Addressing Evolving Database Challenges with New Technologies

The Role of Flash in Today's Database Environments

In This Paper

- Companies have, on average, 75 database instances running in their organizations

- Supporting large data volumes and more database instances introduces many problems

- Organizations are turning to high performance, highly reliable all flash storage to meet business demands

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Executive Brief

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Introduction

The last decade has seen an unprecedented growth in volume of data used for business. More data has been produced in the last 10 years than all previous decades combined. Even more astonishing is the fact that the rate of data production is accelerating rapidly. A fairly large portion of this data is produced and consumed by enterprises using database management systems. The increase in data volumes have had a significant impact on how modern database environments are managed and have introduced a new set of challenges around performance and availability.

To better understand these challenges and the solutions being selected to address them, QuinStreet Enterprise and flash storage innovator Pure Storage carried out a survey of IT decision makers in companies with 500 or more employees. The results of that survey are summarized in this paper.

Growth all around

Many recent studies have noted the explosive growth in data used in businesses. So it comes as no surprise that survey respondents reported they have large numbers of database instances running in their organization and that those instances have significantly increased over the last 12 months.

Specifically, survey respondents reported that they had, on average, 75 database instances running in their organizations. However, 57 percent said they had more than 100 instances. Top solutions used include a mix of offerings from the major players in the marketplace including Microsoft SQL, Oracle Database, IBM DB2, MongoDB, SAP Sybase, and others.

Most respondents cited a large increase in the number of database instances in the last year. A quarter said the number increased significantly (20 percent or more) and 57 percent had increases of between 5 percent and 20 percent. Only 5 percent reported they decreased the number of instances over the last 12 months. However, given the introduction of more powerful servers in the last year, an organization may have simply consolidated operations onto fewer machines or increased the size of a particular database while reducing the number of database licenses.

Figure 1: Increase in database instances

- ■ Increased significantly
- ■ Increased somewhat
- ■ No increase
- ■ Decreased
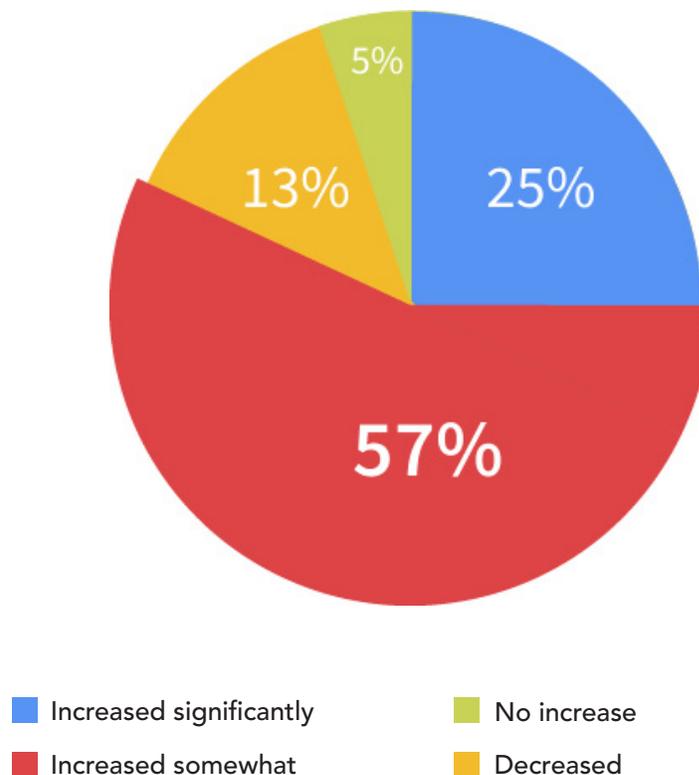
Challenges abound

Supporting the growing volumes of data and increased numbers of database instances can introduce many problems. They include:

General concerns: Database administrators and IT managers are concerned about costs and staffing issues associated with managing their databases. Most of the respondents noted the additional hardware, network, licensing, and administrative costs they face as they grow their database infrastructures and increase the number of instances.

Performance and uptime issues: Although 80 percent of the organizations in the survey are hitting their uptime SLAs (service level agreements) for their databases, they can do a better job of managing downtime. The growth in database instances and the increased complexity of IT environments in general are contributing to unplanned downtime problems. Leading downtime issues include:

• Infrastructure maintenance window (cited by 44 percent of respondents)
• Applying service pack / patches (38 percent)
• System crash (12 percent)

Reporting and analytics problems: About a third (31 percent) of the survey respondents indicated they are facing challenges with reporting

Top Challenges	Percent
Additional hardware/network costs	48%
Additional administration costs/complexity	45%
Licensing costs	43%
Staffing/available skills constraints	35%
Additional security costs/complexity	34%

and analytics. For those experiencing problems, the leading issue, cited by 43 percent of the respondents, was moving data out of production environments into analytics and reporting environments. Thirty-nine percent of the respondents having problems cited the time it takes to run reports as an issue. Additionally, 39 percent said their reporting and analytics problems were due to a lack of technical resources.

Storage headaches: Keeping pace with the explosion in data volumes is stressing IT organizations. When asked to pick their top three storage issues, lack of storage capacity, backup issues, and cost were the leading choices, cited by (respectively) 32 percent, 16 percent, and 13 percent of the respondents.

However, since storage infrastructure is playing an increasingly important role in database operations, other issues came up. The performance of today's business-critical analytics workflows are tightly tied to an underlying storage system's IO, throughput, and uptime. Performance

or maintenance problems with storage have a major impact on the bottom line. In particular, after issues associated with managing today's growing data volumes, performance and speed were in the next tier of problems cited by the survey respondents.

Overcoming today's database problems

The problems identified in the survey can be attributed to several general factors.

First, there is the need to support larger data volumes and more database instances. This is stressing IT infrastructures, and requires increased spending and additional staff time.

Second, there is increasing pressure to squeeze higher performance, support more applications, and deliver real-time information.

Third, IT budgets remain tight at a time when IT is being called on to develop and deploy more and increasingly innovative services. This

means IT and database administrators must do more with less.

When asked to pick their most important goals for managing their databases, the top choices of the respondents were to increase performance, lower costs, and provide continuous availability.

As a result, organizations are looking for solutions to help address these leading issues. And in many cases, one place to focus attention is on the storage infrastructure. This point was borne out in the survey results.

Conclusion

In businesses today, the most critical applications and analytics workflows depend on the database systems in use by the organization. Speed of execution and 24x7 access and availability of applications and services are essential. The challenge is how to keep pace with the increasing volumes of data and growing numbers of database instances while ensuring the performance and high availability required. Increasingly, organizations are turning to high performance and highly reliable all flash storage to help meet the demands of the business.

Most Important Goals for Managing Databases	Percent
Increase performance	59%
Lower costs	46%
Continuous availability (no downtime)	42%
Standardization of infrastructure	28%
Consolidation	20%
Increase automation and reduce provision time	15%
Greater protection	15%
Greater agility	15%
Standardization of database version	9%
Metering	2%

Survey Methodology

This survey was conducted online between December 3 and December 8, 2014, on QuinStreet Enterprise business-to-business websites. Respondents were initially contacted via email, with the first 100 participants to complete the survey receiving a $10 Amazon gift card and all respondents being eligible for a sweepstakes drawing for a $300 Amazon gift card. The 143 respondents who completed the survey are IT decision makers working at organizations with 500 or more employees.