

# THE REAL BENEFITS OF DATABASE AUTOMATION

# CONTENTS

PREFACE	3
THE BENEFITS OF DATABASE AUTOMATION	4
AREAS FOR POTENTIAL DATABASE AUTOMATION	6
NOT EVERYTHING CAN OR SHOULD BE AUTOMATED	9
DBAS SHOULD NOT FEAR AUTOMATION	9

# PREFACE

Databases make up the most valuable components of an organization's information technology (IT) infrastructure except for its human resources. The information contained in enterprise databases represents the intellectual capital and business intelligence that is essential for survival in the modern data-centric market. The importance of maintaining these information repositories cannot be overstated whether they are used internally or provide customer-facing services.

The significance of enterprise data assets continues to grow. And so too does the role of the database administrators and developers who are responsible for the systems' availability and performance. Mission-critical applications rely on database back ends, and companies cannot afford to have them be unavailable or underperforming. The benefits of database automation help the support teams navigate the complexity of modern multi-platform environments. Database professionals can use all the help they can get to accomplish their jobs.



# THE BENEFITS OF DATABASE AUTOMATION

Many of the administrative tasks required to keep databases operating efficiently need to be performed regularly. While in some respects, these activities can become routine and mundane for the administrative team, they are nevertheless vital for the organization and the health of its databases. In some cases, a database administrator (DBA) spends the majority of their day on endeavors that are time-consuming and repetitive.

Database automation is the practice of employing processes and tools to lighten the burden on enterprise DBAs. Standardized and well-documented procedures lend themselves to being automated, as do many of the daily activities that run behind the scenes to keep these critical systems performing as expected. There are multiple benefits to database automation that impact individual administrators as well as the entire organization.

## **Increased DBA productivity**

One of the immediately apparent benefits of automation is the increased level of productivity enjoyed by the database team. Without having to concern themselves with some of their more repetitive duties, they can turn their attention to increasing performance and tuning SQL queries. A DBA can also support more systems when a subset of their responsibilities have been automated, further increasing the team's productivity metrics. DBAs can spend time reviewing the results of automated processes on multiple machines instead of manually performing the tasks for substantial gains in productivity.

## **Process stability and consistency**

Automating processes implies that they are repeatedly executed in the same way. This automation introduces a level of consistency that is not possible with manually run procedures. Observing the automated processes over time can result in discovering improvements that can be replicated throughout the environment. Optimizing the procedures becomes even more important when they are used regularly. Part of the productivity gains that result from automation can be spent in streamlining and further improving the processes. Database automation should be seen as a continually evolving endeavor to perform administrative tasks optimally.

## **Error reduction**

Human error is responsible for the vast majority of issues affecting IT environments. The multiple platforms and systems the average DBA needs to keep tabs on present numerous opportunities for simple oversights or mistakes. Automating processes removes the possibility of omissions like forgetting to kick off the backup jobs, leaving critical databases unprotected. Eliminating human errors is a significant reason for organizations to adopt database automation. Each automated process removes another instance of potential mistakes made by the DBA team.



### **Creating new job opportunities**

In larger organizations, there are often teams designated to implement and oversee the database automation efforts. These roles are perfectly suited to DBAs who have a deep understanding of the processes being automated. Their knowledge can be used to the advantage of the whole database environment rather than the subset of systems for which they were responsible. Becoming more involved in data analytics and visualization are also attractive routes for DBAs who have successfully automated many of their daily processes.

### **Enabling more value-added activities**

Freeing up a database team from repetitive administrative work allows them to get involved with more value-added activities. They can focus on new database platforms and implementations that previously were unable to be addressed due to time constraints. DBAs can delve into the fine points of the platforms they support when unencumbered by mundane daily activities. This focus can result in discovering new performance optimizations that address user concerns and make the systems more valuable to the organization.

There are always lingering issues that a database team never seems to have the time to resolve fully. By automating as many of their daily activities as they can, time will become available. Then, the team can tie up all loose ends and leave the team ready to handle whatever problems appear next.



# AREAS FOR POTENTIAL DATABASE AUTOMATION

Many aspects of database administration are prime candidates for automation. Some of them are tasks that need to be performed daily. However, even procedures that are sparingly used can be automated to ensure they are executed perfectly when the need arises. Not all automated procedures need to be regularly scheduled. Some are only rolled out in specific circumstances. Here are some areas that can be focused on when implementing database automation.

## **Database Backups**

Backing up the valuable information in their databases is one of the most essential tasks that DBAs perform. This importance is not always apparent until a restore is needed to recover a database. Whether the recovery is required due to human error or an environmental disaster, the lack of a valid backup can have a disastrous impact on the entire organization. Automated and scheduled backups that are verified by the database team remove the possibility that backups are missed.

In addition to regularly scheduled backups, there are times when ad hoc data protection needs to be incorporated into other database operations. A collection of automated backup procedures that are tailored to address specific scenarios can be used when performing a wide variety of operations. It is always a wise move to take a backup before making database changes or migrating to new hardware.

## **Database health checks**

Health checks are necessary to provide insight into possible performance and capacity issues. Most DBAs are well aware of the issues that can impact their databases. However, checking many informational metrics manually is an error-prone task that can be lost in the shuffle of a busy IT environment. Automated health checks combined with robust reporting ensure databases are running smoothly. They can also provide information that can be used to address proactively changes in usage patterns before they become problems that impact users.

## **Access management**

Automated processes can be useful in many areas of access management. In busy IT environments, database user ids are continually being created and deleted as business needs change. Creating the logins and their underlying file structures and permissions can easily be automated, removing another tedious task from the DBA team.

Observing user behavior is another area where automated processes and monitoring are beneficial. Changes in how elevated permissions are being exercised can be an indication of unauthorized activities related to enterprise data resources. Automatically generated warnings and alerts give organizations a better chance of keeping their systems secure.

## **Compliance checks and audits**

Complying with data privacy and security standards has assumed a crucial role in the IT landscape. Databases can hold sensitive and personal information that needs to have access restricted to authorized personnel to remain compliant with regulations. Keeping tabs on who is accessing data cannot be accomplished effectively with manual processes.

Automated compliance checks can be instrumental in keeping the database environment compliant with privacy regulations. The reports generated from these tools can also supply evidence to demonstrate compliance to auditors. The increased focus on keeping private data resources secure demands all the methods at an organization's disposal, and automation is a perfect fit.

## **Provisioning**

The process of provisioning new database instances for testing and development involves many related procedures that all need to come together flawlessly. Many enterprises create new instances regularly to address changing business conditions, making provisioning a logical place for automation. Missing a step in the provisioning process can set the team back and cost an inordinate amount of time correcting the mistake. Automating the process enables teams to quickly and efficiently set up new instances. That is even possible in situations where a DBA is not available to take the controls manually and ensures consistent results.

Automating the provisioning process also introduces a level of standardization that provides benefits when the systems need to be patched and upgraded. Working from a uniform provisioning palette facilitates all subsequent patching and upgrades and makes it easier to use automation for those functions as well.

## **Patch and upgrade management**

An outgrowth of provisioning automation is the ability to perform automated patch and upgrade management. The standards enforced when developing automated provisioning procedures make it possible to streamline system upgrades and patches. In the absence of standardization, it is impossible to automate fully patching procedures due to differences in system implementation. Modifying the scripts necessary to perform the upgrades would quickly become unwieldy when dealing with non-standardized system provisioning.

## **Testing**

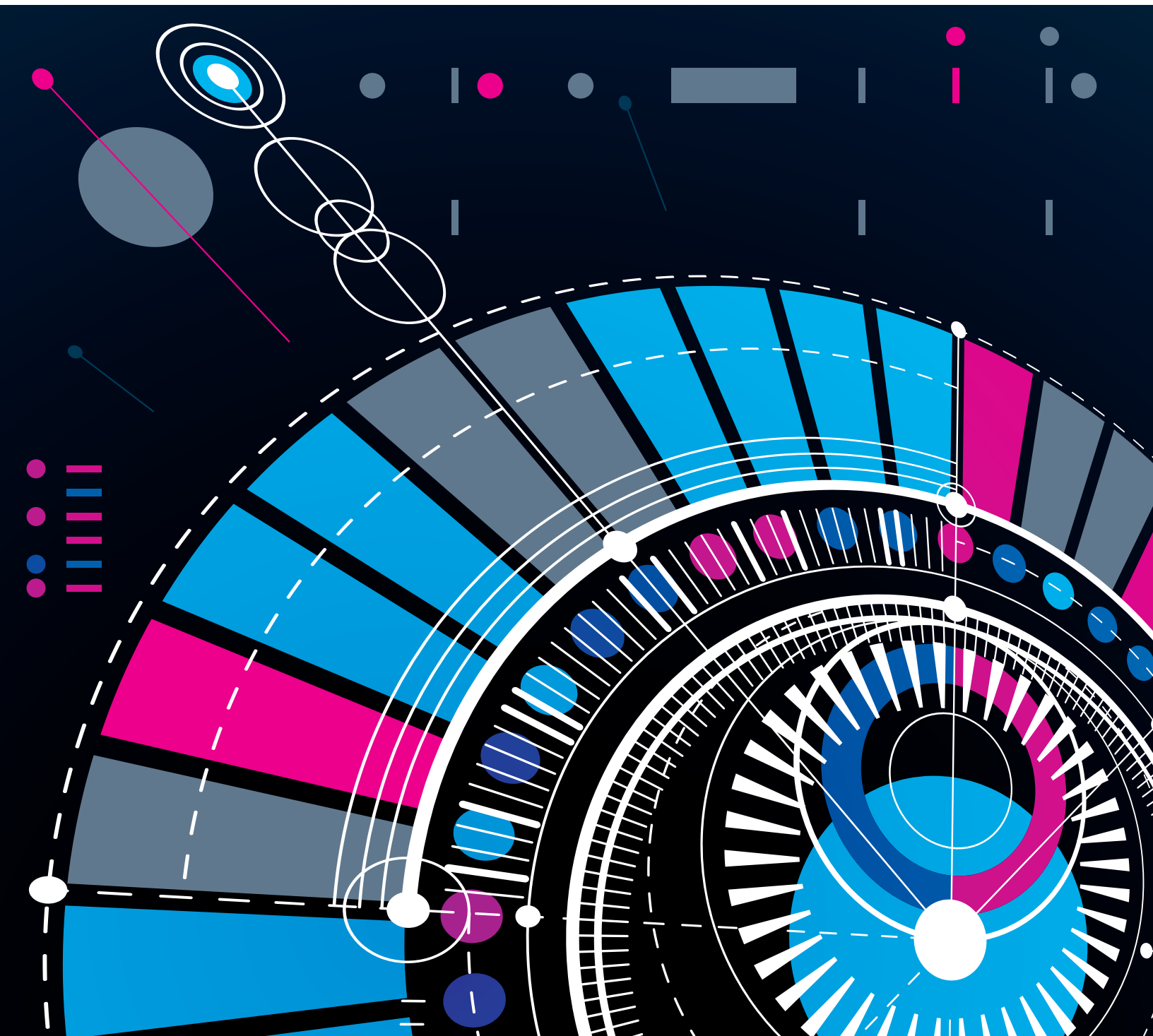
Procedures that are used to test new database instances or configuration changes can be automated and reused repeatedly. This reuse is a case where refining the automated testing processes over time will lead to more resilient systems as better tests are developed.

Sets of tests can be created to address different scenarios and kept ready to be unleashed at a moment's notice. They can be used in conjunction with provisioning and patch management processes to automate the rollout of new systems and upgrading of the database environment. Reports generated from automated testing verifies that all steps were completed successfully.

## Performance tuning

Some aspects of performance tuning can be automated with the right tools. Automatically making extra disk space available or switching to a less-utilized network segment to provide additional bandwidth can go a long way toward keeping systems running smoothly. Human intervention can complement automated tuning processes and are required to set the parameters that trigger environmental changes.

These are just some ways that database automation can benefit an organization. An essential characteristic of automation is that it can be introduced in a structured manner that addresses specific segments of an IT environment. As teams become comfortable with its advantages, the scope of automation efforts can easily be expanded.





## NOT EVERYTHING CAN OR SHOULD BE AUTOMATED

There are some tasks and opportunities for decision-making that do not make good targets for automation. They demand intellectual talents that only humans can currently bring to the table. Activities such as making business decisions based on the value of data resources should remain something done by informed and responsible members of the organization.

Even some processes that can be automated should be left alone for reasons that may not be so obvious. Fully automating SQL code generation can dull the coding skills of the DBA team, making it harder for them to address problems effectively outside of the automated tool's capabilities. Teams need to remain sharp and able to engage when intuitive thinking and action are required to handle unexpected and unique situations.

## DBAS SHOULD NOT FEAR AUTOMATION

The real benefits of database automation are clear. Database administrators need not fear the introduction of automation but instead should welcome it as a valuable addition to their software toolbox. They need to be flexible regarding their role in the enterprise and be open to the new opportunities that are offered by database automation. The benefits of automation make it inevitable that management will eventually take steps to implement it wherever possible. To go against a prevailing perspective is usually a losing proposition and should be avoided by the members of the database team.

Automation can improve the daily life of DBAs while contributing to the overall health of the database environment. It is a valuable methodology that should be used by database teams of any size. When implemented to augment the skill set of an organization's DBAs, automation offers tangible benefits that manifest themselves in numerous ways. It can provide enhanced performance, save money, and allow the database team to concentrate on other issues to help strengthen the enterprise.

# IDERA'S SOLUTION

**IDERA's SQL Safe Backup** provides a high-performance backup and recovery solution for SQL Server. It reduces backup time by up to 50% over native backups and reduces backup disk space by up to 95%. It also enables automated backups of entire SQL Server infrastructures and ensures compliance with the backup and recovery policies of organizations. It turns backup files into virtual databases to query and modify data as if they were real databases without restoring. From tens of local SQL Servers to hundreds of global SQL Servers, it is the only backup and recovery solution that scales to meet the challenge. The suite of products includes SQL Diagnostic Manager Pro (with SQL Workload Analysis and SQL Query Tuner), SQL Compliance Manager, SQL Secure, SQL Safe Backup, and SQL Defrag Manager.

**Start a free, fully-functional, 14-day trial today!**

**Start FREE trial**

