CASE STUDY

A Global Leader in the Cement Industry

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CASE STUDY | **SOFTWARE TESTING**

RISK & AUDIT SERVICES

INFORMATION SECURITY

1.0 Snapshot

1.1 Industry Type

The client is one of the world's leading suppliers of cement and aggregates (crushed stone, sand and gravel) and also supply ready-mix concrete and asphalt, and provides related services.

1.2 Business Challenges

- The application under test was developed by a vendor for the client's group companies which was to be used for its employees, customers and distributors.
- The application had the following features:
  - To check Credit balance, View Invoice, Place order, View Pending Orders, Dispatch details and Payments.
- The client wanted to test the application. It was found that when the user level increased to more than 50, the application response time started to degrade and the application also threw up access denial errors. The business challenge was to simulate and capture response time under various user loads i.e. 50…100…200 users.
- To identify the bottlenecks, validate hardware architecture, simulate the live environment and predict response times.
- The business challenges were performance testing, performance monitoring, performing root cause analysis and identifying bottlenecks.

1.3 AUDITime Solution

- The system architecture was studied & documented.
- The critical business processes and business transactions were identified in the application.
- Typical usage patterns were documented.
- Suggested code level changes for the application and configuration changes at the server level.
- The result sets were compared & analyzed to pinpoint bottlenecks.

1.4 Business Benefits

- Performance testing as a process was effectively established.
- The response time profile was not up to the mark for certain areas of the application. The same was escalated to the client's management. These areas were then optimized by the development team.
- Viability of the application for current and forecasted business volumes was assessed and performance metrics were established.
- Application is now live with the existing hardware while the business usage has continued to grow.
- Optimization needed at application layer was identified & documented.
- Huge upfront infrastructure cost was reduced due to right hardware sizing.
- Improved the quality from a user's perspective, by forecasting the load and stress on critical systems for Internet and Intranet to ensure performance, scalability and reliability.

2.0 Client Requirement Overview

The client was expecting a large number of users to use the application in the near future. The client developed a portal with the help of an external vendor as per their requirements and this was made accessible through the internet and intranet. The customers and employees of the client could check Credit balance, View Invoice, Place order, Check Pending Orders, View Dispatch details and Payments.

3.0 Business Challenges

The application performance and scalability were the vital aspects that had to be measured. Hence the job of identifying the bottlenecks and their root cause was essential and challenging. That apart, the capacity requirements of the application in terms of hardware and bandwidth for connectivity were essential parts of this phase of the project. The major challenge was to identify the bottlenecks, validate application architecture and simulate the live environment and predict response times.

4.0 Technology Challenge

The application used a secure server and third party integration which made it very difficult to automate the testing process using standard test automation tools. Applicability of low cost performance testing tools available off the shelf was not conducive as the results were not structured enough to reflect the performance parameters required to certify

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the product. Due to varied platforms collection of resource utilization, statistics and performance data through a manual process was time consuming. Collation of this data in a proper structured and reportable format was also a tedious and time consuming task.

5.0 AUDITime Solution

The team of testers studied the application to gain complete understanding of the system; the system architecture was also studied & documented. Critical business processes and business transactions were identified in the application. Typical usage patterns were documented to simulate the live environment as closely as possible. The application usage scenarios were recorded for a single user for the transactions identified. These scenarios were used for injecting load onto the application. The resource profiling at the application server and the database server levels were done. Scripts created for various activities to be used as part of the load injection were identified and this enabled data pooling for diverse user behavior. The results gathered were analyzed for breakdown in the application response times and were seen in comparison with the resource utilization on the application server and the database server. A second round of performance tests was performed on the application. The two result sets were compared & analyzed to pinpoint the bottlenecks. Using the tool, scripts were recorded and engineered to run for multiple users. Data pools were used to provide unique and actual data for each virtual user, thus

simulating the live environment for testing. The team tested and engineered each script to run with multiple users. Different scripts were created to simulate different user behaviors and the load was injected into the application at various speeds. Once all the scripts were executed the team captured the resultant output and performed a comparative analysis wherein user response time, application Throughput, Memory utilization, CPU utilization, root cause analysis and bottlenecks etc. were analyzed and reported.

6.0 Business Benefits

- With the help of the performance test suite, there was early identification of major application defects and architectural issues thus reducing the cost of change with a minor upgradation.
- Improved the quality from a user's perspective, by forecasting the load and stress on critical systems on the internet and intranet to ensure performance, scalability and reliability.

7.0 About AUDITime

AUDITime is a quality management specialist with expertise on software quality assurance. Our company includes experts in areas of banking, financial services, insurance, risk and compliance, technology effectiveness, investigations and quality assurance. Our consultants have deep insights on par with the thought leaders of the world. We are more accessible, adept and cost effective than any competitor in delivering value for our clients.

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