



# LINUX BECOMES A PLAYER IN THE SQL SERVER WORLD: PASS 2021 SURVEY ON MICROSOFT SQL SERVER PLATFORM TRENDS

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## EXECUTIVE SUMMARY

Today's SQL Server systems are proving their adaptability in the hybrid, multi-platform enterprises that they are serving. Linux—not too long ago seen as a competitive platform to all things Microsoft—has become a platform of choice now supporting many SQL Server environments. Data managers are increasingly recognizing the advantages that the Linux platform brings to their environments, and close to one in three data managers have already deployed their databases on the open source platform.

This is one of the key findings of a new survey conducted in the second half of 2020 among 306 members of PASS, the Professional Association for SQL Server, by Unisphere Research, a division of Information Today, Inc., in partnership with Red Hat. The results reflect the experiences and viewpoints of respondents from a range of company sizes and industries, including IT services/system integrators, financial and business services providers, government agencies, and healthcare organizations.

The key findings of the study include the following:

- SQL Server sites are embracing a diversity of operating systems beyond Windows. Linux is prevalent at many SQL Server sites, while many non-Microsoft databases are also running on Windows.
- Linux use for SQL Server deployments is on the upswing. While Linux adoption is rising at SQL Server sites, data managers express concern about skill levels and compatibility with current Windows applications.
- SQL Server site data managers are aware of their Linux options, but may not have the skills and experience to move in this direction. When it comes to skill levels, data managers question their own knowledge about Linux. Many are not familiar enough with the Linux OS to embrace the platform.
- The priority for many SQL Server shops is moving to the cloud and more flexible platforms. Organizations are increasingly recognizing the value of cloud as a SQL Server environment. The amount of SQL Server maintained in the cloud is expected to double over the next two years.

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

## DIVERSITY RULES

**SQL Server sites are embracing a diversity of operating systems beyond Windows. Linux is prevalent at many SQL Server sites, while many non-Microsoft databases are also running on Windows.**

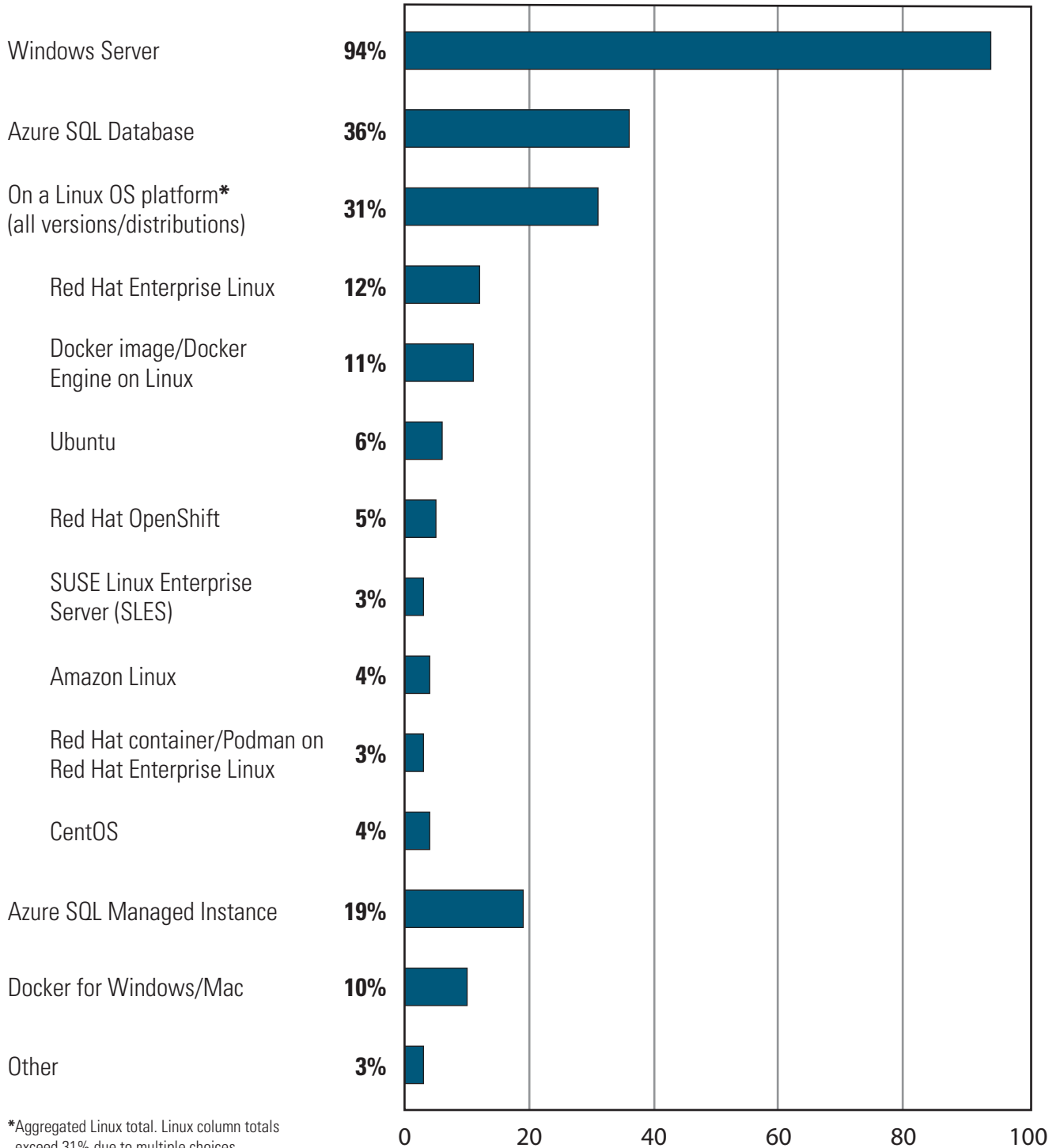
In a survey of Microsoft SQL Server shops, it's no surprise that Windows Server is the ubiquitous platform. At the same time, close to one-third also have Linux as their underlying system. Microsoft now actively supports SQL Server on Linux, and adoption among the SQL Server base is strong. When the Linux responses are totaled up and aggregated, we find at least 31% of the survey group runs at least one Linux-flavor OS at their sites.

A desire to reduce administrative overhead and also move to the cloud are the reasons data executives have made the operating system choices they have. Linux users are less inclined to cite

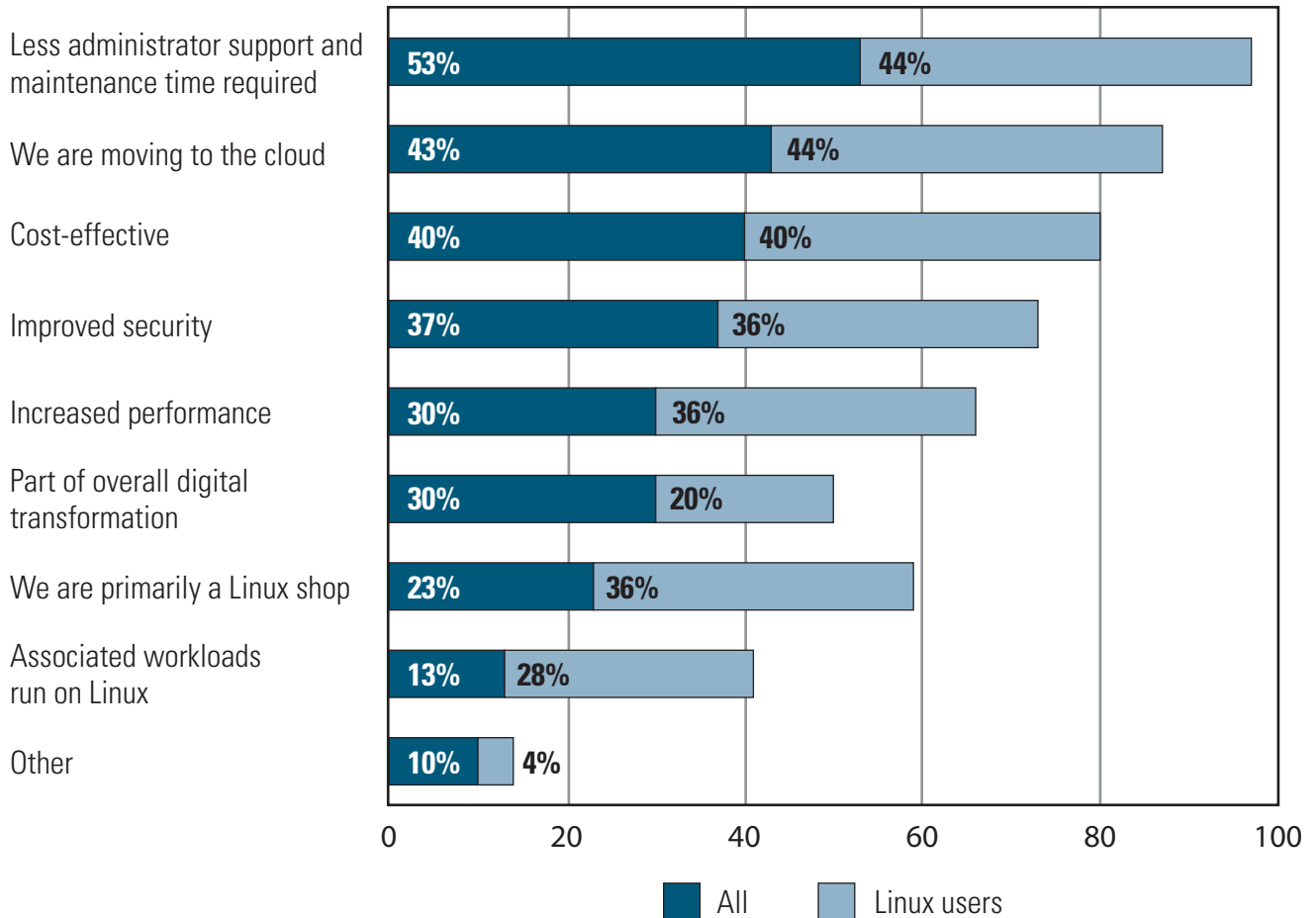
administrative overhead benefits but are more likely to see performance benefits (see Figure 2).

SQL Server isn't the only database that data managers are running on their OS platforms. Six in 10 run other databases on Windows, while close to one-third run other databases on Red Hat Enterprise Linux. Other databases seen in these shops include Oracle, MySQL/MariaDB, PostgreSQL, and MongoDB (see Figures 3 and 4).

**Figure 1: On which operating system platforms are you running SQL Server instances?**

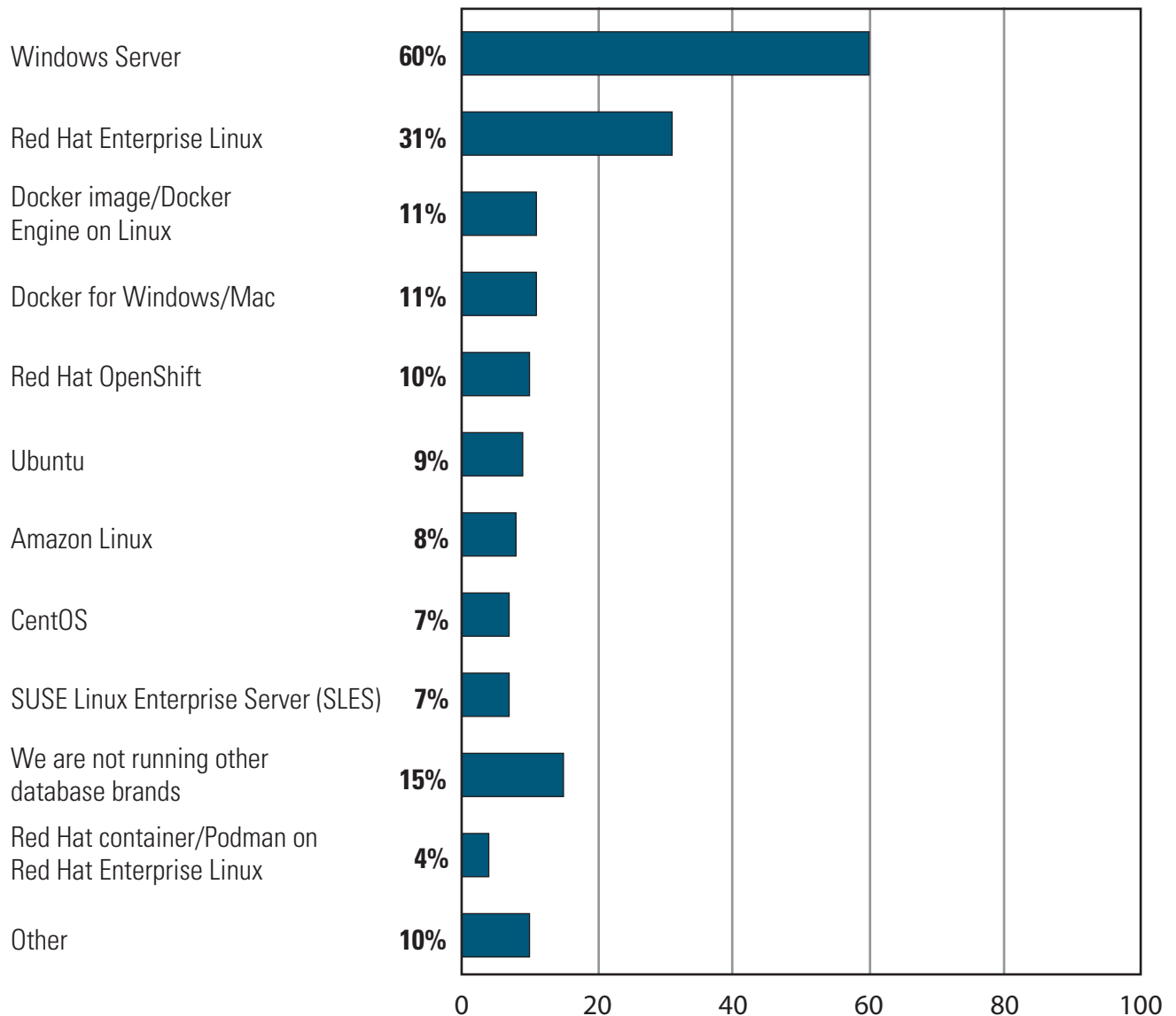


**Figure 2: What are the main reasons you selected this as your primary operating system?**

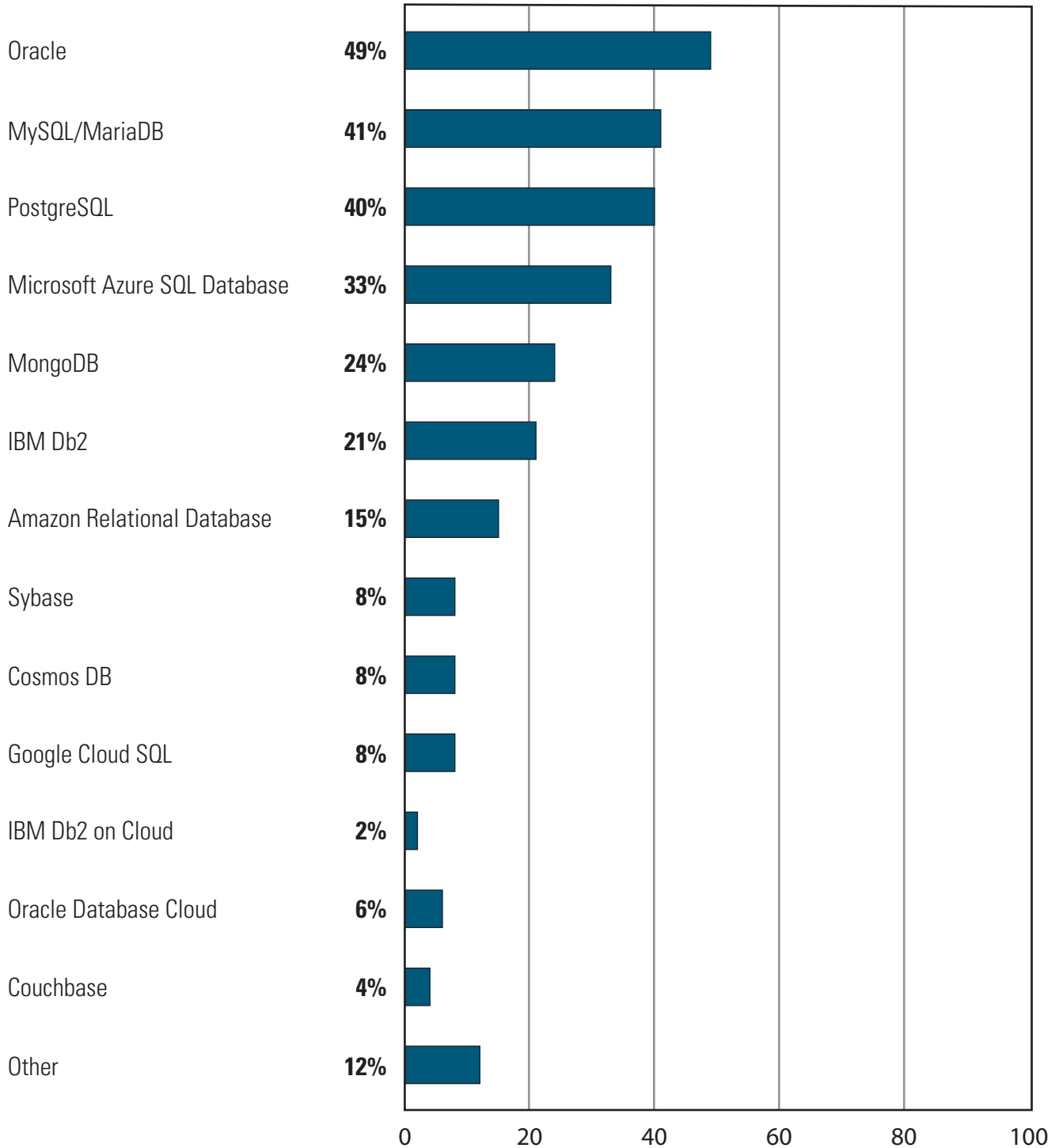


### Figure 3: Is your organization running database brands other than SQL Server on any of these operating system platforms?

(Percentages show portion that said yes)



**Figure 4: What other database brands are you running within your enterprise?**  
(Select all that apply)





## LINUX RISING

**Linux use for SQL Server deployments is on the upswing. While Linux adoption is rising at SQL Server sites, data managers express concerns about skill levels and compatibility with current Windows applications.**

Adoption of Linux as a SQL Server platform is expected to more than triple over the next two years. More than two in three IT professionals are likely to consider moving to Linux under the right circumstances (see Figures 5 and 6).

Data managers see Linux as an approach to reduce costs, reduce reliance on a single vendor, and as a way to increase system performance. Two-thirds of current Linux users already report reduced costs (see Figure 7).

Of course, not everyone is enamored with Linux. For those not interested in Linux, unfamiliarity with the OS is a leading reason, along with their own organization's standardization on Windows (see Figure 8).

The primary workloads seen in Linux-based SQL Server environments include online transaction processing, online analytical processing, and data warehouses. Data lakes and advanced analytical workloads (such as artificial intelligence) are on the horizon (see Figure 9).

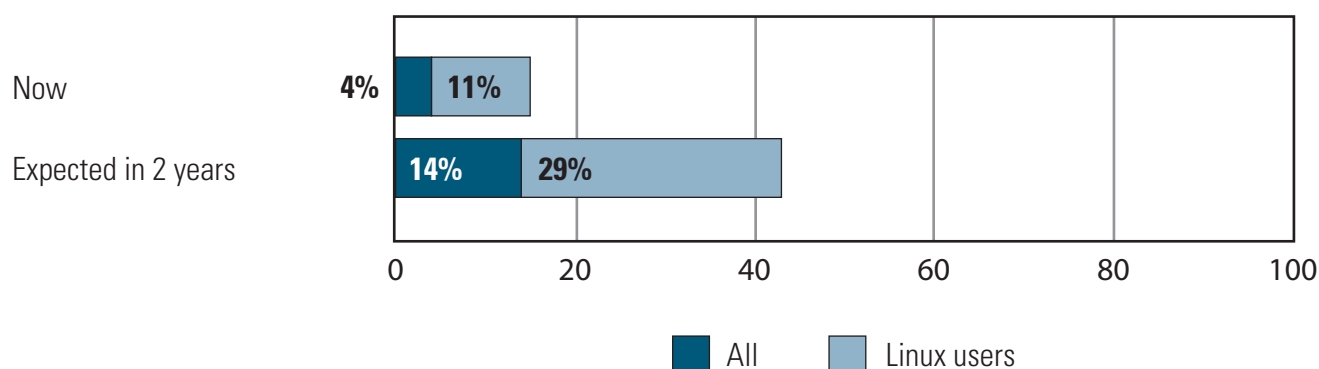
Most applications supported on Linux today are production-oriented, or are web and e-commerce sites. Data managers are open to deploying advanced analytics and AI applications on Linux as well (see Figure 10).

The primary challenge to moving to Linux is one of skills availability. Seven in 10 data managers cite the need for skills to support Linux. Respondents at current Linux sites agree that skills are an issue. Compatibility with Windows-based applications is also seen as an issue. Current Linux users also point to availability of database tools and data replication issues (see Figure 11).

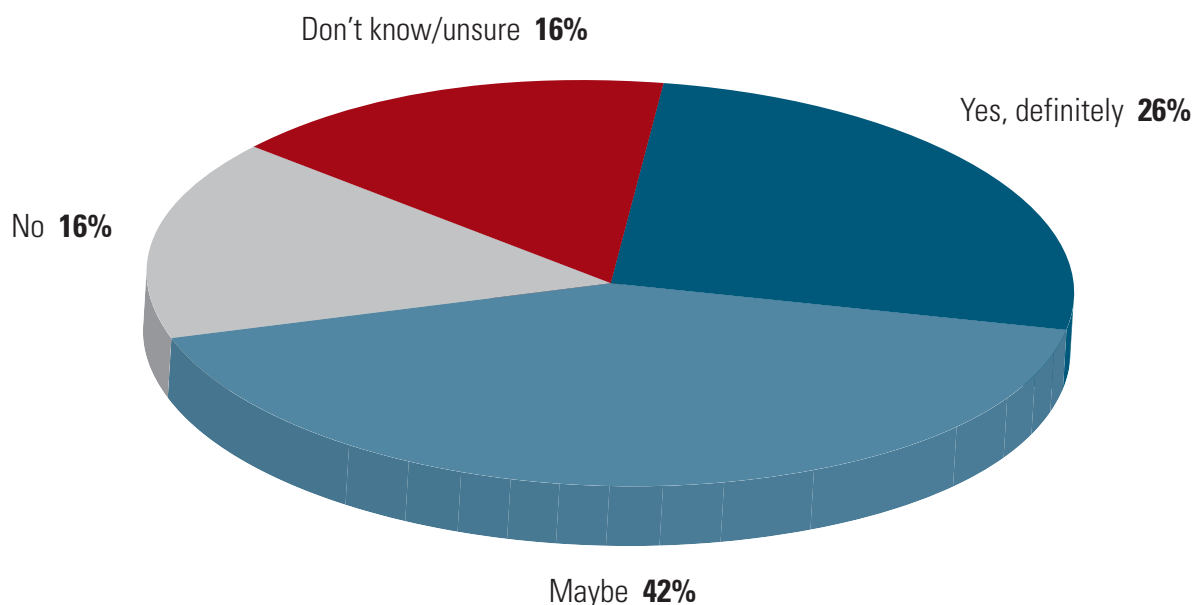
For those considering a Linux platform migration, the optimum time is simply to wait until the organization is ready for the next version of SQL Server, as cited by 44% of respondents. The costs and disruptions associated with a platform change may be daunting, and most IT managers don't want to wait and be forced to upgrade. For a similar number (42%), though, the most compelling reason to adopt Linux may be to accommodate the needs of an enterprise running a range of non-Windows-based applications (see Figure 12).

### Figure 5: How many of your SQL Server instances do you have running on Linux (all versions/distributions) at this time, and how do you predict this to change over the next two years?

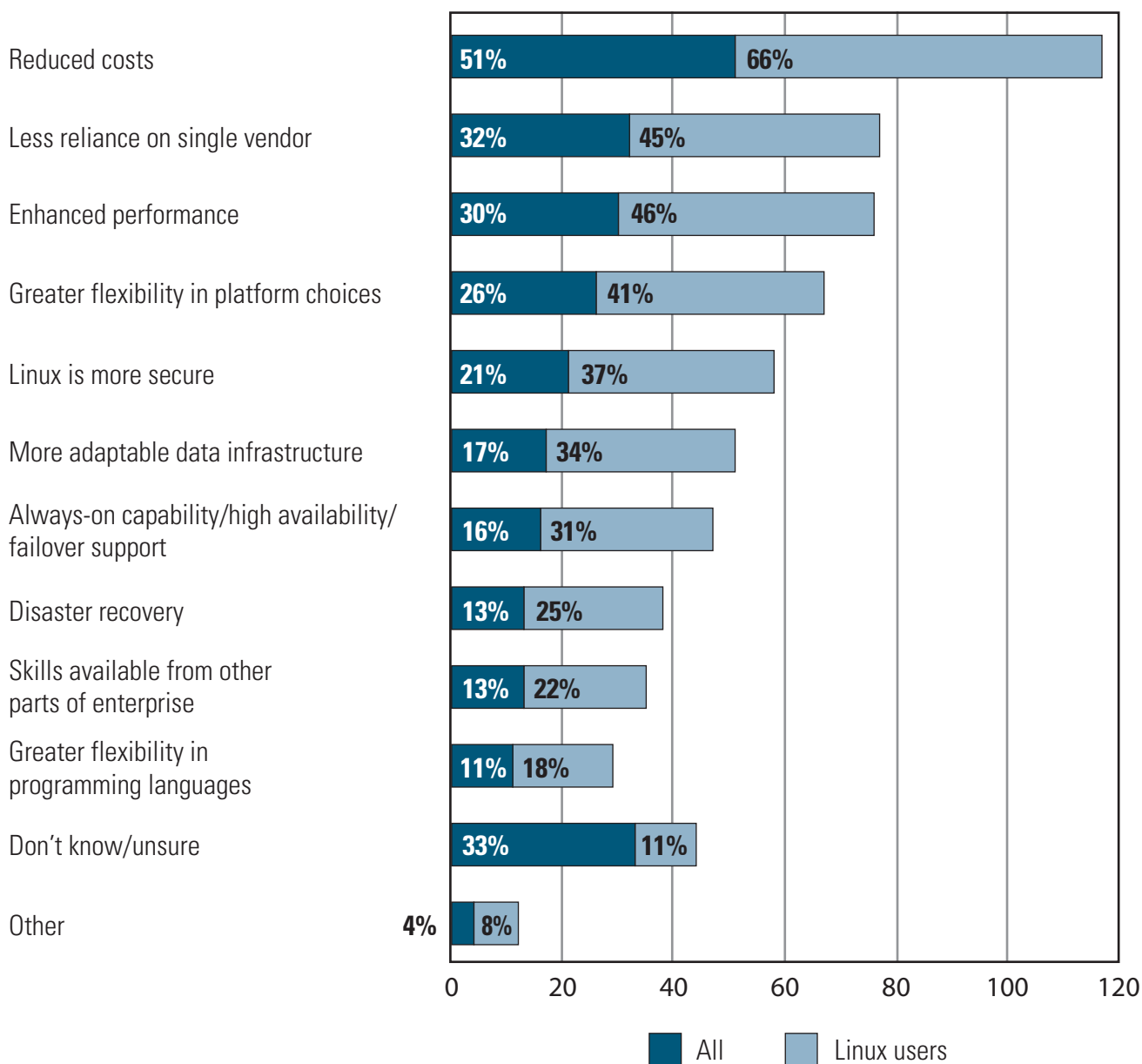
(Percent reporting or planning a significant portion of instances, which is defined, for purposes of this survey, as 25% or more)



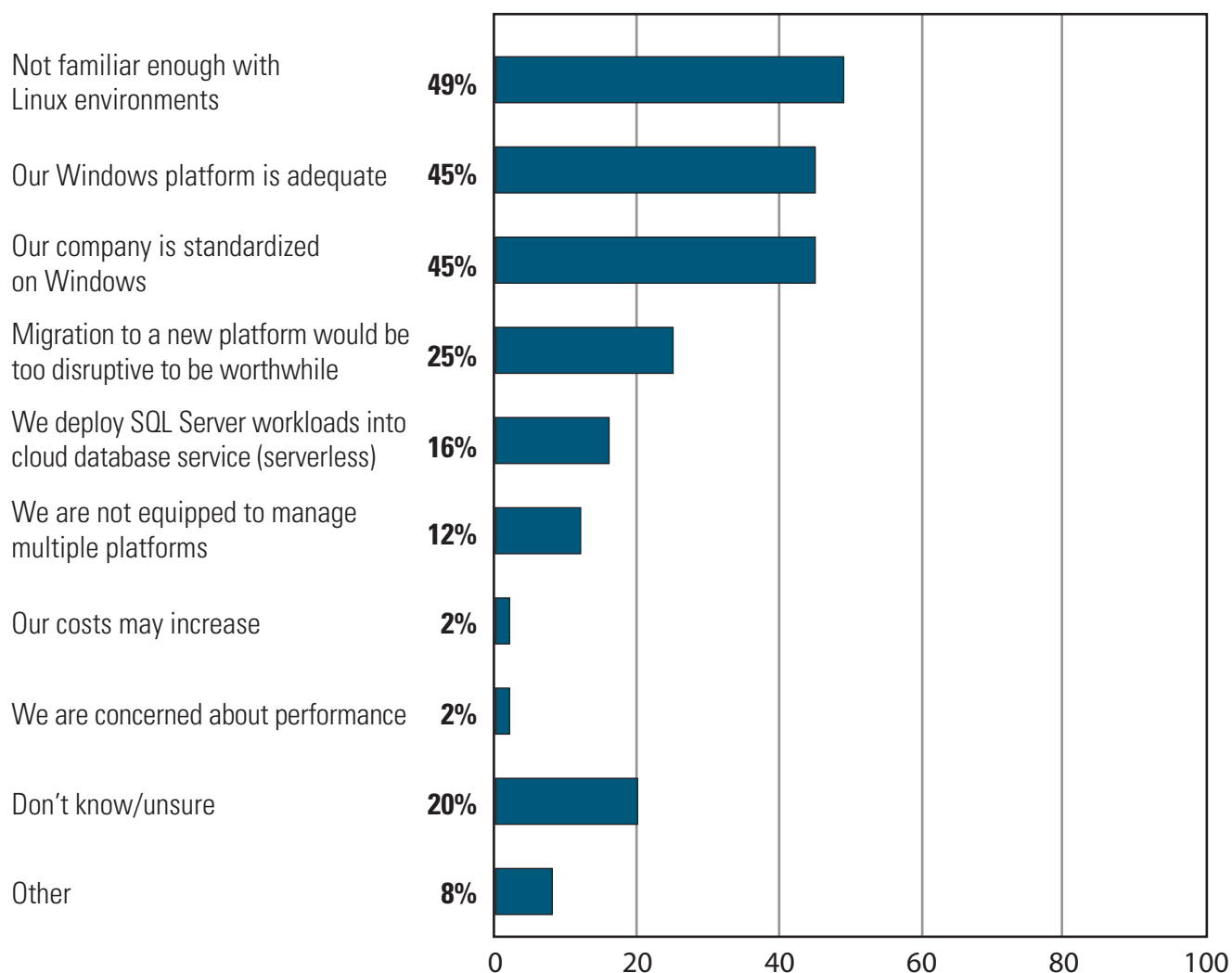
### Figure 6: Would you consider running instances of SQL Server on Linux, given the appropriate circumstances?



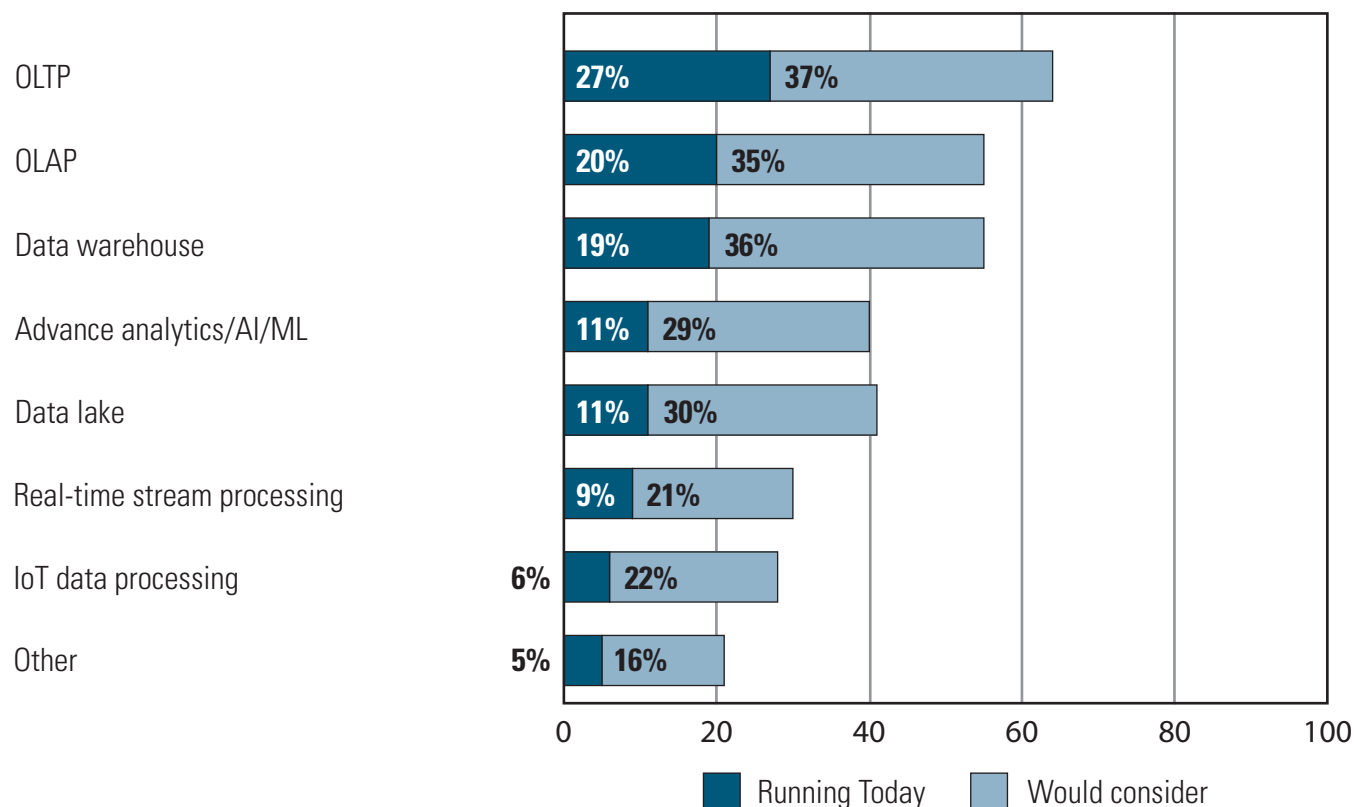
## Figure 7: What do you consider the benefits of running SQL Server on Linux?



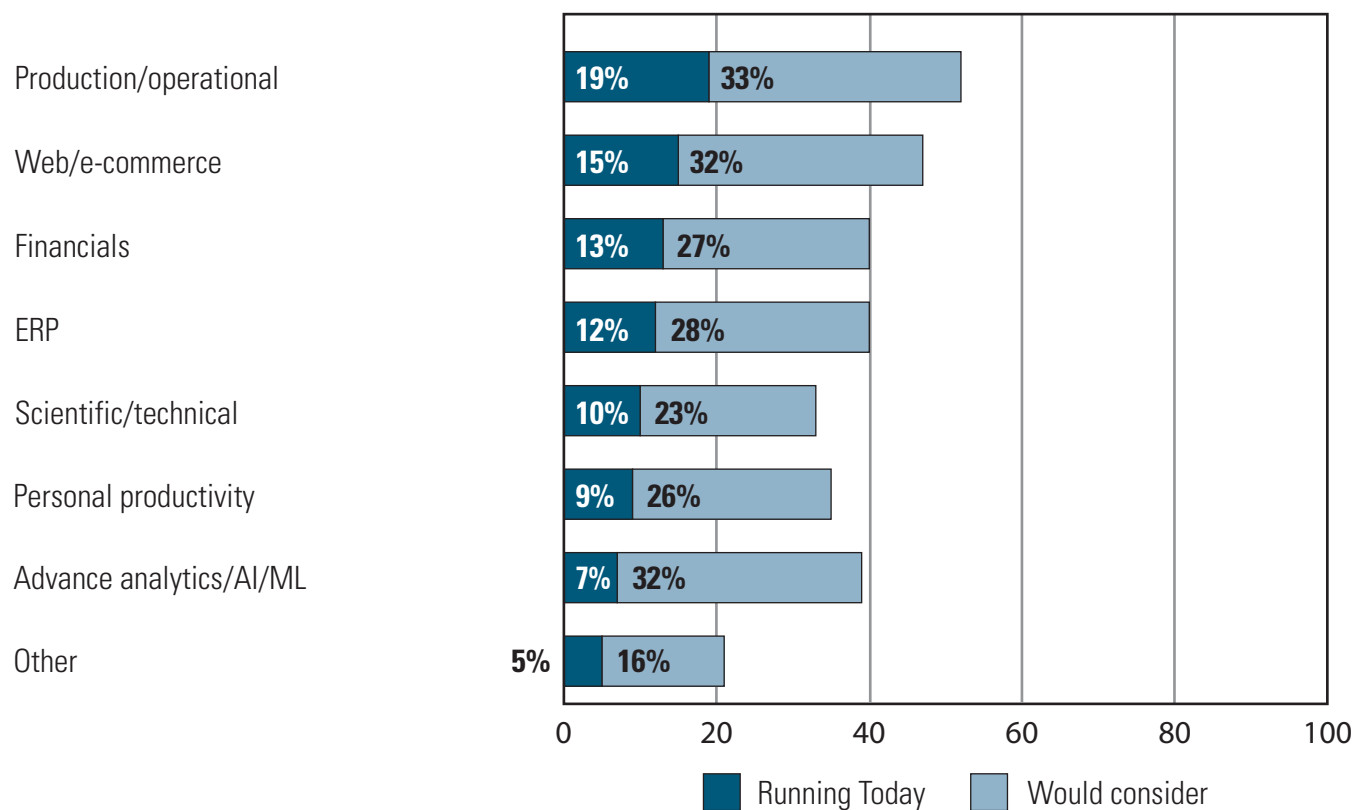
**Figure 8: If you would never consider deploying SQL Server on a Linux platform, what do you see as the major issues?**



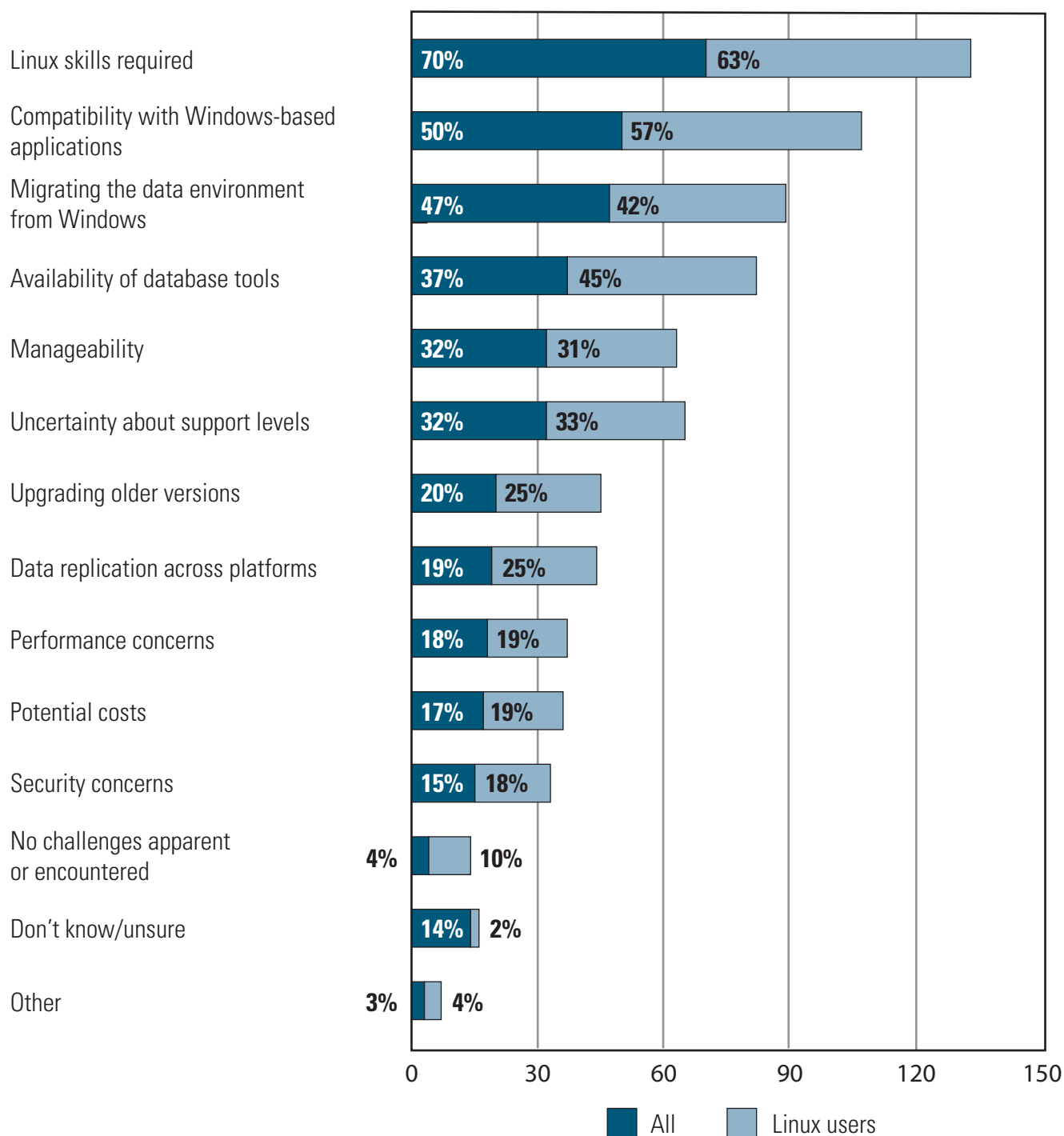
**Figure 9: What types of SQL Server workloads are you now running, or would you consider running, on a Linux platform?**



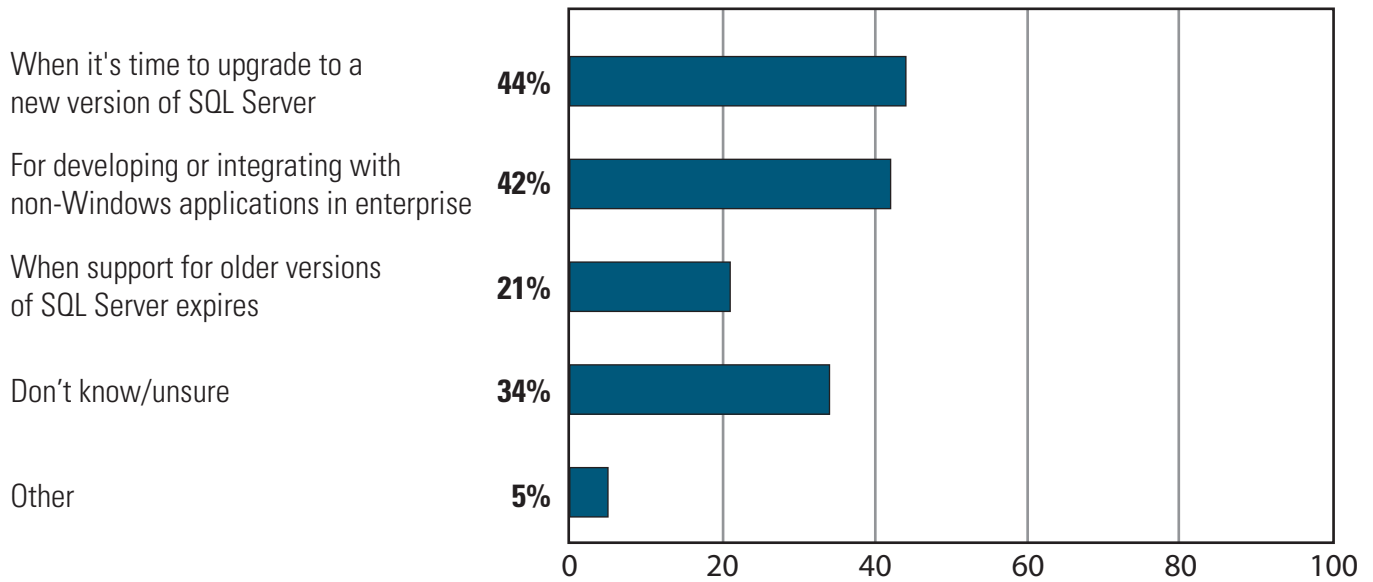
**Figure 10: What types of SQL Server applications are you now running on a Linux platform, or would you consider running on a Linux platform?**



# Figure 11: What do you consider the challenges of running SQL Server on Linux?



**Figure 12: If you were to consider a Linux platform migration, when would be the optimum time to deploy SQL Server on Linux?**





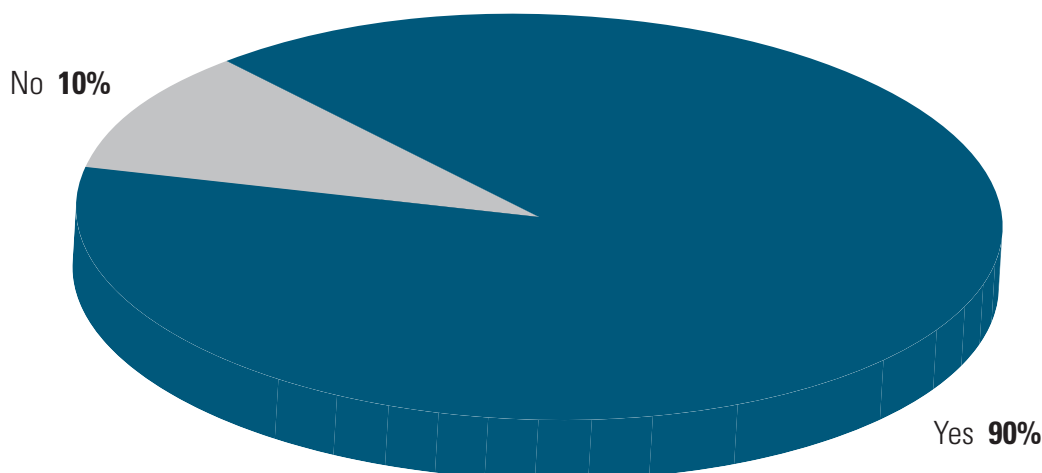
## SKILLS CHECK

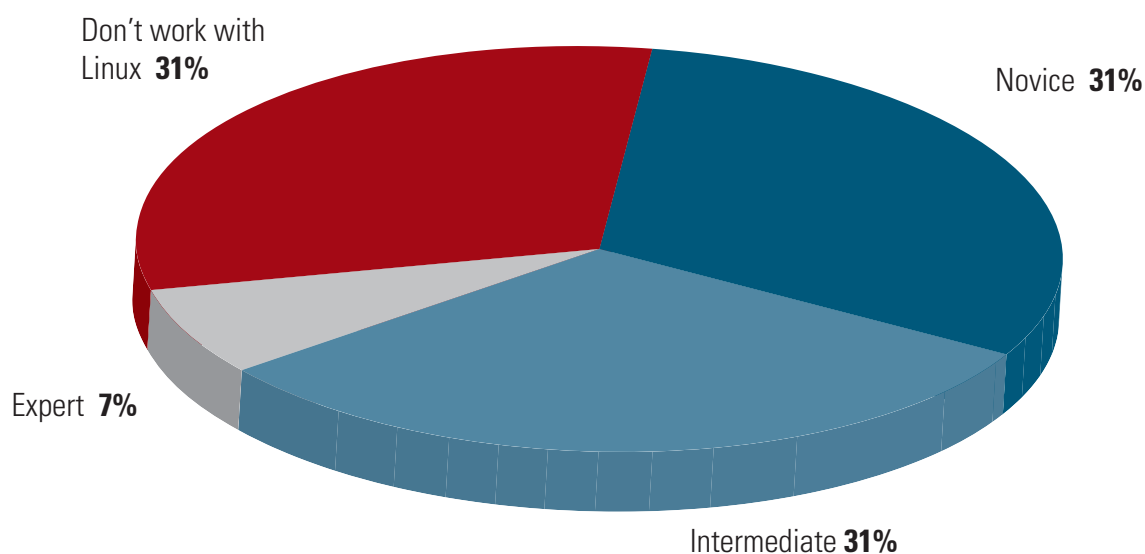
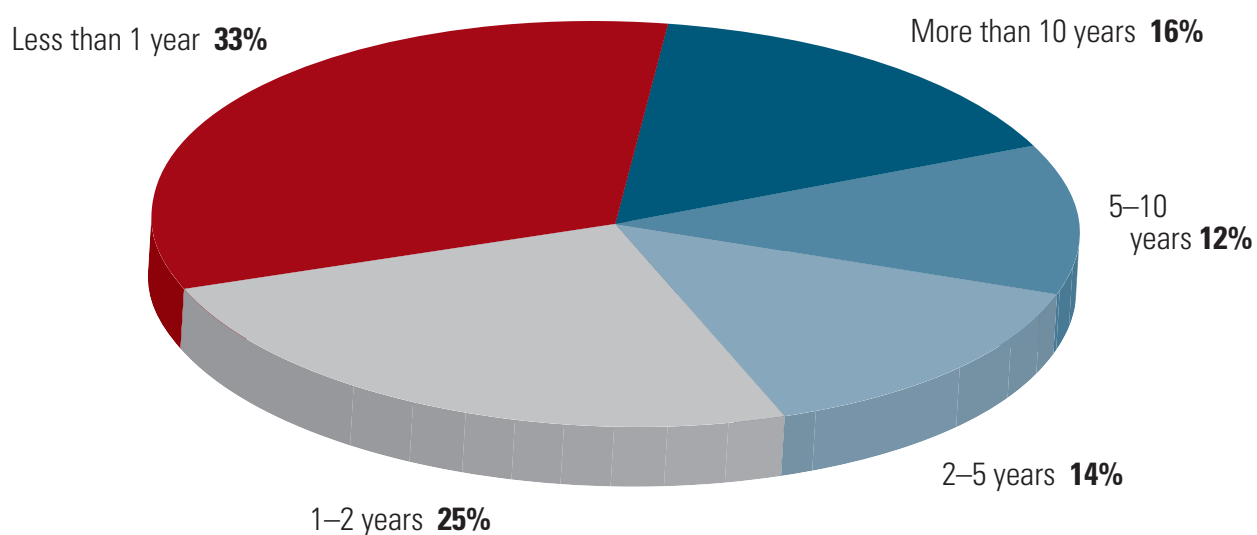
SQL Server site data managers are aware of their Linux options, but may not have the skills and experience to move in this direction. When it comes to skill levels, data managers question their own knowledge about Linux. Most are not familiar enough with the Linux OS to embrace the platform.

There is no question that SQL Server data managers are well aware of their options as far as re-platforming their databases. The survey shows nine in 10 are aware of Linux options for SQL Server (see Figure 13). However, Linux skillsets are not in abundance. Only 38% are well-versed in Linux (see Figure 14).

While Linux has been part of the IT scene for close to three decades, it is only recently that its adoption has risen within Microsoft-centric sites. Even the SQL Server data managers who actually work with Linux are relatively new to the open source OS. Most, 58%, have only worked with the OS for less than two years (see Figure 15).

**Figure 13: Are you aware that SQL Server is deployable on Linux?**



**Figure 14: What is your skill level with Linux?****Figure 15: How many years have you been working with Linux?**

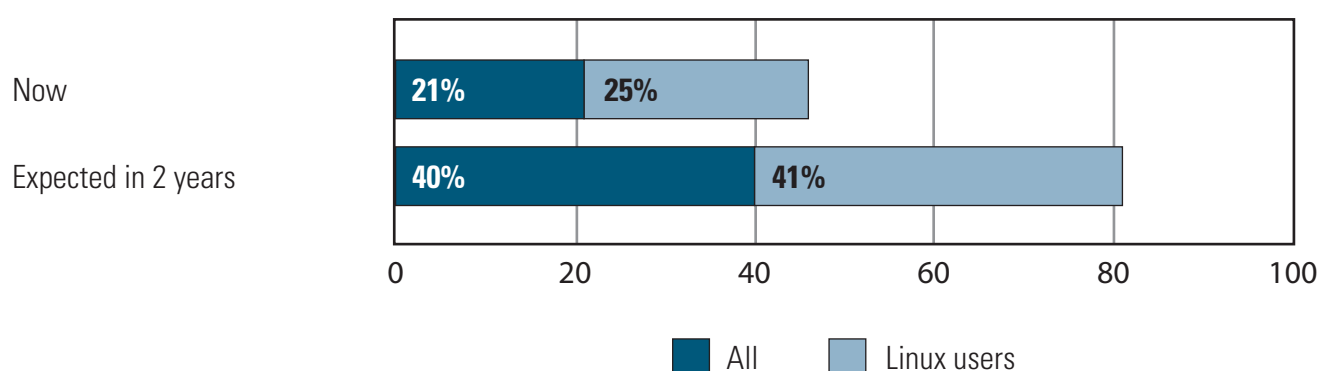
## CLOUD AND VIRTUALIZATION

The priority for many SQL Server shops is moving to the cloud and more flexible platforms. Organizations are increasingly recognizing the value of cloud as a SQL Server environment. The amount of SQL Server maintained in the cloud is expected to double over the next two years.

On average, respondents report that 21% of all SQL Server data now resides in the cloud, a percentage that will grow to 40%. Currently, Linux platform sites lead in cloud adoption, though Windows-based sites are expected to catch up (see Figure 16).

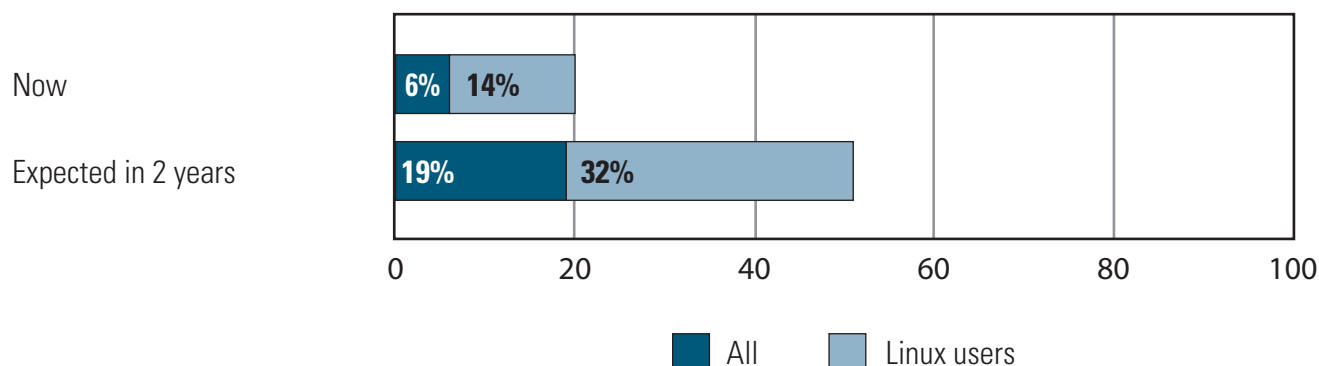
Linux platform users are ahead in adoption of container technology, at close to double the rate of SQL Server sites overall. However, there is parity between the platform types in virtualization (see Figures 17 and 18).

**Figure 16: How much of your SQL Server data resides in the cloud? (Average)**



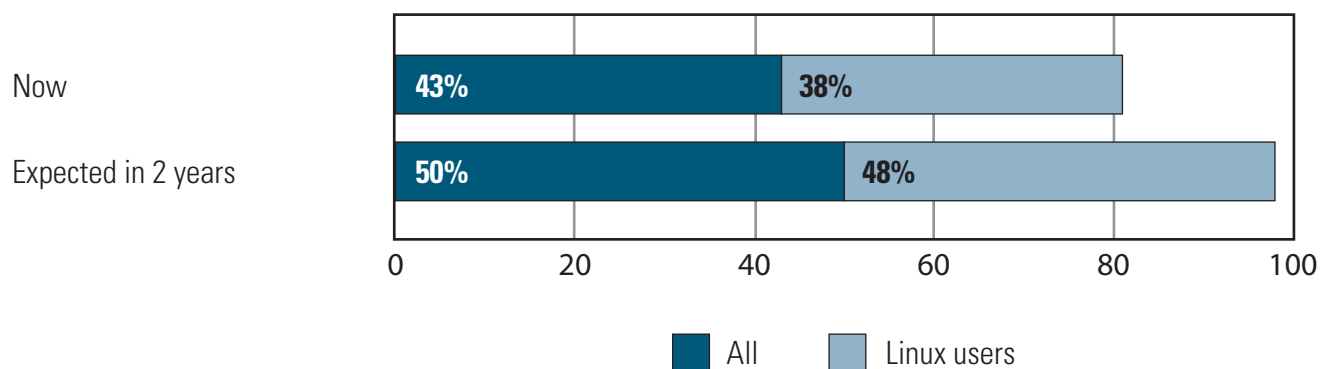
**Figure 17: How much of your SQL Server data is supported through containers, and how much is likely to be containerized within the next two years?**

(Percent reporting or planning a significant portion of instances, which is defined, for purposes of this survey, as 25% or more)



## Figure 18: How much of your SQL Server data is virtualized, and how much is likely to be virtualized within the next two years?

(Percent reporting or planning a significant portion of instances, which is defined, for purposes of this survey, as 50% or more)



## CONCLUSIONS AND RECOMMENDATIONS

Running SQL Server on the open source Linux platform has proven to be a good bet for many data managers. SQL Server on Linux maintains the same enterprise-level features as Windows, including high availability and performance and, despite some misperceptions, DBAs may employ the same tools within their SQL Server environments, whether on Linux or Windows. Azure Data Studio, for example, is a cross-platform tool for managing SQL Server. And while SQL Server Management Studio (SSMS) is a Windows application, it can remotely connect to Linux SQL Server instances. Deploying on a Linux platform also provides opportunities for greater integration with enterprise IT ecosystems and reduces reliance on a single vendor.

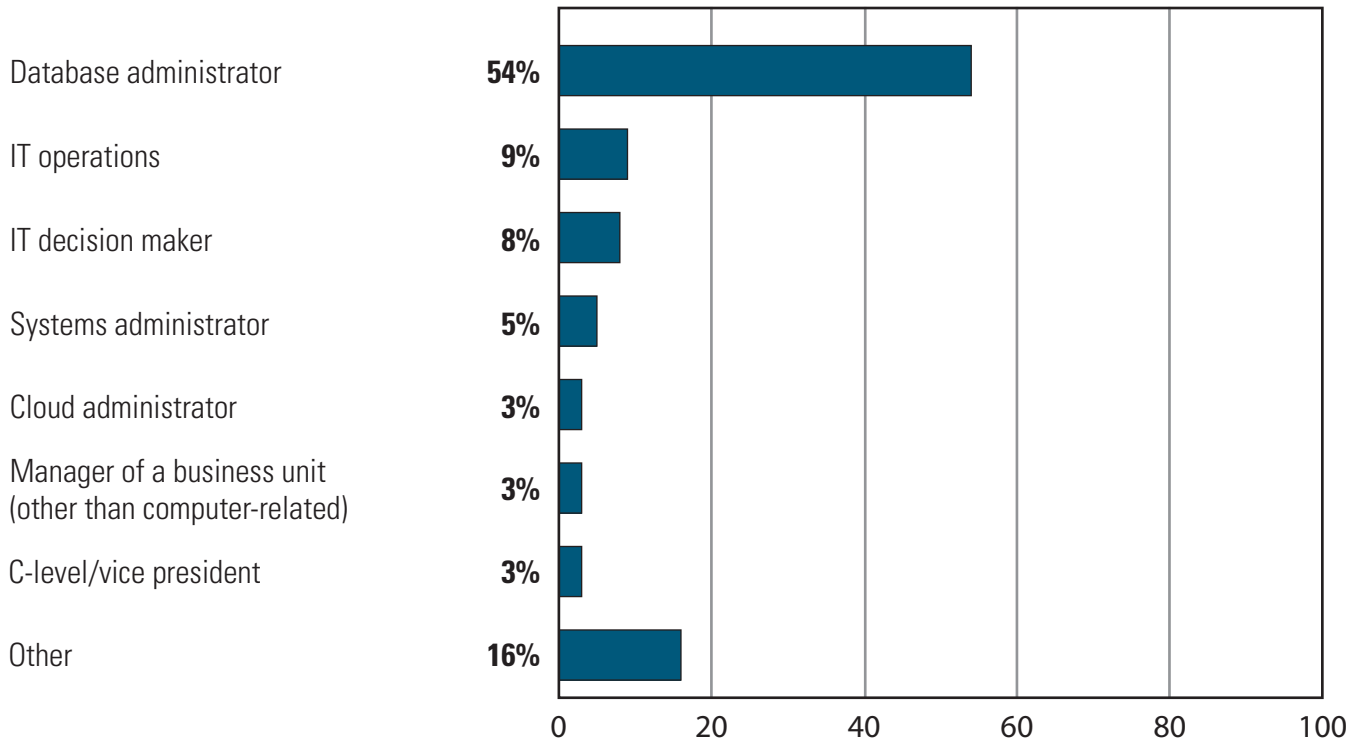
The following are ways to move forward with building Linux into a SQL Server foundation:

- Promote Linux skills training and development.
- Educate your organization on the benefits of SQL Server on Linux, particularly improved performance.
- Work with business stakeholders to identify optimum applications.
- Move toward cloud, containerization and virtualization to open up platform independence.

While it may take time, there is a bright future for Linux within Microsoft-oriented sites, and the rising adoption of the open source platform among SQL Server data managers means more choices and greater capabilities.

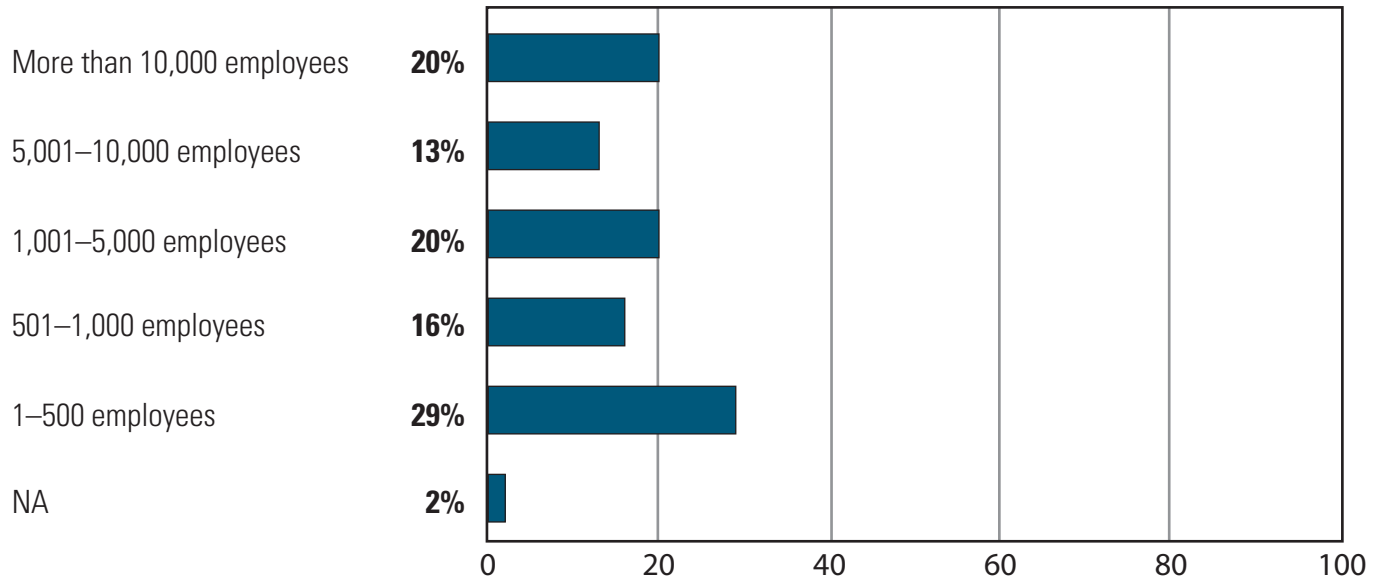
## DEMOGRAPHICS

**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?**