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TRENDS AND APPLICATIONS

ONE COMPLETE MARKETING PROGRAM

# DATABASE PERFORMANCE TODAY: **THE NEED FOR SPEED & SCALE**

*Special October Best Practices Report*

Best Practices Series

**database**  
TRENDS AND APPLICATIONS

# IMPROVING DATABASE PERFORMANCE FOR THE GROWING DIGITAL ECONOMY

## Best Practices Series

What does it take to prepare data environments for the challenges looming in the years ahead? The COVID-19 crisis forced a massive and seemingly overnight shift to digital business. And with it, new requirements have emerged for approaches to data management to support advanced data analytics, AI, IoT, and other ways to compete with data.

The critical role of data as fuel for the growing digital economy is elevating data managers, DBAs, and data analysts into key roles within their organizations. In addition, this rapid change calls for a three-pronged approach that consists of expanding the use of more flexible cloud computing strategies, growing the automation of data environments, and increasing the flow of data and collaboration through strategies such as DevOps and DataOps.

### DATA PERFORMANCE INHIBITORS

Recent surveys have shown that data managers at all levels are hampered by

the tedious maintenance requirements of building and managing their environments. This is hurting their businesses overall. Essential database tasks such as collecting, organizing, and storing large quantities of data—much of it in real time—are now beyond the capabilities of human administrators to manage. Areas ripe for automation include operations, repeatability, automated testing, and the release of data.

For starters, database maintenance still takes too much of DBAs' time and this is cutting into organizations' competitiveness, according to a survey of 212 data and IT managers, conducted among members of the Quest IOUG Database and Technology Community by Unisphere Research, a division of Information Today, Inc. ("2020 Quest IOUG Database Priorities Survey").

Even with database automation and cloud resources abundantly available on the market, many database managers still spend substantial amounts of time on low-level tasks. This is holding back progress.

Asked which activities are the costliest database management projects from an operational standpoint, two out of three data managers said mundane administrative tasks consume a significant part of their budgets. Maintaining system stability—patching, fixing, and upgrading—is considered the costliest part of their jobs, according to 66%. And 61% indicated that maintaining uptime and availability were also resource-intensive processes. For 49%, security consumes large portions of their time.

Database maintenance also cuts deeply into enterprise competitiveness, the Unisphere survey showed. Data managers in the survey overwhelmingly agreed that the amount of time, money, and resources spent on ongoing data management—versus new projects or initiatives—is affecting the competitiveness of their organizations. More than one-quarter, 26%, said that these expenditures are severely limiting their competitiveness, and another

## The *critical role* of *data* as the *fuel* for the *growing digital economy* is elevating *data managers*, *DBAs*, and *data analysts* into *key roles* within their organizations.

45% said their competitiveness is somewhat inhibited.

### CLOUD OPTIONS

While many IT budgets have been on the upswing, cost still is the leading factor in infrastructure purchasing decisions, the Unisphere survey showed. Cloud is seen as the best option for reducing the time and money spent on ongoing database management activities.

There is a notable shift away from on-premise infrastructure. Moving to virtualization or cloud-based solutions tops the list of approaches, cited by 66%. More than half, 59%, indicated they are attempting to address database costs by migrating or updating their databases. More than one-third, 34%, are upgrading or modernizing their hardware and processors. However, adoption of cloud as a backup and recovery environment is still in its infancy.

The shift to cloud-based data and databases has been progressing over the past decade. It's been a gradual move, buffeted by uncertainty over data security and accessibility. An array of choices have opened up to data managers and their organizations—from databases residing in their entirety within third-party hosting services, to database-as-a-service (DBaaS) solutions offered by both database and general cloud vendors. Within cloud-based data services, underlying functions from provisioning to security are automated at the provider's site, freeing up data managers to focus on higher-level advisory roles within their business. Such cloud-based databases and data support high levels of flexibility and adaptability as organizations grow.

### AUTOMATION OPTIONS

Database systems have become complex—too unwieldy to be run manually as they have been in the past.

Initiatives critical to corporate growth in the digital economy—AI and analytics—require ever-larger volumes of data. Many databases already provide tools that automate tasks, while others still require manual scripting by DBAs.

Those companies that fail to effectively leverage and deploy their data assets will find themselves falling behind. As a result, data managers are turning to automation and autonomous databases. Database functions such as backup and recovery are already highly automated, and plans are underway to automate such day-to-day functions as monitoring, provisioning, and maintenance. Data managers welcome the rise of automation for these tasks, and see greater roles for themselves in higher-level business decision making.

Support for more automation was also confirmed by a separate survey of 217 database managers and administrators from the Quest IOUG Database and Technology Community conducted by Unisphere Research ("2019 Quest IOUG Autonomous Database Adoption Survey").

A majority of database managers in this survey seek greater automation to assist their application deployment endeavors. Seventy-five percent said automation would help accelerate their efforts, and that applications can be deployed faster with database management automation. More than one in four, 27%, said this acceleration would be significant in speeding up service to their enterprises. Areas that are in need of work include database troubleshooting (only 14% have been able to highly automate this area), along with database tuning (14%).

Within an automated set of processes, a range of database functions can be managed unattended by humans, including testing, security, making changes and updates, and provisioning. Many aspects of database management

are now already highly automated. By far, backup and recovery functions are the areas that have seen the greatest levels of automation to date, with close to half of respondents, 48%, citing high levels of automation. Database monitoring is also a highly automated area, cited by 43%.

Enterprises intend to step up their automation of database backup and monitoring processes. Database security will also increasingly be automated as database managers continue to brace for the onslaught of threats that accompany the move to digital. A majority, 77%, believe that turning these tasks over to machines will deliver enhanced productivity and output.

### NEW LEVELS OF COLLABORATION

To deliver data quickly and efficiently to where it is needed, a new practice—DataOps—is emerging. DataOps not only syncs the flow of data through enterprises, but also merges the activities of people working with data and enhances this work with automation to ensure the timely delivery of data.

Accordingly, DataOps practices are on the rise across enterprises. A survey of 300 companies by 451 Research found that 72% of respondents have active DataOps efforts underway and the remaining 28% plan to leverage DataOps over the coming year. A majority, 86%, are increasing their spending on DataOps projects over the next 12 months. Most of this spending will go to analytics, self-service data access, data virtualization, and data preparation efforts.

Cloud, automation, and collaboration are supporting organizations' ability to use data more effectively. The ability to deliver data in a rapid and seamless way will pave the way for not only scaling data environments, but also initiatives such as AI and IoT—areas in which the effective deployment of data can have a strategic benefit. ■

—Joe McKendrick

# Modern Database Management: Navigating Open Source, Cloud and DevOps

The database landscape has seen significant changes in the past decade, and the next 10 years promises to be equally transformative. Massive data growth continues to present new challenges and opportunities, including how to manage, monitor, protect, analyze and use it. How businesses respond and adapt to these opportunities and challenges will help determine their ultimate success or failure. A strong database management strategy, operated by talented DBAs, is critical.

At the same time, the days of the Oracle or SQL Server shop are over. Open source databases and cloud adoption are on the rise at businesses looking for ways to reduce costs. In addition, the shift toward a DevOps culture is becoming more prevalent. These trends pile onto the already demanding workload of the modern DBA tasked with managing the performance and high availability of an ever-growing spread of diverse systems.

## KEEPING AN OPEN MIND ABOUT OPEN-SOURCE DATABASES

The adoption of open-source databases is increasing, as these systems are proving to be low-cost and reliable, and now feature better management functions and support. That being said, there are pros and cons when comparing open-source databases with the commercial players.

The tools open-source vendors provide usually pale in comparison to those of the larger commercial vendors, meaning there will be certain tasks that DBAs will need to be skilled enough to perform. Open-source databases have improved to the point that they can handle some mission-critical applications, but this will not be the case in every scenario. Commercial players typically have the resources to drive innovation at a rate that open-source providers can't match. But open-source options can be considerably cheaper.

Often, a multi-platform approach—in which open source is included—allows an organization to capitalize on all the various pros and overcome some of the cons. However, implementing a multi-platform system can be time-consuming. The software programming has to be able to function consistently on different systems, which takes some

work, but that also means you'll be able to reach a wider range of customers once the programming is completed.

The decision to invest in open source will be determined by several factors unique to your organization. You will need to consider the tasks you're performing, the consistency or usability—of the data you're working with, and the performance that your customers need and demand.

## GETTING YOUR HEAD IN THE CLOUD

While on-premises database deployments will never fully disappear, the cloud is continuing to take on increasing prominence. The cloud can provide peace of mind to those concerned with database storage and ensuring databases are running on the most up-to-date software. The cloud is also an important backup plan for production databases that support mission-critical applications, high availability needs or disaster recovery.

While the cloud offers many advantages, there are critical decisions you'll have to make to ensure you capitalize on them effectively. Once you have decided to move into the cloud, you will need to consider whether to implement a public or private model—or a hybrid of the two. You will also have to determine whether a Database-as-a-Service model or Infrastructure-as-a-Service model best fits your needs. Are you looking for an outside vendor to take on the bulk of the tasks typically reserved by DBAs or keep activities like upgrades, backups, and monitoring in-house?

There's also the nitty-gritty of deciding whether to maintain your current service-level agreements (SLAs) with cloud vendors and other third-party vendors or create new ones. With new implementations come new moving parts and more layered considerations. Organizations will have to determine for themselves whether they can fulfill their existing SLAs or whether changing circumstances will require changing agreements.

It will also be important to ensure you manage cloud spend, since database workloads typically behave differently than they do in your data center. Make sure you independently assess



what service tier is the most suitable to balance workload performance with cost to ensure your monthly subscription bills are within budget.

Hanging over all these decisions is the big one: which cloud vendor to choose. There are numerous options out there so organizations have to decide what's most important to them. Reputation might be more important to one company while the offering's alignment with the infrastructure already in place might be the top priority for another. Ultimately, it will be essential to determine the most cost-efficient way for your business to balance cloud with on-premises deployments, and what information and data is stored where.

#### DEVOPS CONVERGENCE

The development team and the operations team have historically been in conflict on some level. This is because they have different but equally important priorities that require striking a delicate balance. Dev team members build applications and write code, among other tasks, while Ops team members oversee the infrastructure to ensure it is fundamentally sound and to ensure the integrity, security and availability of data to the business. However, many businesses have recognized that they need to reorganize and merge the two functions in order to operate more efficiently so that change can be delivered to the business faster. The convergence of teams creates new challenges to navigate and decisions to make when considering the bottom line.

Application developers and infrastructure teams have clashing priorities when it comes to stability and performance issues. The Dev side is accustomed to being measured by how quickly and reliably they can get code changes into production. They're used to developing code rapidly and getting it into production as quickly as possible, while also performing tasks that require continuous attention, such as deployment, integration, and testing.

The operations team, on the other hand, is devoted to making sure processes run smoothly by constant monitoring their systems and reacting to problems effectively. They're not concerned with fast and continuous change. Instead, the Ops team's main task is maintaining database stability through diagnostics, tuning, and administration. This is vital to your organization because database changes aren't sequential, and

certain changes can't be undone, like buggy code, because the data is changing constantly.

At the convergence of Dev and Ops—DevOps—is a balance. As DevOps becomes more widespread, companies are learning the importance of including database teams in these processes to support communication and collaboration. But they're also starting to see the advantages a DevOps approach offers where established automated processes such as continuous integration (CI) and continuous delivery (CD) ensure rapid movement while ensuring the necessary checks and balances and operational oversight still exist. A sound implementation of DevOps CI/CD for database changes ensures your business data and processes are available and consistent throughout your organization, enabling you to make intelligent, cost-effective business decisions. Moreover, a smartly run DevOps strategy that includes the database team will alleviate bottlenecks, so your company can operate smoothly.

#### ACHIEVING SUCCESS IN THE MODERN DATABASE WORLD

The rate of change in IT continues to accelerate. By anticipating, understanding, and embracing changes in database operations, you'll achieve success. But you don't have to go it alone. With powerful solutions from [Quest](#), you'll maximize your cloud, open-source and DevOps initiatives. A toolset like [Foglight for Databases](#) provides unrivaled visibility across all your database platforms, empowering you to easily and proactively ensure peak database performance on legacy databases and new cloud and open-source platforms. And you can do it all from a single, intuitive console. Tools like [Toad](#) and [ApexSQL](#) enable developers to write high quality code faster, reducing defects and orchestrate their development tasks for CI/CD automation, enabling companies to realize their DevOps ambitions.

As businesses strive to reduce costs, DBAs must find new ways to adapt and thrive in the face of significant IT change. Expanding your knowledge by attending webcasts led by top industry experts, reading expert guides and arming yourself with easy-to-use solutions that [improve database performance](#) across a wide range of platforms will empower you to achieve cloud, open-source and [DevOps](#) success.

To learn more about how Quest can help, visit:  
<https://www.quest.com/solutions/database-management/> ■

# How IT Can Scale and Manage Costs in an Economic Downturn



During economic downturns, companies must start to look for ways to reduce costs, slim budgets, and make the difficult decisions required to minimize the impact on their business.

In this article, we'll talk about a few things businesses can start doing now to help reduce infrastructure and database costs, but still keep things running smoothly. Some you may already be considering, while others may be options to consider should the situation continue to demand action.

## FIVE EASY WAYS TO CUT COSTS QUICKLY

### 1. Scale Down

In the recent past, talk of scaling databases and systems was the hot topic—making sure you could respond to quick growth and customer demands on your business. However, when talking about scaling, businesses either didn't want to consider or simply forgot to consider procedures and options to scale down should business demands drop.

The great promise of the cloud, as a managed service, was to provide elasticity to increase and decrease capacity as demand increased and decreased. The problem is a lot of people take advantage of the flexibility to scale up, but they don't often act quickly to scale down. We have seen customers be able to cut a third from hosting costs simply by "right-sizing" and taking a few key steps:

- **Audit Your Systems:** Reduce cloud spend by eliminating extra servers that aren't in use. If needed, spin up a backup.
- **Shrink Your Footprint:** Move to smaller instances to match the reduced workload. Reducing the amount of data you store can lead to big savings. Hoarding digital data is expensive.
- **Consolidate Workloads:** In the past, there would be a desire to split out additional slaves or cluster nodes to process specific types of workloads (i.e., reporting). However, these may not be needed as demand decreases, and can always be added later.
- **Consider Alternative Services or Components:** Many providers offer long-term storage, serverless, or component options for specific needs with vastly different pricing models. Evaluating whether you have all of the parts of your application in the right setup may yield some positive cost results.

Taking full advantage of the tools, systems, and services you have in place is critical for your business at any time, but especially now.

### 2. Improve Performance to Reduce Workloads

Another tip, especially if you are using cloud resources, is spending some time tuning and optimizing. Today, many

companies have chosen to scale and tune by credit card instead of optimizing code and tuning underlying infrastructure. Taking a few days or weeks to reduce the workload on your servers can dramatically reduce your overall costs. With proper database management, we have seen some companies cut their bills in half. Calculate your savings with our [ROI Calculators](#).

### 3. Cross-Train

A good way to reduce costs, and possibly provide longer-term impact, is to invest in your existing employees by helping them expand their skill sets. For example, DBAs helping out with development or system administration duties not only allows those employees to be more well-rounded but also enables them to gain insight and empathy into the challenges and processes that other groups face. In the long run, this can support your organization by creating employees who can step into site reliability engineering (SRE) roles. In the short term, the company delays adding additional costs and, at the same time, is building a stronger team that better understands the touchpoints between business units.

### 4. Audit Your Toolbox

In the age of Software as a service (SaaS) subscriptions, we all have something we have paid for but don't use as often as we thought we would. These smaller expenses can add up quickly—\$99 per month, per user, with a group of 100 users, that's over \$120k a year! Sometimes it's not a question of whether you need this software, as much as, whether all of these people need access to it. Many companies overprovision the number of users who have access to the software and cutting back on licenses can often cut costs quickly.

### 5. Consider Flexible Staffing

With the COVID-19 outbreak, no one is sure how long the economy will be impacted, or what impact it will have on different types of businesses. Having the ability to add or remove a workforce as demands or projects come and go can help keep things cost-effective without having a negative impact on your full-time employees. Using flexible staffing during uncertain times has always been an option businesses have used to avoid committing to long-term costs, while still supporting their immediate needs.

Our dedication to the open-source community has not wavered over the past 14 years. No matter your need, Percona can help you configure and tune environments to address all your application and business solutions. [Contact us today!](#)

# Database Performance Today—The Need for Speed and Scale

## AS BUSINESS MOVES ONLINE, NOSQL IS UNMATCHED FOR SPEED AND SCALABILITY

Today's enterprises are interacting digitally with their customers, employees, partners, vendors, and even their products at an unprecedented scale. At the heart of these interactions area company's cloud, mobile, social media, big data, and IoT applications. Because most of the data used by these applications is unstructured, a flexible and schemaless data model has become increasingly critical as companies continue to move more of their business online every day.

The traditional relational data model relies on rigid adherence to a database schema and normalization of data—both fatal limitations for today's dynamic applications. NoSQL however, is expressly designed to meet the requirements of modern applications. As a result, enterprises that move to NoSQL can be rewarded with better performance and availability, easier scalability, greater agility, faster time to market, and lower costs.

Because NoSQL databases are specifically designed for unstructured data, performing read or write operations is faster. NoSQL supports the JSON data model, which developers find far more natural than a rigidly defined relational schema. And operations engineers love the ease of elastically scaling a NoSQL database without skyrocketing costs or all the headaches of manual sharding.

## COUCHBASE IS NOSQL WITH NOEQUAL

For modern applications, Couchbase isn't just better than relational databases—it's also designed to be better than other NoSQL databases. Node for node, Couchbase can offer 2x to 20x faster workload performance over its competitors.

### Architected like no other database

- Shared-nothing, asynchronous, elastic architecture
- Consistent performance at any scale
- Always on, globally distributed, edge to cloud
- Location and deployment agnostic
- Schema flexibility plus SQL
- Built-in replication
- Workload isolation with multi-dimensional scaling

Unlike other NoSQL databases, Couchbase provides an enterprise-class, multicloud-to-edge database that offers the robust capabilities required for business-critical applications on a highly scalable and available platform. As a distributed cloud-native database, Couchbase runs in modern dynamic environments and on any cloud, either customer-managed or fully managed as a service. Couchbase is built on open standards, combining the best



of NoSQL with the power and familiarity of SQL, to simplify the transition from mainframe and relational databases.

## ACCELERATE YOUR MOVE TO THE CLOUD WITH A NOSQL DBaaS

As a wide variety of business transactions increasingly move online, many organizations are shifting their IT environments to the cloud in order to accommodate more users and cut costs. Couchbase Cloud™ accelerates this transition by providing all the speed and scalability of NoSQL as a fully managed, automated, and secure Database-as-a-Service (DBaaS). Couchbase lets you operate across your hybrid cloud environments with just a few clicks. And because you deploy clusters in your own virtual private cloud, you maintain control of your security and access policies.

Couchbase Cloud lets you choose from numerous instance types in order to optimize performance. You get unified cluster management, monitoring, and alerting from a single console. The DBaaS automates deployment, scaling, failure recovery, and upgrades. It provides hybrid cloud migration and backup, plus multi-region support. And the high performance and low TCO of Couchbase Cloud come with transparent licensing options and policies.

### Couchbase is everywhere you work, shop, and play

Couchbase customers include industry leaders Amadeus, American Express, Carrefour, Cisco, Comcast/Sky, Disney, eBay, LinkedIn, Marriott, Tesco, Tommy Hilfiger, United, Verizon0, and hundreds more household names.

## A LEADING CHOICE ACROSS INDUSTRIES AND USE CASES

Because of its exceptional flexibility, performance, scalability, and high availability, Couchbase is the database of choice across industries and for a wide variety of use cases, including:

**Customer 360**—Comcast, Equifax, and LinkedIn use Couchbase for user profile, session store, and data aggregation.

**Catalog and inventory management**—Amadeus, Marriott, and Sky count on Couchbase for media/content catalogs and product/pricing recommendations.

**Field service**—GE, PG&E, and United selected Couchbase to run their applications for work order management and asset tracking.

**IoT data management**—BD, GE, and SyncThink use Couchbase for operational dashboarding and device/endpoint management.

To learn more, visit [couchbase.com](https://couchbase.com) ■

# Cost Efficient In-memory Performance and Scale with SAP HANA



By Ryan Champlin, Senior Director, SAP HANA Product Marketing

In these challenging times every organization is looking to see how they can do more with the existing investments they've made, but also continue to innovate by cautiously investing when it will help their business grow. This applies to the world of data management and analytics which underpins the critical business applications that keep the lights on and the decision support systems used to gain business insight to keep a competitive edge.

Today, as the volume of data that businesses manage grows so does the myriad of data silos and different technology platforms that support it. It started with traditional databases, then Hadoop,

*The best-in-class performance of SAP HANA is well known, but what's less known is that it's also incredibly cost-efficient.*

and continues today with various flavors of cloud storage. This has significantly increased complexity with data scattered across multiple data centers as well as technology and application boundaries—ultimately slowing down a business's ability to derive value from their data and improve how their business runs.

It's important that data management solutions equip IT to quickly adapt to business needs without disrupting current business operations. Leveraging cloud solutions for new projects is common but each organization is on a different journey to the cloud. Critical data may move into new applications or different data stores in the cloud over time. At SAP, we looked for ways to break down some of these data silos and simplify things for our customers, and 10 years ago we introduced SAP HANA® to do just that. SAP HANA delivers an innovative in-memory first architecture which breaks down decades-old data silos that existed because of limitations in legacy hardware and database management systems. SAP HANA enables organizations to renovate IT landscapes at their own pace but without disrupting the data landscape by virtualizing data access. Abstracting complexity from data consumers with a single point of data access enables data to be combined and transformed from anywhere in the enterprise in real-time.s

This single platform, or service, approach helps organizations simplify IT landscapes and reduce the data management burden, lowering overall TCO. SAP HANA provides a seamless way to dramatically scale while optimizing performance and cost using

advanced in-memory and data tiering capabilities to leverage memory, disk, cloud, and data lake storage and compute. Organizations can choose to use their preferred infrastructure or leverage a fully managed database (SAP HANA Cloud) on almost any cloud.

Challenging events, such as what we're all experiencing now, create new opportunities and to take advantage of them organizations need to be able innovate without rigid boundaries. SAP HANA's in-memory performance enables SAP, partner and customer applications to support complex analytical workloads directly within operational systems, enabling access to analytics right when it's needed directly within the applications. This includes advanced analytics, such as machine learning (ML), embedded within the business processes enabling new levels of automation and insight without duplicating data and the need for separate ML tool sets. New innovation commonly requires leveraging new types of data beyond relational such as graph, spatial, and document structures. SAP HANA enables easily combining all of these into simple solutions with built-in multi-model capabilities with advanced data types and algorithms.

SAP HANA has enabled many organizations to realize dramatic efficiency gains with improvements in agility, while delivering new innovations to the business.

One such company is Canadian Pacific Railway Limited (CP), a leading freight carrier in North America. They use SAP HANA across their business-critical SAP applications as well as numerous custom applications.

Dean Stoffel, IT Director at CP, states, "The best-in-class performance of SAP HANA is well known, but what's less known is that it's also incredibly cost-efficient. With a 12 to 1 data compression ratio compared to a leading competitive database we decreased our storage costs by 20%."

On top of this, they recently took advantage of SAP HANA being the first major database optimized for Intel® Optane™ persistent memory by adopting new Cisco infrastructure with Intel's innovative memory technology.

Combined, they have been able to realize the benefits of a 70% consolidation of SAP application instances and through simplifying their IT landscape they have been able to increase their ability to deliver business innovation by 8x.

To learn how SAP HANA can help put the power of real-time data at your fingertips, visit [www.sap.com/hana](http://www.sap.com/hana) ■

# DBAs in an Evolving and Demanding Landscape: Navigating New Challenges and Evaluating Solutions to Address Them



DBAs are known for their masterful ability to untangle complex systems—but that's not to say that the massive growth in database types and data and the ever-increasing need for business agility haven't made their jobs more challenging. Given the range of applications DBAs must now support and the acceleration of database and data growth, today's DBAs are managing terabytes, if not petabytes, of data across on-premises and cloud—and these numbers will continue to grow. In fact, IDC analysts estimate that data volume will more than double every two years.

## WHAT ARE THE KEY CHALLENGES FACING DBAS?

- **Maintaining and managing existing backups:** DBAs may be comfortable with building impeccable scripts, but the problem lies in maintaining and managing those across multiple databases, adapting to changes in topology, and ensuring compliance needs of the business are met indefinitely. Thus, DBAs would prefer to offload database backups to a central backup system so that they can focus on running the database to meet the business application needs.
- **Managing database sprawl:** DBAs are now expected to manage a range of databases with different types of data and varying data sets. With multiple databases to check on regularly, DBAs are at higher risk of making preventable errors.
- **Accounting for cloud:** Modern DBAs must be experts in managing cloud-based databases, as well as understand how to integrate the cloud with existing onsite operations and data management systems. For example, using a cloud-based system makes the process of backing up a database simpler than creating physical backups and storing them onsite. However, DBAs still have to plan for these backups and implement automation to ensure they happen regularly.
- **Serving the needs of secondary users:** A typical day for a DBA doesn't go by without a steady stream of requests from secondary users (developers, quality assurance teams, and analytics departments) who are looking to gain access to copies of production data for use cases such as testing, development, and ETL (extract, transform, load) workflows. The DBA needs to juggle managing the needs of different departments with protecting mission-critical databases serving the business.
- **Backup admin and DBA divide:** Backup administrators often handle the complete protection lifecycle of an organization's applications from the backup and restore to the compliance and governance policies set forth by the business. While a DBA may be open to delegating backup tasks to the backup administrator, the responsibility still falls on the DBA to build and maintain scripts as the database environment changes.

There is a high chance of human error due to multiple stakeholders being involved.

## WHAT SHOULD DBAS CONSIDER WHEN EVALUATING A SOLUTION?

Third-party data protection solutions can save DBAs time, mitigate risks, and empower them with control they need.

When evaluating data protection services, DBAs should consider the following:

## DOES THE SOLUTION OFFER AUTOMATED DISCOVERY AND PROTECTION?

For organizations looking for a hands-off approach to database protection across their IT environment, they need automated discovery and protection of databases through a backup service and a systematic approach to supporting compliance with SLAs. After an SLA policy has been mapped, databases will be automatically protected, replicated, and archived as they are discovered, freeing up management time to focus on other strategic initiatives.

## DOES THE SOLUTION OFFER FLEXIBLE RECOVERY OPTIONS?

When it comes to backup and recovery, DBAs often take great interest in managing recoveries, which can be a delicate process. What are the range of options the solution offers in the event of a database failure? Do those align well with the organization's needs and business model? Ideally, in a recovery situation, DBAs are freed to devote their precious time to other demanding tasks without worrying about database backups or relinquishing restore control.

## DOES THE SOLUTION OFFER THE REQUIRED LEVEL OF ACCESS TO SELF-SERVICE?

Does the solution enable access to complete a variety of tasks, such as instant recovery, testing a patch or an upgrade, verifying data recoverability, running point-in-time queries and historical reports, and even just meeting ad hoc requests?

With the growing complexities DBAs face, equipping them with the tools they need to succeed is more critical now than ever.

## About the Authors:

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