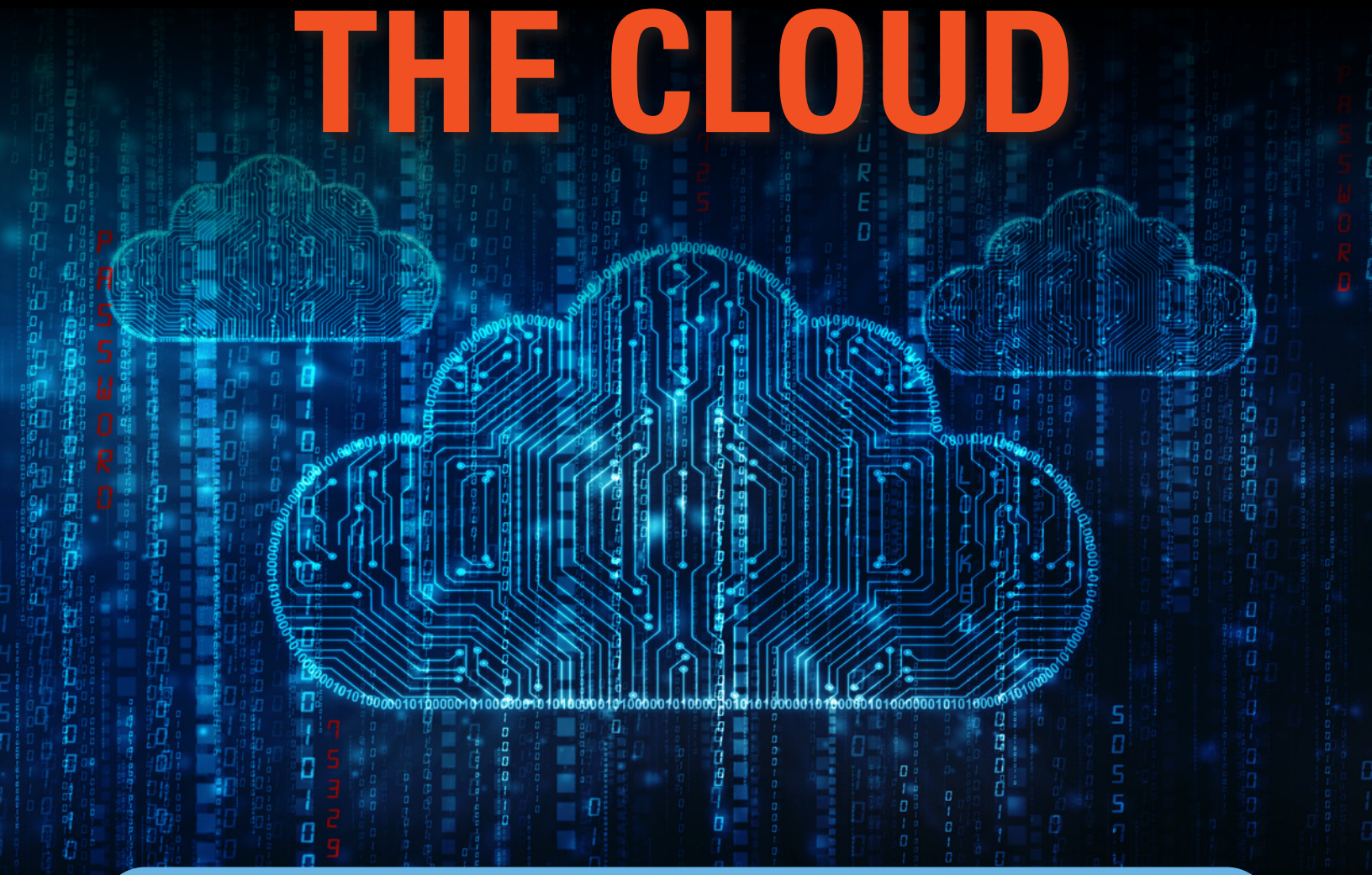
MAKING THE RIGHT MOVE: DATABASES IN THE CLOUD



Sponsored by

Quest®

Authored by

Joe McKendrick, Lead Analyst

database
TRENDS AND APPLICATIONS

MAKING THE RIGHT MOVE: DATABASES IN THE CLOUD

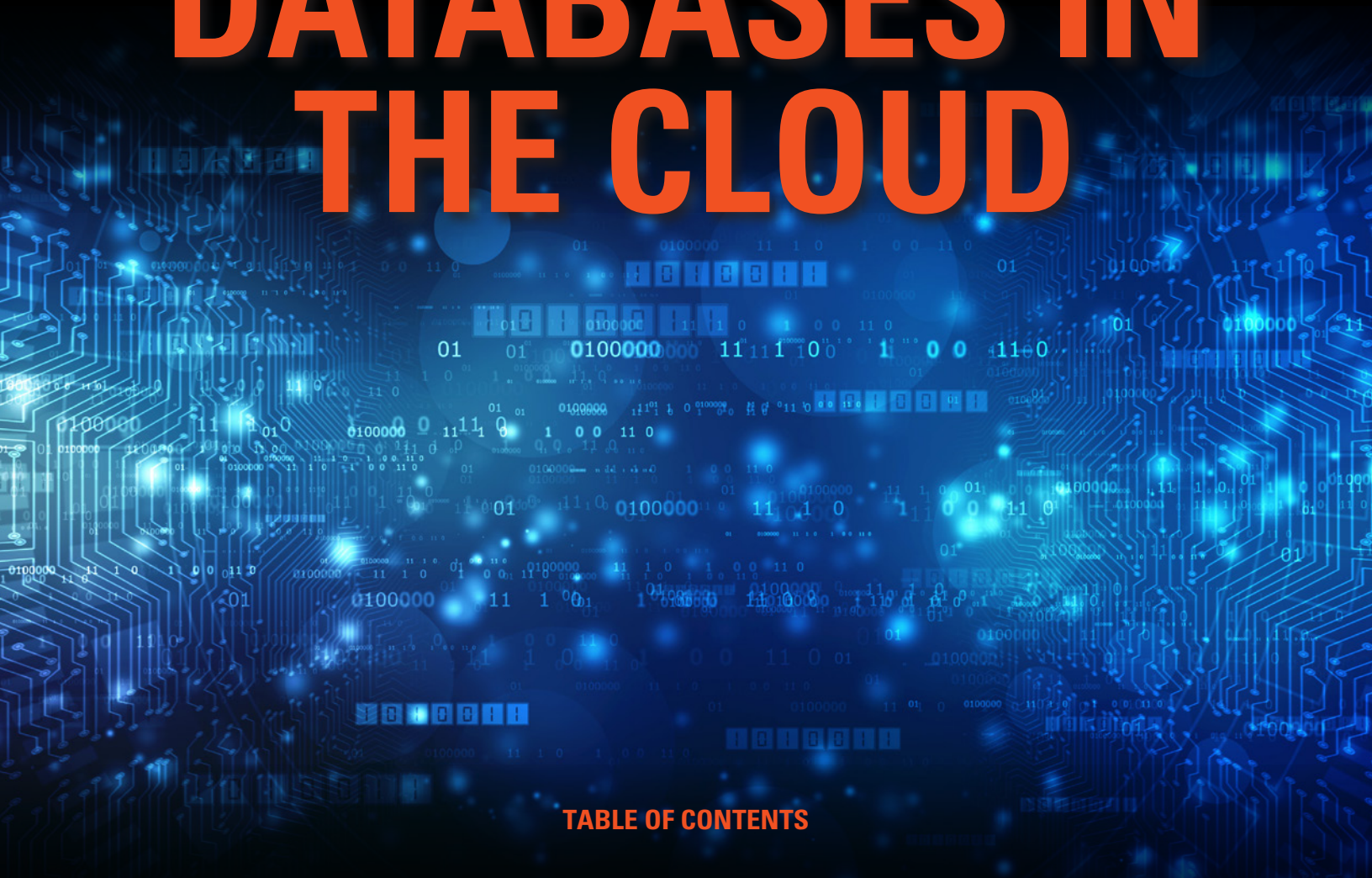


TABLE OF CONTENTS

Introduction **1**

The Database Cloud Landscape **2**

Challenges of Moving Databases to the Cloud **2**

Getting a Cloud Migration Right **4**

Conclusion **6**

Making the Right Move: Databases in the Cloud

By Joe McKendrick, Lead Analyst, Unisphere Research

For database managers and users, moving to the cloud means breaking through the confines imposed by capacity ceilings, speed limits, performance issues, and security concerns. It also assures more opportunities to deliver insights and capabilities to their businesses, and less time enmeshed in day-to-day maintenance issues.

At the same time, moving to the cloud does not mean outsourcing control or responsibility for data to an outside provider, and care must be taken to ensure migrations take place with as little disruption to the business as possible. In addition, organizations need to be prepared with the specific skills required to migrate to and manage databases in the cloud.

Before undertaking a cloud migration, these questions need to be asked:

- What are the potential risks in a cloud migration?
- What are the keys to managing a successful cloud migration?
- How can we be assured everything is functioning as it should?

In this special report, we will address these questions that accompany database cloud migrations.

THE DATABASE CLOUD LANDSCAPE

There's no longer any question that the cloud is the ultimate destination for much of today's enterprise data. It's only a question of how much will ultimately live in the cloud, and what will remain in on-premises or hybrid environments.

The migration of databases to the cloud—or employment of native cloud databases—continues to accelerate. A majority of database managers responding to a recent Quest-Unisphere Research survey, 62%, say they now manage their databases in hosted cloud environments, and the same percentage use cloud-native databases. Forty-three percent indicate a substantial portion of their production data is now cloud-based. A similar percentage reports having non-production data (used for data warehouses/lakes, archival, development, backups) on cloud platforms. In addition, the survey shows the lines between on-premises and cloud environments are blurring. While a substantial portion of data is now in the cloud, enterprises are both likely to be maintaining data sets in the cloud alongside their on-premises environments.

The rise of cloud-based databases and data services means a far greater range of choices for enterprises, and many are looking to migrate data from on-premises (source) systems to cloud (target) systems. Multi-cloud implementations are proliferating, offering a range of services. In the process, enterprises are proceeding incrementally with hybrid cloud infrastructures that offer greater cost advantages and less dependence on hardware. At the same time, these multi-cloud and hybrid implementations also present challenges, from unforeseen costs to security and performance issues.

In this special report, we will explore the challenges of moving data to the cloud, and how data managers and their enterprises can address these concerns for successful cloud delivery.

CHALLENGES OF MOVING DATABASES TO THE CLOUD

While moving databases and data into the cloud is a compelling value proposition, it's not

without its challenges. Adopting databases in the cloud means overseeing environments that may consist of databases remaining in on-premises environments, with the skills and administration requirements that go with it, along with supporting the cloud database management skills that are required to effectively manage a cloud-borne database environment.

The challenges incurred include the following:

- **Cost:** Cloud computing and data storage costs can be uncertain and variable, depending on workloads and the platforms on which they are deployed. While the initial cost proposition of cloud is compelling—based on monthly subscription costs—many organizations experience sticker shock as cloud service adoption grows and these costs mount. Gartner estimates that 60% of IT organizations will "encounter public cloud cost overruns that will negatively affect their on-premises budgets." Much of this is incurred from hidden costs, which may stem from preparing the organization for cloud-based processes.
- **Complexity:** Complexity increases in multicloud and hybrid environments, with the need to link or integrate data managed and flowing in from various platforms. For example, in commencing with a data or database cloud migration, organizations may find they lack insights into data lineage. In addition, there are a lot of components, connectors, applications and business logic that need to be moved or managed across hybrid environments. Plus, any inconsistencies or issues with data that existed on-premises—such as duplication or lack of quality—will also go to the cloud.
- **Skills:** Lack of cloud skills is considered the greatest challenge to cloud migrations, a study by Harvard Business Review Analytic Insights finds. IT or data management staff may have an unfamiliarity with the new database platforms that are deployed following a migration, or lack experience with performance monitoring and diagnostics. They may not have a strong background in high-level migration processes, including evaluating and selecting cloud offerings, and fully understanding the economics of cloud computing. This creates additional delays, or issues with performance and costs.
- **Database monitoring and performance:** Monitoring databases, and managing database performance, may be more difficult in multi-cloud and hybrid environments. The diversity of these environments may obscure the visibility and observability of data pipelines—a risky proposition since data is the lifeblood of the digital enterprise. Logs need to be analyzed for security purposes, usage need to be tracked, queries need to be optimized, and availability must be guaranteed. Hybrid environments call

for more centralized approaches, requiring monitoring and assuring uptime for both on-premises systems as well as cloud systems.

GETTING A CLOUD MIGRATION RIGHT

It's important to take a measured approach with data or database cloud migrations. Otherwise, capabilities that ensure growth for the business may be out of reach. Tellingly, a survey of CIOs conducted by the Cloud Security Alliance finds 90% of IT leaders report having difficulties with data or database cloud migration projects. Only 26% could say they achieved data migration within their expected time frame." In many cases, organizations were forced to reverse the process. Another study out of Fortinet finds 74% had moved an application into the cloud and then moved it back into their own infrastructure.

The following are steps that need to be taken to accomplish a successful database migration to the cloud.

- **Assess your business requirements:** Will the move be to a cloud-native database or a database rehosted in the cloud? How much data needs to be in the cloud? Cloud database migrations are more than IT projects. It's also important to involve all parts of the enterprise—beyond IT and data management teams—that touch the data being moved to or supported by the cloud. There are many ways data and databases can be migrated—from on-premises environments to the cloud, between clouds, or even back to on-premises. At the same time, a move to cloud may not even be necessary. It's important to remember that some applications or datasets may not be appropriate for a cloud migration, either for latency or security reasons, or simply because things are fully functional with the existing system.
- **One step at a time:** How disruptive will the move be? In addition, it's key to deploy incrementally when moving data and databases to the cloud. This is an ongoing initiative that avoids the potential disruption of a "big bang" migration, which also involves gradually shutting down on-premises hardware.
- **Measure and monitor.** How will you know if the transition has been successful? Cloud-based monitoring solutions will help enterprises meet these goals with low-cost, low-maintenance SQL database monitoring tools that reduce complexity, increase visibility, help isolate the root cause of performance issues, and offer ideas for how to fix those issues.
- **Analyze and weigh costs:** What are the real costs of the migration? The migration process itself may prove to be unnecessarily costly, especially if existing database infrastructure

meets the needs of the business. The costs and resources required to migrate a database to the cloud need to be considered in light of the potential return on investment. Does it make sense to make this migration for this particular data environment or application? Along with the actual costs associated with database technologies and IT salaries, there are costs associated with business process changes, reorganizing enterprise roles and teams, and even duplicate, leftover or unused on-premises applications.

- **Maintain data integrity:** Is data safe during the transition? Migrating databases to a new platform isn't a "lift-and-shift" operation. It requires planning and measures to protect the data affected, providing up-to-date data lineage, and assuring it maintains its highest quality. This requires creating mappings of the data source and target tables. Data undergoing a migration needs to be transformed as not to affect its quality—from the source data types and element names to the target types and names.
- **Support skills development:** What kind of talent is needed to complete the migration? Maintaining data and databases in the cloud call for new types of skills. At the same time, moving databases to the cloud does not mean giving up administration and control. Data management is more important than ever, and additional skills also are required to oversee management of cloud infrastructure, cloud security, hypervisors, virtualization, and hybrid IT skills. Professionals such as database administrators will need to extend their skills in administering, provisioning, and securing databases to cloud-based data platforms, using different sets of tools and interfaces.
- **Optimize workloads:** Will the new cloud environment support current workloads effectively? The amount of system resources required to support on-premises databases may not map to cloud's resources—namely, the source system may be replete with processing bloat and over-allocated CPU, memory, or storage. As the costs of cloud resources are more visible, as well as more efficient, data teams have an opportunity to trim and streamline their environments.
- **Expect the unexpected:** What could go wrong? Migrations carry risk, and for that reason, data at both on-premises and target cloud environments needs to be backed up in the event of an issue during the migration. Despite all best efforts, services may be interrupted, and data may be temporarily unavailable. Have a backup and recovery plan in place.
- **Maintain data security.** Part of the migration process is to identify and protect sensitive data before it is migrated. In addition, data security in the cloud requires different

protocols and processes from those employed within on-premises environments.

CONCLUSION: TOWARD DATA EMPOWERMENT

Moving data and databases to the cloud means new ways of managing information within the enterprise. The long-term benefits are too compelling to pass up. Cloud-based platforms open up a world of new opportunities and capabilities for database sites, including almost unlimited on-demand capacity, fewer administrative headaches, and greater access to sophisticated data applications.

Making the move to cloud successful, however, requires upfront work and attention to the systems and mechanisms that assure peak performance in the new cloud environment. This means engaging the business on a more intimate level to understand the risks and opportunities involved in a cloud migration process. Database managers and administrators will see their roles expand and elevate as advisors to their businesses on managing a move to data-driven operations and decision-making.

About Quest:

Quest creates software solutions that make the benefits of new technology real in an increasingly complex IT landscape. From database and systems management, to Active Directory and Office 365 management, and cyber security resilience, Quest helps customers solve their next IT challenge now. Around the globe, more than 130,000 companies and 95% of the Fortune 500 count on Quest to deliver proactive management and monitoring for the next enterprise initiative, find the next solution for complex Microsoft challenges and stay ahead of the next threat. Quest Software. Where next meets now.

About Joe McKendrick:

Joe McKendrick is a contributing editor and writer to Database Trends and Applications and Big Data Quarterly magazines, as well as lead research analyst for Unisphere Research at Information Today, Inc.

QUEST OFFERINGS

Foglight for Databases proactively monitors the health and performance of all your database platforms. With Foglight for Databases, DBAs gain unprecedented visibility across their database platforms. From one simple-to-use console, they can quickly diagnose and resolve emerging issues to prevent business interruption. And because Foglight supports a wide range of platforms, including on-premises and cloud databases, you get cost-effective database monitoring software for the platforms you use now, and the ones you'll add in the future. Foglight for Databases also helps reduce the cost of cloud through reduction of processing resources required by database workloads—optimization of workloads is aided by the "clues" provided at the instance/database or SQL level. While clues vary by platform, they enable operations teams and developers to ensure quantifiable savings to their organizations.

Foglight Evolve takes a proactive approach to hybrid cloud management enabling users to simplify their data centers, reduce infrastructure costs, maximize system performance and accurately predict future costs. Foglight Evolve enables enterprises to tackle complex mix of clouds, hypervisors and applications while keeping resource requirements in check and meeting system uptime and performance SLAs.

SharePlex is compatible with many common IaaS targets in Amazon Web Services (AWS) and Microsoft Azure. No special setup is needed and it's easy to replicate your on-premises Oracle database to the cloud while allowing your daily processes to continue uninterrupted.

Quest Toad tools simplify database management across a broad range of platforms, including Oracle, SQL Server, MySQL, PostgreSQL and more—both on-premises and in the cloud.

https://www.quest.com/solutions/cloud-migration/