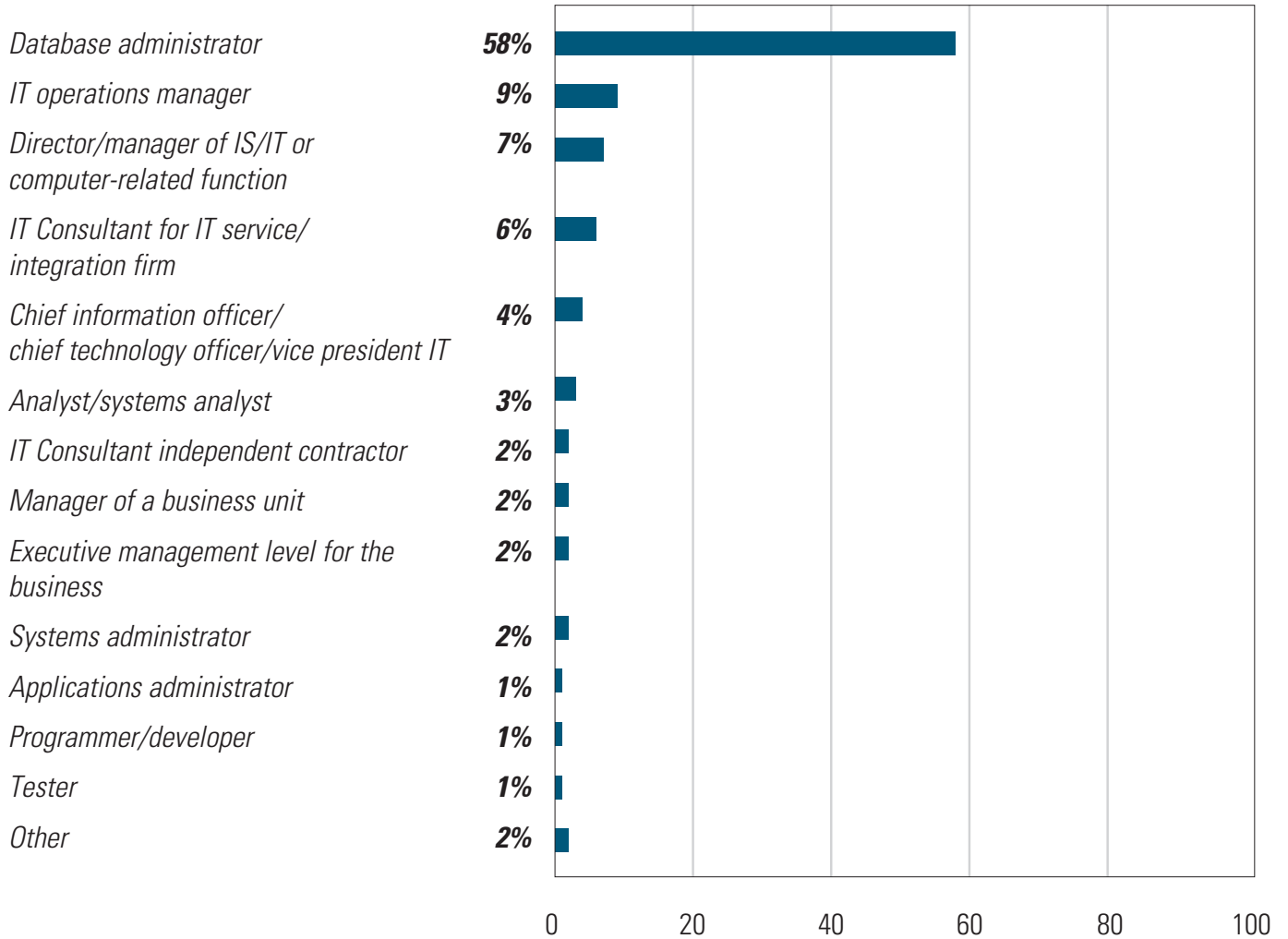
**Real-time enterprises need highly responsive data environments.** Frantic development cycles and accelerated pace of business innovation requires that data and insights be available at a moment's notice. Taking a week or more to approve change requests or provision databases is not acceptable for the real-time enterprise.

**Management and monitoring are essential to keeping data environments responsive.** Enterprises adopting management and monitoring tools tend to be more engaged with the complex issues around security, government, and compliance, as well as cloud and big data issues.

**Keeping data environments up-to-date is not a simple task.** Close to one in three Oracle Database administrators run in excess of five different set configurations of patched or updated databases across their production, testing and development domains. This suggests a greater need for automation and more proactive management to maintain currency and consistency across today's data environments.

## DEMOGRAPHICS

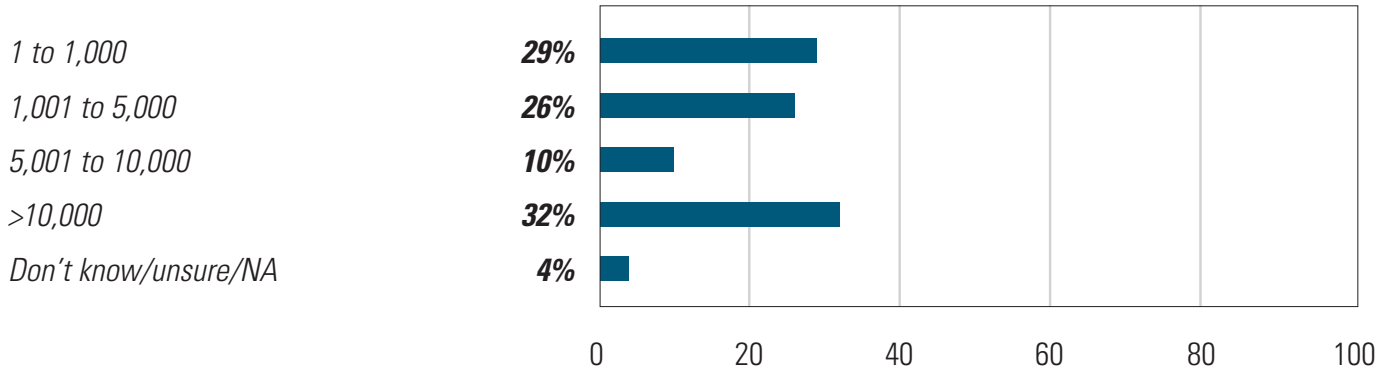
### Figure 24: Respondents' Primary Job Titles





## Figure 25: Organization Sizes—By Number of Employees

(Include all locations, branches, and subsidiaries.)



## Figure 26: Primary Industries

