The Importance of Continuous Monitoring in DevOps Pipeline

Foglight® for Databases helps DBAs monitor their entire database environment at a glance for DevOps agility

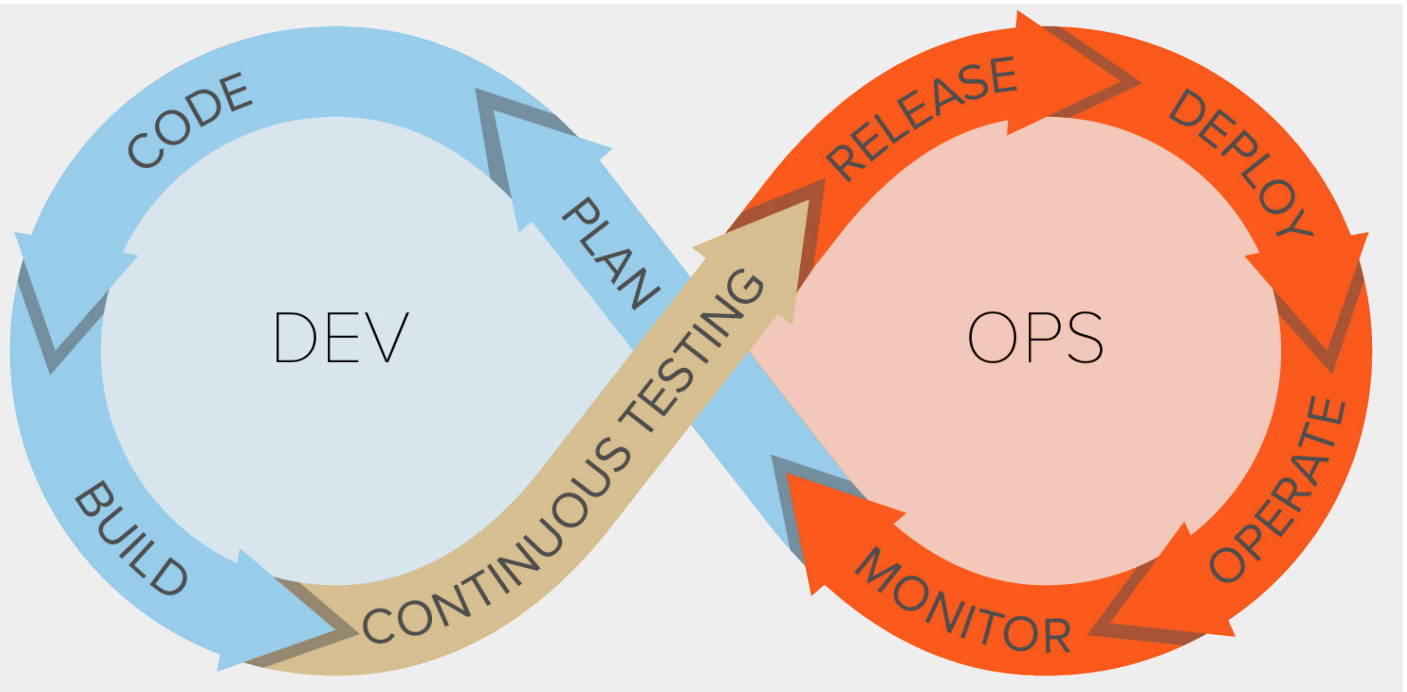Pini Dibask, Product Manager for Database Performance Monitoring, Quest, Oracle ACE

Figure 1. DevOps applied automation and strict monitoring throughout the development lifecycle to enable shorter development cycles and higher quality releases.

INTRODUCTION

Organizations today are under tremendous pressure to quickly deploy new software and updates to their production applications in order to cope with intensely competitive markets and the rapidly evolving technology landscape. To meet this challenge, more and more organizations are turning to DevOps — a set of practices that emphasize collaboration and communication between development, operations and other functional areas to enable the building, testing and release of software in a rapid and reliable fashion.

WHAT IS DEVOPS?

Often, DevOps is described as a set of processes, such as continuous integration (CI), continuous deployment (CD), or as set of tools which enable faster time to market. However, these processes and tools are means to an end, not the end itself.

DevOps is best understood as a business initiative: to improve communication and collaboration among stakeholders in order to increase the speed and quality of software deployment. To achieve these goals, DevOps requires cultural changes, automated processes and investments in the right technologies (see Figure 1).

The most important terms in the DevOps world are the following:

- **Agile Development —** development methodology for releasing smaller sets of changes into production more frequently

- **Continuous Integration —** process in which check-in of code changes triggers an automated build process to test and QA

- **Continuous Delivery —** process for releasing code into production automatically.

- **Continuous Monitoring —** process for continuously measuring the performance of the environment and the application.

> Using Foglight to monitor the enterprise data warehouse for real-time and historical usage patterns reduces the time between problem identification and correction; thus enabling the DevOps culture.

WHAT DOES DEVOPS OFFER?

The successful implementation of a DevOps culture offers a wealth of benefits for both IT teams and the business, including:

- More frequent software deployments
- Faster time to market for new features
- Shorter times between software fixes
- Better application quality and performance
- Increased operational efficiency
- Reduced risk

DEVOPS AND THE DBA

Although DevOps is a relatively new culture, DBAs have always been part of DevOps because most DBAs are deeply involved in both development aspects (SQL, performance tuning, Object Analysis, reporting) as well as operations aspects (server configuration, backup and restores, OS/network/storage tuning, etc.). The main change in recent years is that DevOps has hit the database team, demanding more automation and collaboration in order to accelerate application updates and delivery, and be more efficient in proactively identifying application performance problems before they become a real issue.

THE ROLE OF CONTINUOUS MONITORING IN DEVOPS

One of the most important tasks for DBAs is to keep application databases performing well and ultimately keep end users satisfied. In fact, according to a recent research conducted by DBTA[1], 66% of respondents said that performance is their most important responsibility for DBAs managing databases in the cloud, and 63% of the respondents said that performance is the responsibility that takes up most of their time. These numbers emphasize the importance of database monitoring tools and the fact that database performance monitoring is closely related to DevOps culture. DevOps is often about automation, and automating performance monitoring of databases to ensure they operate at peak stability. Performance is an essential part of that; therefore, monitoring

is an essential part of DevOps. Operations, development teams and DBAs can benefit from sharing a common set of performance data to support production application databases. The data can and should be relevant to the stakeholder's need, whether it is high-level or granular.

THE CHALLENGE OF PERFORMANCE MONITORING IN THE DBA'S WORLD TODAY

Today's DBAs must manage a variety of database technologies. According to the recent DBTA survey, 64% of DBAs responsible for managing relational database management systems are also responsible for managing non-relational database management systems (i.e. NoSQL solutions). Moreover, 66% of respondents said that the number of databases they are responsible for is increasing. This is a big challenge. Many organizations use several tools for monitoring their database performance. This results in difficulty when it comes to correlation and identification of issues. The learning curve for the IT organization increases which also results in operational and economical inefficiency.

Another common challenge in many IT teams is the "blame game" where application developers blame infrastructure teams for stability and performance issues and vice versa. Solving this challenge is one of the main goals of DevOps. The DevOps culture aims for collaboration and shared responsibilities, which should minimize or eliminate the blame game. However, it's not always easy to understand the root cause of an application performance or stability issue and correlate application or infrastructure changes to the actual impact on the database workload and the application performance.

HOW FOGLIGHT® FOR DATABASES CAN HELP

Foglight for Databases provides 24/7 cross-platform database visibility (see Figure 2). It provides DevOps teams a proactive approach for monitoring their entire database environment at a glance and allows them to understand whether there is any stability or performance problem before customers complain.

---

1 © 2017, DBAs Face New Challenges: Trends in Database Administration, Unisphere Research
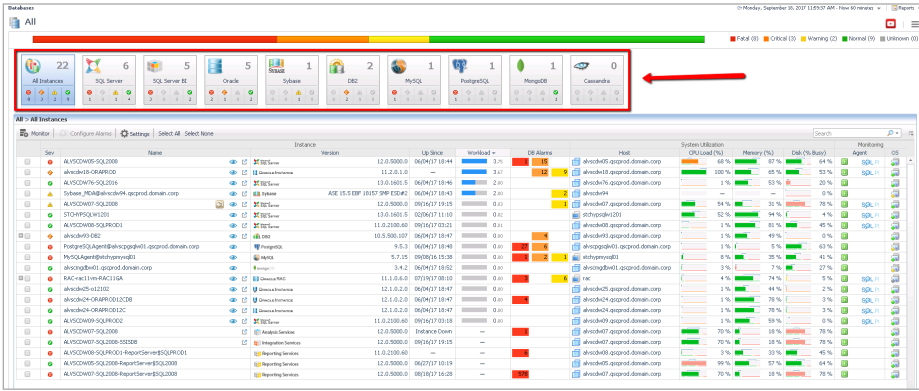
Quest

Figure 2. Foglight for Databases — Cross Platform Visibility

It supports various database technologies including: Oracle, SQL Server, DB2, SAP ASE, PostgreSQL, MySQL, MongoDB and Cassandra. According to our customer, a DBA from a financial services company: "Our organization is using Foglight to monitor the enterprise data warehouse for real-time and historical usage patterns. This shortens the time between problem identification and fixing and as such, is the enabler of the DevOps culture."

Another common aspect of DevOps is leveraging test environments that simulate production environments. Foglight for Databases allows comparing the performance and configuration across database instances which can be used in DevOps culture to compare development and testing environments. In addition, Foglight features a smart baseline

algorithm which defines the expected environment workload profile at any point in time — hour in a day, day in a week, week in a month (see Figure 3). DevOps teams can leverage the tool to easily understand whether the database environment experienced abnormal activity.

Tracking application and infrastructure changes plays a major role in DevOps culture. In many cases, database code, schema changes and infrastructure changes may impact the application performance which results in increasing host resource utilization and poor quality of service of the application. As previously mentioned, a big challenge which exists for today's IT teams is how to correlate between database changes, infrastructure changes and their associated impact on the environment workload. Foglight for Databases

By solving the "blame game" between development and operations, Foglight enables the DevOps culture.
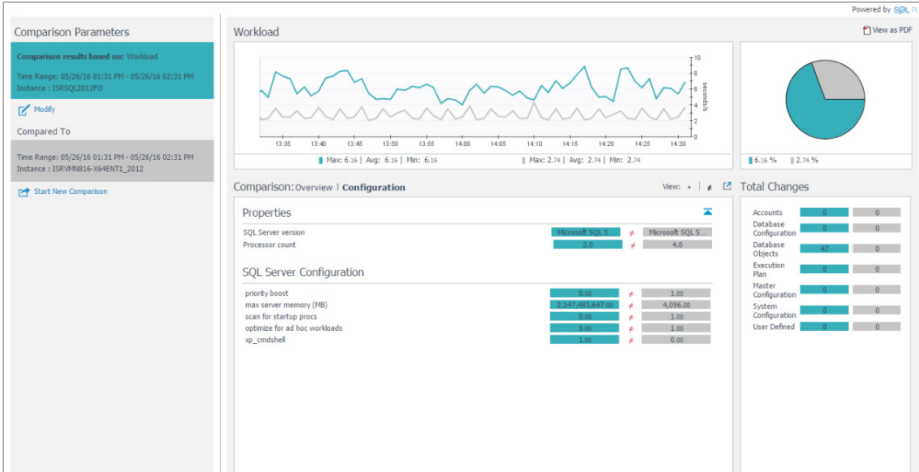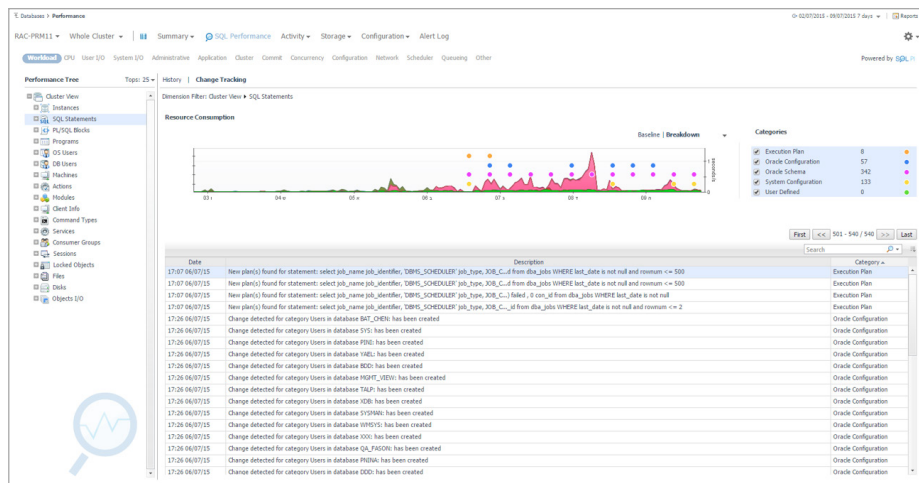

Figure 3. Foglight for Databases Compare Tool

Quest

Figure 4. Foglight for Databases Change Tracking Tool

can solve the "blame game" between development and operations by visually correlating database/application changes (schema, database configuration, execution plans) as well as infrastructure level (disk, CPU, memory) and show how these changes impacted the database performance (see Figure 4). By solving the "blame game" between development and operations, Foglight is the enabler of DevOps culture.

CONCLUSION

With both the business environment and the technology landscape changing and growing rapidly, organizations need to be nimble. DevOps helps organizations increase both the speed and the quality of software deployments by improving communication and collaboration among stakeholders. Foglight for Databases provides a single pane of glass, cross-database platforms visibility into database performance across the entire environment and enables development, DBAs, and application teams to share the same consistent performance metrics and understand the environment health at any given time. Foglight for Databases helps comparing performance and configuration across production and test environments which is a significant part of DevOps. In addition, it can correlate database and infrastructure changes to the actual application performance, which reduces the gaps between development and operations teams and by doing so, it enables DevOps culture. To learn more about Foglight for Databases, please visit www.quest.com/products/foglight-for-cross-platform-databases.

Quest

ABOUT QUEST

At Quest, our purpose is to solve complex problems with simple solutions. We accomplish this with a philosophy focused on great products, great service and an overall goal of being simple to do business with. Our vision is to deliver technology that eliminates the need to choose between efficiency and effectiveness, which means you and your organization can spend less time on IT administration and more time on business innovation.

Quest