FORTUNE 200 BANK BUILDS DATABASE PERFORMANCE INTO APPLICATION DEVELOPMENT

CASE STUDY

The Challenge: Proactive Application Tuning During Development

At number 165 on the Fortune 500 list, the Bank is one of the nation's largest diversified financial services organizations. The Bank provides its U.S. customers with retail and corporate banking, real estate finance and asset-based lending, wealth management and asset management.

Charged with developing applications that fuel the Bank's continued growth, the Management Information Systems (MIS) development group needed to ensure exceptional end user service and performance of their developed applications. The MIS development wanted to learn directly from their applications in production and be more responsive to end user service, a key principle of a DevOps approach. Knowing that as much as 70% of application performance issues are caused by database issues, the MIS development team sought a tool that could correlate application performance directly with database performance and end user service.

Production too Busy with Operations to Help with Application Performance

For the MIS team, there were multiple challenges to realizing this vision. The Bank's Database Technology Group (DTG) is responsible for managing all of the Bank's production Oracle and Microsoft SQL Server database instances. The primary focus for the DTG team is in operations—making sure the production databases are running smoothly and resolving issues as they occur. The MIS team didn't have time to help individual development teams within the MIS group and couldn't provide the database performance insights the development teams needed.

Licensing Costs, Configuration Complexities and Security Prevent Use of Existing Tools

Further complicating the MIS team's ability to achieve its goals was the fact that the DTG production team couldn't give the MIS development team access to database performance tools to use on their own. In the case of SQL Server, the DTG team didn't have a specific performance monitoring tool and was using Microsoft System Center Operations Manager (SCOM) instead. SCOM wasn't able to provide useful information that developers could easily interpret on their own.

For the larger Oracle installation, the DTG team uses Oracle Enterprise Manager (OEM); because of both the licensing costs and the difficulty in configuring OEM to provide the MIS team with access to performance information without giving them access to private data from production databases, OEM wasn't a viable option for use outside of the DTG production team. Also, while OEM is ideally suited for database administration and monitoring the overall health of the database, it didn't provide any insight into end-user service and application performance, and it required advanced database administration skills to accurately identify application problem areas. Simply, there was too much time investment required for MIS developers to get anything from the DTG team or their production tools.

Challenge: Build application performance into development and testing without loading production databases or DBAs

Solution: With simple, visual charts of historical data, trending and reports, SolarWinds DPA gives developers actionable insights to performance issues

Benefits:

- Application performance issues identified and resolved faster, before they become end user service issues in production
- End user service quality improved because DPA enabled improvements to testing regimens
- Actionable insights obtained without requiring privileged access to secure production databases or servers

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All MIS development teams have access to performance data without access to production databases or servers. DPA gives the development teams a direct view of application performance in development, test, staging and production, with visual charts for historical data, trending and reporting. The developers can accurately identify database performance-related problem areas within their applications, without requiring access to the already time-constrained DTG production team.

The DBAs in the DTG production team use DPA to identify and resolve operational problems, focusing their attention on end user service delivered by their group, rather than on server health status alone. DPA is now packaged as a standard service for all databases managed by the DTG, enabling both DBAs and developers to view performance for any new deployment.

The Results: Actionable Insights about Application Performance Drive Development

According to the Vice President of Information Technology, DPA has quickly become a powerful tool in both proactive and reactive troubleshooting efforts. Says the Vice President, "[After] using DPA for a few days, we found it to be very useful in both reactive and proactive troubleshooting for our application." Using DPA, the MIS developer teams identify how database performance is impacting end user experience, which helps to speed the development cycle and improve the quality of the bank's applications.

For example, the SharePoint development team in MIS uses DPA to assess root cause of issues with SQL Server performance and resolve application performance problems faster. The team's manager says, "DPA ... provides [my] team with insight into our SQL Server [instance] which would likely be a black box without it. Yesterday we were able to see blocking processes on SQL [queries] and know what was wrong and who to send the ticket to."

The lead of the ALM Risk development team in MIS is even more passionate about how DPA has helped the team, noting that, "[We've] been using it in our development process for some time now and find it very helpful with diagnosis and query fine-tuning. We must have this tool!"

The MIS Mortgage Technology team was able to analyze and resolve slow month-end batch processing with both Oracle and SQL Server databases. This team's lead reports, "The team and architects use DPA every day, and its use directly resulted in specific changes made to improve performance."

Prior to installation of DPA, the Retail Banking MIS team would typically spend hours poring through a very large volume of data made available through Microsoft SCOM, but still would not be able to precisely identify the root cause of persistent performance issues. Within the first several hours of using DPA, this development team pinpointed two specific stored procedures and the SQL statements contained within them that were causing the problems. Armed with this insight, the team was able to request specific changes and resolve the issues.

Another MIS development team quickly found issues with the timing of backup jobs, as well as some indexing improvements, and made plans to incorporate changes based on those insights.

" The Mortgage Technology Team and the architects use this tool every day and its use has directly resulted in specific DDL changes to improve performance. This tool [gives development] teams actionable insight into Oracle and SQL [Server] instances "

— Solutions Director, MIS Development Team

The IS Risk Team Lead says, "[Our application] has many users and processes that hit SQL Server concurrently. DPA has been an invaluable tool in determining what processes are conflicting and causing performance problems. This allows us to work with clients to better balance workloads." The team lead goes on to note that DPA's historical view of performance has become invaluable, explaining, "Clients often do not tell you about a problem until a few hours after the problem, so the ability to go back and do time slices in DPA has been very beneficial."

Conclusion: Realizing the Value of Proactive Application Performance Tuning

Through its use of DPA, the Bank expects to realize the true potential of identifying and addressing performance issues during application development, well before any impact to end user service. DPA facilitates the Bank realizing key principles of a DevOps-based approach by enabling developers to view code performance in production, and facilitating problem-solving collaboration between the MIS development team and the DTG production team. DPA's simple, visual charts and lightweight architecture make it an ideal tool for developers to gain actionable insights about performance and end user impact, and for the development and production teams to share information about issues in production. For the Bank, these unique capabilities in DPA help to ensure the exceptional end user service so critical to building and sustaining competitive advantage.

> " Our group has only been using the DPA tool for a few days, but has already found it to be very useful in both reactive and proactive troubleshooting efforts for our applications. We were able to identify issues with the timing of the backup jobs as well as some indexing improvements that we will incorporate moving forward. "
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> — Vice President, Information Technology

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