

Cloud Backup And Disaster Recovery Meets Next-Generation Database Demands

Public Cloud Can Lower Cost,
Improve SLAs And Deliver On-
Demand Scale

Table Of Contents

Executive Summary	1
What Is Cloud Backup And DR For Databases And Why Does It Matter? .	2
Enterprises Struggle With Backup And DR For Critical Databases.....	3
Cloud Backup Can Lower Cost And Improve IT Productivity.....	4
Cloud Data Privacy Issue Exists But Its Changing.....	5
Cloud DR For Databases Can Help Lower Cost And Improve SLAs	6
Key Recommendations	7
Appendix A: Methodology	8
Appendix B: Custom Survey Demographics	8
Appendix D: Endnotes.....	8

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Executive Summary

Many enterprises view backup and disaster recovery (DR) as an IT function that seems to provide little value, even though they must do it to support critical applications. As a result, many IT organizations often don't have a database backup and DR strategy in place that focuses on improving the quality of backup, quicker recoverability of databases, strong protection of sensitive data, or even ways to lower infrastructure cost.

Exponential data growth, shrinking backup windows, static budgets, and increasing deployments of next-generation business-critical mobile, cloud, and web applications are changing the backup and DR requirements — they are becoming strategic.¹ Business users and customers want better application availability, reliability, and accessibility of data. Today, organizations are building dozens of new business-critical applications every month; some every week, creating pressure on IT organizations. Traditional on-premises approaches for backup and DR cannot keep up with this explosive demand for new database administration requirements. As a result, IT organizations are looking to renew their backup and DR strategy for databases to support a higher degree of automation, improving SLAs and availability of critical applications, and controlling cost.

Over the past few years, many organizations have started to deploy public cloud for backup and DR. Most enterprises using public cloud find significant cost savings on storage, improved IT productivity, and agility to support new database backup and DR requirements.

In December 2013, Microsoft commissioned Forrester Consulting to identify backup and DR challenges for databases that mid-to-large enterprises face when deploying mission-critical and non-mission-critical applications. The study was designed to highlight current backup and DR strategy, usage of private and public cloud, SLA attainment, and future plans. In conducting an in-depth survey with 209 database backup and operations professionals in North America, Europe, and Asia, Forrester found that companies claim cost savings, improved SLAs, ease of management, and improved reliability when deploying to the public cloud. More enterprises want to deploy database backup and DR to the public cloud.

“Backing up our databases to the public cloud is an important strategic focus for us going forward in order to save money, scale our backup and DR operations, and to ensure our applications are always available to customers and business users worldwide.”
— IT director, large retailer, North America

KEY FINDINGS

Forrester's study yielded five key findings:

- › **Tier-2 backup requirements are growing.** Traditionally, most enterprises have focused their backups mainly on tier-1 applications; however, tier-2 applications are also fast becoming business-critical and are being included in organization's backup strategy.² Fifty-six percent of respondents surveyed for this paper claimed that they now back up tier-2 applications at least once a day. Forrester has seen this adoption growth double over the past three years, showing significant momentum.
- › **Saving money is the top reason for using the cloud.** Cloud offers a variety of benefits such as the ability to do backups more frequently, ease of management, and redundancy, but the top benefit cited by 61% was saving money on storage, followed by 50% who stated savings on administration costs.
- › **Majority of enterprises want to improve DR.** Based on the Forrester-commissioned survey, 79% agree that they would like to improve the level of DR capabilities for tier-1 applications. This is in alignment with what Forrester sees where DR implementations remain complex, requiring a lot of time and effort.
- › **Many plan to extend DR to the public cloud.** Forty-four percent of enterprises claim they want — or are planning — to extend DR to the public cloud. Forrester has seen this adoption growth double over the past four years, showing significant momentum. Enterprises are embarking on a hybrid DR platform strategy comprising on-premises and public cloud.
- › **Enterprises agree that public cloud can improve SLAs.** Ninety-four percent of enterprises that are doing DR to the public cloud agree that SLAs have improved.

What Is Cloud Backup And DR For Databases And Why Does It Matter?

Enterprises increasingly view cloud as the fastest and most flexible way to deliver new capabilities and services. It abstracts away many of the operational challenges of deployment by providing services like infrastructure, caching, and databases. Cloud automates the provisioning, administration, backup, recovery, DR, and scalability of the database without the need for a DBA. It also delivers economies of scale through elastic capacity, automation, and standardization.

Cloud backup and DR for databases, although relatively new, is growing in adoption as organizations look at supplementing their existing on-premises infrastructure to support data growth and meet new business application requirements (see Figure 1).

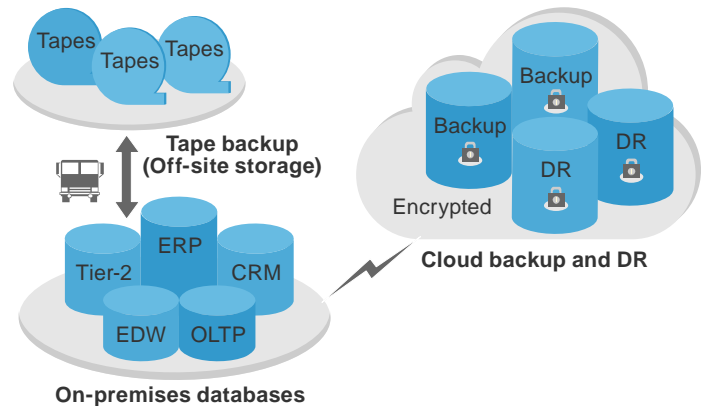
Forrester defines cloud backup and DR for databases as:

Dedicated or multitenant public cloud services that supports database backup and recovery, and disaster recovery in a standardized, pay-per-use, self-service and automated manner.

Cloud storage services are a subset of the overall cloud-computing platform, and as such, cloud storage services have four key attributes that differentiate these services from traditional storage platforms. They are:

- › **Standardized.** The cloud provider offers the services in the same way every time an enterprise requests it. This does not limit the type of storage services available to an enterprise or the different service levels that can be offered.
- › **Pay-per-use.** The provider will track the use of virtual or dedicated resources to provide central accounting with metrics to facilitate chargeback for consumption.
- › **Self-service.** Enterprises can directly request resources via a web or mobile portal, API, or other administrator tool.
- › **Automated.** The cloud provider offers standard procedures for automatically provisioning resources from a dedicated or multitenant infrastructure to support backup and DR functions.

FIGURE 1
Cloud Backup And DR Decreases Recovery Time And Improves SLA Attainment



Source: Forrester Research, Inc.

The benefits of a cloud-computing platform for databases are many, including:

- › **Improving database deployments.** Cloud platforms give you the option of deploying new databases as quickly as desired. Traditional platforms can often take days to install and configure, stalling the application deployment process.
- › **Aligning IT budgets with database demand.** How many databases does your organization deploy without exactly knowing how they'll be used or how much capacity you'll need? With cloud, enterprises can simply pay just for the resources they use, hour by hour.
- › **Providing a "safety valve" for peak demand.** Cloud computing is also good for handling database periodic spikes because of holiday season or some product launch activity. Rather than provision for the expected peak of the holiday shopping season, retailers can push the additional demand into a cloud platform.
- › **Delivering databases without raising the capex.** Cloud computing gives you the ability to deliver new databases without having to buy gear, raising the firm's capital expenditures. Application development and delivery can both be handled using operating expenses only.

Enterprises Struggle With Backup And DR For Critical Databases

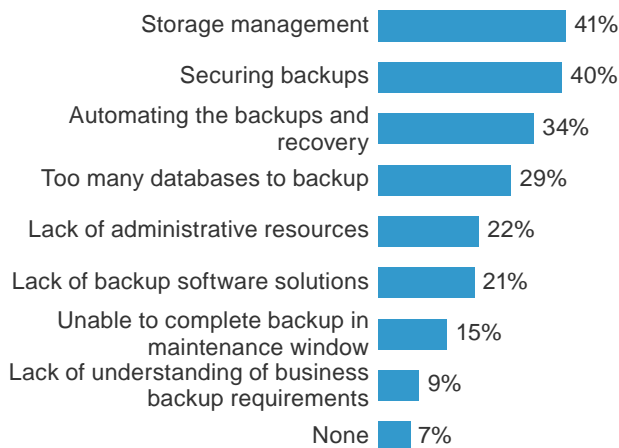
Every company depends on data to support virtually every function of its business, including marketing, sales, product design and development, customer experience, and finance. Databases play a critical role in storing, processing, and accessing such data to support business applications and users. Today, the need for new databases has grown significantly compared to a decade or even five years ago. This is triggered largely by increased application usage and demand for newer type of applications such as web-based applications, mobile applications, cloud applications, and LOB applications.

Forrester's survey data shows that the majority of enterprises have many mission-critical databases, many of which are larger than 10 terabytes. The service-level requirements of critical applications continue to grow, especially from the increasing use of web and mobile applications that must be available 24x7. More databases mean more backups, requiring more DBA time and effort.

FIGURE 2

Storage Management And Securing Backups Are Top Backup And Recovery Challenges

“What are your organization’s top challenges when it comes to backup and recovery?”



Base: 209 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

“In our organization, we have more than 2,400 databases, of which 30% are critical. Today, backups of these databases are a challenge, especially with the growing database sizes. We are now looking at automating our backups to improve productivity and minimize failures”
— IT director, financial services company

The Forrester survey revealed the following top challenges enterprises face when it comes to backup and recovery (see Figure 2):

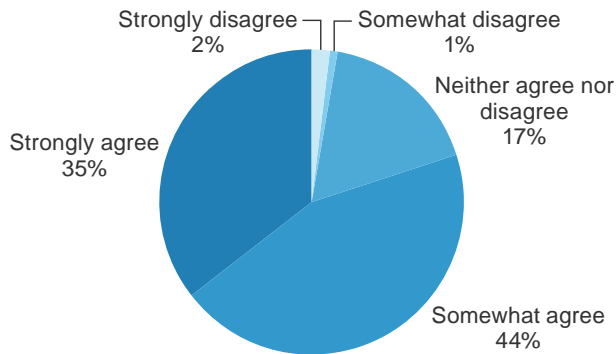
- › **Storage management issues.** Of those surveyed, 41% listed storage management as the top backup and recovery challenge. More backups mean more storage management challenges, requiring deeper understanding of database backup requirements including their sizes, SLAs, and frequency across tens or hundreds of enterprise databases.
- › **Securing backups for compliance and data security.** For database backups, 40% of organizations cited securing backups as one of the top three challenges. Many enterprises do not encrypt their database backups largely because it's complex, can potentially require additional software licenses, and fear of data corruption.
- › **Automating backup and recovery.** With the increasing number of databases, it has become critical to automate the backup and recovery process. Without automation, DBAs would have to manually check the status of backups, ensure their reliability, and perform routine storage management functions.
- › **Managing too many databases to backup.** More databases mean more backups. With organizations supporting hundreds and thousands of databases, the sheer number of databases presents a challenge. This was confirmed by the fact that 29% of respondents surveyed reported too many database to backup as one of the top issues.

Disaster recovery has similar administration and management issues. DR often takes time and effort to implement, and most enterprises don't test their DR sites frequently. This aligns with the Forrester survey where 79% of respondents agree that they would like to improve the level of DR capabilities for their tier-1 application (see Figure 3).

FIGURE 3

Most Enterprises Would Like To Improve Their DR Capabilities For Tier-1 Applications

“Please indicate to what extent you agree with the following statement: ‘We would like to improve the level of disaster recovery capabilities for our tier-1 applications.’”



Note: “Don’t know” not shown

Base: 209 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

Cloud Backup Can Lower Cost And Improve IT Productivity

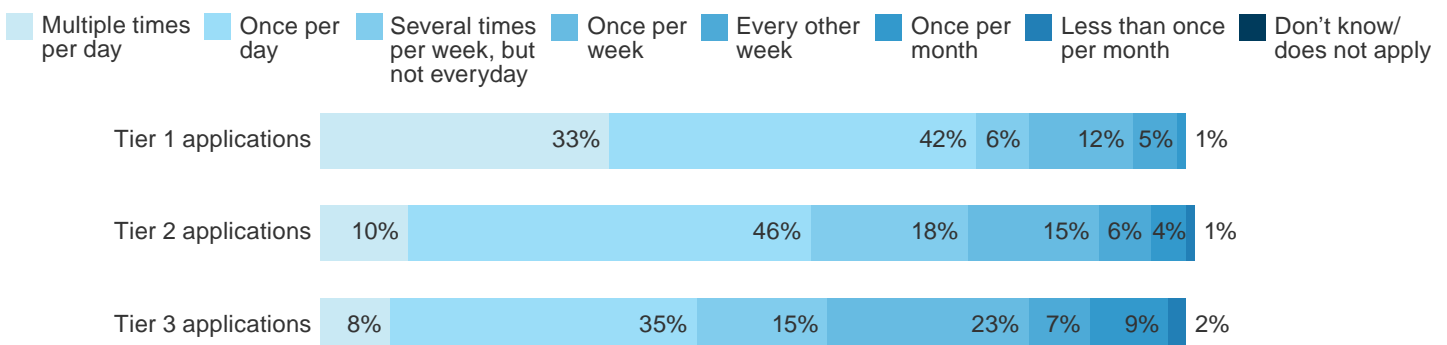
Database backup is a struggle for both enterprises and small and medium-size businesses (SMBs). It’s a complex ecosystem of backup software, networks, servers, disk arrays, and tape systems. Many firms have difficulty completing backups in the time available, and a large number of backups fail or complete with errors. In addition, tier-2 applications backup requirements are changing. The Forrester survey shows that 56% of companies are backing up once or more for tier-2 applications (see Figure 4). Given the headaches associated with backup, many organizations are considering cloud backup for their databases.

Cloud platforms have existed for a decade, but only recently have organizations started to consider them for backups and DR largely because of improvement in software technology. New software now allows backup and restores of their on-premises database to the public cloud without having to worry about the physical media off-site storage, leveraging third-party software to perform backup and restores to different locations, or data security.

FIGURE 4

Tier-2 Application Backup Requirements Are Changing

“How often does your organization back up the following application types?”



Note: “Don’t know” not shown

Base: 209 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

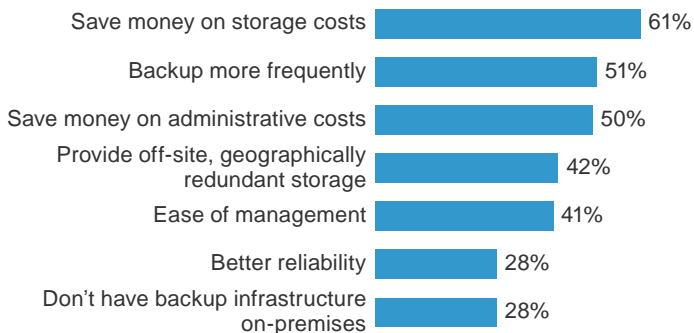
The top cloud backup benefits include:

- › **Saving money on storage cost.** Sixty-one percent of database backup and operations professionals who have implemented public cloud say that saving money on storage cost was the top reason for considering backing up to the public cloud (see Figure 5). Although storage cost has declined over the years, it can add up to be a significant cost item for IT.
- › **Backing up your database more frequently.** In most organizations, backup is performed at least once a day for tier-1 and tier-2 applications. However, newer next-generation mobile, cloud, and web applications are demanding 24x7 availability that is putting pressure on IT to back up more frequently. Being able to perform frequent backups to the public cloud was cited as a top benefit by 51% of database backup and operations professionals.

FIGURE 5

Public Cloud Backup Helps Lower Cost

“What are the reasons your organization currently backs up to the public cloud, or is considering backing up to the public cloud?”



Note: “Other” and “Don’t know” not shown

Base: 89 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

- › **Saving money on administrative costs.** Public cloud backup can also help save money on administration by automating the backup and recovery process, including proactively checking for errors. While not the top cloud benefit, saving money on administration was cited by 50% of surveyed database backup and operations professionals.

- › **Ease of management to support more databases.**

Forty-one percent of surveyed database professionals using public cloud cited ease of management as another top benefit. With growing backup complexity, most enterprises are looking for a simplified and automated solution, and cloud addresses those.

Cloud Data Privacy Issue Exists, But It’s Changing

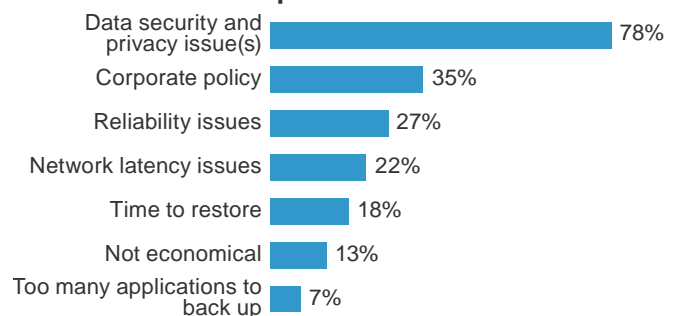
Cloud service providers have over the years improved data protection in the cloud that makes it harder for attackers to access sensitive data. However, shared public clouds that store your data with other users can still pose a security risk. Database backup and DR, especially containing sensitive data such as credit card numbers, social security numbers, and other personal information should be protected in the cloud.

Seventy-eight percent of organizations cited data security and privacy as the top reason for not considering backup to the public cloud (see Figure 6). While this has been a key concern for many, new and emerging software now can encrypt data while backing up directly to the public cloud. Traditionally, this would have required additional steps to encrypt and decrypt data, requiring considerable effort from DBAs. Encrypted backups ensure that data is protected in-transit and at-rest ensuring complete end-to-end protection.

FIGURE 6

Data Security And Privacy Top Concern For Enterprises

“What are the reasons your organization is *not* currently considering backing up to the public cloud?”



Note: “Other” and “Don’t know” not shown

Base: 89 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

“When we first started doing database backup and disaster recovery in the public cloud two years ago, we were concerned about data security and privacy. But during the past two years, cloud security has greatly improved, and today we are backing up even sensitive data to the cloud.”

— DBA manager, manufacturing company, North America

Cloud DR For Databases Can Help Lower Cost And Improve SLAs

Regardless of company size or industry, your business can't afford downtime, but it's hard to justify improving your DR capabilities when you're under pressure to cut IT costs and when DR is seen as an expensive insurance policy. However, DR is often complex and requires considerable amount of time and effort to setup, test, and deploy, besides requiring significant infrastructure investment.

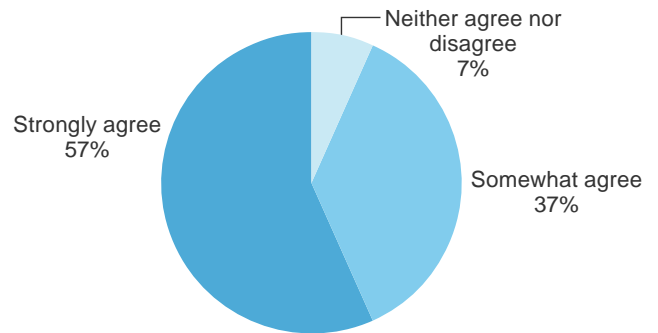
Cloud DR integrates with cloud service provider's multitenant platform, which consists of virtual servers and shared storage. In the case of a disaster, database software can recover data from the cloud onto other data center locations and help restart the critical application. With cloud, you can recover your database in hours with just a few minutes to a few hours of data loss but without the cost of dedicated IT infrastructure.

With cloud, you can automate and simplify the DR process, support more applications, and improve SLAs. This was confirmed by the fact that 94% of surveyed database and operations professionals using public cloud as DR platform agreed that cloud improve SLA attainment (see Figure 7).

FIGURE 7

Public Cloud As DR Platform Can Improve SLA

“Please indicate the extent to which you agree with the following statement: ‘Using the public cloud as a disaster recovery platform can improve SLA attainment.’”



Note: “Strongly” and “somewhat disagree” not selected

Base: 89 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

Key Recommendations

Public cloud backup and DR for databases should be part of your database strategy. Forrester's in-depth survey with database and operations professionals on their deployment of backup and DR shows that public cloud databases are top of mind for many, with security concerns declining thanks to the new and innovative software solutions that deliver end-to-end data encryption. Cloud backup and DR offer tremendous potential to free up DBAs from complex and onerous storage management, system complexity, and increasing database administration workloads. IT organizations should:

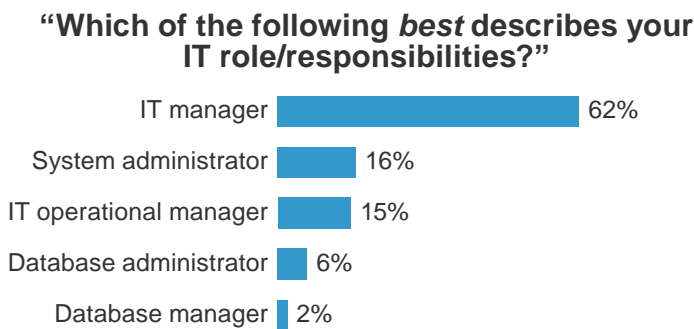
- › **Start thinking strategically about cloud backup and DR for databases.** Over the past four years, cloud backup and DR has gone from early adopters phase to large enterprises using it to support mission-critical databases. Although organizations have been slow to react to the public cloud adoption for backup and DR for databases largely because of security and network latency concerns, new and innovative software technologies are accelerating cloud adoption by making backups and DR simple, automated, integrated, support faster recovery and protect sensitive data.
- › **Look at cloud backup and DR for databases to improve SLAs.** If you are currently experiencing SLAs issue with your databases, look at public cloud backup and DR solutions. Cloud backup can automate and streamline backup and recovery process that can minimize outages. It also ensures better manageability of backups, keeping track of every database backup ensuring support for hundreds and thousands of your databases.
- › **Consider automating the backup and DR process to scale.** Although backing up to the public cloud can be performed manually by DBAs, organizations should consider automating the process after ensuring successful testing. Automating database backup and DR to the public cloud can help scale, supporting hundreds and thousands of databases, and without being concerned about infrastructure capacity or scale issue.
- › **Use backup and DR encryption for databases containing sensitive information.** Traditionally, organizations first take a backup and then encrypt it before moving it to tapes. With new and innovative software solutions, enterprises can now encrypt the data while creating a backup to the cloud. The columns in a database do not necessarily have to be encrypted to use backup encryption.
- › **Strike a balance between on-premises and cloud that's optimal for your business.** You don't have to put all of your backups in the public cloud or on-premises; strike a balance. A hybrid backup and DR approach works well for large enterprises that have hundreds and thousands of databases. Consider on-premises backup for very large databases or those that require very frequent backups such as several times a day. Moderate sized tier-1, tier-2, and tier-3 are good candidates for the public cloud.
- › **Keep an eye on network latency issue.** Although network latency issues are declining in public clouds, thanks to higher speed fiber networks, ensure that larger backups are monitored closely and alert DBAs for potential issue. Consider doing incremental streaming backup to the public cloud that minimizes network usage.

Appendix A: Methodology

In this study, Forrester conducted an online survey of 209 organizations in North America, Europe, and Asia to evaluate Cloud backup and DR for databases. Survey participants included decision-makers in database backup and operations. Questions provided to the participants asked about backup and disaster recovery strategies and implementation at their organizations. The study began in December 2013 and was completed in February 2014.

Appendix B: Custom Survey Demographics

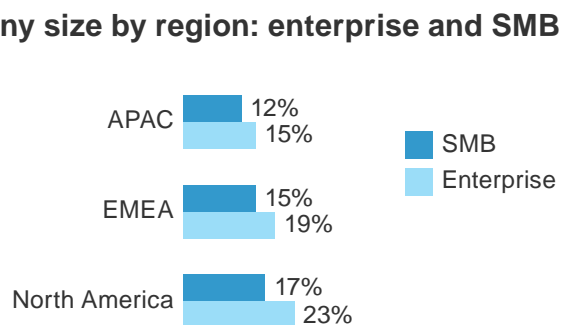
FIGURE 8
Survey Demographics: IT Role



Base: 209 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

FIGURE 9
Survey Demographics: Company Size By Region



Base: 209 database backup and operations professionals in North America, Europe, and Asia

Source: A commissioned study conducted by Forrester Consulting on behalf of Microsoft, February 2014

Appendix D: Endnotes

¹ On average, the amount of data that mission-critical applications handle doubles every 18 months; for some firms in the retail, financial services, manufacturing, and telecom sectors, data volumes can quadruple over the same period. Source: “The Steadily Growing Database Market Is Increasing Enterprises’ Choices,” Forrester Research, Inc., June 7, 2013.

² Tier-2 applications are ones that are not so mission-critical applications — usually company internal applications, departmental or smaller applications.