



FIS Global

Quickly identifies and resolves database performance issues with DB Optimizer

Overview

FIS Global is one of the world's top-ranked technology providers to the financial services industry. With more than 30,000 experts in 100 countries, the company delivers a range of solutions to more than 14,000 clients. With such a broad clientele, IT services are critical. The databases that serve the various branches of the company must be accessible, reliable and high performing, or business could come to a halt.



Challenge

According to Karen Morton, Performance Specialist for the services branch of FIS Global that serves IT outsourcing customers, application availability is a primary concern. “Agents, loan officers, and managers rely on our support for services to run their businesses,” she said. “If there’s a performance issue, hundreds of them could be waiting for applications, and that can impact their ability to generate revenue.”

Karen’s organization deployed DB Optimizer™ to support six applications and roughly 80 pre-production and production Oracle databases. The team had been using Oracle Grid Control for identifying and fixing ill-performing code; however there were several drawbacks of using the tool.

“Grid Control would catch problems in the workload repository, after the transaction had completed,” said Morton. “There was no easy way to attach the query back to the transaction that started it, so it was difficult to line up transaction boundaries with the data coming out of the database.” Often, this made it impossible to find and address the root cause of performance latency or evictions. “If you’re trying to cube the data with specific details and create an event profile, it’s much harder to find a pattern once the transaction is over,” she said.

Additionally, the granularity of the snapshots provided by the tool was lacking. “The Performance console can be used to generate Automatic Workload Repository (AWR) reports, but we needed more granularity. We had to supplement the findings with ad-hoc queries against the system tables to pull out historical data – which was like finding a needle in a haystack – that took us days or weeks, or sometimes we couldn’t find the problem at all.” said Morton.

APPLICATIONS

- Financial Industry and Backoffice Processing

TOOLS USED

- DB Optimizer

Solution

When Morton came on board, she recognized immediately the need for a more comprehensive performance optimization tool for the numerous Oracle databases her team manages. She requested an evaluation of DB Optimizer.

DB Optimizer is a heterogeneous tool that maximizes database and application performance by quickly discovering, diagnosing and optimizing poor-performing SQL. DB Optimizer empowers DBAs and developers to eliminate performance bottlenecks by visually profiling key metrics inside the database, such as CPU, I/O and wait times and relate resource utilization to specific queries. This helps to visually tune problematic SQL and eliminate performance bottlenecks in production databases and applications. DB Optimizer also provides a single, easy-to-use IDE across all databases.

One of the key components of DB Optimizer is the Profiler tool, which helps DBAs pinpoint poor-performing SQL. Advanced tuning features such as Index Analysis, Visual SQL Tuning (VST) diagrams, and a powerful SQL IDE help teams to efficiently tune the code. Morton and her team can use the tool to drill down into performance metrics and determine the root cause of problems rapidly.

“DB Optimizer shows us the big picture, then lets us get specific,” said Morton. “If I have a profile session running in DB Optimizer, and I get a call with a question about a problem in progress, I can report back with very granular information about what was happening at any given point in time. We’ve never been able to do this so directly before.”

DB Optimizer provides true heterogeneous support for all DBMSes from a single interface, making it easy for Morton’s team to improve the performance of all the databases they use, regardless of platform or version.

CHALLENGES

- Identify the root cause of performance latency and evictions
- Rapidly rewrite or tune poor-performing SQL code to resolve issues
- Improve collaboration between DBAs and developers by providing validation for suggested code changes
- Reduce time to repair database performance problems
- Build confidence among end users in the team’s ability to resolve performance issues

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Karen Morton,
Performance Specialist,
FIS Global

Results

DB Optimizer's VST diagrams provide graphical evidence of what might be causing the problem, and they also illuminate what's not causing the problem. This ability improves collaboration between Morton's team and developers and increases the mean time to repair for database issues. The team saves time by avoiding investigations that led nowhere.

"A visual is powerful," said Morton. "It helps us to shut down arguments quickly with graphical representations that are easy to understand. For example, if developers say we need more server capacity to fix a performance problem, the VST might show that some bad code, not a lack of hardware, is the real problem. We can identify and fix ill-performing code right away, rather than throwing money at additional server space."

DB Optimizer's VST diagrams display table sizes, the sizes of the joins between tables in queries, and the percentage of rows returned, on every table that has a predicate filter. These statistics allow DBAs to see any bottlenecks or potential issues immediately. They provide a good indication as to the best execution plan for the query, dramatically reducing time spent on identifying and fixing poor-performing code.

According to Morton, DB Optimizer helps to reduce excess resource consumption and frustration among users. For example, a recent problem with one of the databases used to create on-demand reports was not producing the reports within the pre-configured 5-minute timeframe, which was set to enhance productivity. The application would often time out before the report was complete, causing major delays.

"We were able to eliminate the need to schedule their reports to run in an overnight queue," said Morton. "We further eliminated performance issues resulting from bad queries which prevented batch reporting from completing in prescribed maintenance windows. Previous attempts to solve this problem centered around breaking the job into smaller units but poorly performing queries still consumed all available resources."

By viewing the transaction in DB Optimizer, Morton quickly identified the problematic code, ran it through an SQL tuning session and fixed it within an hour. "The problem is gone, and the reports run in under a minute each," she said.

RESULTS

- Provided validation for suggested code fixes with visual diagrams that quickly illuminate poor-performing code and demonstrate how proposed fixes will work
 - Decreased time spent troubleshooting and fixing performance issues
 - Enabled effective, visual SQL tuning sessions to reduce excess resource consumption and user frustration
 - Ensured better response times and increased satisfaction among end users
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In addition to providing a faster, more efficient way to fix bad code and tune SQL, DB Optimizer helps to increase confidence in the ability of Morton's team to resolve database performance issues. "When you can't provide details about root cause, your customer becomes wary of your ability to service them the way they need," said Morton. "With DB Optimizer, we can provide quick and accurate answers and back them up with visuals of how our suggestions will fix the problem."

DB Optimizer provides Morton's team with much more detailed, timely information than inherent Oracle tools. Recently, a problem with a node in a server cluster was resulting in periodic, unexplained evictions. They were unable to identify the cause of the evictions using the Oracle tools. After installing DB Optimizer, Morton was able to watch the eviction in the Profiler as it happened, revealing a problem with a time setting in the application server.

"The AWR reports from the native Oracle tools didn't lead us to the cause of the problem, because they weren't detailed enough," said Morton. "DB Optimizer allowed us to pinpoint the culprit as the eviction occurred. Without it, we would never have been able to catch – or fix – the problem."

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Conclusion

An advanced SQL profiling and validation tool, DB Optimizer helps Morton's team to uncover inefficiencies and offer alternatives to improve database performance, while preventing poor-performing SQL from ever reaching FIS Global's production environment. With the ability to continuously monitor the databases her team manages, she can help to ensure faster response times for a better end-user experience. Not only can she spot performance issues that may have a potential impact on her organization's profitability, she can save time and resources fixing those issues. The increased confidence that results—for both developers and end users—facilitates improved collaboration among DBAs and development teams, and increases satisfaction among the end users who rely on FIS Global's services for completing mission-critical tasks.